power grid tubes

QUICK REFERENCE CATALOG 284

William W. Eitel (W6UF)

Jack A. McCullough (W6CHE)

EIMAC 1934–1984

A very small advertisement in the November, 1934, issue of QST magazine announced that a new tube, "unsurpassed in every important feature" was available from an obscure company in California. The company was Eitel-McCullough, Inc., and the tube was the 150T. How did it all start?

In 1932 two radio amateurs, Jack McCullough (W6CHE) and Bill Eitel (W6UF), decided to build high power transmitters to work some of the 20 meter overseas stations being heard in California. They found to their dismay that the expensive transmitting tube they purchased refused to work at 1,000 volts—and that was all the high voltage their supply would provide for them. They decided they could build a better tube themselves that would work at low voltage.

They borrowed a modest sum and in 1934 started a company with only three people. The product was the 150T triode. From this humble beginning, the company expanded steadily. Other tubes were added to the line and the number of personnel increased slowly.

In late 1935 some tubes were sold to the U.S. Naval Research Laboratory for use in an experimental radar set that worked on 200 MHz. The 50T was the only tube that provided sufficient pulse power and that was able to stand up to the high plate voltage. More tubes were ordered by the military and in 1939 the first Navy sea radar tests used EIMAC tubes.

During 1938, the U.S. airways were developing radio beacons and high frequency radio links all over the United States. A new EIMAC tube type (450TH) was chosen for this service, and a number of other types were used for broadcast radio, including the newly-developed Armstrong FM broadcast service, and experimental television service. Radio amateurs worldwide also used EIMAC tubes as their popularity grew and dependability became known.

In 1940 the company received its first big war order from Western Electric for the delivery of 10,000 tubes! Up to now, an order for fifty tubes would be a cause for celebration. Converting from hand methods to mass production kept everyone working night and day for months, sent the hiring rate skyrocketing and tossed out all standard methods and routines. By July, 1941, the original staff was ten times as large as it was a year earlier and the plant was doubled in size to accommodate the work. Expansion of the company was so fast that a second plant was opened in Salt Lake City, Utah. By 1945, EIMAC had grown to over 1800 people and nearly 3,500 tubes per day of all types were being manufactured.

The end of hostilities in 1945 and the cancellation of government contracts brought about a crisis at Eitel-McCullough, Inc. Production fell to near-zero as government stocks of surplus tubes were dumped on the market for as little as fifteen cents each. The Salt Lake City plant was closed.

Foreseeing the end of the war, however, EIMAC had evolved new tube types, including the new beam tetrode (4X150A) which performed well in the vhf region. At the same time, a new Salt Lake City plant was opened to make television picture tubes. The future of the company no longer depended upon the older tubes so plentiful on the surplus market.

In 1958 a new Eitel-McCullough plant was built in San Carlos, California, for production of new tetrode tubes, plus larger tubes for broadcast and TV service. At the same time, TV klystrons and other microwave devices were developed for troposcatter communications.

In 1965, Eitel-McCullough merged with Varian Associates of Palo Alto, California. The Varian EIMAC divisions continue to produce all types of transmitting tubes, and are known worldwide as a leader in advanced tube design. Super-power tubes were developed and built for broadcast service (up to 1.5 megawatt anode dissipation) and special tube types are constantly being developed for research studies and experimentation.

Varian EIMAC has pioneered the use of Pyrolytic grids in power tubes for the broadcast industry, making use of a novel laser-milling operation to achieve increased tube performance, stability and higher power output.

Modern Varian EIMAC manufacturing techniques have led to improved VHF performance in large power grid tubes, such as the 4CW300,000G. Other modern Varian EIMAC products are used in the Department of Energy's fusion research program.

The latest development, the Klystrode, combines the better features of the klystron and the tetrode and is shown in this catalog, along with many other new tubes.

Bill Eitel and Jack McCullough, although both now retired, are still interested in the company and, of course, are still very active radio amateurs. The EIMAC divisions of Varian owe a great deal to amateur radio for it was in this field that many of the early transmitting tubes proved their worth and—even today—many of the company's customers are radio amateurs.

As Bill and Jack say, "If it were not for amateur radio, EIMAC could never have existed."

PRICE: $5.00

EIMAC
power grid tubes and accessories

QUICK REFERENCE CATALOG 284

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CATALOG INDEX

To find a specific product, first look under the product category for the initial portion of the type number. Products are listed sequentially according to this number. When more than one product has the same initial number, the products are listed alphabetically by the first set of letter designations. Within these parameters, products are then listed numerically or alphabetically by the remaining number or letter designations.

Also listed is the point of manufacture for each product: **SC** for the San Carlos facility, **SL** for the Salt Lake City facility.

QUICK REFERENCE GUIDE TO CATALOG CONTENTS

INTRODUCTION

The EIMAC Divisions of Varian manufacture a complete line of power grid tubes, X-ray tubes and accessories including cavities and associated equipment.

The Divisions employ over 1400 persons at the San Carlos, California, and Salt Lake City, Utah, facilities.

Major production at the San Carlos plant includes manufacture of large ceramic/metal power grid tubes, cavities and accessories, plus some small ceramic/metal tubes. Glass power tubes, smaller ceramic/metal tubes and a wide line of planar triode tubes and X-ray tubes are major items manufactured at the Salt Lake City plant.

These two facilities, among the most modern electron tube production plants in the world, have all the manufacturing areas designed on a product flow system for maximum efficiency. Clean rooms for critical assembly work are ventilated and filtered for maximum product yield and reliability. Giant EIMAC-developed rotary vacuum pumps provide a high production rate. Facilities for processing ceramic materials include some of the most modern equipment available. Extensive environmental test equipment is at hand for checking product performance under extreme conditions of shock, vibration, humidity and high altitude.

The Advanced Products Laboratories at both facilities provide product evaluation, application data, prototype production and precision testing of tube and circuit designs. The Laboratory model shops and tube design engineers are available to assist equipment manufacturers and prime users of EIMAC products with unique applications.

Existing experimental designs can be adapted by the Laboratories to meet specific customer requirements. Newly developed tube types and circuit techniques are continually being evaluated in the EIMAC Laboratories.

Application Engineering and Marketing Services are available from both the San Carlos and Salt Lake City facilities, as well as from any of the Varian EIMAC Division, Electron Device Group sales offices throughout the world. **In order to facilitate prompt response, inquiries should be directed to the facility manufacturing the specific product.** The Tube and Component Index on the preceding pages lists the point of manufacture of each product by the nomenclature (SC) for San Carlos or (SL) for Salt Lake City.

INTERPRETATION OF CATALOG DATA

Data provided for EIMAC products in this catalog include maximum ratings, typical operation characteristics and a brief description of the product.

The **maximum ratings** are based on the "absolute system" and are not to be exceeded under **any** service conditions. These ratings are limiting values outside which the serviceability of any individual tube may be impaired. In order not to exceed absolute ratings, the designer has the responsibility of determining an average design value for each rating below the absolute value of that rating by a safety factor so that the absolute values will never be exceeded under any usual conditions of the supply-voltage variation, load variation, or manufacturing variations in the equipment itself. It does not necessarily follow that combination of absolute maximum ratings can be attained simultaneously. The maximum ratings designate the maximum of the absolute value of that rating regardless of polarity.

Data provided under **typical operation** represent operating conditions within the maximum ratings that are suitable for a particular application but do not imply that the product cannot be operated satisfactorily under other conditions in the same application.

The term **plate output power** is the calculated output power from the tube itself and is equal to plate input minus plate dissipation. the term **useful power output** is the output measured at the load and does not include power lost in the output circuit.

Information furnished by EIMAC in the catalog is believed to be accurate and reliable. More extensive data is available on individual types on request. Characteristics and operating values are based upon performance tests or calculated data. **These figures may change without notice as the result of additional data or product refinement. It is highly recommended that EIMAC be consulted before using this catalog information for the final equipment design.**

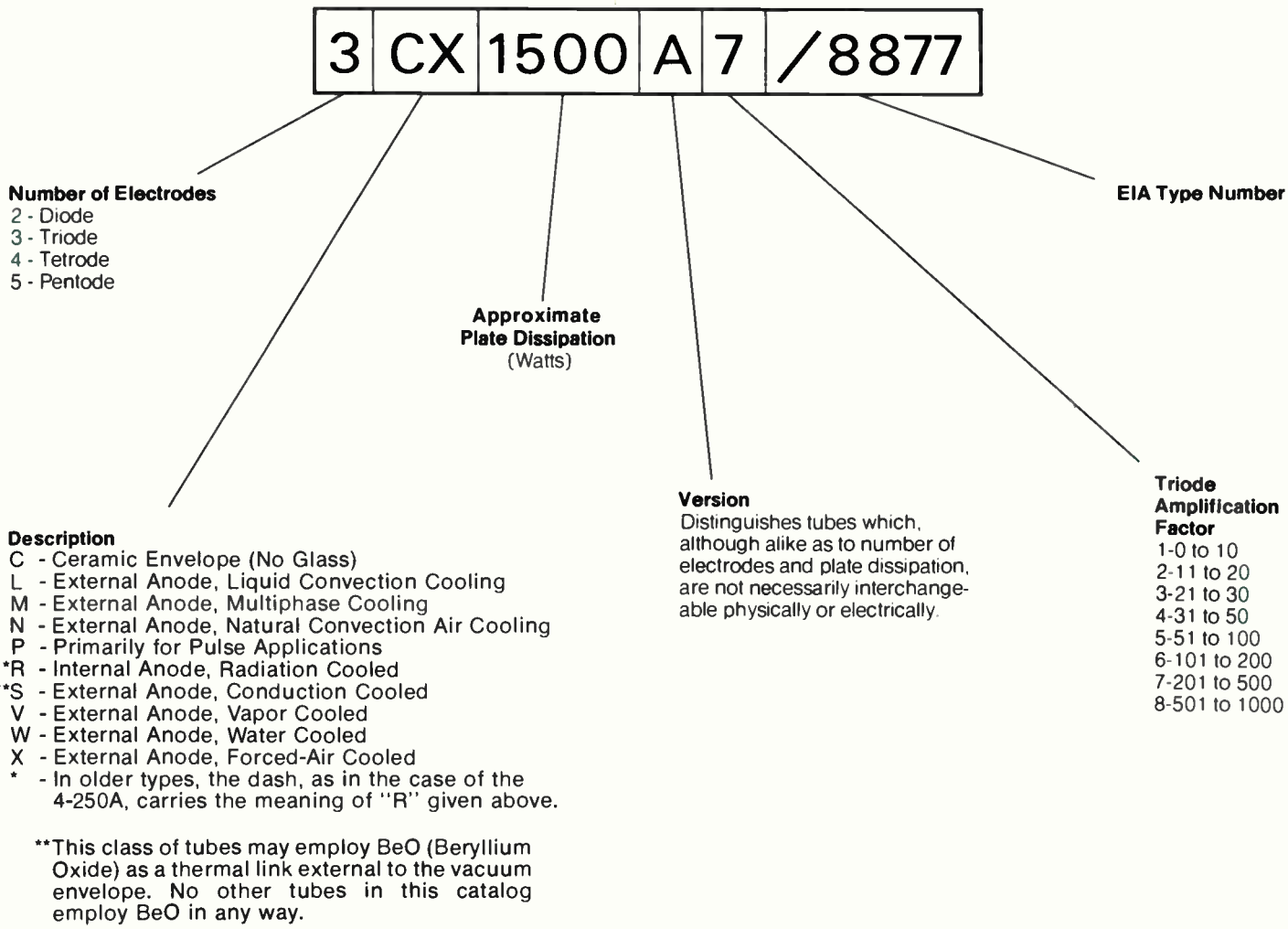
Tentative ratings and characteristics are identified so the user is alerted that possible changes may be made. Contact EIMAC Application Engineering Department at the appropriate plant prior to proceeding on a design.

TUBE TYPE NUMBERING SYSTEM

EIMAC tube types are identified by either a non-descriptive, sequentially-assigned 4-digit type number, standardized and registered with the ELECTRONICS INDUSTRIES ASSOCIATION (EIA), for non-duplication throughout the world, or by an EIMAC-originated coded numbering system, designed to convey descriptive information about the tube. Many tube types can be identified with either number, and are branded with both.

In general, the EIMAC type number consists of: a numeral including the number of electrodes, one or more letters denoting special characteristics, a numeral representing the plate dissipation rating, and a final letter to distinguish the tube from others which may bear similar or preceding letters and numerals. Triode types carry an additional number to indicate their approximate amplification factor.

To illustrate the system, a typical 1500-watt ceramic, external-anode, forced-air cooled EIMAC triode is broken down as follows:



POWER GRID TUBE SELECTION GUIDE

The EIMAC Power Grid Tube Selection Guide is arranged for ease in making type selections by use rather than tube type. The Guide is applications-oriented.

Tube types are listed according to the principal modes of service for which they are rated. Under each mode of service, EIMAC tube types suitable for the application are tabulated in descending order of the most significant tube parameter in the left hand column. For example, in the POWER AMPLIFIER tabulation, tube types are listed in descending order of typical rf power output; PULSE REGULATOR tubes are listed in descending order of peak current capability. This format places emphasis on tube application and facilitates comparison in terms of the significant ratings of the EIMAC types available for a given application.

After preliminary selection of a tube type (or types) from the Guide, the final choice should be based upon the complete ratings from the EIMAC data sheet for the tube in question and consultation with the EIMAC Application Engineering Department.

RADIO FREQUENCY POWER AMPLIFIER

Linear Service

Peak Env. Power** Typical (kW—W)	Rated Plate Diss. (kW—W)	Frequency* F1/ Upper Useful (MHz)	Inter-Mod. Distortion Typical # 3rd (—dB)	5th (—dB)	Cooling	EIMAC Type Number	Tube Type
1220 kW	1250 kW	30/50	—	—	water	8974(X-2159)	Tetrode
610 kW	400 kW	110/150	—	—	multi	4CM400,000A	Tetrode
610 kW	1000 kW	110/150	—	—	water	8973(X-2170)	Tetrode
300 kW	300 kW	30/110	—	—	multi	4CM300,000G	Tetrode
230 kW	250 kW	30/50	31	43	vapor	4CV250,000B	Tetrode
230 kW	250 kW	30/50	31	43	water	4CW250,000B	Tetrode
168 kW	150 kW	108/150	—	—	water	4CW150,000E	Tetrode
168 kW	100 kW	108/150	—	—	water	4CW100,000E	Tetrode
123 kW	100 kW	30/50	26	40	vapor	4CV100,000C/8351	Tetrode
55 kW	35 kW	30/50	30	40	air	4CX35,000C/8349	Tetrode
45 kW	50 kW	110/200	46	60	vapor	4CV50,000J	Tetrode
45 kW	50 kW	110/200	46	60	water	4CW50,000J	Tetrode
33 kW	30 kW	230/—	—	—	air	4CX40,000GM	Tetrode##
29.6 kW	30 kW	110/—	—	—	water	3CW30,000A7	Triode
28.5 kW	25 kW	110/220	—	—	water	4CW25,000B	Tetrode
27.5 kW	20 kW	110/220	—	—	air	3CX20,000A7 ¶	Triode
24 kW	15 kW	110/220	40	39	air	3CX15,000A7	Triode##
20 kW	20 kW	30/—	—	—	air	4CX20,000B	Tetrode
17 kW	20 kW	140/220	40	39	water	3CW20,000A7	Triode##
17 kW	10 kW	140/220	40	39	air	3CX10,000A7/8160	Triode##
16.5 kW	15 kW	230/—	—	—	air	4CX15,000R	Tetrode
15 kW	12 kW	250/—	—	—	air	3CX12,000U7 ¶	Triode
12 kW	15 kW	110/220	41	41	air	4CX15,000J/8910	Tetrode
10.5 kW	20 kW	100/220	35	40	air	4CX10,000J	Tetrode
10 kW	12 kW	110/—	—	—	water	4CW10,000B	Tetrode
10 kW	10 kW	250/—	39	43	air	3CX10,000U7 ¶	Triode##
10 kW	7.5 kW	110/220	32	44	air	4CX7500A ¶	Tetrode
10 kW	5 kW	100/220	30	38	air	4CX5000R/8170W	Tetrode
5.8 kW	3 kW	150/220	40	43	air	5CX3000A/8966	Pentode
5.5 kW	3 kW	110/—	51	45	air	3CX3000A7	Triode##
5.3 kW	3 kW	150/220	35	40	air	4CX3000A/8169	Tetrode
5.0 kW	5 kW	150/—	—	—	air	3CX5000A7	Triode##
3.3 kW	5 kW	100/220	41	44	air	4CX5000J/8909	Tetrode
2.06 kW	1 kW	220/400	31	39	air	3CX1000A7/8283	Triode##
2.05 kW	1.5 kW	220/400	38	44	air	3CX1500A7/8877 ¶	Triode##
2.03 kW	1.5 kW	500/—	44	44	air	8938 ¶	Triode##
1785 W	1500 W	110/220	33	42	air	5CX1500A	Pentode
1500 W	1200 W	110/—	—	—	air	3CX1200A7	Triode##
1160 W	1000 W	110/220	43	47	air	4CX1500B/8660	Tetrode
1100 W	4500 W	1000/—	—	—	air	Y-834	Tetrode
1100 W	1500 W	450/—	43	47	air	4CX1500BC	Tetrode
1080 W	1000 W	110/—	29	37	air	3-1000Z/8164	Triode##
750 W	800 W	30/450	36	32	air	3CX800A7 ¶	Triode##
740 W	500 W	110/—	40	45	air	3-500Z	Triode##
680 W	1500 W	1000/—	—	—	air	3CX1500U7/8962	Triode##
645 W	500 W	110/—	33	41	air	5-500A	Pentode
590 W	200 W	500/900	35	36	cond	8873	Triode##
590 W	400 W	500/900	35	36	air	3CX400A7/8874 ¶	Triode##
590 W	300 W	500/900	35	36	air	8875	Triode##
590 W	400 W	110/—	28	35	air	3-400Z/8163	Triode##
580 W	600 W	30/—	43	43	air	4CX600J/8809	Tetrode
495 W	400 W	110/—	35	36	air	4-400C/6775	Tetrode
350 W	350 W	500/—	27	30	air	8930	Tetrode
295 W	250 W	500/—	25	30	air	4CX250R/7580W	Tetrode
295 W	250 W	500/—	25	30	cond	4CS250R	Tetrode
263 W	350 W	30/220	30	35	air	4CX350A/8321	Tetrode
263 W	350 W	30/220	30	35	air	4CX350F/8322	Tetrode
263 W	350 W	30/220	40	45	air	4CX350FJ/8904	Tetrode
200 W	1500 W	1500/—	52	—	air	Y-831 §§	PI Triode
100 W	1000 W	1500/—	52	—	air	Y-730 §§	PI Triode
100 W	150 W	3000/—	—	—	air	Y-579A §§	PI Triode

* F1 is the maximum frequency at which maximum ratings apply. Operation at the upper useful frequency normally involves operation at reduced plate voltage and reduced plate input power.
** Plate power output, calculated or measured at low frequency.
# Calculated or measured by two-tone method at 2.0 MHz.
Cathode driven.
¶ Cavity assemblies for various frequencies available from EIMAC. See CAVITY section in this catalog.
§§ LPTV and translator service.

RF POWER AMPLIFIER

Class C, CW or FM Service

Plate Pwr Output Typical* (kW—W)	Rated Plate Diss. (kW—W)	Frequency # F1/ Upper Useful (MHz)	Power Gain*	Cooling	EIMAC Type Number	Tube Type
1650 kW	1250 kW	30/50	200	water	8974(X-2159)	Tetrode
1050 kW	1000 kW	110/150	300	water	8973(X-2170)	Tetrode
1050 kW	400 kW	110/150	300	multi	4CM400,000A	Tetrode
460 kW	250 kW	30/50	150	vapor	4CV250,000B	Tetrode
460 kW	250 kW	30/50	150	water	4CW250,000B	Tetrode
301 kW	300 kW	30/110	209	multi	4CM300,000G/9000	Tetrode
220 kW	150 kW	108/150	1800	water	4CW150,000E	Tetrode
220 kW	100 kW	108/150	1800	water	4CW100,000E	Tetrode
168 kW	100 kW	30/50	1350	vapor	4CV100,000C/8351	Tetrode
165 kW	100 kW	30/50	140	water	4CW100,000D	Tetrode
137 kW	50 kW	110/220	900	vapor	4CV50,000E	Tetrode
137 kW	50 kW	110/220	900	water	4CW50,000E	Tetrode
110 kW	35 kW	30/50	425	air	4CX35,000C/8349	Tetrode
70 kW	100 kW	110/250	28	water	4CW100,000G	Tetrode
64 kW	20 kW	90/150	66	air	3CX20,000A3	Triode
64 kW	20 kW	90/150	66	air	3CX20,000H3	Triode
60 kW	40 kW	250/—	200	air	4CX40,000G	Tetrode ¶
60 kW	40 kW	90/—	75	water	3CW40,000A5	Triode
60 kW	30 kW	110/230	100	air	4CX30,000G	Tetrode**¶
60 kW	20 kW	90/—	75	air	3CX20,000B5	Triode ¶
38 kW	20 kW	110/220	170	air	4CX20,000A/8990	Tetrode ¶
36.5 kW	15 kW	110/225	166	air	4CX15,000A/8281	Tetrode
36.5 kW	25 kW	110/—	160	water	4CW25,000B	Tetrode
30 kW	15 kW	100/150	45	air	3CX15,000A3	Triode
28.2 kW	20 kW	30/—	1000	air	4CX20,000B	Tetrode
28.2 kW	20 kW	110/—	1000	air	4CX20,000C	Tetrode ¶
25 kW	15 kW	110/160	50	air	3CX15,000A7	Triode
24.5 kW	10 kW	140/200	6	air	3CX10,000A3	Triode**
24.5 kW	20 kW	140/200	6	water	3CW20,000A3	Triode**
22.5 kW	10 kW	160/—	15	air	3CX10,000A7	Triode
21.3 kW	30 kW	110/—	50	water	3CW30,000A7	Triode
20 kW	12 kW	220/—	850	air	4CX12,000A/8989	Tetrode ¶
16 kW	5 kW	100/220	100	air	4CX5000A/8170	Tetrode
16 kW	10 kW	100/220	100	air	4CX10,000D/8171	Tetrode
16 kW	10 kW	100/220	100	water	4CW10,000A	Tetrode
16 kW	5 kW	100/220	100	air	4CX5000R/8170W	Tetrode
11 kW	3 kW	30/100	260	air	4CX3000A/8169	Tetrode
10 kW	4 kW	75/150	73	air	3CX2500A3/8161	Triode
10 kW	4 kW	75/150	73	air	3CX2500F3/8251	Triode
10 kW	5 kW	75/150	73	water	3CW5000A3/8242	Triode
10 kW	5 kW	75/150	73	water	3CW5000F3/8243	Triode
10 kW	7.5 kW	100/220	100	air	4CX7500A	Tetrode ¶
8.5 kW	3 kW	150/200	160	air	5CX3000A	Pentode
5 kW	3.5 kW	100/200	75	air	4CX3500A	Tetrode ¶
3.4 kW	1 kW	100/—	225	air	4-1000A/8166	Tetrode
3.2 kW	1.5 kW	110/220	350	air	4CX1500A	Tetrode
3.18 kW	1.5 kW	110/220	350	air	5CX1500A	Pentode
2.6 kW §	1.5 kW	250/—	33	air	3CX1500A7/8877	Triode** ¶
1.5 kW §§	1.5 kW	500/—	30	air	8938	Triode** ¶
1300 W	1.2 kW	110/—	48	air	3CX1200A7	Triode
1300 W	500 W	110/—	93	air	5-500A	Pentode
1265 W	500 W	110/—	140	air	4-500A	Tetrode
1100 W	400 W	110/—	190	air	4-400C	Tetrode
1000 W	250 W	110/—	190	air	4-250A	Tetrode
840 W	350 W	100/150	31	air	5867A	Triode
750 W	800 W	350/450	35	air	3CX800A7	Triode** ¶
805 W	500 W	110/—	110	air	4-500A/4-500B	Tetrode

* Power output and power gain do not include circuit losses and are calculated or measured at low frequency (Power Gain = Plate Power Output/Driving Power).
** Cathode driven.
# F1 is the maximum frequency at which maximum ratings apply. Operation at the upper useful frequency normally involves operation at reduced anode voltage and reduced plate input power.
§ Power output shown is measured useful, delivered to load, at 104 MHz.
§§ Useful power output, measured at 430 MHz.
¶ Cavity assemblies for various frequencies available from EIMAC. See CAVITY section in this catalog.

RF POWER AMPLIFIER

Class C, CW or FM Service

Plate Pwr Output Typical* (kW—W)	Rated Plate Diss. (kW—W)	Frequency # F1/ Upper Useful (MHz)	Power Gain*	Cooling	EIMAC Type Number	Tube Type
600 W	300 W	110/220	158	air	4CX300Y	Tetrode
500 W	300 W	500/—	177	air	4CX300A	Tetrode
450 W	350 W	500/—	190	air	8930	Tetrode
380 W	250 W	500/—	190	cond	4CS250R	Tetrode
380 W	250 W	500/—	130	air	4CX250B/7203	Tetrode
380 W	250 W	500/—	130	air	4CX250FG/8621	Tetrode
380 W	250 W	500/1500	130	air	4CX250K/8245	Tetrode
380 W	250 W	500/1500	130	air	4CX250M/8246	Tetrode
380 W	250 W	500/—	190	air	4CX250R/7580W	Tetrode
380 W	250 W	150/500	130	air	4X150A/7034	Tetrode
380 W	250 W	150/500	130	air	7609	Tetrode
350 W	800 W	1000/—	35	air	3CX800U7	Triode** ¶
375 W	125 W	120/—	150	air	4-125A/4D21	Tetrode
320 W	200 W	500/—	35	cond	8873	Triode**
320 W	400 W	500/—	35	air	3CX400A7/8874	Triode** ¶
320 W	300 W	500/—	35	air	8875	Triode**
300 W	600 W	1000/—	32	air	3CX600U7	Triode**
270 W	65 W	150/—	160	conv	4-65A	Tetrode
216 W	400 W	1000/—	11.5	air	3CX400U7	Triode** ¶

* Power output and power gain do not include circuit losses and are calculated or measured at low frequency (Power Gain = Plate Power Output/Driving Power).
** Cathode driven.
# F1 is the maximum frequency at which maximum ratings apply. Operation at the upper useful frequency normally involves operation at reduced anode voltage and reduced plate input power.
¶ Cavity assemblies for various frequencies available from EIMAC. See CAVITY section in this catalog.

RF POWER AMPLIFIER

Class C—Plate Modulated Service

Carrier Pwr. Output Typical* (kW-W)	Plate Diss. at Typical Conditions (kW-W)	Frequency # F1/ Upper Useful (MHz)	Power Gain*	Cooling	EIMAC Type Number	Tube Type
1375 kW	300 kW	30/50	200	water	8974(X-2159)	Tetrode
700 kW	175 kW	100/150	290	water	8973(X-2170)	Tetrode
700 kW	175 kW	110/150	290	multi	4CM400,000A	Tetrode
300 kW	85 kW	30/110	210	multi	4CM300,000G	Tetrode
285 kW	119 kW	30/50	120	vapor	4CV250,000B	Tetrode
285 kW	119 kW	30/50	120	water	4CW250,000B	Tetrode
140 kW	35 kW	108/150	260	water	4CW150,000G	Tetrode
140 kW	47 kW	30/50	110	vapor	4CV100,000C/8351	Tetrode
140 kW	35 kW	108/150	260	water	4CW100,000E	Tetrode
138 kW	22 kW	30/50	160	water	4CW100,000D	Tetrode
110 kW	22 kW	110/220	160	water	4CW50,000E	Tetrode
110 kW	22 kW	110/220	160	vapor	4CV50,000E	Tetrode
55 kW	13 kW	30/50	440	air	4CX35,000C/8349	Tetrode
29 kW	7 kW	30/—	800	air	4CX20,000B	Tetrode
27.5 kW	7.5 kW	90/150	18	air	3CX20,000A3	Triode
27.5 kW	7.5 kW	90/150	18	air	3CX20,000H3	Triode
23.5 kW	5.8 kW	110/—	155	water	4CW25,000B	Tetrode
23.5 kW	5.8 kW	110/225	155	air	4CX15,000A/8281	Tetrode
23.5 kW	5.8 kW	110/225	155	vapor	4CV35,000A	Tetrode
18 kW	5.4 kW	110/150	37	air	3CX15,000A3	Triode
12.4 kW	2.6 kW	140/200	24	air	3CX10,000A3/8159	Triode
5.8 kW	3.5 kW	110/220	230	air	4CX10,000D/8171	Tetrode
5.8 kW	3.5 kW	110/220	230	air	4CX5000A/8170	Tetrode
5.8 kW	3.5 kW	100/220	230	air	4CX5000R/8170W	Tetrode
5.75 kW	1.25 kW	150/220	190	air	4CX3000A/8169	Tetrode
5.3 kW	950 W	75/150	45	air	3CX2500A3/8161	Triode
5.3 kW	950 W	75/150	45	air	3CX2500F3/8251	Triode
2.6 kW	670 W	110/—	290	air	4-1000A/8166	Tetrode
2.3 kW	780 W	110/220	230	air	4CX1500A	Tetrode
1.96 kW	575 W	110/220	195	air	5CX1500A	Pentode
1.76 kW	485 W	110/—	50	air	3-1000Z/8164	Triode
830 W	245 W	110/—	140	air	4-500A/4-500B	Tetrode
785 W	280 W	110/—	110	air	5-500A	Pentode
640 W	185 W	110/—	25	air	3-500Z	Triode
630 W	195 W	110/—	190	air	4-400C/6675	Tetrode
510 W	165 W	110/—	160	air	4-250A/5D22	Tetrode
300 W	80 W	120/—	90	air	4-125A/4D21	Tetrode
300 W	200 W	110/220	175	air	4CX300Y/8561	Tetrode
270 W	280 W	500/—	160	air	8930	Tetrode
235 W	65 W	500/—	160	cond	4CS250R	Tetrode
235 W	65 W	500/—	135	air	4CX250BC/8957	Tetrode
235 W	65 W	500/1500	135	air	4CX250K/8245	Tetrode
235 W	65 W	500/1500	135	air	4CX250M/8246	Tetrode
235 W	65 W	500/—	160	air	4CX250R/7580W	Tetrode
235 W	65 W	500/—	135	air	4CX300A/8167	Tetrode
235 W	65 W	150/500	135	air	4X150A/7034	Tetrode
235 W	65 W	150/500	135	air	7609	Tetrode
210 W	45 W	150/—	65	conv	4-65A/8165	Tetrode

* Power output and power gain do not include circuit losses and are calculated or measured at low frequency (Power Gain = Plate Power Output/Driving Power).

F1 is the maximum frequency at which maximum ratings apply. Operating at the upper useful frequency normally involves operation at reduced plate voltage and reduced plate input power.

Class C—Oscillator or Amplifier

Plate Pwr. Output Typical # (kW-W)	Rated Plate Diss. (kW-W)	Filament Heating Power (Watts)	Frequency* F1/ Upper Useful (MHz)	Cooling	EIMAC Type Number	Tube Type
1600 kW	1250 kW	23625	30/60	water	8972(X-2176)	Triode
750 kW	650 kW	11810	30/60	water	8971(X-2177)	Triode
475 kW	250 kW	7920	30/—	water	3CW250,000H3	Triode
175 kW	100 kW	3120	30/—	water	3CW100,000H3	Triode
70 kW	40 kW	1600	90/—	water	3CW40,000H3	Triode
60 kW	20 kW	1600	90/—	air	3CX20,000H3	Triode
42 kW	30 kW	1020	90/—	water	3CW30,000H3	Triode
42 kW	30 kW	1020	100/—	vapor	3CV30,000H3	Triode
41 kW	15 kW	1020	90/—	air	3CX15,000H3	Triode
29 kW	10 kW	742	90/—	air	3CX10,000H3	Triode
28 kW	20 kW	742	90/—	water	3CW20,000H3	Triode
20.6 kW	10 kW	566	90/—	water	3CW10,000H3	Triode
18.6 kW	5 kW	566	90/—	air	3CX5000H3	Triode
13.3 kW	7 kW	585	75/—	water	Y-842	Triode
10 kW	5 kW	379	75/150	water	3CW5000H3	Triode
8.3 kW	4.5 kW	550	75/—	air	3CX4500H3	Triode
5 kW	2.5 kW	379	75/150	air	3CX2500A3/8161	Triode
5 kW	2.5 kW	379	75/150	air	3CX2500F3/8251	Triode
5 kW	2.5 kW	379	75/150	air	3CX2500H3	Triode
3.67 kW	1.5 kW	232	75/—	water	3CW1500A3	Triode
3.67 kW	1.0 kW	232	75/—	air	3CX1000A3	Triode
2.0 kW	1.0 kW	150	100/—	air	3-1000H	Triode
1.2 kW	300 W	125	40/80	air	304TL	Triode
680 W	350 W	70	100/—	air	5867A	Triode

* F1 is the maximum frequency at which maximum ratings apply. Operation at the upper useful frequency normally involves operation at reduced plate voltage and reduced plate input power.
# Plate power output, calculated or measured at low frequency.

REGULATOR SERVICE

Voltage or Current

Maximum Pass Current (Adc)	Maximum Hold-off Voltage* (kVdc)	Minimum Tube Drop (Vdc)	Rated Plate Diss. (kW-W)	Cooling	EIMAC Type Number	Tube Type
300	50 kV	3000	1250 kW	water	8974(X-2159)	Tetrode
150	50 kV	2500	650 kW	water	8973(X-2170	Tetrode
80	150 kV	2000	1000 kW	water	9009(X-2062K)	Tetrode
80	100 kV	2000	300 kW	water	9008(X-2062J)	Tetrode
60	175 kV	2000	1000 kW	water	X-2062M	Tetrode
60	40 kV	2500	250 kW	water	4CW250,000B	Tetrode
35	40 kV	2700	150 kW	water	4CW150,000E	Tetrode
35	40 kV	2700	100 kW	water	4CW100,000E	Tetrode
30	40 kV	3300	100 kW	water	4CW100,000D	Tetrode
15	35 kV	3000	50 kW	water	4CW50,000E	Tetrode
15	40 kV	2200	35 kW	air	4CX35,000C/8349	Tetrode
10	35 kV	2000	20 kW	air	4CX20,000B	Tetrode
7.5	10 kV	1500	20 kW	water	3CW20,000A1	Triode
7.5	10 kV	1200	20 kW	water	3CW20,000A7	Triode
7	10 kV	1300	12 kW	air	3CX10,000A1/8158	Triode
6	20 kV	800	25 kW	water	4CW25,000A	Tetrode
4	20 kV	500	15 kW	air	3CX15,000A7	Triode
4	25 kV	2000	10 kW	water	4CPW10,000R	Tetrode
4	15 kV	2000	10 kW	water	4CW10,000A/8661	Tetrode
3	12 kV	1300	5.0 kW	water	3CW5000A1	Triode
2	12 kV	1000	3.0 kW	air	3CX3000F1	Triode
1	8 kV	250	1.5 kW	air	3CPX1500A7	Triode
1	6 kV	500	1.0 kW	air	4CX1000A/8168	Tetrode
1	6 kV	500	800 W	water	4CW800B	Tetrode
1	6 kV	500	800 W	water	4CW800F	Tetrode
0.6	15 kV	600	1000 W	oil	4CPL1000A	Tetrode
0.6	15 kV	600	1000 W	oil	4CPL1000B	Tetrode
0.6	15 kV	600	1000 W	oil	4CPL1000C	Tetrode
0.6	3.5 kV	300	800 W	air	3CX800A7	Triode
0.6	30 kV	500	1000 W	air	4PR1000A/8189	Tetrode
0.6	8 kV	400	500 W	air	3-500Z	Triode
0.35	3.5 kV	300	400 W	air	3CX400A7/8874	Triode
0.35	3.5 kV	300	300 W	air	8875	Triode
0.35	3.5 kV	300	200 W	cond	8873	Triode
0.2	20 kV	1800	400 W	air	4PR400A/8188	Tetrode
0.2	50 kV	1000	250 W	air	4PR250C/8248	Tetrode
0.1	18 kV	1200	125 W	air	4PR125A/8247	Tetrode
0.1	15 kV	500	65 W	conv	4PR65A/8187	Tetrode

* Consult EIMAC Application Engineering Department at the appropriate plant for regulator range characteristics.

Pulsed Service

Peak RF Pwr. Out Typical # (kW—kW)	Rated Plate Diss. (kW—W)	Frequency* F1/ Upper Lower (MHz)	Maximum Plate Voltage (kVdc)	Maximum Plate# Current (A)	Cooling	EIMAC Type Number	Tube Type
3900 kW	1250 kW	30/50	30	195	water	8974(X-2159)	Tetrode
2000 kW	1000 kW	110/150	30	100	water	8973(X-2170)	Tetrode
1000 kW	300 kW	30/110	25	60	multi	4CM300,000G	Tetrode
600 kW	150 kW	108/150	30	30	water	4CW150,000E	Tetrode
600 kW	100 kW	108/150	30	30	water	4CW100,000E	Tetrode
400 kW	50 kW	110/220	30	25	vapor	4CV50,000E	Tetrode
400 kW	50 kW	110/220	30	25	water	4CW50,000E	Tetrode
150 kW	20 kW	30/—	30	20	air	4CX20,000B	Tetrode
120 kW	40 kW	250/—	15	15	air	4CX40,000G	Tetrode
120 kW	15 kW	110/225	12	20	air	4CX15,000A/8281	Tetrode
100 kW	12 kW	220/—	10	16	air	4CX12,000A/8989	Tetrode
80 kW	10 kW	110/220	10	13	air	4CX10,000D/8171	Tetrode
80 kW	7.5 kW	220/—	8	16	air	4CX7500A	Tetrode
80 kW	10 kW	110/220	10	13	air	4CX5000A/8170	Tetrode
80 kW	10 kW	110/220	10	13	air	4CX5000R/8170W	Tetrode
60 kW	12 kW	250/500	7	15	air	3CX12,000U7 ¶	Triode
40 kW	10 kW	250/500	7	10	air	3CX10,000U7 ¶	Triode§
34 kW	1.0 kW	110/—	15	3.5	air	4PR1000A/8189	Tetrode
28 kW	250 W	500/1500	7	6	air	4CPX250K/8950	Tetrode##
28 kW	250 W	500/1500	7	6	air	4CX250K/8245	Tetrode##
28 kW	250 W	500/1500	7	6	air	4CX250M/8246	Tetrode##
26 kW	1500 W	500/—	5	8	air	8938 ¶	Triode§
11 kW	400 W	110/—	10	1.7	air	4PR400A/8188	Tetrode
10 kW	250 W	500/1500	5.5	0.8	air	4CPX250K/8590	Tetrode
4.0 kW	125 W	120/—	9	0.7	air	4PR125A/8247	Tetrode
4.0 kW	800 W	500/—	2.5	3.5	air	3CX800U7	Triode§
2.6 kW	300 W	110/220	3	1.3	air	4CX300Y/8561	Tetrode
2.0 kW	65 W	150/—	7.5	0.4	conv	4PR65A/8187	Tetrode
1.6 kW	200 W	500/—	3	0.8	cond	8873	Triode§
1.6 kW	400 W	500/—	3	0.8	air	3CX400A7/8874 ¶	Triode§
1.6 kW	300 W	500/—	3	0.8	air	8875	Triode§
1.6 kW	250 W	500/—	3	0.8	air	4CX250B/7203	Tetrode
1.6 kW	250 W	500/—	3	0.8	air	4CX250FG/8621	Tetrode
1.6 kW	250 W	500/1500	3	0.8	air	4CX250K/8245	Tetrode
1.6 kW	250 W	500/1500	3	0.8	air	4CX250M/8246	Tetrode

* F1 is the maximum frequency at which maximum ratings apply. Operation at the upper useful frequency normally involves operation at reduced plate voltage and reduced plate power input.
# Average during the pulse. Power output data is plate power (does not include circuit losses), calculated or measured at low frequency. Derating due to pulse duration vs duty cycle is necessary.
Plate and screen grid pulsed.
§ Cathode driven.
¶ Cavity assemblies for various frequencies available from EIMAC. See CAVITY section in this catalog.

AF POWER AMPLIFIER OR MODULATOR SERVICE

AF Pwr. Out Typical (2 tubes) (kW—W)	Plate Diss. at Typical Conditions Per Tube (kW—W)	Class of Service	Driving Power (2 tubes) (W)	Cooling	EIMAC Type Number	Tube Type
1900 kW	420 kW	AB1	0	water	8974(X-2159)	Tetrode
950 kW	210 kW	AB1	0	water	8973(X-2170)	Tetrode
660 kW	260 kW	AB1	0	vapor	4CV250,000B	Tetrode
660 kW	260 kW	AB1	0	water	4CW250,000B	Tetrode
246 kW	57 kW	AB1	0	vapor	4CV100,000C/8351	Tetrode
246 kW	57 kW	AB1	0	water	4CW100,000D	Tetrode
200 kW	46 kW	AB1	0	water	4CW100,000E	Tetrode
195 kW	42 kW	AB1	0	water	4CW50,000E	Tetrode
195 kW	42 kW	AB1	0	vapor	4CV50,000E	Tetrode
195 kW	42 kW	AB1	0	vapor	4CV50,000J	Tetrode
195 kW	42 kW	AB1	0	water	4CW50,000J	Tetrode
70 kW	20 kW	AB1	0	air	4CX35,000C/8349	Tetrode
66 kW	20.5 kW	AB1	0	vapor	4CV35,000A	Tetrode
57 kW	14 kW	AB1	0	water	4CW25,000A	Tetrode
57 kW	14 kW	AB1	0	air	4CX15,000A/8281	Tetrode
44 kW	13.9 kW	AB1	0	air	4CX20,000B	Tetrode
31.9 kW	9 kW	AB1	0	air	4CX10,000D/8171	Tetrode
29.1 kW	10 kW	AB1	0	air	3CX10,000A1/8158	Triode
29.1 kW	10 kW	AB1	0	water	3CW20,000A1	Triode
17.5 kW	4.2 kW	AB1	0	air	4CX5000A/8170	Tetrode
17.5 kW	4.2 kW	AB1	0	air	4CX5000R/8170W	Tetrode
14.5 kW	4.2 kW	AB1	0	vapor	4CV8000A	Tetrode
13.0 kW	2.5 kW	AB2	113	water	3CW5000A3/8242	Triode
13.0 kW	2.5 kW	AB2	113	water	3CW5000F3/8243	Triode
13.0 kW	2.5 kW	AB2	113	air	3CX2500A3/8161	Triode
13.0 kW	2.5 kW	AB2	113	air	3CX2500F3/8251	Triode
11.4 kW	3.3 kW	AB1	0	air	4CX3000A/8169	Tetrode
10 kW	2.95 kW	AB1	0	water	3CW5000F1/8241	Triode
10 kW	2.95 kW	AB1	0	air	3CX3000A1/8238	Triode
10 kW	2.95 kW	AB1	0	air	3CX3000F1/8239	Triode
3.9 kW	900 W	AB2	4.7	air	4-1000A/8166	Tetrode
3.22 kW	920 W	AB1	0	air	5CX1500A	Pentode
3.2 kW	920 W	AB1	0	air	4CX1500A	Tetrode
2.9 kW	830 W	AB1	60	air	3CX1200A7	Triode
1.75 kW	400 W	AB2	3.5	air	4-400C/6775	Tetrode
1.72 kW	500 W	AB1	0	air	4-500A, 4-500B	Tetrode
1.66 kW	458 W	AB1	0	air	5-500A	Pentode
1.42 kW	445 W	AB2	25	air	3-500Z	Triode
1.31 kW	340 W	AB2	26	air	3-400Z/8163	Triode
1.04 kW	190 W	AB2	1.9	air	4-250A/5D22	Tetrode
800 W	225 W	AB1	0	air	4CX300A/8167	Tetrode
600 W	200 W	AB1	0	air	8930	Tetrode
600 W	200 W	AB1	0	air	4CX250BC/8957	Tetrode
600 W	200 W	AB1	0	air	4CX250FG/8621	Tetrode
600 W	200 W	AB1	0	air	4X150A/7034	Tetrode
600 W	200 W	AB1	0	air	7609	Tetrode
400 W	125 W	AB2	1.0	air	4-125A/4D21	Tetrode
270 W	63 W	AB2	1.3	conv	4-65A/8165	Tetrode

SWITCH TUBE OR PULSED REGULATOR SERVICE

Peak Plate Current [1] (amperes)	Maximum Hold-off Voltage (kVdc)	Rated Plate Diss. [1] (kW—W)	Cooling	EIMAC Type Number	Tube Type
780	60	1250 kW	water	8974(X-2159)	Tetrode
400	60	650 kW	water	8973(X-2170)	Tetrode
250	40	250 kW	water	4CW250,000B	Tetrode
150	150	1000 kW	water	9009(X-2062K)	Tetrode
150	100	300 kW	water	9008(X-2062J)	Tetrode
115	40	150 kW	water	4CW150,000E	Tetrode
115	75	100 kW	water	9013/Y-676A	Tetrode
100	175	1000 kW	water	X-2062M	Tetrode
100	60	35 kW	air	Y-546	Tetrode*
100	60	100 kW	water	Y-647	Tetrode**
100	40	100 kW	water	4CW100,000D	Tetrode
100	40	35 kW	air	4CX35,000C/8349	Tetrode
90	100	100 kW	water	Y-841	Tetrode
90	35	50 kW	water	4CW50,000E	Tetrode
90	35	50 kW	vapor	4CV50,000E·	Tetrode
70	20	25 kW	water	4CW25,000A	Tetrode
60	30	20 kW	air	4CX20,000B	Tetrode
60	20	15 kW	air	4CX15,000A/8281	Tetrode
50	30	25 kW	water	Y-569	Tetrode §
50	15	1.5 kW	air	3CPX1500A7	Triode
40	15	10 kW	air	4CX10,000D/8171	Tetrode
40	20	20 kW	water	3CW20,000A7	Triode
40	15	5 kW	air	4CX5000A/8170	Tetrode
40	15	5 kW	air	4CX5000R/8170W	Tetrode
40	25	10 kW	water	4CPW10,000R	Tetrode §§
25	20	3 kW	air	4CX3000A/8169	Tetrode
18	20	60 kW	air	4PR60C/8252W	Tetrode
15	15	4 kW	air	3CX3000A7	Triode
15	15	4 kW	air	3CX3000F7/8162	Triode
12	25	400 W	oil	Y-820	PI Triode
12	4	600 W	air	4CX600B	Tetrode
12	4	600 W	air	4CX600F	Tetrode
12	4	800 W	water	4CW800B	Tetrode
12	4	800 W	water	4CW800F	Tetrode
12	15	750 W	air	8941	PI Triode
12	8	750 W	air	8942	PI Triode
12	4	750 W	air	8940	PI Triode
10	50	1.0 kW	air	8960	Tetrode
10	7	1.5 kW	air	4CX1500A	Tetrode
10	85	1.0 kW	oil	Y-810	PI Triode
10	65	1.0 kW	oil	Y-811	PI Triode
10	40	1.0 kW	oil	Y-812	PI Triode
8	15	1.0 kW	oil	4CPL1000A	Tetrode
8	15	1.0 kW	oil	4CPL1000B	Tetrode
8	15	1.0 kW	oil	4CPL1000C	Tetrode
8	30	1.0 kW	air	4PR1000A/8189	Tetrode
8	40	1.0 kW	air	Y-364	Tetrode ¶
6	12	150 W	air	Y-518	PI Triode
6	7	250 W	air	4CPX250K/8590	Tetrode
6	4	150 W	air	Y-519	PI Triode
6	3.5	800 W	air	3CX800A7	Triode
5	12	150 W	air	Y-540	PI Triode
5	8	150 W	air	8933/8538B	PI Triode
5	10	150 W	air	8755	PI Triode
5	4	150 W	air	8847A	PI Triode
5	3.5	100 W	air	7211	PI Triode
5	3.5	150 W	air	8757	PI Triode
4	50	250 W	air	4PR250C/8248	Tetrode
4	20	400 W	air	4PR400A/8188	Tetrode
3	10	400 W	air	Y-504	Triode ¶¶
3	4.5	100 W	air	7815RAL	PI Triode
3	3.5	100 W	air	3CPX100A5/7815R	PI Triode
3	3.5	100 W	air	7855	PI Triode
2.1	18	125 W	air	4PR125A/8247	Tetrode
1.5	4.5	100 W	air	8745	PI Triode
1.2	15	65 W	conv	4PR65A/8187	Tetrode

1 Contact EIMAC Application Engineering at the plant of manufacture for peak pulse ratings.

* Specially processed 4CX35,000C
** Specially processed 4CW100,000D
§ Specially processed 4CX15,000A
§§ Previously designated as Y-442
¶ Specially processed 4PR1000A
¶¶ Specially processed 3-400Z

EIMAC PLANAR TRIODES

EIMAC planar triodes provide greater power, higher efficiency and more reliability than "standard" designs. Many EIMAC planars include internal shielding to reduce degradation effects caused by cathode sublimation. Other types feature a cool cathode to provide long tube life. A broad choice of anodes is available for a wide selection of cooling techniques. High quality and rigid inspection of all planars provide low failure rate and low cost per tube operating hour.

You are not limited by listed planar types. EIMAC's Application Engineering Department is ready to help you design planars into your equipment, or to propose new planar designs to glove-fit your requirements. Write for our planar triode brochure or contact Product Manager, Varian EIMAC, 1678 South Pioneer Road, Salt Lake City, Utah 84104. Phone: (801) 972-5000.

7211, 7698

7211

7698

These ceramic/metal planar UHF triodes feature a large cathode area and a long grid-plate ceramic insulator, resulting in higher current ratings and making them useful in pulse service and high altitude environments. Features are high mu, high transconductance, great mechanical strength, and an arc-resistant extended interface cathode to assure long and reliable life under adverse conditions.

The 7211 and 7698 are identical except for the installation for a 100-watt transverse cooler on the anode of the 7211, while the 7698 carries a knurled-knob assembly on its anode.

CHARACTERISTICS

Plate Dissipation (Max.) (7211)	100 watts
(7698)	10 watts
Grid Dissipation (Max.) (both types)	2 watts
Frequency for Max. Ratings (CW)	2500 MHz
(Pulsed)	3000 MHz
Cooling (7211)	Forced Air
(7698)	Conduction or Forced Air
Cathode	Oxide-coated Unipotential
Heater: Voltage	6.3 volts
Current	1.3 amperes
Capacitances: Grid-Cathode	8.0 pF
Grid-Plate	2.25 pF
Plate-Cathode	0.06 pF
Amplification Factor (Mu)	80
Transconductance (Sm)	30 mmhos
Base	Special, Coaxial
Socket	Special
Maximum Seal & Anode Core Temperature	250°C
Maximum Length: (both types)	2.70 in; 68.60 mm
Maximum Diameter: (7211)	1.27 in; 32.20 mm
(7698)	1.20 in; 30.50 mm
Weight (approximate): (7211)	2.2 oz; 63 gm
(7698)	1.6 oz; 48 gm
Operating Position (both types)	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Duty	Pulse Length (μs)	Output Power (watts)
C	RF Amplifier (gnd. grid) at 700 MHz	2500	0.150	630	0.140	—	—	45*
C	RF Oscillator (gnd. grid) at 2500 MHz	2500	0.150	1000	0.140	—	—	30*
C	Grid-pulsed Amp. or Osc. at 1100 MHz	2500	5.0 •	2200	2.5 •	0.002	3	2500†
C	Plate-pulsed Amp. or Osc. at 3000 MHz	3500	5.0 •	3500	4.8 •	0.0025	3	3000†

* Useful Power Output, delivered to the load.
† Useful Pulse Power, delivered to the load.
•Average during the pulse.

7855, 7855KAL, Y-503

7855

These ceramic/metal planar UHF triodes feature rugged design, high transconductance, and high mu, a frequency stable anode, and an arc-resistant cathode, all to assure stable operation under adverse conditions and minimize catastrophic failure due to an arc during circuit malfunction.

Test evaluation of the 7855KAL is based on the operating conditions found in commercial airborne applications, such as transponders, emphasizing cathode emission capability at reduced heater voltage and high-voltage holdoff.

The 7855 has a 100-watt transverse cooler, while the 7855KAL includes a knurled-knob anode assembly and is rated for lower plate dissipation.

The Y-503 is a 7855 with a threaded anode shank, to allow conduction, heat-sink, or liquid cooling.

7855KAL

Y-503

CHARACTERISTICS

Plate Dissipation (Max.) (7855) ..... 100 watts
(7855KAL) ..... 10 watts
(Y-503) ..... Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling (7855) ..... Forced Air
(7855KAL) ..... Conduction or Forced Air
(Y-503) ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage (7855 & Y-503) ..... 6.0 volts
(7855KAL) ..... 5.7 volts
Current (7855 & Y-503) ..... 1.0 ampere
(7855KAL) ..... 0.95 ampere
Capacitances: Grid-Cathode ..... 6.8 pF
Grid-Plate ..... 2.5 pF
Plate-Cathode ..... 0.035 pF
Amplification Factor (Mu) 80
Transconductance (Sm) ..... 25 mmhos
Base ..... Special, Coaxial
Socket ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: (7855 & 7855KAL) ..... 2.40 in; 60.96 mm
(Y-503) ..... 1.81 in; 45.97 mm
Maximum Diameter: (7855) ..... 1.27 in; 32.20 mm
(7855KAL) ..... 1.20 in; 30.50 mm
(Y-503) ..... 0.79 in; 20.00 mm
Weight (approximate): (7855) ..... 2.0 oz; 57 gm
(7855KAL) ..... 1.4 oz; 40 gm
(Y-503) ..... 0.65 oz; 18 gm
Operating Position (all types) ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Duty	Pulse Length (μs)	Output Power (watts)
C	Grid-pulsed Amplifier or Oscillator at 1100 MHz	2500	3.0 •	2000	1.3 •	0.001	0.5	750*
C	Plate-pulsed Amplifier or Oscillator	3500	3.0 •	—	—	—	—	—

* Useful Power Output, delivered to the load.
• Average during the pulse.

8755

The 8755 is a miniature ceramic/metal rugged planar triode for advanced airborne and space applications up to 3000 MHz.

The tube is intended for use as an amplifier, oscillator, or frequency multiplier, either grid or plate-pulsed, and may also be used in modulator or regulator service. It has a frequency-stable anode design and an arc-resistant cathode to assure stable and reliable life under adverse conditions.

The tube is supplied without radiator, and may be conduction, convection, heat-sink, or liquid cooled. Radiators for forced-air cooling, permitting up to 150 watts of dissipation, are available.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 1.3 amperes
Capacitances: Grid-Cathode ..... 9.5 pF
Grid-Plate ..... 1.05 pF
Plate-Cathode ..... 0.06 pF
Amplification Factor (Mu) 135
Nominal Cutoff Amp. Factor (Mu) 90
Transconductance (Sm) ..... 30 mmhos
Anode ..... Threaded stud, 3/8-24 UNF, for heat transfer; Concentric flange for electrical contact.
Base ..... Special, Coaxial
Socket ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.37 in; 34.80 mm
Maximum Diameter: ..... 0.785 in; 19.94 mm
Weight (approximate) ..... 0.56 oz; 16 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	Grid-pulsed Amplifier or Oscillator	8,000	5.0 •	1750	1.0 •	0.001	3.5	650†
C	Plate-pulsed Amplifier or Oscillator	10,000	5.0 •	—	—	—	—	—
—	Switch Tube or Pulse Modulator	8,000	5.0 •	—	—	—	—	—

† Useful Pulse Power, delivered to the load.
• Average during the pulse.

8757

The 8757 is a miniature, frequency-stable, ceramic/metal, rugged planar triode for advanced airborne and space applications up to 3500 MHz.

It may be used as an amplifier, oscillator, or frequency multiplier in the CW, grid or plate pulsed mode, as well as a modulator or regulator.

The tube has an anode designed to produce exceptional frequency stability, and an arc-resistant cathode, both assuring stable, reliable, and long-life operation under adverse conditions.

The 8757 is supplied without radiator and may be conduction, convection, heat-sink, or liquid cooled. Radiators for forced-air cooling, permitting an anode dissipation up to 150 watts, are available.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 3000 MHz
(Pulsed) ..... 3500 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 1.3 amperes
Capacitances: Grid-Cathode ..... 9.0 pF
Grid-Plate ..... 1.65 pF
Plate-Cathode ..... 0.04 pF
Amplification Factor (Mu) 75
Nominal Cutoff Amp. Factor (Mu) 60
Transconductance (Sm) ..... 30 mmhos
Anode ..... Threaded stud, 3/8-24 UNF, for heat transfer; Concentric flange for electrical contact.
Base ..... Special, Coaxial
Socket ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.30 in; 33.00 mm
Maximum Diameter: ..... 0.785 in; 19.94 mm
Weight (approximate) ..... 0.56 oz; 16 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	2500	0.250	—	—	—	—	—
C	Grid-pulsed Amplifier or Oscillator at 3500 MHz	3000	5.0 •	2500	5.0 •	0.0033	1.0	3000†
C	Plate-pulsed Amplifier or Oscillator	3500	5.0 •	—	—	—	—	—
—	Switch Tube or Pulse Modulator	3500	5.0 •	—	—	—	—	—

† Useful Pulse Power, delivered to the load.
• Average during the pulse.

8847A

The 8847A is a miniature, ceramic/metal, rugged planar triode for advanced airborne and space applications up to 3500 MHz.

The tube is supplied without radiator and may be conduction, convection, heat-sink, or liquid cooled. Radiators permitting forced-air cooling with up to 150 watts of anode dissipation are available.

The tube is a frequency-stable anode design and has an arc-resistant cathode, for stable, reliable, and long-life operation under adverse conditions. It may be used as an amplifier, oscillator, or frequency multiplier, in the CW mode, or grid or plate pulsed, as well as a modulator or regulator.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 3000M MHz
(Pulsed) ..... 3500 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.0 volts
Current ..... 0.95 ampere
Capacitances: Grid-Cathode ..... 9.5 pF
Grid-Plate ..... 1.4 pF
Plate-Cathode ..... 0.06 pF
Amplification Factor (Mu) 75
Nominal Cutoff Amp. Factor (Mu) 60
Transconductance (Sm) ..... 30 mmhos
Anode ..... Threaded stud, 3/8-24 UNF, for heat transfer; Concentric flange for electrical contact.
Base ..... Special, Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.37 in; 34.80 mm
Maximum Diameter: ..... 0.785 in; 19.94 mm
Weight (approximate) ..... 0.56 oz; 16 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	2500	0.250	—	—	—	—	—
C	Grid-pulsed Amplifier or Oscillator at 1600 MHz	3000	5.0 •	3000	3.0 •	0.0033	6	3000†
C	Plate-pulsed Amplifier or Oscillator	3500	5.0 •	—	—	—	—	—
—	Switch Tube or Pulse Modulator	3500	5.0 •	—	—	—	—	—

† Useful Pulse Power, delivered to the load.
• Average during the pulse.

8933/8538B

The 8933/8538B is a miniature, ceramic/metal, rugged planar triode for advanced airborne and space applications up to 3000 MHz where high RF pulse power is required, or for switch tube service up to 8 kVdc.

In addition to low inter-electrode capacitance, high transconductance and amplification factor, the 8933/8938B has an arc-resistant cathode and a spewing shield, assuring stable, reliable long-life operation under adverse conditions.

The 8933/8538B is supplied without radiator and may be conduction, convection, heat-sink, or liquid cooled. Radiators for forced-air cooling, permitting an anode dissipation up to 150 watts, are available.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 1.3 amperes
Capacitances: Grid-Cathode ..... 9.5 pF
Grid-Plate ..... 1.4 pF
Plate-Cathode ..... 0.06 pF
Amplification Factor (Mu) 120
Transconductance (Sm) ..... 30 mmhos
Anode ..... Threaded stud, 5/16-24 UNF-2A thread for heat transfer; Concentric flange for electrical contact.
Base ..... Special, Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.50 in; 38.10 mm
Maximum Diameter: ..... 0.95 in; 24.13 mm
Weight (approximate) ..... 0.7 oz; 19 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	Grid-pulsed Amplifier or Oscillator at 1030 MHz	8000	5.0 •	5000	3.3 •	0.0033	0.5	8000†
C	Grid-pulsed Amplifier or Oscillator at 1030 MHz	8000	5.0 •	4700	1.5 •	0.0033	0.5	3250‡
C	Plate-pulsed Amplifier or Oscillator	10,000	5.0 •	—	—	—	—	—
—	Switch Tube or Pulse Modulator	8000	5.0 •	—	—	—	—	—

†Useful Pulse Power, delivered to the load. Approximate stage gain = 6dB.
‡ Useful Pulse Power, delivered to the load. Approximate stage gain = 10 dB.
• Average during the pulse.

8940

The 8940 is a planar triode for advanced airborne, ground, and space applications up to 2500 MHz.

The tube may be used as an amplifier, oscillator, or frequency multiplier, in the grid or plate pulsed mode, as well as a modulator or series regulator tube.

The 8940 is normally supplied without radiator and may be conduction, convection, heat-sink or liquid cooled, such as immersion cooling in an insulating medium (e.g. FC-75). Radiators for forced-air cooling, as well as heat-sink adaptors, permitting anode dissipation up to 750 watts are available.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 2.0 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 2.25 amperes
Capacitances: Grid-Cathode ..... 16.0 pF
Grid-Plate ..... 3.8 pF
Plate-Cathode ..... 0.11 pF
Amplification Factor (Mu) 65
Transconductance (Sm) ..... 100 mmhos
Anode ..... Threaded stud, 1/2-20 UNF for heat transfer; Tapered flange for electrical contact.
Grid, Cathode/Heater Contacts ..... Special, Coaxial
Heater Contact ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.98 in; 50.29 mm
Maximum Diameter: ..... 1.37 in; 34.80 mm
Weight (approximate) ..... 2.0 oz; 56 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Duty	TYPICAL OPERATION: Pulse Length (μs)	TYPICAL OPERATION: Output Power (watts)
C	Grid-pulsed Amplifier or Oscillator at 1200 MHz	4000	12 •	4000	3.0 •	0.01	500	6,000†
C	Plate-pulsed Amplifier or Oscillator at 2000 MHz	6500	12 •	3500	10.0 •	0.0033	6	10,000†
A,B, or C	RF Amplifier or Oscillator at 800 MHz	4000	0.6	1400	0.32	—	—	180*
—	Switch Tube or Pulse Modulator	4000	12 •	—	—	0.0033	6	—

* Useful Power Output, delivered to the load.
† Useful Pulse Power, delivered to the load.
• Average during the pulse.

8941

The 8941 is a planar triode for advanced airborne, ground, and space applications.

The tube is intended primarily as a modulator or series regulator tube, and can be used also in grid or plate pulsed RF applications.

The 8941 is normally supplied without radiator and may be conduction, convection, heat-sink or liquid cooling, such as immersion cooling in an insulating medium (e.g., FC-75). Radiators for forced-air cooling, as well as heat-sink adaptors, permitting anode dissipation up to 750 watts are available.

CHARACTERISTICS

Plate Dissipation (Max.) .... Depends on Cooling Technique
Grid Dissipation (Max.) ..... 2.0 watts
Frequency for Max. Ratings (Pulsed) ..... 2000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 2.25 amperes
Capacitances: Grid-Cathode ..... 14.0 pF
Grid-Plate ..... 2.5 pF
Plate-Cathode ..... 0.11 pF
Amplification Factor (Mu) 200
Transconductance (Sm) ..... 75 mmhos
Anode ..... Threaded stud, 1/2-20 UNF for heat transfer; Tapered flange for electrical contact.
Grid, Cathode/Heater contacts ..... Special, Coaxial
Heater Contact ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.23 in; 56.64 mm
Maximum Diameter: ..... 1.36 in; 34.54 mm
Weight (approximate) ..... 2.0 oz; 56 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)•	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Duty	TYPICAL OPERATION: Pulse Length (μs)	TYPICAL OPERATION: Output Power (watts)
B or C	Grid-pulsed Amplifier or Oscillator at 1090 MHz	10,000	12•	5000	4.0	0.001	3.0	10,000†
B or C	Plate-pulsed Amplifier or Oscillator	15,000	12•	—	—	—	—	—
—	Switch Tube or Pulse Modulator	15,000	12•	—	—	—	—	—

• Average during the pulse
† Useful Pulse Power, delivered to the load.

8942

The 8942 is a planar triode for advanced airborne, ground, and space applications up to 2000 MHz.

The tube may be used as an amplifier, oscillator, or frequency multiplier, in the grid or plate pulsed mode, as well as a modulator or series regulator tube.

The 8942 is normally supplied without radiator and may be conduction, convection, heat-sink or liquid cooled, such as immersion cooling in an insulating medium (e.g., FC-75). Radiators for forced-air cooling as well as heat-sink adaptors permitting anode dissipation up to 750 watts are available.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 2.0 watts
Frequency for Max. Ratings (Pulsed) ..... 2000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 2.25 amperes
Capacitances: Grid-Cathode ..... 15.0 pF
Grid-Plate ..... 3.0 pF
Plate-Cathode ..... 0.11 pF
Amplification Factor (Mu) 115
Transconductance (Sm) ..... 90 mmhos
Anode ..... Threaded stud, 1/2-20 UNF for heat transfer; Tapered flange for electrical contact.
Grid, Cathode/Heater contacts ..... Special, Coaxial
Heater Contact ..... Special
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.23 in; 56.64 mm
Maximum Diameter: ..... 1.36 in; 34.54 mm
Weight (approximate) ..... 2.0 oz; 56 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)•	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	Gird-pulsed Amplifier or Oscillator	6000	12•	—	—	—	—	—
C	Plate-pulsed Amplifier or Oscillator at 1300 MHz	7500	12•	7500	12	0.001	1.0	30,000†
—	Switch Tube or Pulse Modulator	8000	12•	—	—	—	—	—

† Useful Pulse Power, delivered to the load.
• Average during the pulse.

X-2238

The X-2238 is specifically designed for high voltage series/shunt regulator or switch tube (modulator) service. The compact, rugged design has very low internal inductance and capacitance to improve rise and fall times for very short pulse applications. The tube can be mounted in optional operating positions and is capable of sustaining vibration and shock.

CHARACTERISTICS

Plate Dissipation (Max.) Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Cooling ..... Oil and Heat Sink
Cathode ..... Tungsten Matrix
Voltage ..... 6.3 volts
Current ..... 6.0 amperes
Capacitances (Gnd. Cath. Connection)
Input ..... 19.0 pF
Output ..... 0.003 pF
Feed-through ..... 3.5 pF
Amplification Factor 1300
Base ..... Special
Plate Dissipation ..... Dissipation of 2000 watts in oil can be achieved using appropriate heat sink.
Maximum Seal & Anode Core Temperature ..... 90°C
Maximum Length ..... 5.125 in; 130.18 mm
Maximum Diameter ..... 6.375 in; 161.93mm
Weight (approximate) ..... 3 lb; 1.35 kg
Operating Position ..... Any

Peak Plate Voltage (kV)	DC Plate Voltage (kV)	Pulse Duration (μs)	Pulse Cathode Current (A)	Duty
165.0	150.0†	20	10	0.1

†In oil and in conjunction with EIMAC 171178 or 171125 corona shields.

Y-518

The Y-518 is a miniature planar triode for advanced airborne, ground, and space applications up to 3000 MHz.

The Y-518 may be used as an amplifier, oscillator, or frequency multiplier in the CW mode, grid or plate pulsed mode, or as a modulator or regulator.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 1.3 amperes
Capacitances: Grid-Cathode ..... 9.7 pF
Grid-Plate ..... 1.2 pF
Plate-Cathode ..... 0.065 pF
Amplification Factor (Mu) 135
Transconductance (Sm) ..... 40 mmhos
Anode ..... Threaded stud, 3/8-24 UNF, for heat transfer; Tapered flange for electrical contact.
Base ..... Special, Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.37 in; 34.80 mm
Maximum Diameter: ..... 0.785 in; 19.90 mm
Weight (approximate) ..... 0.56 oz; 16 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	7500	0.3	—	—	—	—	—
C	Grid-pulsed Amplifier or Oscillator at 1100 MHz	8000	6.0•	4000	1.8•	0.001	12	2500†
C	Plate-pulsed Amplifier or Oscillator	10,000	6.0•	—	—	—	—	—
—	Switch Tube or Pulse Modulator	10,000	6.0•	—	—	—	—	—

* Cathode current
† Useful Pulse Power, delivered to the load.
• Average during the pulse.

Y-519

The Y-519 is a planar triode for advanced airborne and space applications up to 3000 MHz.

The Y-519 may be used as an amplifier, oscillator, or frequency multiplier in the CW, grid or plate pulsed mode, as well as a modulator or series regulator tube.

CHARACTERISTICS

Plate Dissipation (Max.) .. Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 2500 MHz
(Pulsed) ..... 3000 MHz
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
Heater: Voltage ..... 6.3 volts
Current ..... 1.3 amperes
Capacitances: Grid-Cathode ..... 9.75 pF
Grid-Plate ..... 1.70 pF
Plate-Cathode ..... 0.065 pF
Amplification Factor (Mu) 75
Transconductance (Sm) ..... 40 mmhos
Anode ..... Threaded stud, 3/8-24 UNF-2A for heat transfer; Tapered flange for electrical contact.
Base ..... Special, Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 1.37 in; 34.80 mm
Maximum Diameter: ..... 0.78 in; 19.90 mm
Weight (approximate) ..... 0.56 oz; 16 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Duty	TYPICAL OPERATION Pulse Length (μs)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	3000	0.3	1800	0.2	—	—	80*
C	Grid-pulsed Amplifier or Oscillator	3000	6.0•	3000	3.0•	0.0033	200	3500†
C	Plate-pulsed Amplifier or Oscillator	3500	6.0•	—	—	—	—	—
—	Switch Tube or Pulse modulator	3000	6.0•	—	—	—	—	—

* Useful Power Output, delivered to the load.
† Useful Pulse Power, delivered to the load.
• Average during the pulse

Y-540

The Y-540 is a rugged planar triode designed for switch tube or pulsed regulator service in advanced ground, airborne, or space applications.

Design features include an arc-resistant cathode to assure stable and reliable long-life operation under adverse conditions. An added feature is the increased grid-to-cathode insulator length to permit operation at high plate voltages and/or higher altitudes.

The Y-540 is normally supplied without a radiator and may be conduction, convection, heat-sink, or liquid cooled, as immersion cooling in an insulating medium (e.g., FC-75). Radiators for forced-air cooling, as well as heat-sink adaptors, permitting anode dissipation up to 150 watts, are available. The tube is supplied with solder tabs on the cathode, heater, and grid terminals.

CHARACTERISTICS

Plate Dissipation (Max.)	Dependent on Cooling Technique
Grid Dissipation (Max.)	1.5 watts
Cooling	Technique Optional
Cathode	Oxide-coated Unipotential
Heater: Voltage	6.3 volts
Current	1.3 amperes
Capacitances: Grid-Cathode	9.0 pF
Grid-Plate	1.4 pF
Plate-Cathode	0.06 pF
Amplification Factor (Mu)	145
Transconductance (Sm)	30 mmhos
Anode	Threaded stud, 5/16-24 UNF-2A for heat transfer and electrical contact.
Grid, Cathode, Heater Contacts	Special, Solder Tabs
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	1.56 in; 39.60 mm
Maximum Diameter:	0.78 in; 19.90 mm
Weight (approximate)	0.56 oz; 16 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)*	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Duty	TYPICAL OPERATION: Pulse Length (μs)	TYPICAL OPERATION: Output Power (watts)
—	Switch Tube or Pulse Modulator	8000	5.0	—	—	—	—	—

* Peak current.

Y-579

The Y-579 is a rugged ceramic/metal planar triode designed to deliver 15 dB peak sync power gain in UHF TV translator service. The tube may also be used in CW mixer, oscillator, or amplifier service. The Y-579 is supplied with an air-cooling radiator for forced-air cooling.

The Y-579 has a specially designed dispenser-type cathode which permits the high average current ratings needed in TV translator service and which is particularly insensitive to back heating.

CHARACTERISTICS

Plate Dissipation (Max.)	150 watts
Grid Dissipation (Max.)	1.5 watts
Frequency for Max. Ratings (CW)	2500 MHz
Cooling	Forced Air
Cathode	Dispenser Type
Heater: Voltage	6.0 volts
Current	1.3 amperes
Capacitances: Grid-Cathode	6.5 pF
Grid-Plate	2.0 pF
Plate-Cathode	0.035 pF
Amplification Factor	100
Transconductance	25 mmhos
Base	Special, Coaxial
Socket	Special
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.70 in; 68.60 mm
Maximum Diameter:	1.27 in; 32.20 mm
Weight (approximate)	2.2 oz; 63 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Amplifier or Oscillator	2500	.40	—	—	—	—
A	UHF TV Translator Amplifier	2500	.40	1300	.09	3.2	100*

*Peak Sync. level

Y-579 A

The Y-579A is a high-gain (up to 20 dB) version of the basic Y-579. It is a rugged ceramic/metal planar triode designed to deliver 20 dB peak sync power gain in UHF TV translator service. The tube may also be used in CW oscillator or mixer and amplifier service.

The Y-579A has higher Mu and transconductance than the Y-579, and includes the specially designed dispenser-type cathode which permits the high average current ratings needed in TV translator service and which is particularly insensitive to back heating. The high Mu and Sm make this tube ideally suited for applications where high gain is required; gain in excess of 18 dB may be expected with suitable cavity design.

CHARACTERISTICS

Plate Dissipation (Max.)	150 watts
Grid Dissipation (Max.)	1.5 watts
Frequency for Max. Ratings (CW)	3000 MHz
Cooling	Forced Air
Cathode	Dispenser Type
Heater: Voltage	6.0 volts
Current	1.3 amperes
Capacitances: Grid-Cathode	7.0 pF
Grid-Plate	2.0 pF
Plate-Cathode	0.035 pF
Amplification Factor (Mu)	200
Transconductance (Sm)	30 mmhos
Base	Special, Coaxial
Socket	Special
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.70 in; 68.60 mm
Maximum Diameter:	1.26 in; 32.20 mm
Weight (approximate)	2.2 oz; 63 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	2500	0.40	—	—	—	—
A	UHF TV Translator Amplifier	2500	0.40	1300	.09	1*	100*

*Peak Sync. level.

Y-667

The Y-667 is a high plate dissipation triode especially suited for UHF-TV translator service. This tube is also useful as a CW oscillator or amplifier.

CHARACTERISTICS

Plate Dissipation	150 watts
Grid Dissipation	2 watts
Frequency for Max. Ratings (CW)	2500 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Heater: Voltage	6.3 volts
Current	1.3 amperes
Capacitances: Grid-Cathode	8.0 pF
Grid-Plate	2.25 pF
Plate-Cathode	0.06 pF
Amplification Factor (Mu)	80
Transconductance (Sm)	30 mmhos
Base	Special Coaxial
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.70 in.; 68.6 mm
Maximum Diameter:	1.27 in.; 32.2 mm
Weight (approximate)	2.2 oz.; 63 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier or Oscillator	2500	0.15	—	—	—	—
A	UHF TV Translator Amplifier	2500	0.15	1800	0.09	3*	100*

*Peak Sync. level.

Y-730

The Y-730 is a planar triode for use as a highly linear amplifier for TV translator service up to 1.5 GHz. It may be used as an amplifier or oscillator in CW mode, or grid- or plate-pulsed. In translator service, transmitting simultaneous video and aural signals in the same channel, the intermodulation level is better than −52 dB.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 1500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 5.5 volts
  Current ..... 3.2 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 19.0 pF
  Output ..... 0.07 pF
  Feed-through ..... 6.5 pF
Amplification Factor 165
Transconductance ..... 100 mmhos
Base ..... Special Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 3.19 in; 81.03 mm
Maximum Diameter ..... 2.79 in; 71.40 mm
Weight (approximate) ..... 26.8 oz; 760 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Gain (dB)	Output Power (watts)
A	RF Linear Amplifier #	3000	0.6	1900	0.35	21	100†

760 MHz
† Peak Sync

Y-810, Y-811, Y-812

The Y-810, Y-811, and Y-812 are specifically designed for high voltage series/shunt regulator or switch tube (modulator) service. The compact, rugged design has very low internal inductance and capacitance to improve rise and fall times for very short pulse applications. The tubes can be mounted in optional operating positions and are capable of sustaining vibration and shock.

CHARACTERISTICS

Plate Dissipation (Max.) Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 1.5 watts
Cooling ..... Oil and Heat Sink
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.3 volts
  Current ..... 2.25 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 8.0 pF
  Output ..... 0.003 pF
  Feed-through ..... 2.5 pF
Amplification Factor Y-810: 1300
Y-811: 950
Y-812: 800
Base ..... Special
Plate Dissipation ..... Dissipation of 1000 watts in oil can be achieved using appropriate heat sink.
Maximum Seal & Anode Core Temperature ..... 90°C
Maximum Length ..... Y-810: 3.08 in; 78.11 mm
Y-811: 2.83 in; 71.75 mm
Y-812: 2.70 in; 68.58 mm
Maximum Diameter ..... 3.01 in; 76.45 mm
Weight (approximate) ..... 18.34 oz; 520 gm
Operating Position ..... Any

Tube Type	Peak Plate Voltage (kV)	DC Plate Voltage (kV)†	Pulse Duration (μs)	Pulse Cathode Current (A)	Duty
Y-810	95.0	85.0	6.0	10	.0033
Y-811	70.0	65.0	6.0	10	.0033
Y-812	45.0	40.0	6.0	10	.0033

† In oil and in conjunction with EIMAC PRB 20761 corona shield.

Y-820

The Y-820 is a high voltage switch tube designed especially for short pulsed (nanosecond) applications. It can also be used in series or shunt regulators where high voltage and low current are required in addition to fast switching. Solder tabs are used in order to minimize input capacitance to provide minimum fall and rise times.

CHARACTERISTICS

Plate Dissipation (Max.) Dependent on Cooling Technique
Grid Dissipation (Max.) ..... 2.0 watts
Cooling ..... Technique Optional
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.3 volts
  Current ..... 2.25 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 16.0 pF
  Output ..... 0.03 pF
  Feed-through ..... 1.7 pF
Amplification Factor 650
Anode ..... Threaded stud 5/8-18 UNSP-2A for heat transfer and electrical contact
Grid, Cathode and Heater Contacts ... Special Solder tabs
Plate Dissipation ..... Dissipation of 400 watts in oil can be achieved using EIMAC cooling adapter 164084.
Maximum Seal & Anode Core Temperature ..... 90°C
Maximum Length ..... 2.80 in; 71.12 mm
Maximum Diameter ..... 1.40 in; 35.56 mm
Weight (approximate) ..... 4.6 oz; 130 gm
Operating Position ..... Any

Peak Plate Voltage (kV)	DC Plate Voltage (kV)	Pulse Duration (μs)	Pulse Cathode Current (A)	Duty
30.0	25.0†	6.0	12	.0033

† In oil and in conjunction with EIMAC cooling adapter 164084.

Y-831

The Y-831 is a planar triode for use as a highly linear amplifier for TV translator service up to 1.5 GHz. It may be used as an amplifier or oscillator in CW mode, or grid- or plate-pulsed. In translator service, transmitting simultaneous video and aural signals in the same channel, the intermodulation level is better than −52 dB.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Grid Dissipation (Max.) ..... 1.5 watts
Frequency for Max. Ratings (CW) ..... 1500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 5.7 volts
  Current ..... 3.3 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 21.0 pF
  Output ..... 0.07 pF
  Feed-through ..... 6.9 pF
Amplification Factor 90
Transconductance ..... 120 mmhos
Base ..... Special Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 3.19 in; 81.03 mm
Maximum Diameter ..... 3.18 in; 80.8 mm
Weight (approximate) ..... 38.8 oz; 1.0 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Gain (dB)	Output Power (watts)
A	RF Linear Amplifier#	3000	0.6	2400	0.35	16	200†

803 MHz
† Peak Sync

Y-846

The Y-846 is a planar triode for use as a highly linear amplifier for TV translator service up to 1.5 GHz. It may be used as an amplifier or oscillator in CW mode, or grid- or plate-pulsed. In translator service, transmitting simultaneous video and aural signals in the same channel, the intermodulation level is better than −52 dB.

CHARACTERISTICS

Plate Dissipation (Max.)	1500 watts
Grid Dissipation (Max.)	1.5 watts
Frequency for Max. Ratings (CW)	1500 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	5.7 volts
Current	3.3 amperes
Capacitances (Gnd. Cath. Connection)	
Input	18.0 pF
Output	0.07 pF
Feed-through	7.3 pF
Amplification Factor	160
Base	Special Coaxial
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	3.19 in; 81.03 mm
Maximum Diameter	3.18 in; 80.80 mm
Weight (approximate)	35.3 oz; 1.9 kg
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Gain (dB)	Output Power (watts)
A	RF Linear Amplifier #	3000	0.6	2400	0.35	19	200†

803 MHz
† Peak Sync

UHF Focused Triodes

EIMAC HIGH PERFORMANCE FOCUSED TRIODES

This new series of focused triodes is designed specifically for operation in the UHF spectrum. The triodes are designed with beam-forming cathode and control grid geometry. This beam-focusing feature provides high gain and low grid interception. These triodes eliminate many of the cavity and equipment design complications associated with tetrodes. Performance is equal or superior to equivalent tetrodes.

For convenience, the series of new tube types is listed at right. The page number of the catalog is referenced where additional information may be found on each type. For additional information contact Product Manager, Varian, EIMAC division, 301 Industrial Way, San Carlos, CA 94070. Phone (415)-592-1221.

EIMAC Type Number	Rated Plate Dissipation (watts)	F(max) CW (MHz)	Page Number
3CX400U7 / 8961	400	1000	29
3CX600U7	600	1000	29
3CX800U7	800	1000	30
8938	1500	500	46
3CX1500U7 / 8962	1500	1000	33
3CX10,000U7	10,000	250	41

3CPX1500A7

The 3CPX1500A7 is a rugged high-mu power triode, designed with beam-forming cathode and control-grid geometry to allow the simplicity of design and circuit advantages of a triode with the gain of a tetrode.

The tube is intended for pulse modulator or pulse regulator service. The external anode may be forced-air cooled, or for higher voltage holdoff capability the complete tube may be liquid immersed for both insulation improvement and cooling

This tube may be used in grid or plate pulsed RF application where higher peak power is required.

CHARACTERISTICS

Plate Dissipation (Max.)	1500 watts
Grid Dissipation (Max.)	25 watts
Cooling	Liquid Immersion or Forced Air
Cathode	Oxide-coated Unipotential
Voltage	5.5 volts
Current	11.2 amperes
Capacitances (Gnd. Cath. Connection)	
Input	38.5 pF
Output (Max.)	0.2 pF
Feed-through	10.2 pF
Transconductance	55,000 μmhos
Amplification Factor	200
Base	Special, 7-pin
Recommended Air System Socket	SK-2200
Recommended Air Chimney	SK-2216
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	4.02 in; 102.00 mm
Maximum Diameter:	3.38 in: 86.00 mm
Weight (approximate)	26.02 oz; 0.735 kg
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (kV)	MAXIMUM RATINGS Plate Current (amps)*	TYPICAL OPERATION Plate Voltage (kV)	TYPICAL OPERATION Plate Current (amps)*	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (kW)
Forced Air	Grid Driven Pulse Regulator or Modulator	10.0	50.0	10.0	40.0	700	306†
Liquid immersed	Grid Driven Pulse Regulator or Modulator	15.0	50.0†	15.0	40.0	735	506†

†t_p = 10 μsec, see pulse rating curve for longer pulse.
*Peak value

3CX400A7/8874

The 3CX400A7/8874 is a compact high-mu power triode intended for use in zero-bias Class B amplifiers in audio or RF applications. Operation with zero bias simplifies circuitry and cathode-driven operation is attractive since a power gain as high as twenty can be obtained.

CHARACTERISTICS

Plate Dissipation (Max.)	400 watts
Grid Dissipation (Max.)	5 watts
Frequency for Max. Ratings (CW)	500 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	6.3 volts
Current	3.0 amperes
Capacitances (Gnd. Cath. Connection)	
Input	20.5 pF
Output	0.03 pF
Feed-through	6.0 pF
Capacitances (Gnd. Grid Connection):	
Input	20.5 pF
Output	6.0 pF
Feed-through	0.03 pF
Amplification Factor	240
Transconductance	29,000 μmhos
Base	Large Wafer Elevenar 11-pin with ring (JEDEC No. E11-81)
Available Contact Collets:	
Plate	Part No. 008294
Grid	882931
Grid (w. grounding ring)	720359
Recommended Air System Socket	SK-1900
Recommended Air Chimney	SK-606
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	2.14 in; 54.40 mm
Maximum Diameter	1.64 in; 41.70 mm
Weight (approximate)	4.3 oz; 122 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB_2	Cathode Driven RF Linear Amplifier (30MHz)	2200	0.35	2000	0.5*	26	587†
AB_2	Cathode Driven RF Linear Amplifier (150MHz)	2200	0.35	2000	0.4*	18	526†
AB_2	Cathode Driven RF Linear Amplifier (432 MHz)	2200	0.35	2000	0.5*	27	505†
—	Pulse Modulator or Regulator	4500	6.0††	—	—	—	—

* Single-tone Intermittent Voice Service Value
† Useful Power Output
†† Short Pulse

3CX400U7/8961

The 3CX400U7/8961 is a high-mu power triode designed for use above 200 MHz as a CW, pulse, or linear RF amplifier, particularly in the 806 to 1000 MHz portion of the spectrum allocated to land mobile service. The tube is designed with beam-forming cathode and control-grid geometry, and has an anode rating of 400 watts.

With an amplification factor of over 200 and minimum current interception by the grid the tube has excellent power gain in cathode-driven circuitry. Over 200 watts of useful CW RF power may be obtained with better than 33% efficiency and better than 10 dB of gain in the UHF region.

CHARACTERISTICS

Plate Dissipation (Max.)	400 watts
Grid Dissipation (Max.)	5 watts
Frequency for Max. Ratings (CW)	1000 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	6.3 volts
Current	3.0 amperes
Capacitances (Gnd. Cath. Connection)	
Input	18.4 pF
Output	6.1 pF
Feed-through	0.07 pF
Amplification Factor	240
Transconductance	29,000 μmhos
Base	Special, Coaxial
Recommended Air System Socket	Special: Collets Available
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.50 in; 63.70 mm
Maximum Diameter:	2.10 in; 52.90 mm
Weight (approximate)	5.5 oz; 155 gm.
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Cathode Driven RF Amplifier at 850 MHz	1500	0.4	1500	0.4	13	225†

†Useful Power Output

3CX600U7

The 3CX600U7 is a high-mu power triode designed for use above 200 MHz as a CW, pulse, or linear RF amplifier. This high-mu triode is designed with beam-forming cathode and control grid geometry. It has an anode rating of 600 watts.

The combination of an amplification factor over 200 and minimum current interception by the control grid provides good power gain in cathode-driven amplifiers. Coaxial terminals and continuous cone-shaped conductors for the grid and cathode allow the lowest possible inductance between these tube elements and the cavity.

445 watts of useful CW RF power may be obtained with better than 40% efficiency, and better than 14 dB of gain, at 775 MHz.

CHARACTERISTICS

Plate Dissipation (Max.)	600 watts
Grid Dissipation (Max.)	6 watts
Frequency for Max. Ratings (CW)	1000 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage (See UHF Derating Curve on data sheet)	6.0 volts
Current	5.4 amperes
Capacitances (Gnd. Grid Connection)	
Input	26.6 pF
Output	9.2 pF
Feed-through	.11 pF
Amplification Factor	200
Base	Special Coaxial
Recommended Air System Socket	Special; collets available
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.33 in; 59.2 mm
Maximum Diameter:	2.08 in; 52.8 mm
Net Weight (approximate)	7.7 oz.; .22 kg.
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Cathode Driven RF Amplifier	2000	0.6	1750	0.6	15	445*

* Measured data @775 MHz

3CX800A7

The 3CX800A7 is a compact high-mu power triode intended for use in zero-bias class-B amplifiers in audio or radio-frequency applications. It may also be used as a pulse modulator or regulator. A single 3CX800A7 will deliver 750 watts PEP and 750 watts keydown CW output to 350 MHz. Linearity and power gain are excellent due to the beam-forming geometry of the special grid and cathode design.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 800 watts
Grid Dissipation (Max.) ..... 4 watts
Frequency for Max. Ratings (CW) ..... 350 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 13.5 volts
  Current ..... 1.5 amperes
Capacitances (Gnd. Grid. Connection)
  Input ..... 26.0 pF
  Output ..... 6.1 pF
  Feed-through ..... 0.05 pF
Amplification Factor 200
Base ..... Large Wafer Elevenar 11-pin with rings (JEDEC No. E11-81)
Available Contact Collets:
  Grid ..... Part No. 882931
  Grid (w. grounding ring) 720359
Recommended Air System Socket SK-1900
Recommended Air Chimney SK-1906
Available Chimney Clamp SK-1916
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 2.52 in; 64.01 mm
Maximum Diameter ..... 2.53 in; 64.26 mm
Weight (approximate) ..... 11.5 oz; 326 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB_2	Cathode Driven RF Linear Amplifier	2250	0.6	2200	0.5	23	750†
—	Pulse Modulator or Regulator	3500	8.0††	—	—	—	—

† Usefull power output, 144MHz
†† Short pulse. Average = 0.6A

3CX800U7

The 3CX800U7 is a high-mu triode designed for use above 200 MHz as a CW, pulse or linear RF amplifier. The tube is designed with beam-forming cathode and control-grid geometry, and has an anode dissipation rating of 800 watts.

Over 350 watts of useful CW RF power may be obtained with better than 33% efficiency and better than 10 dB gain at 915 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 800 watts
Grid Dissipation (Max.) ..... 4 watts
Frequency for Max. Ratings (CW) ..... 1000 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 13.5 volts
  Current ..... 1.5 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 23.3 pF
  Output ..... 0.037 pF
  Feed-through ..... 6.2 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 23.3 pF
  Output ..... 0.037 pF
  Feed-through ..... 6.2 pF
Amplification Factor 200
Base ..... Special Coaxial
Available Contact Collets:
  Grid ..... Part No. 882931
  Cathode 008292
  Heater 008291
  Heater (w. center pin) 008290
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 2.85 in; 72.39 mm
Maximum Diameter ..... 2.53 in; 64.26 mm
Weight (approximate) ..... 11.5 oz; 326 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
B	Cathode Driven RF Amplifier (915 MHz)	1800	0.5	1800	0.5	25	350†

† Useful Power Output

3CX1000A3

The 3CX1000A3 is a medium mu, rugged power triode intended for use as a power oscillator in industrial heating applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 31.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 20.4 pF
  Output ..... 0.89 pF
  Feed-through ..... 9.0 pF
Amplification Factor 24
Base ..... 3-pin Special
Recommended Air System Socket SK-520
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 7.93 in; 201.4 mm
Maximum Diameter ..... 2.91 in; 73.1 mm
Weight (approximate) ..... 2.7 lb; 1.2 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	6000	1.5	6000	0.75	—	3670

3CX1000A7/8283

The 3CX1000A7/8283 high-mu triode is intended for Class AB_2 linear amplifier service in either grid-driven or cathode-driven configuration. It is recommended for use as a grid-driven push-pull audio amplifier or modulator and as a cathode driven linear amplifier through the VHF-TV bands.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Grid Dissipation (Max.) ..... 45 watts
Frequency for Max. Ratings (CW) ..... 220 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten Mesh
  Voltage ..... 5.0 volts
  Current ..... 30.5 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 32.0 pF
  Output ..... 0.15 pF
  Feed-through ..... 14.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 32.0 pF
  Output ..... 14.0 pF
  Feed-through ..... 0.15 pF
Amplification Factor 200
Base ..... Special, breechblock
Recommended Air System Socket ..... SK-860 or SK-870
Recommended Air Chimney SK-816
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.80 in; 121.90 mm
Maximum Diameter: ..... 3.38 in; 85.80 mm
Weight (approximate) ..... 2.0 lb; 0.91 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier	3500	0.7.	—	—	—	—
C	Grid Driven RF Amplifier Plate Modulated	2000	0.55	—	—	—	—
AB_2	Cathode Driven RF Linear Amplifier	3500	1.0	3500	0.86	100	2060
AB_2	Grid Driven AF Amplifier or Modulator	3500	1.0	2500	2.0*	44	3100*

*Two tubes

3CX1200A7

The 3CX1200A7 is a high-mu, forced-air cooled, rugged power triode intended for use as a zero-bias Class AB2 RF amplifier to 110 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1200 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 21.0 amperes
Capacitances (Gnd. Grid Connection)
  Input ..... 20.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 12.0 pF
Amplification Factor 200
Base ..... 5 Pin Special
Recommended Air System Socket SK-410
Recommended Air Chimney SK-436
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 6.0 in; 147.0 mm
Maximum Diameter ..... 2.91 in; 73.1 mm
Weight (approximate) ..... 2.5 lb; 1.1 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB	RF Linear Amplifier	5000	0.8	3600	0.7	85	1500

3CX1500A7/8877

The 3CX1500A7/8877 power triode is designed for use as a cathode-driven Class AB_2 or Class B amplifier, in audio or RF applications including the VHF band or as a cathode driven plate modulated Class C RF amplifier. As a linear amplifier, high power gain may be obtained without sacrifice of low intermodulation distortion characteristics. Low grid interception and high amplification factor combine to make drive requirements exceptionally low for a tube of this power capacity.

CHARACTERISTICS

Plate Dissipation ..... 1500 watts
Grid Dissipation ..... 25 watts
Frequency for Max. Ratings (CW) ..... 250 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 5.0 volts
  Current ..... 10.5 amperes
Capacitances (Gnd. Cath. connection):
  Input ..... 38.5 pF
  Output ..... 0.1 pF
  Feed-through ..... 10.2 pF
Capacitances (Gnd. Grid. Connection):
  Input ..... 38.5 pF
  Output ..... 10.2 pF
  Feed-through ..... 0.1 pF
Amplification Factor 200
Transconductance ..... 55,000 μmhos
Base ..... Special 7-pin
Recommended Air System Socket:
  Grounded Grid SK-2210
  Grounded Cathode SK-2200
Recommended Air Chimney SK-2216
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.02 in; 102.20 mm
Maximum Diameter: ..... 3.38 in; 85.80 mm
Weight (approximate) ..... 1.6 lb; 0.7 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Cathode Driven RF Amplifier Plate Modulated at 30 MHz	3200	0.80	2400	0.60	41	1000
B	Cathode Driven RF Linear Amplifier at 108 MHz	4000	1.0	4000	1.0	78	2600†
AB_2	Cathode Driven RF Linear Amplifier at 220 MHz	4000	1.0	2500	1.0	57	1520†
AB_2	Cathode Driven RF Linear Amplifier at 30 MHz	4000	1.0	3500	1.0	64	2075†

†Useful Power Output.

3CX1500U7/8962

The 3CX1500U7/8962 is intended for use above 200 MHz as a CW, pulse or linear RF amplifier. It has a plate dissipation rating of 1500 watts. The tube is especially useful in the 900 MHz band allocated to land mobile services where typical gain of 10 dB may be obtained in a suitable amplifier.

The focused-triode design makes possible the simplicity and circuit advantages of a triode combined with the gain of a tetrode.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Grid Dissipation (Max.) ..... 30 watts
Frequency for Max. Ratings (CW) ..... 1000 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 5.0 volts
  Current ..... 11.7 amperes
Capacitances (Gnd. Grid Connection)
  Input ..... 28.0 pF
  Output ..... 13.0 pF
  Feed-through ..... 0.04 pF
Amplification Factor 300
Base ..... Special Coaxial
Recommended Air System Socket SK-2220*
Available Contact Collets:
  Anode ..... Part No. 135304
  Grid 135305
  Cathode 135306
  Heater 135307
  Heater (center pin) 135310
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 3.5 in; 89.0 mm
Maximum Diameter ..... 3.4 in; 86.0 mm
Weight (approximate) ..... 25 oz; 700 gm
Operating Position ..... Any

* For operation above 200 MHz, individual collets are recommended.

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Cathode Driven RF Amplifier at 850 MHz	2000	1.0	2000	1.0	68	680†

† Useful power output, measured at the load.

3CX2500A3/8161, 3CX2500F3/8251, 3CX2500H3

3CX2500A3/8161

The 3CX2500A3/8161 high power triode is widely employed in AM, FM, and TV service. Its coaxial filament and grid terminals insure low-inductance connection to these electrodes and allow operation at maximum ratings through 110 MHz. The use of an external forced-air-cooled anode results in a compact structure with high power-handling capability.

The 3CX2500F3/8251 is identical except for the addition of flexible filament and grid leads on the base which can simplify low frequency installations.

The 3CX2500H3 is designed primarily for use in industrial RF heating services.

3CX2500F3/8251

3CX2500H3

CHARACTERISTICS

Plate Dissipation (Max.) ..... 4000 watts
Grid Dissipation (Max.) 150
Frequency for Max. Ratings (CW)
(3CX2500A3/8161) ..... 110 MHz
3CX2500F3/8251 & 3CX2500H3 ..... 75 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 7.5 volts
Current (all types) ..... 51.5 amperes
Capacitances (Gnd. Cath. Connection)
Input ..... 35.0 pF
Output ..... 0.9 pF
Feed-through ..... 20.0 pF
Amplification Factor 20
Transconductance ..... 20,000 μmhos
Base (3CX2500A3/8161) ..... Coaxial
(3CX2500F3/8251, 3CX2500H3) ..... Flexible Leads
Maximum Seal & Anode
Core Temperature ..... 250°C
Maximum Length:
3CX2500A3/8161 ..... 9.00 in; 228.60 mm
3CX2500F3/8251, 3CX2500H3 .... 18.44 in; 468.40 mm
Maximum Diameter: (all types) ..... 4.16 in; 105.70 mm
Weight (approximate): 3CX2500A3/8161 ... 6.2 lb; 2.8 kg
3CX2500F3/8251, 3CX2500H3 ..... 7.5 lb. 3.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	6000	2.5	6000	2.1	136	10,000
C	Grid Driven RF Amplifier	6000	2.5	6000	2.1	136	10,000
C	Grid Driven RF Amplifier Plate Modulated	5500	2.0	5000	1.3	115	5,300
AB	Grid Driven AF Amplifier or Modulator	6000	2.5	6000	3.0*	113	13,000*

*Two tubes

3CX3000A1/8238, 3CX3000F1/8239

3CX3000A1/8238

3CX3000F1/8239

The 3CX3000A1/8238 low-mu power triode is forced-air cooled and is intended for use as an audio amplifier or modulator. Available high plate current under Class AB_1 operating conditions permits high power gain with a minimum of distortion. The tube is coaxial in construction.

The 3CX3000F1/8239 is identical except for the addition of flexible filament and grid leads on the base which can simplify some installations.

CHARACTERISTICS

Plate Dissipation (Max.)	4000 watts
Grid Dissipation (Max.)	50 watts
Cooling	Forced Air
Filament	Thoriated Tungsten
Voltage	7.5 volts
Current	51.5 amperes
Amplification Factor	5.0
Transconductance	11,000 μmhos
Base (3CX3000A1/8238)	Coaxial
(3CX3000F1/8239)	Flexible leads
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	
(3CX3000A1/8238)	9.00 in; 228.60 mm
(3CX3000F1/8239)	18.44 in; 464.40 mm
Maximum Diameter: (both types)	4.16 in; 105.70 mm
Weight (approximate): (3CX3000A1/8238	6.2 lb; 2.8 kg
(3CX3000F1/8239)	7.5 lb; 3.4 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	Grid Driven AF Amplifier or Modulator	6000	2.5	5500	2.2*	0	8250*

*Two tubes.

3CX3000A7, 3CX3000F7/8162

3CX3000A7

The 3CX3000A7 high-mu forced-air cooled power triode provides relatively high power output as an amplifier, oscillator, or modulator at low plate voltages. The tube has a low inductance cylindrical filament-stem structure which readily becomes part of a linear filament tank circuit for VHF operation.

Operation with zero grid bias in many applications offers circuit simplicity by eliminating the bias supply. Grounded-grid operation is attractive since a power gain of over twenty times can be obtained.

The 3CX3000F7/8162 tube is identical except for the addition of flexible leads on the base for grid and filament connections which can simplify socketing in low frequency applications.

3CX3000F7/8162

CHARACTERISTICS

Plate Dissipation (Max.) ..... 4000 watts
Grid Dissipation (Max.) ..... 225 watts
Frequency for Max. Ratings (CW)
  3CX3000A7 ..... 110 MHz
  3CX3000F7/8162 ..... 75 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current:
    (3CX3000A7) ..... 51.5 amperes
    (3CX3000F7/8162) ..... 50.5 amperes
Capacitances (Gnd. Cath. connection):
  Input ..... 38.0 pF
  Output ..... 0.6 pF
  Feed-through ..... 24.0 pF
Capacitances (Gnd. Grid. Connection):
  Input ..... 38.0 pF
  Output ..... 24.0 pF
  Feed-through ..... 0.6 pF
Amplification Factor 160
Base (3CX3000A7) ..... Special, coaxial
  (3CX3000F7/8162) ..... Flexible leads
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length:
  (3CX3000A7) ..... 9.00 in; 228.60 mm
  (3CX3000F7/8162) ..... 18.44 in; 468.40 mm
Maximum Diameter: (both types) ..... 4.15 in; 105.50 mm
Weight (approximate):
  (3CX3000A7) ..... 6.2 lb; 2.8 kg
  (3CX3000F7/8162) ..... 7.5 lb; 3.4 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Cathode Driven RF Amplifier	5000	2.5	4800	1.5	435	5500†
AB_2	Cathode Driven RF Linear Amplifier	5000	2.5	4800	2.0	410	7260
AB_2	Grid Driven RF Linear Amplifier AM Service	5000	2.5	4000	0.74	11.5	1130
AB_2	Grid Driven AF Amplifier or Modulator	5000	2.5	4000	3.6*	115	10,500*
D	Switching Modulator	15,000	2.5	13,700	0.53	—	—

*Two tubes
†Useful Power Output

3CX4500H3

The EIMAC 3CX4500H3 is a medium-mu forced-air cooled, external anode power triode with a maximum plate dissipation rating of 4500 watts. High power output as an amplifier, oscillator, or modulator may be obtained at moderate voltages.

Plentiful reserve emission is available from the 525-watt filament, and the grid structure is rated 225 watts, making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.)	4500 watts
Grid Dissipation (Max.)	225 watts
Frequency for Max. Ratings (CW)	75 MHz
Cooling	Forced Air
Filament	Thoriated Tungsten
Voltage	7.0 volts
Current	78 amperes
Capacitances (Gnd. Cath. Connection)	
Input	35.0 pF
Output	0.9 pF
Feed-through	20 pF
Amplification Factor	22
Base	Flexible filament leads
Maximum Seal & Anode Core Temperature	250°C
Maxiumum Length	18.437 in; 46.83 cm
Maximum Diameter	6.125 in; 15.56 cm
Weight (approximate)	9.5 lb; 4.3 kg
Operation Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Power Amplifier or Oscillator	6000	3.0	6000	3.0	380	13,300
C	RF Amplifier Plate Modulated	5000	3.0	5000	1.72	175	7,120
AB	Grid Driven Amplifier or Modulator	6000	3.0	5000	2.0*	147	16,425*

*Two tubes.

3CX5000A3

The 3CX5000A3 is a medium-mu power triode designed primarily for use as a power oscillator in industrial heating applications. It is also recommended for use as a grounded-grid FM amplifier, as a conventional plate-modulated amplifier, or as a linear amplifier.

Plentiful reserve emission is available from the 560-watt filament. The grid structure is rated at 100 watts making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.)	5000 watts
Grid Dissipation (Max.)	100 watts
Frequency for Max. Ratings (CW)	110 MHz
Cooling	Forced Air
Filament	Thoriated Tungsten
Voltage	7.5 volts
Current	75.0 amperes
Capacitances (Gnd. Cath. Connection)	
Input	51.0 pF
Output	1.5 pF
Feed-through	25.0 pF
Amplification Factor	18
Base	Special, coaxial
Recommended Air System Socket	SK-1300 or SK-1320
Recommended Air Chimney	SK-1316
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	8.75 in; 222.20 mm
Maximum Diameter	6.40 in; 162.70 mm
Weight (approximate)	9.5 lb; 4.3 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier	7500	3.0	—	—	—	—
C	Grid Driven RF Amplifier Plate Modulated	5000	2.5	—	—	—	—
C	RF Industrial Oscillator	10,000	3.0	9000	2.5	208	18,600
AB	Grid Driven Amplifier or Modulator	7500	4.0	—	—	—	—

3CX5000A7

The 3CX5000A7 high-mu triode is designed for use as a cathode-driven Class AB or Class C power amplifier. The tube does not require a socket as it is designed to bolt directly to the chassis by means of the grid flange. Cathode and heater connections are made by bolting directly to the amplifier circuitry. These features reduce equipment cost and complexity.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 10.0 volts
  Current ..... 17.5 amperes
Base ..... Direct Chassis Mounting
Recommended Air Chimney SK-306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 8.25 in; 20.96 cm
Maximum Diameter ..... 4.94 in; 12.55 cm
Weight (approximate) ..... 9.5 lb; 4.3 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB	Cathode Driven RF Linear Amplifier	6500	2.5	5000	1.9	220	5000

3CX5000H3

The 3CX5000H3 is a medium-mu power triode intended for use in industrial radio-frequency heating services, or for conventional RF or audio amplifier or modulator applications.

Full input may be run up to 90 MHz. The 100-watt grid structure makes this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 100 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 74.5 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 51.0 pF
  Output ..... 1.5 pF
  Feed-through ..... 25.0 pF
Amplification Factor 18
Base ..... Flexible filament leads
Recommended Air Chimney SK-1316
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length ..... 17.50 in; 444.50 mm
Maximum Diameter ..... 6.45 in; 163.80 mm
Weight (approximate) ..... 10.0 lb; 4.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier	7500	3.0	—	—	—	—
C	Grid Driven RF Amplifier Plate Modulated	5000	2.5	—	—	—	—
C	RF Industrial Oscillator	10,000	3.0	9000	2.5	208	18,600
AB	Grid Driven AF Amplifier or Modulator	7500	4.0	—	—	—	—

3CX5000U7

The 3CX5000U7 high-mu triode is designed for use as a cathode-driven RF amplifier in the VHF spectrum.

The 3CX5000U7 makes use of a beam-forming cathode and control grid geometry to produce high gain, low grid interception, and zero-bias operation capability.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
(Pulsed) ..... 1000 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
Voltage ..... 10.0 volts
Current ..... 17.5 amperes
Capacitances (Gnd. Grid Connection)
Input ..... 60.0 pF
Output ..... 16.0 pF
Feed-through ..... 0.18 pF
Amplification Factor 200
Base ..... Special Coaxial
Available Contact Collets:
Grid ..... Part No. 720636
Heater-Cathode 720637
Heater 720638
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 4.50 in; 114.3 mm
Maximum Diameter ..... 4.94 in; 125.4 mm
Weight (approximate) ..... 5.5 lb; 2.5 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB	Cathode Driven Low Band TV Linear RF Amplifier*	6,500	2.0	5,000	1.9	300	5,000
AB	Cathode Driven High Band TV Linear RF Amplifier*	6,500	2.0	5,500	1.8	310	5,000

*Peak of sync conditions

3CX10,000A3/8159

The 3CX10,000A3/8159 is a medium-mu, power triode intended for use as a power oscillator in industrial heating applications or as an RF power amplifier in Class C or Class AB_2 linear service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 250 watts
Frequency for Max. Ratings (CW) ..... 160 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 7.5 volts
Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection):
Input ..... 53.0 pF
Output ..... 1.4 pF
Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Coaxial
Recommended Air System Socket SK-1300
Recommended Air Chimney SK-1306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 8.75 in; 222.20 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 12.0 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Cathode Driven RF Amplifier	7000	4.0	7000	4.0	4100	24,500
C	Grid Driven RF Amplifier Plate Modulated	5500	3.0	5000	3.0	515	12,400
C	RF Industrial Oscillator or Amplifier	7000	4.0	7000	4.0	600	22,400
AB_2	Cathode Driven RF Linear Amplifier	7000	5.0	7000	4.0	2050	20,000

3CX10,000A7/8160

The 3CX10,000A7/8160 is a high-mu power triode is intended for use as a zero-bias Class B amplifier in audio or RF applications, or as a Class C amplifier, CW or modulated.

Operation in Class B with zero grid bias offers circuit simplicity by eliminating the bias supply, and in addition, grounded-grid operation is attractive since a power gain as high as twenty times can be obtained with the tube.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 160 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 59.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 59.0 pF
  Output ..... 36.0 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... Coaxial
Recommended Air System Socket SK-1300
  or SK-1320
Recommended Air Chimney SK-1306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 8.75 in; 222.20 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 12.0 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Cathode Driven RF Amplifier	8000	4.0	7600	3.7	1510	22,500
C	Grid Driven RF Amplifier Plate Modulated	6500	3.0	5000	3.0	380	11,900
AB_2	Cathode Driven RF Linear Amplifier	8000	5.0	7000	5.0	1540	24,200
AB_2	Cathode Driven RF Linear Amplifier AM Service	8000	5.0	7000	2.4	330	5600
AB_2	Grid Driven AF Amplifier or Modulator	8000	5.0	7000	10.0*	560	47,700*

*Two tubes

3CX10,000H3

The 3CX10,000H3 is a medium-mu power triode designed primarily for use in industrial RF heating service. Input of 40 kW is permissible up to 90 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 250 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 53.0 pF
  Output ..... 1.4 pF
  Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 17.75 in; 450.80 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 13.0 lb; 5.9 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator or Amplifier	10,000	4.0	9000	4.0	570	29,000

3CX10,000U7

The 3CX10,000U7 high-mu triode is designed for use as a cathode-driven RF amplifier in the VHF spectrum. It is a very linear device making it ideally suited for TV service in addition to CW and pulsed RF amplifier service.

The 3CX10,000U7 makes use of a beam-forming cathode and control grid geometry to produce high gain, low grid interception, and zero-bias operation capability.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 250 MHz
Pulsed ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
Voltage ..... 15.0 volts
Current ..... 13.0 amps
Capacitances (Cathode Driven)
Input ..... 90.0 pF
Output ..... 28.8 pF
Feed-through ..... 0.25 pF
Amplification Factor 200
Base ..... Special Coaxial
Socket ..... Collets available
Heater 720638
Heater/Cathode 720637
Grid 720636
Anode Collet Assembly 720635
Maximum Seal & Temperature ..... 250°C
Maximum Length: ..... 6.7 in; 170 mm
Maximum Diameter: ..... 7.05 in; 179 mm
Weight ..... 20 lb; 9.1 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB	Cathode Driven Low Band TV Linear RF Amplifier*	6500	4	5000	3.72	400	10,000
AB	Cathode Driven High Band TV Linear RF Amplifier*	6500	4	5500	3.6	410	10,000
C	Cathode Driven Pulse RF Amplifier	13,000	100†	—	—	—	—

*Peak of synch conditions
†Peak value

3CX15,000A3

The 3CX15,000A3 is a medium-mu power triode designed for use as a power oscillator in industrial radio frequency heating applications. It is also recommended for use as a conventional plate-modulated amplifier, or as a linear amplifier. The one kilowatt filament and rugged 500 watt grid structure make this tube especially suitable for heavy duty service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 6.3 volts
Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
Input ..... 55.0 pF
Output ..... 1.4 pF
Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Coaxial
Recommended Air System Socket SK-1300
Recommended Air Chimney SK-1306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 8.75 in; 222.30 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 12.0 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier	8000	6.0	8000	5.9	740	34,000
C	Grid Driven RF Amplifier Plate Modulated	6500	5.0	5000	3.9	490	18,000
AB	Grid Driven RF Linear Amplifier	8000	6.0	7000	4.8	215	23,000

3CX15,000A7

The 3CX15,000A7 is a high-mu power triode intended for use as a zero-bias Class B RF amplifier or Class C power amplifier or oscillator. It is also recommended for use as a grounded grid FM amplifier. Class B operation with zero bias offers circuit simplicity. In addition, grounded-grid operation is attractive since a power gain as high as twenty times can be obtained.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 61.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 61.0 pf
  Output ..... 36.0 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... Coaxial
Recommended Air System Socket ..... SK-1300 or SK-1320
Recommended Air Chimney SK-1306
Maximum Seal Temperature ..... 250°C
Maximum Length: ..... 8.75 in; 222.30 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 12.0 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier	8000	5.0	7000	4.0	430	21,300
AB	Cathode Driven RF Linear Amplifier	8000	6.0	7000	5.9	1750	29,600

3CX15,000H3

The 3CX15,000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 55.0 pF
  Output ..... 1.4 pF
  Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Flexible filament leads
Recommended Air Chimney SK-1306
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 17.75 in; 450.80 mm
Maximum Diameter: ..... 7.05 in; 179.10 mm
Weight (approximate) ..... 13.0 lb; 5.9 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator or Amplifier	12,000	6.0	10,000	5.0	650	41,200

3CX20,000A3

The 3CX20,000A3 is a medium-mu power triode for industrial oscillator or general communications service. It is recommended for Class C amplifier service, or Class B radio frequency and audio frequency amplifier use.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 750 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 70.0 pF
  Output ..... 2.3 pF
  Feed-through ..... 43.0 pF
Base ..... Coaxial
Recommended Air System Socket SK-1300
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 10.00 in; 254.0 mm
Maximum Diameter: ..... 8.00 in; 203.0 mm
Weight (approximate) ..... 19.5 lb; 8.8 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier	12,000	8.0	10,000	7.9	960	64,000
C	Grid Driven RF Amplifier Plate Modulated	6500	5.5	6500	5.0	1500	27,500
AB	Grid Driven RF Linear Amplifier	8000	8.0	7500	7.4	400	40,000
AB	Grid Driven AF Amplifier or Modulator	8000	8.0	7500	14.8*	800	80,000*

*Two tubes

3CX20,000A7

The 3CX20,000A7 is a high-mu power triode intended for use as a zero-bias Class B RF amplifier or Class C power amplifier or oscillator. Class B operation with zero grid bias offers circuit simplicity. In addition, grounded-grid operation is attractive since a power gain as high as twenty times can be obtained.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 61.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 61.0 pF
  Output ..... 36.0 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... Coaxial
Recommended Air System Socket ..... SK-1300 or SK-1320
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 8.75 in; 222.20 mm
Maximum Diameter: ..... 8.31 in; 211.10 mm
Weight (approximate) ..... 13.5 lb; 6.15 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier at 110 MHz	10,000	5.0	7000	4.0	430	21,300
C	Cathode Driven RF Amplifier at 110 MHz	10,000	5.0	7800	4.2	2300	27,500
B	Cathode Driven RF Amplifier TV Service at 216 MHz†	10,000	6.0	7200	5.8	1700	27,500
AB	Cathode Driven RF Linear Amplifier at 110 MHz	10,000	6.0	7000	5.0	1540	24,200

†Peak Sync. Level

3CX20,000B5

The 3CX20,000B5 is a high-mu power triode designed primarily for use as a radio-frequency amplifier or AF class B modulator. It has flying-lead filament connections to eliminate the need for a socket and an RTV insulator for use at high voltage and high altitude.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 1,000 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 12.0 volts
  Current ..... 120 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 70.0 pF
  Output ..... 2.3 pF
  Feed-through ..... 43.0 pF
Amplification Factor 55
Base ..... Flexible filament leads
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Flexible Leads Temperature ..... 175°C
Maximum Length ..... 19.00 in; 482.60 mm
Maximum Diameter ..... 8.00 in; 203.20 mm
Weight (approximate) ..... 20.0 lb; 9.1 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier	12,000	9.0	10,000	7.0	800	60,000

3CX20,000H3

The 3CX20,000H3 is a medium-mu power triode designed for use as an industrial oscillator in the LF to lower VHF range (30 kHz to 90 MHz). This triode is also recommended for AM broadcast service as a modulator, modulated RF stage, or as a linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 750 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  input ..... 70.0 pF
  Output ..... 2.3 pF
  Feed-through ..... 43.0 pF
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 19.00 in; 482.60 mm
Maximum Diameter: ..... 8.00 in; 203.20 mm
Weight (approximate) ..... 20.0 lb; 9.1 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier	12,000	8.0	10,000	7.9	960	64,000
C	Grid Driven RF Amplifier Plate Modulated	6500	5.5	6500	5.0	1500	27,500
AB	Grid Driven AF Amplifier or Modulator	8000	8.0	7500	14.8*	800	80,000*

*Two tubes

8874: See 3CX400A7/8874

8875

The 8875 is a compact high-mu power triode intended for use in zero-bias Class B amplifiers in audio or RF applications. The 8875 has a transverse cooler for forced-air cooling and is rated for 300 watts.

Operation with zero grid bias simplifies circuitry by eliminating the normal bias supply. In addition, grounded-grid operation is attractive since a power gain as high as twenty can be obtained.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 300 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.3 volts
  Current ..... 3.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 20.5 pF
  Output ..... 0.03 pF
  Feed-through ..... 6.0 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 20.5 pF
  Output ..... 6.0 pF
  Feed-through ..... 0.03 pF
  Cathode-Heater ..... 6.0 pF
Amplification Factor 240
Transconductance†† ..... 29.000 μmhos
Base ..... Large Wafer Elevenar 11-pin with Ring (JEDEC No. E11-81)
Available Contact Collets:
  Grid ..... Part No. 882931
  Grid (w. grounding ring) 720359
Recommended Socket ..... Part No. 154353
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 2.18 in; 55.50 mm
Maximum Diameter ..... 2.52 in; 64.00 mm
Weight (approximate) ..... 8.6 oz; 244 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Cathode Driven RF Linear Amplifier at 30 MHz	2200	0.35	2000	0.50* 0.31**	26	587†
AB_2	Cathode Driven RF Linear Amplifier at 150 MHz	2200	0.35	2000	0.40* 0.245**	17.5	526†
AB_2	Cathode Driven RF Linear Amplifier at 432 MHz	2200	0.35	2000	0.50* 0.30**	27	505†
C	Grid Driven RF Power Amplifier at 110 MHz	2200	0.35	2000	0.25	9.0	305†
—	Pulse Modulator or Regulator	4500	6.0 (Short Pulse)	—	—	—	—

*Single-tone Intermittent Voice Service value
**Two-tone plate current
†Useful power output
††At I_b = 250 mA

8938

The 8938 is a rugged coaxial-base power triode designed for use as a cathode driven Class AB_2 or Class C amplifier.

It is recommended for VHF or UHF service as a linear amplifier, power amplifier, or pulse amplifier. Linearity and power gain are both excellent due to the low ratio of grid to plate current, and the relatively high amplification factor. Low grid interception of available emission current is due to the beam forming geometry of the special grid and cathode design.

CHARACTERISTICS

Plate Dissipation (Max.)	1500 watts
Grid Dissipation (Max.)	20 watts
Frequency for Max. Ratings (CW)	500 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	5.0 volts
Current	10.5 amperes
Capacitances (Gnd. Connection)	
Input	35.5 pF
Output	12.4 pF
Feed-through	0.14 pF
Amplification Factor	125
Transconductance	55.000 μmhos
Base	Coaxial
Available Contact Collets:	
Anode	Part No. 135304
Grid	135305
Cathode	135306
Heater	135307
Heater (center pin)	135310
Recommended Air-System Socket	SK-2220
Recommended Air Chimney	SK-2216
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	3.68 in; 93.40 mm
Maximum Diameter	3.38 in; 85.80 mm
Weight (approximate)	25 oz; 709 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Cathode Driven RF Amplifier at 400 MHz	4000	1.0	3000	1.0	83	1570†
AB_2	Cathode Driven RF Linear Amplifier up to 30 MHz	4000	1.0	3500	0.97	50	2030†

†Useful Power Output
‡Individual Collets available

8873

The 8873 is a compact high-mu power triode intended for use in zero-bias Class-B or AB amplifiers in audio or radio-frequency applications, but may also be used in Class-C service or as a pulse modulator or regulator.

The 8873 is designed for conduction cooling and is nominally rated for 200 watts of anode dissipation. A beryllium-oxide thermal link is available to insulate the anode from the heat sink while allowing for heat conduction from the anode to the sink.

Operation with zero bias simplifies associated circuitry by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain as high as twenty can be obtained.

CHARACTERISTICS

Plate Dissipation [1] (Max.) ..... 200 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW)) ..... 500 MHz
Cooling ..... Conduction
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.3 volts
  Current ..... 3.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 20.5 pF
  Output ..... 0.03 pF
  Feed-through ..... 6.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 20.5 pF
  Output ..... 6.0 pF
  Feed-through ..... 0.03 pF
  Cathode to heater ..... 6.0 pF
Transconductance †† ..... 29,000 μmhos
Base ..... Large Wafer Elevenar 11-Pin with ring (JEDEC No. E11-81)
Recommended Socket ..... Eimac P/N 154353
Recommended BeO Thermal Link ..... Eimac SK-1920
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.14 in; 54.41 mm
Maximum Diameter: ..... 1.64 in; 41.66 mm
Weight (approximate) ..... 8.5 oz; 241 gm
Operating Position ..... Any

[1]Dissipation capability is dependent on cooling technique.

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_2	Cathode Driven RF Linear Amplifier at 30 MHz	2200	0.35	2000	0.50* 0.31**	26	587†
AB_2	Cathode Driven RF Linear Amplifier at 150 MHz	2200	0.35	2000	0.40* 0.245**	17.5	526†
AB_2	Cathode Driven RF Linear Amplifier at 432 MHz	2200	0.35	2000	0.50* 0.30**	27	505†
C	Grid Driven RF Amplifier at 110 MHz	2200	0.35	2000	0.25	9.0	305†
—	Pulse Modulator or Regulator	4500	6.0 (Short pulse)	—	—	—	—

*Single-tone Intermittent Voice Service value
**Two-tone plate current
† Useful power output
††At I_b = 250 mA

3CW1500A3

The 3CW1500A3 is a medium-mu, water cooled, rugged power triode intended for use as a power oscillator in industrial heating applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 31.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 20.4 pF
  Output ..... 0.89 pF
  Feed-through ..... 9.0 pF
Amplification Factor 24
Base ..... 3-pin Special
Recommended Air System Socket SK-520
Maximum Length ..... 7.22 in; 183.4 mm
Maximum Diameter ..... 3.00 in; 76.2 mm
Weight (approximate) ..... 2.2 lb; 1.0 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Industrial Oscillator	6000	1.5	6000	0.75	—	3670

3CW5000A3/8242, 3CW5000F3/8243

3CW5000A3/8242, 3CW5000F3/8243

The 3CW5000A3/8242 and 3CW5000F3/8243 are medium-mu power triodes intended for use in amplifier, oscillator, or modulator service. Their maximum rated anode dissipation is 5000 watts.

These tubes are water-cooled versions of the air-cooled 3CX2500A3/8161 and 3CX2500F3/8251.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 150 watts
Frequency for Max. Ratings (CW) ..... 75 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 51.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 35.0 pF
  Output ..... 0.9 pF
  Feed-through ..... 20.0 pF
Amplification Factor 22
Transconductance † ..... 20,000 μmhos
Base (3CW5000A3/8242) ..... Coaxial
  (3CW5000F3/8243) ..... Flexible Filament Leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: (3CW5000A3/8242) .. 12.62 in; 320.50 mm
  (3CW5000F3/8243) .. 22.06 in; 560.30 mm
Maximum Diameter: (both types) ..... 3.63 in; 92.10 mm
Weight (approximate): (3CW5000A3/8242) ..... 4.8 lb; 2.2 kg
  (3CW5000F3/8243) ..... 6.0 lb; 2.7 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier	6000	2.5	6000	2.1	136	10,000
C	Grid Driven RF Amplifier Plate Modulated	5000	2.0	5000	1.5	76	5580
AB_2	Grid Driven AF Amplifier or Modulator	6000	2.5	6000	3.0*	113	13,000*
AB_2	Grid Driven AF Amplifier or Modulator	6000	2.5	5000	2.3*	59	8000*

*Two tubes
†At I_b = 0.83 A

3CW5000F1/8241

The 3CW5000F1/8241 is a low-mu power triode intended for use as audio amplifiers or modulators. The maximum rated plate dissipation is 5000 watts.

Two tubes in Class AB_1 audio service will deliver more than 10 kW maximum-signal plate output power at 6000 plate volts without drawing grid current.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 50 watts
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 50.5 amperes
Amplification Factor 4.9
Transconductance † ..... 11,000 μmhos
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 22.06 in; 560.30 mm
Maximum Diameter: ..... 3.63 in; 92.10 mm
Weight (approximate) ..... 6.0 lb; 2.7 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB_1	Grid driven AF Amplifier or Modulator	6000	2.5	6000	2.7*	0	10,000*

*Two tubes
†At I_b = 1.0 A

3CW5000H3

The 3CW5000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

Input of 12.5 kW is permissible up to 75 MHz. The grid structure is rated at 150 watts making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Grid Dissipation (Max.) ..... 150 watts
Frequency for Max. Ratings (CW) ..... 75 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 51.5 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 35.0 pF
  Output ..... 0.9 pF
  Feed-through ..... 20.0 pF
Amplification Factor 20
Transconductance † ..... 20,000 μmhos
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 18.56 in; 471.40 mm
Maximum Diameter: ..... 5.42 in; 137.70 mm
Weight (approximate) ..... 7.5 lb; 3.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Industrial Oscillator	6000	2.5	6000	2.1	136	10,000

†At I_b = 0.83 A.

3CW10,000A3

The 3CW10,000A3 is a medium-mu power triode designed for applications where air cooling is not practical. Typical applications include industrial oscillators, RF power amplifier, modulator and a series pass tube in regulated power supplies.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 100 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 75 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 51.0 pF
  Output ..... 1.5 pF
  Feed-through ..... 25.0 pF
Amplification Factor 20
Base ..... Special Coaxial
Recommended Air System Socket SK-1310
Maximum Seal Temperature ..... 250°C
Maximum Length: ..... 18.75 in; 476 mm
Maximum Diameter: ..... 6.8 in; 173 mm
Weight (approximate) ..... 10 lb; 4.5 kg
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	7500	3.0	—	—	—	—
C	RF Industrial Oscillator	10,000	3.0	9000	2.5	208	18,600
AB or B	AF Amplifier or Modulator	7500	4.0	—	—	—	—

3CW10,000H3

The 3CW10,000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

Input of 30 kW is permissible up to 90 MHz. The grid structure is rated at 150 watts making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Grid Dissipation (Max.) ..... 100 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 75.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 51.0 pF
  Output ..... 1.5 pF
  Feed-through ..... 25.0 pF
Amplification Factor 20
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 18.75 in; 476.20 mm
Maximum Diameter: ..... 6.80 in; 172.70 mm
Weight (approximate) ..... 10 lb; 4.54 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	10,000	3.0	9000	2.9	—	20,600

3CW20,000A1

The 3CW20,000A1 is a low-mu power triode intended primarily for use as an audio amplifier or modulator. This tube is also recommended for voltage-regulator applications where high current capability and low tube drop are important. Except for plate dissipation, the tube is electrically identical to the 3CX10,000A1/8158.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 100 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 51.0 pF
  Output ..... 4.0 pF
  Feed-through ..... 29.0 pF
Amplification Factor 6.0
Transconductance † ..... 20, 000 μmhos
Base ..... Coaxial
Recommended Air System Socket SK-1300
Maximum Seal Temperature ..... 250°C
Maximum Length: ..... 11.22 in; 284.90 mm
Maximum Diameter: ..... 4.65 in; 118.10 mm
Weight (approximate) ..... 11.5 lb; 5.2 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	5000	4.0	5000	2.8	385	11,000
AB_1	Grid Driven AF Amplifier or Modulator	7000	5.0	7000	7.0*	0	29,100*
A	Grid Driven AF Amplifier or Modulator	7000	5.0	2500	4.0	0	1800
A	Voltage Regulator	10,000	5.0	5000	2.0	—	—

*Two tubes.
†At I_b = 2.0A.

3CW20,000A3

The 3CW20,000A3 is a medium-mu power triode intended primarily for use as a power oscillator in industrial heating applications. It is also recommended for use as a conventional plate-modulated amplifier, or as a linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 250 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 53.0 pF
  Output ..... 1.4 pF
  Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Coaxial
Recommended Air System Socket SK-1300
Maximum Seal Temperature ..... 250°C
Maximum Length: ..... 11.22 in; 285.00 mm
Maximum Diameter: ..... 4.65 in; 118.10 mm
Weight (approximate) ..... 11.5 lb; 5.2 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Cathode Driven RF Amplifier	7000	4.0	7000	4.0	4100	24,500
C	Grid Driven RF Amplifier Plate Modulated	5500	3.0	5000	3.0	515	12,400
C	RF Industrial Oscillator	7000	4.0	7000	4.0	—	22,400
AB_2	Cathode Driven RF Linear Amplifier	7000	5.0	7000	4.0	2050	20,000

3CW20,000A7

The 3CW20,000A7 is a high-mu power triode intended to be used as a zero-bias Class-B amplifier in audio or radio-frequency applications. Operation with zero grid bias offers circuit simplicity by eliminating the bias supply. In addition, grounded-grid operation is attractive since a power gain as high as twenty times can be obtained.

The 3CW20,000A7 is electrically identical to the air-cooled 3CX10,000A7 except for its 20kW plate dissipation rating.

CHARACTERISTICS

Plate Dissipation (Max.)	20,000 watts
Grid Dissipation (Max.)	500 watts
Frequency for Max. Ratings (CW)	110 MHz
Cooling	Water and Forced Air
Filament	Thoriated Tungsten
Voltage	7.5 volts
Current	99.0 amperes
Capacitances (Gnd. Cath. Connection)	
Input	59.0 pF
Output	0.2 pF
Feed-through	36.0 pF
Capacitances (Gnd. Grid Connection)	
Input	59.0 pF
Output	36.0 pF
Feed-through	0.2 pF
Amplification Factor	200
Base	Coaxial
Recommended Air System Socket	SK-1300
Maximum Seal Temperature	250°C
Maximum Length:	11.22 in; 285.00 mm
Maximum Diameter:	4.65 in; 118.10 mm
Weight (approximate)	11.5 lb; 5.2 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	Grid Driven RF Amplifier	7000	4.0	7000	4.0	530	21,300
C	Grid Driven RF Amplifier Plate Modulated	5500	3.0	5000	3.0	380	11,900
B	Cathode Driven RF Linear Amplifier	7000	5.0	7000	5.0	1540	24,200
B	Cathode Driven RF Linear Amplifier (AM Service)	7000	5.0	7000	2.4	330	5650†
B	Grid Driven AF Amplifier or Modulator	7000	5.0	7000	10.0*	560	47,700*

*Two tubes.
†Carrier Power.

3CW20,000H3

The 3CW20,000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

Input of 40 kilowatts is permissible up to 90 MHz. The grid structure is rated at 250 watts, making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.)	20,000 watts
Grid Dissipation (Max.)	250 watts
Frequency for Max. Ratings (CW)	90 MHz
Cooling	Water and Forced Air
Filament	Thoriated Tungsten
Voltage	7.5 volts
Current	99.0 amperes
Capacitances (Gnd. Cath. Connection)	
Input	53.0 pF
Output	1.4 pF
Feed-through	34.0 pF
Amplification Factor	20
Base	Flexible filament leads
Maximum Seal Temperature	250°C
Maximum Flexible Lead Temperature	175°C
Maximum Length:	18.25 in; 463.50 mm
Maximum Diameter:	6.75 in; 171.40 mm
Weight (approximate)	12.0 lb; 5.5 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Industrial Oscillator	12,000	4.0	10,000	4.0	340	28,000

3CW20,000H7

The 3CW20,000H7 is a high-mu power triode intended for use as a dc voltage or current regulator, or in high-voltage switch tube or pulsed regulator service.

In addition, since the tube is identical to the 3CW20,000A7 except for the anode and grid flanges and the addition of the filament flying leads, it is useful as a zero-bias Class B amplifier in audio or RF applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 99.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 59.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Amplification Factor 200
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 20.70 in; 525.80 mm
Maximum Diameter: ..... 6.75 in; 171.40 mm
Weight (approximate) ..... 12 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
AB	Cathode Driven RF Linear Amplifier	7000	5.0	7000	5.0	1540	24,200
AB	Cathode Driven RF Linear Amplifier (AM Service)	7000	5.0	7000	2.4	330	5650†
AB	Grid Driven AF Amplifier or Modulator	7000	5.0	7000	10.0*	560	47,700*

*Two tubes.
†Carrier Power.

3CW30,000A7

The 3CW30,000A7 is a high-mu power triode designed for use as a zero-bias Class B RF amplifier, or a grounded grid FM amplifier. Class B operation with zero bias offers circuit simplicity. In addition, grounded-grid operation is attractive since a power gain as high as twenty times can be obtained.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 30,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 61.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 61.0 pF
  Output ..... 36.0 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... Coaxial
Recommended Air System Socket SK-1300
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 11.90 in; 302.26 mm
Maximum Diameter* ..... 6.75 in; 171.00 mm
Weight (approximate) ..... 10.4 lb; 4.73 kg
Operating Position ..... Vertical, base up or down
*Anode mounting flange pitch circle

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
B	RF Amplifier	8000	5.0	7000	4.0	430	21,300
AB	Cathode Driven RF Linear Amplifier	8000	6.0	7000	5.9	1750	29.600

3CW30,000H3

The 3CW30,000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

Input of 60 kW is permissible from its one kilowatt filament. The grid structure is rated at 500 watts making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 30,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 53.0 pF
  Output ..... 1.4 pF
  Feed-through ..... 34.0 pF
Amplification Factor 20
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 20.60 in; 523.24 mm
Maximum Diameter: ..... 6.75 in; 171.40 mm
Weight (approximate) ..... 12 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	12,000	6.0	10,000	6.0	365	42,000

3CW30,000H7

The 3CW30,000H7 is a high-mu power triode designed for use as a zero-bias Class B RF amplifier, Class C power amplifier or oscillator, or for voltage regulator service.

Input of 48 kW is permissible up to 110 MHz. Plentiful reserve emission is available from its one kilowatt filament.

Class B operation with zero grid bias offers circuit simplification by eliminating the bias supply.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 30,000 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 56.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 36.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 56.0 pF
  Output ..... 36.0 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 20.6 in; 524 mm
Maximum Diameter: ..... 6.75 in; 171.4C mm
Weight (approximate) ..... 12.0 lb; 5.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Power Amplifier	8000	5.0	7000	4.0	430	21,300
AB	Cathode Driven RF Linear Amplifier	8000	6.0	7000	5.0	1540	24,200
A	Voltage Regulator	28,000	6.0	—	—	—	—

3CW40,000A5

The 3CW40,000A5 is a medium-mu power triode designed primarily for use as an RF power amplifier. Input of 100 kW is permissible up to 90 MHz. Plentiful reserve emission is available from its 1500-watt filament. The grid structure is rated at 1000 watts dissipation.

The electrical characteristics of the 3CW40,000A5 closely match those of the Siemens RS-2021W and it is therefore ideal as a retrofit.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 40,000 watts
Grid Dissipation (Max.) ..... 1,000 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 12.0 volts
  Current ..... 120 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 70.0 pF
  Output ..... 2.3 pF
  Feed-through ..... 43.0 pF
Amplification Factor 55
Base ..... Special, Coaxial
Recommended Air System Socket ..... SK-1300 Family
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 12.0 in; 304.8 mm
Maximum Diameter ..... 6.75 in; 171.5 mm
Weight (approximate) ..... 17 lb; 7.7 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier	12,000	9.0	10,000	7.0	800	60,000

3CW40,000H3

The 3CW40,000H3 is a medium-mu power triode designed primarily for use in industrial radio-frequency heating services.

Input of 100 kW is permissible up to 90 MHz. Plentiful reserve emission is available from its 1500-watt filament. The grid structure is rated at 750 watts, making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 40,000 watts
Grid Dissipation (Max.) ..... 750 watts
Frequency for Max. Ratings (CW) ..... 90 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 70.0 pF
  Output ..... 2.3 pF
  Feed-through ..... 43.0 pF
Amplification Factor 20
Base ..... Flexible filament leads
Maximum Seal Temperature ..... 250°C
Maximum Flexible Lead Temperature ..... 175°C
Maximum Length: ..... 21.23 in; 539.20 mm
Maximum Diameter: ..... 6.75 in; 171.40 mm
Weight (approximate) ..... 14 lb; 6.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator	12,000	9.0	10,000	9.0	1040	70,000

3CW100,000H3

The 3CW100,000H3 is a medium-mu triode designed for industrial radio-frequency sercice.

Input of 300 kW is permissible up to 30 MHz. Reserve emission is available from its 3100 watt filament. The grid structure is rated for 1500 watts, making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.)	100,000 watts
Grid Dissipation (Max.)	1,500 watts
Frequency for Max. Ratings (CW)	30 MHz
Cooling	Water and Forced Air
Filament	Thoriated Tungsten
Voltage	10.0 volts
Current	312 amperes
Capacitances (Gnd. Cath. Connection)	
Input	156 pF
Output	4.4 pF
Feed-through	94 pF
Amplification Factor	25
Base	Special
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	20.4 in; 51.8 cm
Maximum Diameter	9.5 in; 24.1 cm
Weight (approximate)	49 lb; 22.2 kg
Operating Position	Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kw)
C	RF Industrial Oscillator†	18,000	18.0	16,000	13.0	3000	173

†3-phase, full-wave rectified unfiltered power supply

3CW250,000H3

The 3CW250,000H3 is a medium-mu triode designed for industrial radio-frequency service.

Input of 700 kW is permissible up to 30 MHz. Reserve emission is available from its 8000-watt filament, which is water cooled. The grid structure is rated for 4000 watts, making this tube an excellent choice for severe applications.

CHARACTERISTICS

Plate Dissipation (Max.)	250,000 watts
Grid Dissipation (Max.)	4,000 watts
Frequency for Max. Ratings (CW)	30 MHz
Cooling	Water
Filament	Thoriated Tungsten
Voltage	12.0 volts
Current	660 amperes
Capacitances (Gnd. Cath. Connection)	
Input	285 pF
Output	6.0 pF
Feed-through	137 pF
Amplification Factor	29
Base	Special Coaxial
Recommended Base Connectors (2)	SK-1711
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	23.5 in; 59.7 cm
Maximum Diameter	13.0 in; 33.2 cm
Weight (approximate)	116 lb; 52.6 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Industrial Oscillator†	19,000	45.0	16,000	42.0	—	475

†3-phase, full-wave rectified unfiltered power supply

8971 (X-2177)

The 8971 medium-mu power triode is designed for very high power industrial heating service in the half-megawatt power range.

The 8971 has a thoriated-tungsten cathode mounted on water-cooled supports. The maximum anode dissipation of the tube is 650,000 watts steady-state.

Provision is made for large-diameter coaxial terminals to the grid and the RF cathode terminals. Filament power and filament support cooling-water connections are made through two special couplings.

CHARACTERISTICS

Plate Dissipation ..... 650,000 watts
Grid Dissipation ..... 6,000 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 18.5 volts
  Current ..... 650 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 320 pF
  Output ..... 9.5 pF
  Feed-through ..... 210 pF
Amplification Factor 18
Base ..... Special
Recommended Cooling Water/Filament
  Power Connector (2 required) SK-2310
Recommended RF Return Connector SK-2315
Recommended Anode Water Connectors SK-2322
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 16.5 in; 419.1 mm
Maximum Diameter: ..... 17.03 in; 432.60 mm
Weight (approximate) ..... 153 lb; 69.5 kg
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (kW)	Output Power (kW)
C	RF Power Amplifier or Oscillator	20,000	65	18,000 15,500	56 56	12.0 14.0	750 650

8972 (X-2176)

The 8972 is a medium-mu triode designed for very-high-power medium-frequency or high-frequency broadcast service and very-low-frequency communication in the megawatt power range.

The 8972 has a two-section thoriated-tungsten filament mounted on water-cooled supports. The two sections may be fed in quadrature to reduce hum contributed by an ac power source. The maximum anode dissipation rating is 1250 kW steady state.

Large-diameter coaxial terminals are used for the control grid and the RF filament terminals. Filament power and filament support cooling-water connections are made through three special couplings with threaded clamping rings.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1.250,000 watts
Grid Dissipation (Max.) ..... 12,000 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Water and Forced Air
Filament ..... Two section, Thoriated Tungsten
  Voltage/section ..... 18.5 volts
  Current/section ..... 650 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 900 pF
  Output ..... 25.0 pF
  Feed-through ..... 350 pF
Amplification Factor 23
Base ..... Special
Recommended Cooling Water/Filament
  Power Connector (3 required) SK-2310
Recommended RF Return Connector SK-2315
Recommended Anode Water Connectors SK-2322
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 25.31 in; 642.90 mm
Maximum Diameter: ..... 17.03 in; 432.60 mm
Weight (approximate) ..... 190 lb; 87 kg
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (kW)	Output Power (kW)
C	RF Power Amplifier or Oscillator	20,000	125	18,000 15,500	110 110	30.0 32.0	1500 1300

Y-842

The Y-842 is a medium-mu, water cooled power triode intended for use in amplifier, oscillator or modulator service. Maximum anode dissipation of the tube is 7,000 watts. This tube is a version of the air cooled 3CX4500H3 and is recommended for industrial applications where reserve anode dissipation is required.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 7,000 watts
Grid Dissipation (Max.) ..... 150 watts
Frequency for Max. Ratings (CW) ..... 75 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 78.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 35.0 pF
  Output ..... 0.9 pF
  Feed-through ..... 20.0 pF
Amplification Factor 22
Transconductance ..... 20,000 μmhos
Base ..... Flexible leads
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length* ..... 12.56 in; 31.9 cm
Maximum Diameter ..... 3.63 in; 9.22 cm
Weight (approximate) ..... 5.5 lb; 2.5 kg
Operating Position ..... Vertical, base up
*Excluding leads

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Industrial Oscillator or Amplifier	7,000	3.0	6,000	3.0	380	13,300
C	RF Amplifier, Plate Modulated	6,000	3.0	5,000	1.72	175	7,120
AB	AF Amplifier or Modulator	7,000	3.0	5,000	4.80‡	147	16,425‡

‡Two tubes

3-400Z/8163

The 3-400Z/8163 is intended for use as a zero-bias Class B amplifier, in audio or radio-frequency applications, or in Class C service.

Operation with zero grid bias simplifies associated circuitry by eliminating the bias supply, and grounded grid operation is attractive since a power gain as high as twenty times can be obtained with this tube in a cathode-driven circuit.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 400 watts
Grid Dissipation (Max.) ..... 20 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 5.0 volts
  Current ..... 14.1 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 7.1 pF
  Output ..... 4.1 pF
  Feed-through ..... 0.10 pF
Amplification Factor 200
Base ..... 5-Pin Special
Recommended Air-System Socket SK-410
Recommended Air Chimney SK-416
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperature ..... 200°C
Maximum Length: ..... 5.5 in; 139.7 mm
Maximum Diameter: ..... 3.56 in; 90.40 mm
Weight (approximate) ..... 7.0 oz; 198.0 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid driven RF Amplifier	4000	0.35	3000	0.33	25	730
C	Grid driven RF Amplifier Plate Modulated	3000	0.27	3000	0.24	18	550
B	Cathode driven RF Linear Amplifier	4000	0.40	2500	0.27	44	560
B	Grid driven AF Amplifier or Modulator	4000	0.40	3000	0.66*	26	1310*

*Two tubes.

3-500Z

The 3-500Z is intended for use as a zero-bias Class B amplifier in audio or radio frequency applications, or in Class C service.

Operation with zero grid bias simplifies associated circuitry by eliminating the bias supply, and grounded grid operation is attractive since a power gain as high as twenty times can be obtained with this tube in a cathode-driven circuit.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 500 watts
Grid Dissipation (Max.) ..... 20 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 5.0 volts
  Current ..... 14.6 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 8.3 pF
  Output ..... 4.7 pF
  Feed-through ..... 0.1 pF
Amplification Factor 130
Base ..... 5 Pin Special
Recommended Air-System Socket SK-410
Recommended Air Chimney SK-406
Recommended Heat Dissipating Connector HR-6
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperature ..... 200°C
Maximum Length: ..... 6.1 in; 154.94 mm
Maximum Diameter: ..... 3.44 in; 87.40 mm
Weight (approximate) ..... 7.0 oz; 198.0 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid driven RF Amplifier	4000	0.35	3000	0.35	14	720†
C	Grid driven RF Amplifier Plate Modulated	3000	0.27	3000	0.27	25	640
C	Cathode driven RF Linear Amplifier	4000	0.40	3000	0.33	35	700†
AB_2	Cathode driven RF Linear Amplifier	4000	0.40	3000	0.40	46	740†
AB_2	Grid driven AF Amplifier or Modulator	4000	0.40	3000	0.77*	25	1420*

*Two tubes.
†Useful Power Output.

3-1000H

The 3-1000H is a medium-mu triode designed for use in industrial heating services.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Grid Dissipation ..... 50 watts
Cooling ..... Radiation and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 20.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 16 pF
  Output ..... 1 pF
  Feed-through ..... 7.5 pF
Amplification Factor 25
Base ..... 5-Pin Special
Recommended Air System Socket SK-510
Recommended Air Chimney SK-516
Recommended Heat Dissipating Connector HR-8
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperature ..... 200°C
Maximum Length: ..... 7.88 in; 200.2 mm
Maximum Diameter: ..... 5.25 in; 133.4 mm
Weight (approximate) ..... 1.2 lb.; 0.54 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Power Oscillator	6000	0.70	6000	0.70	—	3200

3-1000Z/8164

The 3-1000Z/8164 is intended for use as a Class B amplifier in either the grid or cathode-driven connection, for Class C amplifier service, or as Class B audio amplifiers or modulators. At a plate voltage of 3000 volts, 2 kW PEP input can be run with a single 3-1000Z, providing a power gain of over 20 in a cathode-driven circuit.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 20.0. amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 17.0 pF
  Output ..... 0.2 pF
  Feed-through ..... 7.5 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 17.0 pF
  Output ..... 7.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor 200
Base ..... 5 Pin Special
Recommended Air-System Socket SK-510
Recommended Air Chimney SK-516
Recommended Heat Dissipating Connector HR-8
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperature ..... 200°C
Maximum Length: ..... 7.88 in; 200.20 mm
Maximum Diameter: ..... 5.25 in; 133.40 mm
Weight (approximate) ..... 1.2 lb.; 0.54 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION			
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid driven RF Amplifier	6000	0.70	6000	0.70	57	3200
C	Grid driven RF Amplifier Plate Modulated	4500	0.55	4500	0.50	35	1765
B	Cathode driven RF Linear Amplifier	6000	0.80	3000	0.67	47	1080
B	Grid driven AF Amplifier or Modulator	6000	0.80	5000	1.0*	28	3560*

*Two tubes.

5867A

The 5867A is intended for use in industrial heating applications. The large heat storage capacity of the graphite anode aids in compensating for the wide variations in load generally associated with this type of service. The 5867A is also suitable for use as a RF or AF power amplifier.

CHARACTERISTICS

Plate Dissipation (Max.)	350 watts
Grid Dissipation (Max.)	30 watts
Frequency for Max. Ratings (CW)	50 MHz
Cooling	Forced Air
Filament	Thoriated Tungsten
Voltage	5.0 volts
Current	14.5 amperes
Capacitances (Gnd. Cath. Connection)	
Input	7.5 pF
Output	0.5 pF
Feed-through	6.2 pF
Amplification Factor	25
Transconductance	5,000 μmhos
Base	5-Pin Special
Recommended Air System Socket	SK-410
Recommended Air Chimney	SK-406
Maximum Seal & Anode Core Temperature	220°C
Maximum Length	5.88 in; 149.3 mm
Maximum Diameter	3.44 in; 87.4 mm
Weight (approximate)	6 oz; 168 gm
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Oscillator or Amplifier	4000	0.4	4000	0.38	40	1200
C	RF Industrial Oscillator†	3800	0.36	3500	0.33	—	1100
C	RF Industrial Oscillator*	4500#	0.21	4000#	0.19	—	630

†Industrial application. Single phase, full wave unfiltered plate supply
*Self-rectified
#r.m.s.

4CPX250K/8590

The 4CPX250K/8590 is intended for wideband grid-pulsed radio frequency amplifier and pulse modulator service.

The 4CPX250K/8590 is capable of delivering pulse output power in excess of 10 kW with 10 dB gain when cathode driven at 450 MHz.

The tube is of coaxial construction and especially designed for cavity operation.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 2.7 amperes
Capacitances (Gnd. Grid Connection):
  Input ..... 14.0 pF
  Output ..... 4.1 pF
  Feed-through ..... 0.006 pF
Amplification Factor (g_1-g_2) 5
Base ..... Coaxial
Recommended Air System Socket . Special, collets available
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.81 in; 71.40 mm
Maximum Diameter: ..... 1.64 in; 41.60 mm
Weight (approximate) ..... 4 oz; 114 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier	2500	0.25	2500	250	0.25	2.8	500
C or B	RF Amplifier Grid and Screen Pulsed at 500 MHz	5500	6.0†	5500	1000†	—	1000†	10,000‡
—	Switch Tube or Pulse Modulator	7000	6.0†	6000	750	3.5†	—	17,500†

† Pulse value
‡ Useful Power Output

4CX250B/7203, 4CX250FG/8621

The 4CX250B/7203 and 4CX250FG/8621 have a maximum plate dissipation rating of 250 watts and a maximum input-power rating of 500 watts. The 4CX250B/7203 is designed to operate with a heater voltage of 6.0 volts, while the 4CX250FG/8621 is designed for operation at a heater voltage of 26.5 volts. Otherwise, the two tube types have identical characteristics.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage (4CX250B/7203) ..... 6.0 volts
    (4CX250FG/8621) ..... 26.5 volts
  Current (4CX250B/7203) ..... 2.6 amperes
    (4CX250FG/8621) ..... 0.54 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 15.7 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.04 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 13.0 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.01 pF
Amplification Factor (g_1-g_2) 5
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 2.46 in; 62.50 mm
Maximum Diameter ..... 1.64 in; 41.70 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier up to 175 MHz	2000	0.25	2000	300	0.25	2.9	390
C	RF Amplifier Plate Modulated up to 175 MHz	1500	0.20	1500	250	0.20	1.7	235
AB_1	RF Linear Amplifier up to 175 MHz	2000	0.25	2000	350	0.25	—	300
AB_1	RF Linear Amplifier (AM Service) up to 175 MHz	2000	0.25	2000	350	0.15	—	65†
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	600*

*Two tubes
† Carrier Power

4CX250BC/8957

The 4CX250BC/8957 is especially recommended as a premium-quality replacement for the 4CX250B/7203, in applications where long life and consistent performance are of prime concern and the closer heater voltage tolerance and increased cathode warmup time are acceptable.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 2.4 amperes
Capacitances (Gnd. Grid Connection):
  Input ..... 15.7 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.04 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 13.0 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.01 pF
Amplification Factor (g_1–g_2) 5
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.46 in; 62.50 mm
Maximum Diameter: ..... 1.64 in; 41.70 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier up to 175 MHz	2000	0.25	2000	300	0.25	2.9	390
C	RF Amplifier Plate Modulated up to 175 MHz	1500	0.20	1500	250	0.20	1.7	235
AB_1	RF Linear Amplifier up to 175 MHz	2000	0.25	2000	350	0.25	—	300
AB_1	RF Linear Amplifier up to 175 MHz (AM Service)	2000	0.25	2000	350	0.15	—	65†
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	600*

*Two tubes.
†Carrier Power

4CX250K/8245, 4CX250M/8246

The 4CX250K/8245 and 4CX250M/8246 have a maximum plate dissipation rating of 250 watts and a maximum input-power rating of 500 watts.

All element terminals are coaxial so the tube lends itself to cavity designs for VHF and UHF service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
(Pulsed) ..... 1500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
Voltage (4CX250K/8245) ..... 6.0 volts
(4CX250M/8246 ..... 26.5 volts
Current (4CX250K/8245) ..... 2.7 amperes
(4CX250M/8246) ..... 0.5 amperes
Capacitances (Gnd. Cath. Connection):
Input ..... 27.0 pF
Output ..... 4.7 pF
Feed-through ..... 0.04 pF
Capacitances (Gnd. Grid Connection):
Input ..... 17.0 pF
Output ..... 4.7 pF
Feed-through ..... 0.01 pF
Amplification Factor (g_1–g_2) 5
Base ..... Special, Coaxial
Socket ..... Collets available
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.81 in; 71.40 mm
Maximum Diameter: ..... 1.64 in; 41.70 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Amplifier up to 500 MHz	2000	0.25	2000	300	0.25	—	225*
C	RF Amplifier Plate Modulated up to 175 MHz	1500	0.20	1500	250	0.20	1.7	300
C	RF Amplifier Plate and Screen Pulsed at 1200 MHz	7000	7.0†	7000‡	1200‡	6.0	—	17,000§
B	RF Linear Amplifier TV Service up to 216 MHz	2000	0.25	2000	350	0.36	9	440•
AB_1	RF Linear Amplifier up to 175 MHz	2000	0.25	2000	350	0.25	—	300

* Useful Power Output
† Cathode Current, pulse
‡ Pulse Voltage Values
§ Pulse Power
• Peak of Sync. power

4CX250R/7580W

The 4CX250R/7580W is designed specifically for use in Class AB_1 linear amplifiers where shock and/or vibration preclude the use of nonruggedized tube types. The 4CX250R/7580W will replace the 4CX250B in equipments where the range of bias adjustment will tolerate this higher perveance tube and where tuning range can compensate for the small differences in input and output capacitances.

The 4CX250R/7580W will deliver more output power in most linear amplifiers which presently employ the 4CX250B and it will operate with maximum rated plate and screen voltage applied in equipments where shock and/or vibration is experienced.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
Voltage ..... 6.0 volts
Current ..... 2.6 amperes
Capacitances (Gnd. Cath. Connection):
Input ..... 17.5 pF
Output ..... 4.8 pF
Feed-through ..... 0.04 pF
Amplification Factor (g_1–g_2) 5
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.46 in; 62.50 mm
Maximum Diameter: ..... 1.64 in; 41.70 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
AB_1	RF Linear Amplifier	2000	0.25	2000	400	0.25	—	300
AB_1	RF Linear Amplifier (AM Service)	2000	0.25	2000	400	0.17	—	100†
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	595*

*Two tubes.
†Carrier Power

4CX300A/8167

The 4CX300A/8167 is a compact power tetrode having a maximum plate-dissipation rating of 300 watts.

The ceramic/metal construction and the internally unitized electrode structure combine to make the 4CX300A/8167 especially durable and free from mechanically induced noise under conditions of severe acceleration caused by shock or vibration.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 300 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 2.9 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 29.0 pF
  Output ..... 4.0 pF
  Feed-through ..... 0.04 pF
Amplification Factor (g_1-g_2) 4.8
Transconductance † ..... 12,000 μmhos
Base ..... Special, Breechblock
Recommended Air-System Socket SK-700
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.50 in; 63.50 mm
Maximum Diameter: ..... 1.64 in; 41.60 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier	2000	0.25	2000	250	0.25	2.9	390
C	RF Amplifier at 500 MHz	2000	0.25	2000	250	0.25	—	225‡
C	RF Amplifier Plate Modulated	1500	0.20	1500	250	0.20	1.7	235
AB_1	RF Linear Amplifier	2500	0.25	2500	350	0.25	—	400
AB_1	RF Linear Amplifier (AM Service)	2500	0.25	2500	350	0.15	—	85§
AB_1	AF Amplifier or Modulator	2500	0.25	2500	350	0.50*	—	800*

* Two tubes
† At I_b = 200 mA
‡ Useful Power Output
§ Carrier Power

4CX300Y/8561

The 4CX300Y/8561 is a compact power tetrode having a maximum plate dissipation rating of 400 watts. It may be operated at maximum ratings to 110 MHz.

The ceramic/metal construction and the internally-unitized electrode structure combine to make the 4CX300Y/8561 especially durable and free from mechanically-induced noise under conditions of severe acceleration caused by shock or vibration.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 400 watts
Screen Dissipation (Max.) ..... 8 watts
Grid Dissipation (Max.) ..... 1 watt
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 3.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 34.0 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.04 pF
Amplification Factor (g_1-g_2) 5.6
Base ..... Special, Breeechblock
Recommended Air-System Socket SK-700
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.50 in; 63.50 mm
Maximum Diameter: ..... 1.64 in; 41.60 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier	2000	0.40	2000	250	0.40	3.8	600
C	RF Amplifier Plate Modulated	1500	0.30	1500	250	0.30	1.7	300
AB_1	RF Linear Amplifier	2000	0.40	2000	400	0.38	—	415
AB_1	RF Linear Amplifier (AM Service)	2000	0.40	2000	400	0.20	—	115†
AB_1	AF Amplifier or Modulator	2000	0.40	2000	400	0.75*	—	890*

*Two tubes
†Carrier power

4CX350A/8321, 4CX350F/8322

The 4CX350A/8321 and 4CX350F/8322 have a maximum plate dissipation of 350 watts and are intended for Class AB audio or RF amplifier service. The tube is externally identical to the 4CX250B but contains rugged internal construction features. Amplification factor and cathode area have been increased over the basic 4CX250B to give higher transconductance and figure of merit.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 350 watts
Screen Dissipation (Max.) ..... 8 watts
Grid Dissipation (Max.) ..... 0 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage (4CX350A/8321) ..... 6.0 volts
  (4CX350F/8322) ..... 26.5 volts
  Current (4CX350A/8321) ..... 2.9 amperes
  (4CX350F/8322) ..... 0.73 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 23.6 pF
  Output ..... 5.6 pF
  Feed-through ..... 0.03 pF
Amplification Factor (g_1–g_2) 13
Transconductance † ..... 22,000 μmhos
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.47 in; 62.60 mm
Maximum Diameter: ..... 1.64 in; 41.60 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	2500	0.30	2200	400	0.29	—	385
AB_1	AF Amplifier or Modulator	2500	0.30	2200	400	0.58*	—	770*

*Two tubes.
†At I_b = 150 mA.

4CX350FJ/8904

The 4CX350FJ/8904 is intended for Class AB linear RF amplifier service. The tube has rugged internal construction features.

The 4CX350FJ/8904 may be used as an exact replacement for the 4CX350F/8322 in most applications, requiring only minor circuit adjustment and retuning. The tube has improved intermodulation distortion characteristics. It contains a 26.5 volt heater, and is recommended for new equipment designs.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 350 watts
Screen Dissipation (Max.) ..... 8.0 watts
Grid Dissipation (Max.) ..... 0 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 26.5 volts
  Current ..... 0.65 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 22.0 pF
  Output ..... 5.9 pF
  Feed-through ..... 0.033 pF
Amplification Factor (g_1–g_2) 17
Transconductance † ..... 22,000 μmhos
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-606
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.46 in; 62.60 mm
Maximum Diameter: ..... 1.64 in; 41.60 mm
Weight (approximate) ..... 4 oz; 113 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	2500	0.30	2200	400	0.23	—	250*

*Useful Power Output.
†At I_b = 150 mA.

4CX600B, 4CX600F

The 4CX600B and 4CX600F are designed for use in wideband amplifiers, particularly distributed amplifiers.

The mechanical and electrical features of these tubes are compatible with wideband amplifier circuit requirements; having low lead inductance, low input and output capacitances, small size and high transconductance.

Rugged construction consisting of a unitized electrode structure and direct mounting to the chassis combine to make the 4CX600B and 4CX600F suitable for environments of severe shock and vibration.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 600 watts
Screen Dissipation (Max.) ..... 15 watts
Grid Dissipation (Max.) ..... 3 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage (4CX600B) ..... 6.0 volts
  (4CX600F) ..... 26.5 volts
  Current (4CX600B) ..... 4.3 amperes
  (4CX600F) ..... 1.05 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 45.0 pF
  Output ..... 5.8 pF
  Feed-through ..... 0.15 pF
Input Conductance
  (I_b = 0.6 Adc, f = 30 MHz) .....0.1×10^{-3}mhos
Transconductance
  (I_b = 0.6 Adc) ..... 41,000 μmhos
Base ..... Special
Recommended Screen Bypass Capacitor SK-680
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.45 in; 62.20 mm
Maximum Diameter: ..... 2.08 in; 52.80 mm
Weight (approximate) ..... 7 oz; 198 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
B	RF Amplifier TV Service at 865 MHz	2500	0.60	2000	300	0.60†	52†	585†
AB	RF Amplifier up to 432 MHz	2500	0.60	1800	300	0.60	25	700*
AB	RF Amplifier at 865 MHz	2500	0.60	2000	300	0.60	52	585*
AB	RF Linear Amplifier Broadband Service	3000	0.60	2500	275	0.59	—	1000

*Useful Power Output.
†Sync. level.

4CX600J/8809, 4CX600JA/8921

4CX600J/8809

4CX600JA/8921

The 4CX600J/8809 is a low-voltage, high current tetrode specifically designed for exceptionally low intermodulation distortion and low grid interception.

The 4CX600JA/8921 has a larger anode cooling for reduced cooling air pressure-drop. It is electrically identical to the 4CX600J.

CHARACTERISTICS

Plate Dissipation (Max.)	600 watts
Screen Dissipation (Max.)	15 watts
Grid Dissipation (Max.)	1 watt
Frequency for Max. Ratings (CW)	110 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	6.0 volts
Current	5.4 amperes
Capacitances (Gnd. Cath. Connection):	
Input	50 pF
Output	6.3 pF
Feed-through	0.13 pF
Transconductance	
(I_b = 0.3 Adc, E_{c2} = 350 Vdc)	27,000 μmhos
Base	9-Pin Special
Recommended Air-System Socket	SK-607
Recommended Air Chimney (4CX600J)	SK-646
(4CX600JA)	SK-656
Maximum Seal & Anode Core Temperature	250°C
Maximum Length: (both types)	2.71 in; 68.80 mm
Maximum Diameter: (4CX600J)	2.08 in; 52.80 mm
(4CX600JA)	2.52 in; 64.00 mm
Weight (approximate)	
(4CX600J)	7.7 oz; 218 gm
(4CX600JA)	9.0 oz; 255 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB	RF Linear Amplifier up to 30 MHz	3000	0.60	2500	350	0.68†	—	1100‡
AB	AF Amplifier or Modulator	3000	0.60	2800	350	1.1*	—	1985*

*Two tubes.
†1-tone value; 2-tone $I_b \approx 0.475A$
‡Useful power output; intermodulation distortion products ≈ −40 dB in circuit with 11Ω unbypassed cathode resistor.

4CX600JB

The 4CX600JB is the lower priced version of the highly linear 4CX600J. This type is recommended when operation is to be Class AB_1 or when extra drive power is available for AB_2 operation.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 600 watts
Screen Dissipation (Max.) ..... 15 watts
Grid Dissipation (Max.) ..... 1 watt
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 5.4 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 50 pF
  Output ..... 6.3 pF
  Feed-through ..... .13 pF
Base ..... 9-pin Special
Recommended Air-System Socket SK-607
Recommended Air Chimney SK-646
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.71 in; 68.8 mm
Maximum Diameter: ..... 2.08 in; 52.8 mm
Weight (approximate) ..... 7.7 oz; 218 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	3000	0.60	2000	350	0.50	—	550
AB_1	RF Linear Amplifier	3000	0.60	2800	350	0.57	—	975

4CX1000A/8168

The 4CX1000A/8168 is a low-voltage, high-current tetrode specifically designed for Class AB_1 RF linear-amplifier or audio-amplifier applications where its high gain may be used to advantage.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 0 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 9.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 81.0 pF
  Output ..... 11.8 pF
  Feed-through ..... 0.015 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 35.5 pF
  Output ..... 12.0 pF
  Feed-through ..... 0.004 pF
Transconductance† ..... 37,000 μmhos
Base ..... Special, Breechblock
Recommended Air-System Socket SK-800B
Recommended Air Chimney SK-806
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.80 in; 122.00 mm
Maximum Diameter: ..... 3.37 in; 85.50 mm
Weight (approximate) ..... 27 oz; 0.77 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier at 30 MHz	3000	1.0	3000	325	0.88	—	1630
AB_1	AF Amplifier or Modulator	3000	1.0	3000	325	1.8*	—	3260*

*Two tubes.
†At I_b = 1.0 A.

4CX1000K/8352

The 4CX1000K/8352 is a low-voltage, high-current tetrode, specifically designed for Class AB_1 RF linear-amplifier applications where its high gain and low distortion characteristics may be used to advantage. The 4CX1000K/8352 is similar to the 4CX1000A/8168 but contains a solid screen ring that improves isolation between input and output circuits and permits use of the tube in UHF service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 0 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 9.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 84.0 pF
  Output ..... 13.3 pF
  Feed-through ..... 0.015 pF
Capacitances (Gnd. Cath. Connection):
  Input ..... 35.0 pF
  Output ..... 13.3 pF
  Feed-through ..... 0.003 pF
Transconductance† ..... 37,000 μmhos
Base ..... Special, Breechblock
Recommended Air-System Socket ..... SK-820 or SK-830
Recommended Air Chimney SK-806
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.80 in; 122.00 mm
Maximum Diameter: ..... 3.37 in; 85.50 mm
Weight (approximate) ..... 27 oz; 0.77 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
AB_1	RF Linear Amplifier	3000	1.0	3000	325	0.88	—	1630
AB_1	AF Amplifier or Modulator	3000	1.0	3000	325	1.80*	—	3260*

*Two tubes.
†At I_b = 1.0 A.

4CX1500A

The 4CX1500A is a general purpose tetrode for use up to and through VHF. Insulation is ceramic and the thoriated tungsten filament is a rugged mesh design. The screen terminal is a continuous ring which allows good isolation between the plate circuit and the control grid circuit.

The 4CX1500A is recommended for use as a Class C power amplifier, Class B or Class AB_1 linear amplifier as a regulator, and in pulse modulator service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Screen Dissipation (Max.) ..... 75 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 5.0 volts
  Current ..... 38.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 78.0 pF
  Output ..... 10.5 pF
  Feed-through ..... 0.25 pF
Amplification Factor (g_1–g_2) 5.5
Transconductance † ..... 26,000 μmhos
Base ..... Special, Breechblock
Recommended Air-System Socket SK-831
Recommended Air Chimney SK-806
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.90 in; 124.50 mm
Maximum Diameter: ..... 3.37 in; 85.60 mm
Weight (approximate) ..... 36 oz; 850 gm
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Amplifier at 30 MHz	5000	1.0	4000	500	0.80	3.6	2500
C	RF Amplifier at 220 MHz	3000	1.0	3000	500	1.0	31.5	1500‡
C	RF Amplifier Plate Modulated at 30 MHz	3500	0.8	3400	500	0.90	10	2320
AB	RF Linear Amplifier at 30 MHz	4000	1.0	3900	600	0.75	—	1850
AB	AF Amplifier or Modulator	4000	1.0	3900	600	1.5*	—	3700*

*Two tubes.
†At I_b = 1.0 A.
‡Useful power output.

4CX1500B/8660

The 4CX1500B/8660 is a low-voltage, high-current tetrode specifically designed for exceptionally low intermodulation distortion and low grid interception. The low distortion characteristics make the 4CX1500B/8660 especially suitable for radio-frequency and audio-frequency linear amplifier service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 1 watt
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 10.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 81.5 pF
  Output ..... 11.8 pF
  Feed-through ..... 0.02 pF
Transconductance† ..... 30,000 μmhos
Base ..... Special, Breechblock
Recommended Air-System Socket SK-800B
Recommended Air Chimney SK-806
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.80 in; 121.90 mm
Maximum Diameter: ..... 3.37 in; 85.60 mm
Weight (approximate) ..... 27 oz; 0.77 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB	RF Linear Amplifier	3000	0.90	2900	225	0.71	—	1100‡
AB_1	AF Amplifier or Modulator	3000	0.90	2900	325	1.7*	—	2774*

*Two tubes.
†At I_b = 0.5 A.
‡Useful power output.

4CX1500BC

The 4CX1500BC is a low-voltage, high current tetrode specifically designed for exceptionally low intermodulation distortion and low grid current interception. The tube is recommended for radio-frequency linear amplification to 450 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1,500 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 1 watt
Frequency for Max. Ratings (CW) ..... 450 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 10.0 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 81.5 pF
  Output ..... 11.8 pF
  Feed-through ..... 0.02 pF
Transconductance ..... 30,000 μmhos
Base ..... Special Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 5.13 in; 130.3 mm
Maximum Diameter ..... 3.37 in; 85.60 mm
Weight (approximate) ..... 27 oz; 0.77 kg
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	3,000	0.9	2900	225	0.71	—	1100‡
AB_1	AF Amplifier or Modulator	3,000	0.9	2900	325	1.7*	—	2774*

‡Useful power output
*Two tubes

4CX3000A/8169

The 4CX3000A/8169 is designed to be used as a Class AB_1 linear amplifier in audio or radio-frequency applications. Its characteristics of low intermodulation distortion make it especially suitable for single sideband service.

This tube is unique in that a production test is included to insure minimum distortion products. The 4CX3000A/8169 must produce a minimum of 5300 watts in Class AB_1 service with 3rd order IM distortion at least 32 dB down, from one tone of two-tone signal.

The tube is also recommended for use as a Class C radio-frequency power amplifier and plate-modulated, radio-frequency power amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 3500 watts
Screen Dissipation (Max.) ..... 175 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 9.0 volts
  Current ..... 41.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 130 pF
  Output ..... 12.5 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 61.0 pF
  Output ..... 12.5 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1-g_2) 5.5
Base ..... Special, Breechblock
Recommended Air-System Socket SK-1400
Recommended Air Chimney SK-1406
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 7.90 in; 200.70 mm
Maximum Diameter: ..... 4.63 in; 117.60 mm
Weight (approximate) ..... 5.5 lb; 2.5 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Amplifier at 30 MHz	7000	2.0	7000	500	1.9	41	11,000
C	RF Amplifier Plate Modulated at 30 MHz	5000	1.4	5000	500	1.4	31	5750
AB	RF Linear Amplifier	7000	2.0	5000	850	1.7	—	5300†
AB	AF Amplifier or Modulator	6000	2.0	6000	850	3.1*	—	12,400*

*Two tubes.
†Useful output power.

4CX3500A

The 4CX3500A is a compact tetrode designed to be used in VHF power amplifier service. It features a type of internal structure which results in high RF operating efficiency up to 220 MHz.

This tube is also recommended for use as a VHF TV linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 3,500 watts
Screen Dissipation (Max.) ..... 165 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 220 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 5.0 volts
  Current ..... 90 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 111.0 pF
  Output ..... 12.0 pF
  Feed-through ..... 0.5 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 58.5 pF
  Output ..... 10.0 pF
  Feed-through ..... 0.4 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket ..... SK-340 Family
Recommended Air Chimney SK-346
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 7.25 in; 184.15 mm
Maximum Diameter ..... 4.94 in; 125.48 mm
Weight (approximate) ..... 5.5 lb; 2.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	Grid Driven RF Amplifier†	5,500	2.0	5,000	500	1.32	25	5280
C	Grid Driven RF Amplifier‡	5,500	2.0	4,300	750	1.90	66	5530

†30 MHz
‡100.5 MHz

4CX5000A/8170

The 4CX5000A/8170 is useful as an oscillator, amplifier, or modulator at frequencies up to 220 MHz, Class AB_1 audio amplifier, or as a screen-modulated radio-frequency amplifier.

The rated plate dissipation is 5 kW for most classes of services and 6 kW for Class AB operation.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 75.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 115 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 53.0 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.13 in; 231.80 mm
Maximum Diameter: ..... 4.94 in; 125.40 mm
Weight (approximate) ..... 9.5 lb; 4.31 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	7500†	3.0†	7500	500	2.8	150	16,000
C	RF Amplifier Plate Modulated	5500	2.5	5000	500	1.4	25	5,800
C	RF Amplifier Screen Modulated	7500	3.0	7500	350	1.1	11	3,550
AB_1	RF Linear Amplifier	7500	4.0	7500	1250	1.9	—	10,000
AB_1	AF Amplifier or Modulator	7500	4.0	7000	1250	3.7*	—	17,500*

*Two tubes.
†Derated values apply above 30 MHz to 220 MHz

4CX5000J/8909

The 4CX5000J/8909 incorporates rugged internal construction features, including a mesh filament.

The 4CX5000J/8909 is specifically designed for exceptionally low intermodulation distortion in radio-frequency linear amplifier service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 6000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 103 amperes
Capacitances (Gnd. Cath . Connection):
  Input ..... 120.0 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 56.0 pF
  Output ..... 21.5 pF
  Feed-through ..... 0.10 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.13 in; 231.80 mm
Maximum Diameter ..... 4.94 in; 125.40 mm
Weight (approximate) ..... 9.5 lb; 4.31 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	7500	4.0	4050	800	1.7	—	3150*

*Useful power output; intermodulation distortion products ≈ −40 dB.

4CX5000R/8170W

The 4CX5000R/8170W incorporates rugged internal construction features including a sturdy mesh filament, which allows it to meet demanding vibration and shock specifications.

The 4CX5000R/8170W is useful up to 110 MHz and is recommended for use as a radio-frequency linear amplifier, a Class AB audio amplifier, or a Class C power amplifier or plate-modulated amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 5000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 75.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 115.0 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 53.0 pF
  Output ..... 21.5 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.13 in; 232.00 mm
Maximum Diameter: ..... 4.94 in; 125.00 mm
Weight (approximate) ..... 9.5 lb; 4.31 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	7500	3.0	6500	750	2.3	100	10,000†
C	RF Amplifier Plate Modulated	5000	2.5	5000	500	1.4	25	5,800
AB_1	RF Linear Amplifier	7500	4.0	7500	1250	1.9	—	10,000
AB_1	AF Amplifier or Modulator	7500	4.0	7000	1250	3.7*	—	17,500*

*Two tubes.
†Useful Power Output.

4CX7500A

The 4CX7500A is a compact tet- designed to be used in VHF power amplifier service. It features a type of internal structure which results in high RF operating efficiency up to 220 MHz. A dense mesh filament is used which contributes to the high performance capability of the tube.

This tube is also recommended for use as a VHF TV linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 7,500 watts
Screen Dissipation (Max.) ..... 150 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 220 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.0 volts
  Current ..... 110 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 145 pF
  Output ..... 20.0 pF
  Feed-through ..... 0.53 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 74.1 pF
  Output ..... 20.6 pF
  Feed-through ..... 0.07 pF
Amplification Factor (g_1–g_2) 8
Base ..... Special Coaxial
Recommended Air System Socket SK-340 (hf): SK-350 (vhf)
Recommended Air Chimney SK-346
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.27 in; 235.46 mm
Maximum Diameter ..... 5.66 in; 143.76 mm
Weight (approximate) ..... 8.4 lb; 3.8 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	6,500	3.0	6,450	650	2.20	240	13,600
AB_1	RF Linear Amplifier	8,000	2.5	7,500	1250	2.25	—	10,000

4CX10,000D/8171

The 4CX10,000D/8171 is identical electrically to the 4CX5000A/8170 except for its rated plate dissipation. Its increased dissipation capability, resulting from a larger cooler, is most useful in linear applications where plate dissipation is generally the limiting factor.

The larger cooler also allows the 4CX10,000D/8171 to be used in place of the 4CX5000A/8170 with cooler operation at any given air-flow rate.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 10,000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 75.0 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 115.0 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 53.0 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-1306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.13 in; 232.00 mm
Maximum Diameter: ..... 7.05 in; 179.00 mm
Weight (approximate) ..... 12.0 lb; 5.50 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Power Amplifier	7500†	3.0†	7500	500	2.8	150	16,000
C	RF Power Amplifier Plate Modulated	5000	2.5	5000	500	1.4	25	5,800
AB_1	RF Linear Amplifier	7500	4.0	7500	1500	3.3	—	15,950
AB_1	AF Amplifier or Modulator	7500	4.0	7500	1500	6.7*	—	31,900*

*Two tubes.
†Derated values apply above 30 MHz.

4CX10,000J

The 4CX10,000J has a rated maximum plate dissipation of 12 kW. It incorporates rugged internal construction features, including a mesh filament.

The 4CX10,000J is specifically designed for exceptionally low intermodulation distortion in radio-frequency linear amplifier service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 12,000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 100 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 103 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 120 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 56.0 pF
  Output ..... 21.5 pF
  Feed-through ..... 0.10 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK300A
Recommended Air Chimney SK-1306
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.13 in; 232.00 mm
Maximum Diameter: ..... 7.05 in; 179.00 mm
Weight (approximate) ..... 12.2 lb; 5.50 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	7500	4.0	7500	1600	2.2	—	10,000*

*Useful output power.

4CX12,000A/8989

The 4CX12,000A is intended for use in audio or radio frequency applications. It features an internal mechanical structure which results in high RF operating efficiency. Low RF losses in this structure permit operation at full ratings up to 220 MHz.

The 4CX12,000A has a gain of 18 dB in FM broadcast service, and is also recommended for RF linear amplifier service, and for VHF-TV linear amplifier service. The anode is rated for 15 kilowatts of dissipation with forced-air cooling and incorporates a new highly efficient cooler design.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Screen Dissipation (Max.) ..... 300 watts
Grid Dissipation (Max.) ..... 150 watts
Frequency for Max. Ratings (CW) ..... 220 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 120 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 160 pF
  Output ..... 18.5 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 70 pF
  Output ..... 18.6 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1-g_2) 6.7
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-336
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.84 in; 24.99 mm
Maximum Diameter ..... 7.76 in; 19.71 mm
Weight (approximate) ..... 14 lb; 6.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	3.5	9,000	750	2.83	23*	20,000‡
C	RF Amplifier at 90.5 MHz§	10,000	3.5	9,950	600	3.08	245	22,900†
C	RF Amplifier at 108.1 MHz§	10,000	3.5	10,000	800	2.81	275	22,500†

*Approximate value.
†Useful power, at the load.
‡Plate output power.
§Measured values at frequency shown, in EIMAC cavity amplifier.

4CX15,000A/8281,4CX15,000R

The 4CX15,000A/8281 is intended for use in audio or radio frequency applications. It features a new type of internal mechanical structure which results in higher RF operating efficiency. Low RF losses in this mechanical structure permit operation of the 4CX15,000A/8281 at full ratings up to 110 MHz, and at reduced ratings, to 225 MHz.

The 4CX15,000R is identical to the 4CX15,000A except that it has a mesh filament. It is recommended for VHF TV linear amplifier service to 225 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 160.5 pF
  Output ..... 24.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 67.0 pF
  Output ..... 25.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-316
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.38 in; 238.00 mm
Maximum Diameter: ..... 7.58 in; 193.00 mm
Weight (approximate) ..... 12.8 lb; 5.80 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	6.0	10,000	750	4.6	220	36,500
C	RF Amplifier Plate Modulated	8,000	4.0	8,000	750	3.7	150	23,500
AB_1	RF Linear Amplifier	10,000	6.0	10,000	1500	4.3	—	28,500
AB_1	AF Amplifier or Modulator	10,000	6.0	10,000	1500	8.5*	—	57,700*
—	Television Linear Amplifier†	6,500	5.0	6,000	700	3.3	1350	16,500

* Two tubes
† 4CX15,000R

4CX15,000J/8910

The 4CX15,000J/8910 is intended for use in audio or radio frequency applications. The internal structure features a mesh filament and a mechanical design which assures good strength and high RF operating efficiency.

Full ratings on the 4CX15,000J/8910 apply to 110 MHz, and it is especially recommended for radio frequency linear amplifier service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 15,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 158 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 160.5 pF
  Output ..... 26.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 67.0 pF
  Output ..... 27.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Recommended Air Chimney SK-316
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.38 in; 238.00 mm
Maximum Diameter: ..... 7.58 in; 193.00 mm
Weight (approximate) ..... 12.8 lb; 5.80 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	5.0	10,000	750	4.6	220	36,500
C	RF Amplifier Plate Modulated	8,000	4.0	8,000	750	3.7	150	23,500
AB_1	RF Linear Amplifier	10,000	6.0	7,500	1250	2.9	—	12,000†
AB_1	AF Amplifier or Modulator	10,000	6.0	10,000	1500	8.5*	—	57,000*

*Two tubes.
†Useful output power, −39 dB 3rd and 5th order products.

4CX20,000A/8990

The 4CX20,000A/8990 is a power tetrode intended for use in audio or radio frequency applications. It features an internal mechanical structure which results in high RF operating efficiency. Low RF losses in this structure permit operation at full ratings up to 110 MHz and at reduced ratings to 220 MHz.

The 4CX20,000A/8990 has a gain of over 18 dB in FM broadcast service, and is also recommended for radio-frequency linear power amplifier service, and for VHF-TV linear amplifier service. The anode is rated for 20 kW of dissipation with forced-air cooling and incorporates a new highly efficient cooler design.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 140 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 190 pF
  Output ..... 23.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 83 pF
  Output ..... 24.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1-g_2) 6.7
Base ..... Special, Coaxial
Recommended Air-System Socket SK-320
Recommended Air Chimney SK-326
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 9.5 in; 241.3 mm
Maximum Diameter: ..... 8.8 in; 223.5 mm
Weight (approximate) ..... 14 lb; 6.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	5.0	9,000	900	4.0	26.4*	28,200†
C	RF Amplifier at 88.3 MHz‡	10,000	5.0	9,000	800	4.1	325	28,750**
C	RF Amplifier at 107.7 MHz‡	10,000	5.0	9,000	800	4.2	360	28,900**

*Approximate value.
†Plate output power.
**Useful power, at the load.
‡Measured values at frequency shown, in EIMAC CV-2200 cavity amplifier.

4CX20,000B

The 4CX20,000B is intended for use as a Class C RF power amplifier in AM broadcast service, for use as a push-pull audio amplifier or modulator, or as a pulse modulator.

The anode is rated for 20 kW dissipation and incorporates a highly efficient cooler of new design.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 10.0 volts
  Current ..... 140 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 190 pF
  Output ..... 23.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 83 pF
  Output ..... 24.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1–g_2) 6.7
Base ..... Special Coaxial
Recommended Air System Socket SK-320
Recommended Air Chimney SK-326
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.84 in; 249.90 mm
Maximum Diameter ..... 8.86 in; 225.04 mm
Weight (approximate) ..... 14.0 lb; 6.36 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Power Amplifier	12,500	5.0	9,000	900	4.01	26	28,200
C	RF Power Amplifier Plate Modulated	10,000	5.0	7,800	750	4.60	35	29,000
AB_1	AF Amplifier or Modulator	12,500	6.0	7,800	1,500	9.2*	—	44,000*
—	Pulse Modulator or Regulator	35,000	60‡	—	—	—	—	—

*Two tubes
‡Peak cathode current

4CX20,000C

The 4CX20,000C is recommended for use in audio or RF applications. It features an internal structure having low RF losses, permitting operation at full ratings to 110 MHz.

This tube has a gain of over 18 dB in FM broadcast service. It is also recommended for RF linear amplifier service. The anode is rated for 20 kW of dissipation and incorporates a highly efficient cooler of new design.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 20,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 10.0 volts
  Current ..... 140 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 193 pF
  Output ..... 22.4 pF
  Feed-through ..... 0.6 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 90 pF
  Output ..... 22.9 pF
  Feed-through ..... 0.08 pF
Amplification Factor (g_1–g_2) 6.7
Base ..... Special Coaxial
Recommended Air System Socket SK-360
Recommended Air Chimney SK-326
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.84 in; 249.90 mm
Maximum Diameter ..... 8.86 in; 225.04 mm
Weight (approximate) ..... 14.0 lb; 6.36 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Power Amplifier	12,500	5.0	9,000	900	4.01	26	28,200
C	RF Power Amplifier†	12,500	5.0	12,000	1,000	3.54	340	34,400
AB_1	AF Amplifier or Modulator	12,500	6.0	7,800	1,500	9.20*	—	44,000*

†107.1 MHz
*Two tubes

4CX30,000G

The EIMAC 4CX30,000G is intended for use in audio or RF applications. It features high-stability pyrolytic graphite grids and a type of internal mechanical structure which results in high RF operating efficiency. The tube may be operated to 110 MHz in CW service, and to 230 MHz in VHF-TV service.

The 4CX30,000G is also recommended for FM broadcast and general RF amplifier service. The anode is rated for 30 kilowatts of dissipation with forced-air cooling.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 30,000 watts
Screen Dissipation (Max.) ..... 1,000 watts
Grid Dissipation (Max.) ..... 600 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
(TV) ..... 230 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
Voltage ..... 10.5 volts
Current ..... 175 amperes
Capacitances (Gnd. Cath. Connection)
Input ..... 360 pF
Output ..... 26.0 pF
Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection)
Input ..... 136 pF
Output ..... 27.0 pF
Feed-through ..... 0.09 pF
Amplification Factor (g_1–g_2) 8
Base ..... Special Coaxial
Recommended Air System Socket SK-2400
Recommended Air Chimney SK-2406
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 11.85 in; 300.99 mm
Maximum Diameter ..... 10.08 in; 256.03 mm
Weight (approximate) ..... 55 lb; 25 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	Grid Driven RF Amplifier†	12,000	8.0	11,500	690	7.8	665	66,500
AB	TV Service‡	12,000	8.0	10,000	750	5.2	380	33,000

†108 MHz
‡Peak Sync. level at 225 MHz

4CX35,000C/8349

The 4CX35,000/8349 is intended for use at the 50 to 150 kW output power level. It is recommended for use as a Class C RF amplifier or oscillator a Class AB RF linear amplifier, or a Class AB push-pull AM amplifier or modulator.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 35,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 10.0 volts
Current ..... 295 amperes
Capacitances (Gnd. Cath. Connection):
Input ..... 440 pF
Output ..... 55.0 pF
Feed-through ..... 2.30 pF
Capacitances (Gnd. Grid Connection):
Input ..... 175 pF
Output ..... 57 pF
Feed-through ..... 0.4 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, graduated rings
Recommended Air-System Socket SK-1500A
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 17.34 in; 440.00 mm
Maximum Diameter: ..... 9.75 in; 248.00 mm
Weight (approximate) ..... 50 lb; 22.70 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	20,000	15.0	19,000	750	7.0	258	110,000
C	RF Amplifier Plate Modulated	14,000	15.0	12,000	750	5.4	125	55,000
AB_1	RF Linear Amplifier	20,000	15.0	15,000	1500	5.7	—	55,000
AB_1	AF Amplifier or Modulator	20,000	15.0	12,000	1500	9.2*	—	70,000*

*Two tubes.

4CX40,000G, 4CX40,000GM

The 4CX40,000G power tetrode is intended for use in audio or radio frequency applications. It features a high stability pyrolytic graphite grid and a type of internal mechanical structure which results in high RF operating efficiency. Low RF losses in this structure permit operation at full ratings up to 220 MHz.

The 4CX40,000G is recommended for FM broadcast service and for VHF TV linear amplifier service. The anode is rated for 40 kW of dissipation with forced-air cooling and incorporates a highly efficient cooler of new design.

The 4CX40,000GM is recommended for use in linear amplifier service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 40,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 1,000 watts
Frequency for Max. Ratings (CW) ..... 250 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 15.0 volts
  Current ..... 165 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 447 pF
  Output ..... 36 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid. Connection):
  Input ..... 155 pF
  Output ..... 37 pF
  Feed-through ..... 0.15 pF
Amplification Factor (g_1-g_2) 8
Base ..... Special, graduated rings
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 11.70 in; 29.72 cm
Maximum Diameter ..... 10.06 in; 25.55 cm
Weight (approximate) ..... 55 lb; 25 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	14,000	10.0	10,600	800	7.0	250	60,000

8930

The 8930 is electrically identical to the 4CX250R/7580W but the larger anode radiator assembly allows higher dissipation with low air flow and pressure drop characteristics.

The tube has rugged internal construction features for reliable operation under heavy shock or vibration conditions.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 350 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 2.6 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 17.5 pF
  Output ..... 4.9 pF
  Feed-through ..... 0.03 pF
Amplification Factor (g_1-g_2) 5
Base ..... 9-Pin Special
Recommended Air-System Socket SK-600A
Recommended Air Chimney SK-646
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 2.46 in; 62.60 mm
Maximum Diameter: ..... 2.08 in; 52.80 mm
Weight (approximate) ..... 5.5 oz; 156 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	2400	0.25	2000	350	0.29†	—	350†
AB_1	RF Linear Amplifier AM Service	2000	0.25	2000	400	0.17‡	4	65‡
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	595*

*Two tubes.
†1-tone value; 2-tone $I_b \approx 0.20A$.
‡Carrier value; $I_b = 0.20A$ with 90% modulation.

Y-834

The Y-834 is a power tetrode especially designed for TV translator service and linear operation requiring low intermodulation distortion. It has a plate dissipation of 4.5 kW and is rated for service up to 1000 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 4,500 watts
Screen Dissipation (Max.) ..... 25 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 1000 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.0 volts
  Current ..... 34 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 40 pF
  Output ..... 8.2 pF
  Feed-through ..... 0.02 pF
Amplification Factor (g_1–g_2) 7
Base ..... Special Coaxial
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 5.31 in; 134.9 mm
Maximum Diameter ..... 4.35 in; 116.8 mm
Weight (approximate) ..... 4.6 lb; 1.75 kg
Operating Position ..... Vertical

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Gain (dB)	Output Power (watts)
A	Translator Service Aural and Video Signal	5,000	2.0	4,000	400	0.8†	15.5	1,100

†Black level plus audio

4CV8000A

The 4CV8000A is designed to be used as a Class AB_1 linear amplifier in audio or radio-frequency applications. Its characteristic of low intermodulation distortion makes it specially suitable for single-sideband service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 8,000 watts
Screen Dissipation (Max.) ..... 175 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
Cooling ..... Vapor and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 9.0 volts
  Current ..... 41.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 130 pF
  Output ..... 12.5 pF
  Feed-through ..... 0.8 pF
Amplification Factor (g_1-g_2) 5.5
Base ..... Special Ring and Breechblock Terminal Surfaces
Recommended Air-System Socket SK-1490
Recommended Boiler BR-101
Maximum Seal Temperature ..... 250°C
Maximum Anode Flange Temperature ..... 110°C
Maximum Length: (less Boiler) ..... 7.98 in; 202.70 mm
Maximum Diameter: (less Boiler) ..... 7.87 in; 199.90 mm
Weight (approximate) (less Boiler) ..... 7.0 lb; 3.2 kg.
Operating Position ..... Vertical, base up

		MAXIMUM RATINGS		TYPICAL OPERATION				
Class of Operation	Type of Service	Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier at 30 MHz	7000	2.0	7000	500	1.9	47	11,000
C	RF Amplifier Plate Modulated at 30 MHz	5000	1.4	5000	400	1.3	42	5,500
AB_1	RF Linear Amplifier at 30 MHz	7000	2.0	6000	850	2.0	—	7,250
AB_1	AF Amplifier or Modulator	7000	2.0	6000	850	4.0*	—	14,500*

*Two tubes.

4CV50,000E

The 4CV50,000E is characterized by low input and feedback capacitances and low internal lead inductances. A rugged mesh thoriated tungsten filament provides adequate emission over the long operating life. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier or a Class AB push-pull AF amplifier or modulator. The 4CV50,000E is also useful as a plate and screen modulated Class C RF amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 50,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 400 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Vapor and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 12.0 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 310.0 pF
  Output ..... 52.0 pF
  Feed-through ..... 0.7 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special
Recommended Air-System Socket SK-2011A
Recommended Boiler BR-710A
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: (less Boiler) ..... 11.50 in; 292.10 mm
Maximum Diameter: (less Boiler) ..... 9.53 in; 242.00 mm
Weight (approximate) (less Boiler) ..... 31.5 lb; 14.3 kg.
Operating Position ..... Vertical, base down

		MAXIMUM RATINGS		TYPICAL OPERATION				
Class of Operation	Type of Service	Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	17,500	12.0	15,000	1500	11.5	150	137,000
C	RF Amplifier Plate Modulated	15,000	12.0	14,000	750	9.25	685	110,000
AB_1	RF Linear Amplifier	17,500	12.0	10,000	1800	9.14	—	57,000
AB_1	AF Amplifier or Modulator	17,500	12.0	15,000	1250	18.6*	—	195,000*

*Two tubes.

4CV50,000J

The 4CV50,000J is a vapor-cooled power tetrode intended for use at the 50 to 100 kW output power level. This tube is characterized by low input and feedback capacitances and low internal lead inductances. A rugged mesh thoriated tungsten filament provides adequate emission over the long operating life. It is recommended for use as a class AB_1 RF linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 50,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 400 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Vapor and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 12.0 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 320.0 pF
  Output ..... 48.0 pF
  Feed-through ..... 1.0 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special
Recommended Air-System Socket SK-2011A
Recommended Boiler BR-710A
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: (less Boiler) ..... 11.50 in; 292.10 mm
Maximum Diameter: (less Boiler) ..... 9.53 in; 242.00 mm
Weight (approximate) (less Boiler) ..... 31.5 lb; 14.3 kg.
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	17,500	12.0	8300	1500	9.8	—	45,000

4CV100,000C/8351

The 4CV100,000C/8351 is recommended for use as a Class C RF amplifier or oscillator, a Class AB, RF linear amplifier or a Class AB, push-pull AF amplifier or modulator. The 4CV100,000C/8351 is also useful as a plate and screen modulated Class C RF amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Vapor and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 300 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 440 pF
  Output ..... 55.0 pF
  Feed-through ..... 2.3 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 175 pF
  Output ..... 57.0 pF
  Feed-through ..... 0.4 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special, Graduated Rings
Recommended Air-System Socket SK-1500A
Recommended Boiler BR-300
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: (less Boiler) ..... 17.24 in; 437.90 mm
Maximum Diameter: (less Boiler) ..... 10.07 in; 255.80 mm
Weight (approximate) (less Boiler) ..... 68 lb; 30.9 kg.
Operating Position ..... Vertical, base up

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	20,000	15.0	17,500	1500	11.8	125	168,000
C	RF Amplifier Plate Modulated	17,500	15.0	16,000	750	12.0	1260	138,500†
C	RF Amplifier Plate Modulated (Cathode Driven)	17,500	15.0	15,000	900	11.6	8100	141,000†
AB_1	RF Linear Amplifier	20,000	15.0	18,000	1500	10.0	—	123,200
AB_1	AF Amplifier or Modulator	20,000	15.0	18,000	1500	20.0*	—	246,400*

*Two tubes.
†Carrier conditions.

4CV100,000E

The 4CV100,000E is recommended for use as a Class C RF amplifier, a Class AB RF amplifier, a Class AB push-pull audio amplifier or modulator, as well as a high-level modulated or pulse-duration modulated amplifier. The tube is characterized by low input and feedback capacitances and low internal lead inductance. A rugged mesh thoriated-tungsten filament provides ample emission over long operating life.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 108 MHz
Cooling ..... Vapor and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 470 pF
  Output ..... 61.0 pF
  Feed-through ..... 1.1 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 200 pF
  Output ..... 61.0 pF
  Feed-through ..... 0.4 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special
Recommended Air System Socket SK-2011A
Recommended Boiler BR-710B
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length (less boiler) ..... 15.50 in; 39.37 cm
Maximum Diameter (less boiler) ..... 9.53 in; 24.21 cm
Weight (approximate) (less boiler) ..... 35.0 lb; 15.9 kg
Operating Position ..... Vertical, anode up

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	17,500	16.0	17,500	1,500	13.5	—	168,000
C	RF Amplifier	17,500	16.0	15,000	750	11.7	560	140,000
C	RF Amplifier Plate Modulated	15,000	16.0	15,000	750	11.7	530	140,000†
AB_1	AF Amplifier or Modulator	17,500	16.0	15,000	1,500	19.5*	—	200,000*

†Carrier conditions
*Two tubes

4CV250,000B

The 4CV250,000B is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier or a Class AB push-pull AF amplifier or modulator. The 4CV250,000B is also useful as a plate and screen modulated Class C RF amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250,000 watts
Screen Dissipation (Max.) ..... 3,500 watts
Grid Dissipation (Max.) ..... 1,500 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Vapor and Water
Filament ..... Thoriated tungsten
  Voltage ..... 12.0 volts
  Current ..... 660 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 745 pF
  Output ..... 124 pF
  Feed-through ..... 6.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 324 pF
  Output ..... 128 pF
  Feed-through ..... 1.2 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special
Filament Connectors SK-1710
Grid Connectors SK-1712
Recommended Boiler BR-620
Maximum Seal-& Envelope Temperature ..... 200°C
Maximum Length: (less Boiler) ..... 28.02 in; 17.17 cm
Maximum Diameter: (less Boiler) ..... 15.06 in; 38.26 cm
Weight (approximate): (less Boiler) ..... 180 lb; 82 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	20,000	40.0	19,000	800	32.5	3000	460,000
C	RF Amplifier Plate Modulated	17,500	30.0	15,000	800	22.8	1630	280,000†
AB_1	RF Linear Amplifier	20,000	40.0	20,000	1800	23.0	—	330,000
AB_1	AF Amplifier or Modulator	20,000	40.0	20,000	1800	46.0*	—	660,000*

*Two tubes.
†Carrier conditions.

4CM25,000G

The 4CM25,000G, currently under development, is a power tetrode intended for use in UHF-TV applications through US Channel 80 (806 MHz).

The elements are of a coaxial design utilizing pyrolytic graphite grids in a structure which permits high RF operating efficiency. The anode is rated for 25 kilowatts dissipation with multiphase (water-vapor) liquid cooling.

CHARACTERISTICS

Plate Dissipation (Max.)	25,000 watts
Screen Dissipation (Max.)	400 watts
Grid Dissipation (Max.)	200 watts
Frequency for Max. Ratings (CW)	860 MHz
Cooling	Water and Forced Air
Filament	Thoriated Tungsten mesh
Voltage	6.0 volts
Current	160 amperes
Capacitances (Gnd. Cath. Connection)	
Input	218 pF
Output	14.8 pF
Feed-through	0.5 pF
Capacitances (Gnd. Grid Connection)	
Input	98 pF
Output	15.2 pF
Feed-through	0.1 pF
Amplification Factor (g_1–g_2)	5.5
Base	Special Coaxial
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	8.63 in; 219.20 mm
Maximum Diameter	5.64 in; 143.26 mm
Weight (approximate)	10 lb; 4.5 kg
Operating Position	Any

4CM100,000G

The 4CM100,000G is a tetrode featuring high-stability pyrolytic graphite grids and an internal structure which permits high efficiency operation to 110 MHz. The tube is recommended for Class AB or Class C RF amplifiers, Class AB AF amplifier or modulator service, as well as plate and screen modulated Class C RF amplifier service. The water-vapor cooled anode is rated for 100 kW dissipation.

CHARACTERISTICS

Plate Dissipation (Max.)	100,000 watts
Screen Dissipation (Max.)	1,500 watts
Grid Dissipation (Max.)	1,000 watts
Frequency for Max. Ratings (CW)	110 MHz
Cooling	Water and Forced Air
Filament	Thoriated Tungsten mesh
Voltage	15.0 volts
Current	200 amperes
Capacitances (Gnd. Cath. Connection)	
Input	445 pF
Output	37.0 pF
Feed-through	1.8 pF
Capacitances (Gnd. Grid Connection)	
Input	169 pF pF
Output	39.0 pF
Feed-through	0.2 pF
Amplification Factor (g_1–g_2)	8
Base	Special Coaxial
Recommended Air System Socket	SK-2450
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	15.0 in; 38.1 cm
Maximum Diameter	8.5 in; 21.6 cm
Weight (approximate)	35.0 lb; 15.9 kg
Operating Position	Vertical, anode up

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier, Plate Modulated	14,000	15.0	12,000	500	10.2	600	100

4CM300,000G/9000

The 4CM300,000G/9000 is a power tetrode with pyrolytic graphite control and screen grids for applications requiring tube outputs of 300 kW and above.

The tube is characterized by low input and feedback capacitances and low internal lead inductances. Its rugged mesh thoriated-tungsten filament provides ample emission for long operating life.

The water-vapor cooled anode is rated for 300 kW of dissipation. The pyrolytic grids have high dissipation ratings and low secondary emission characteristics.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 300,000 watts
Screen Dissipation (Max.) ..... 6,000 watts
Grid Dissipation (Max.) ..... 2,000 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.0 volts
  Current ..... 500 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 800 pF
  Output ..... 84.0 pF
  Feed-through ..... 6.0 pF
Amplification Factor (g_1–g_2) 5
Base ..... Special Coaxial
Recommended Air System Socket SK-2450
Maximum Seal & Anode Core Temperature ..... 200°C
Maximum Length ..... 22.50 in; 57.15 cm
Maximum Diameter ..... 13.30 in; 33.80 cm
Weight (approximate) ..... 121 lb; 55 kg
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (kW)
C	Grid Driven RF Amplifier	20,000	50.0	11,000	1,000	35.2	1,440	301

4CM400,000A

The 4CM400,000A is a water-vapor cooled power tetrode designed for very-high power broadcast service to 110 MHz. The tube has a thoriated-tungsten mesh filament mounted on water-cooled supports. Maximum anode dissipation is 400 kilowatts steady state.

Large diameter coaxial terminals are used for the control grid and the RF filament terminals. Filament power and filament support cooling water connections are made through special couplings with threaded clamping rings.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 400,000 watts
Screen Dissipation (Max.) ..... 7,500 watts
Grid Dissipation (Max.) ..... 2,000 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Vapor and Water
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 18.5 volts
  Current ..... 650 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 1,000 pF
  Output ..... 165 pF
  Feed-through ..... 5.0 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 450 pF
  Output ..... 165 pF
  Feed-through ..... 0.7 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Filament Power/Water
  Connectors (2 required) SK-2310
Recommended Filament RF
  Connector (1 required) SK-2315
Recommended Anode Water
  Connectors (2 required) ..... SK-2320 thru SK-2323
Maximum Seal & Anode Core Temperature ..... 200°C
Maximum Length ..... 21.75 in; 55.25 cm
Maximum Diameter ..... 17.03 in; 43.26 cm
Weight (approximate) ..... 170 lb; 77.3 kg
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (kW)
C	RF Amplifier	22,500	65.0	21,000	2,500	63	3,500	1,050†
C	RF Amplifier Plate Modulated‡	17,500	50.0	17,500	800	50	2,400	700†
AB_1	RF Linear Amplifier	22,500	65.0	20,000	1,500	45	—	610†
AB_1	AF Amplifier or Modulator	22,500	65.0	17,500	1,500	78*	—	950*†

‡Carrier Conditions
†Plate Power Output
*Two Tubes

4CPL1000A, 4CPL1000B, 4CPL1000C

4CPL1000A

The 4CPL1000-series tubes are designed for switch tube, pulse modulator, or voltage regulator service. They will pass anode current up to 8 amperes for pulses up to 100 microseconds duration, and derated values of anode current at longer pulse durations.

All three tubes are designed for immersion cooling in a liquid dielectric and can dissipate 1,000 watts. In air, with proper cooling, plate dissipation is 300 watts. The 4CPL1000A mounting is optional; the 4CPL1000B has a special support for environmental stress absorption. The 4CPL1000C has an integral mounting flange.

The tubes are rated to operate at an anode potential up to 15 kVdc when immersed in the recommended coolant. When immersed, the rating is not altitude-dependent.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1,000 watts
Screen Dissipation (Max.) ..... 15 watts
Grid Dissipation (Max.) ..... 2 watts
Cooling ..... Liquid or Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.3 volts
  Current ..... 4.9 amperes
Capacitances:
  g_1–k ..... 26 pF
  g_1–g_2 ..... 33 pF
  g_2–p ..... 5.3 pF
  g_1–p ..... 0.1 pF
  p–k ..... 0.1 pF
  g_2–k ..... 27 pF
Base ..... Special with solder terminals
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Overall Dimensions:
  4CPL1000A Length ..... 2.71 in; 68.83 mm
  Diameter ..... 2.05 in; 51.94 mm
  4CPL1000B Length ..... 2.71 in; 68.83 mm
  Diameter ..... 3.00 in; 76.20 mm
  4CPL1000C Length ..... 2.68 in; 68.07 mm
  Diameter ..... 2.75 in; 69.85 mm
Operating Position ..... Any

4CPL1000B

4CPL1000C

Type of Service	MAXIMUM RATINGS					
	Peak Positive Plate Voltage (volts)	Plate Voltage (volts)	Plate Voltage (volts)	Peak Plate Current (amps)	Screen Voltage (volts)	Grid Voltage (volts)
Pulse Modulator or Switch Tube	20,000†	15,000†	7,000‡	8.0*	700	−150

†In liquid dielectric coolant.
‡In air with recommended minimum cooling.
*Pulse duration, peak current and duty are inter-related.

4CPW10,000R

The 4CPW10,000R is intended for use as a pulse modulator or regulator for use with magnetrons, crossed-field amplifiers, TWT's, klystrons, and other RF power sources. The inherent constant current characteristic of this tetrode is well suited for series switching of plasma-discharge devices, electron-beam welding equipment, etc. The rugged construction of this tube allows it to be used under demanding vibration and shock conditions.

The holdoff voltage rating is 25 kVdc in pulse modulator or regulator service, with a peak anode current rating of 24 amperes.

CHARACTERISTICS

Plate Dissipation (Max.)	10,000 watts
Screen Dissipation (Max.)	250 watts
Grid Dissipation (Max.)	75 watts
Cooling	Water and Forced Air
Filament	Thoriated Tungsten mesh
Voltage	7.5 volts
Current	75 amperes
Capacitances (Gnd. Cath. Connection)	
Input	115 pF
Output	20.0 pF
Feed-through	0.7 pF
Amplification Factor (g_1–g_2)	4.5
Base	Coaxial
Recommended Air System Socket	SK-300A
Recommended Liquid-Cooled Socket	Y-632D
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	11.44 in; 29.06 cm
Maximum Diameter	4.66 in; 11.84 cm
Weight (approximate)	7.5 lb; 3.4 kg
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (kW)
—	Switch Tube or Pulse Modulator	25,000	24.0†	20,000	1,250	20.0†	—	370

†Pulse Value

4CW800B, 4CW800F

The 4CW800B and 4CW800F are designed for use in distributed amplifiers and VHF/UHF power amplifiers.

The mechanical and electrical features of these tubes are compatible with distributed amplifier circuit requirements; i.e., low lead inductance, low input and output capacitance and small size.

Ruggedized construction consisting of a unitized electrode structure and direct mounting to the chassis, combine to make the 4CW800B and 4CW800F suitable for environments of severe shock and vibration.

Anode water fittings not supplied.

CHARACTERISTICS

Plate Dissipation (Max.)	800 watts
Screen Dissipation (Max.)	15 watts
Grid Dissipation (Max.)	3 watts
Frequency for Max. Ratings (CW)	500 MHz
Cooling	Water
Cathode	Oxide-coated Unipotential
Voltage (4CW800B)	6.0 volts
(4CW800F)	26.5 volts
Current (4CW800B)	4.4 amperes
(4CW800F)	1.1 amperes
Capacitances (Gnd. Cath. Connection):	
Input	45.0 pF
Output	5.8 pF
Feed-through	0.15 pF
Input Conductance (I_b = 600 mAdc)	0.1 x 10^{-3} mhos
Transconductance††	40,000 μmhos
Base	Special
Recommended screen bypass capacitor	SK-680
Maximum Seal & Envelope Temperature	250°C
Maximum Length:	3.00 in; 76.20 mm
Maximum Diameter:	2.03 in; 51.60 mm
Weight (approximate)	7 oz; 198.0 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
B	RF Linear Amplifier at 140–250 MHz	3000	0.6	2500	300	0.60	—	820*
B	RF Linear Amplifier at 432 MHz	3000	0.6	2000	300	0.60	†	770*
B	RF Linear Amplifier at 865 MHz	3000	0.6	2000	300	0.60	‡	550*
AB	RF Linear Amplifier, Broadband Service	3000	0.6	2500	275	0.58	—	1000

*Useful Output power.
†Power Gain approx. 15.3 dB at 432 MHz.
‡Power Gain approx. 9 dB at 865 MHz.
††At I_b = 0.6 A

4CW10,000A/8661

The 4CW10,000A is electrically identical to the 4CX10,000D/8171 and 4CX5000A/8170 except for plate dissipation, which is rated at 12 kW. The tube is useful up to 110 MHz and is suggested for general use as an oscillator, amplifier or modulator. A pair of these tubes will deliver more than 30 kW of audio output.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 12,000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 75 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 115 pF
  Output ..... 20.5 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 53 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.16 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket ..... SK-300 Family
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 11.44 in; 29.06 cm
Maximum Diameter ..... 4.66 in; 11.84 cm
Weight (approximate) ..... 7.5 lb; 3.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier to 30 MHz	7,500	3.0	7,500	500	2.8	150	16,000
C	RF Amplifier to 110 MHz	6,500	2.6	—	—	—	—	—
C	RF Amplifier Plate Modulated	5,000	2.5	5,000	500	2.4	120	8,500
AB_1	RF Linear Amplifier	7,500	4.0	7,500	1,500	3.33	—	15,950
AB_1	AF Amplifier or Modulator	7,500	4.0	7,500	1,500	6.66*	—	31,900*

*Two tubes

4CW10,000B

The 4CW10,000B is recommended for use as a linear amplifier for HF and VHF service. It incorporates a special anode cooling jacket and a thoriated-tungsten mesh filament to achieve very low noise modulation of the electron stream.

The tube is rated for full input up to 110 MHz and may be entirely water cooled by the use of a special socket.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 12,000 watts
Screen Dissipation (Max.) ..... 250 watts
Grid Dissipation (Max.) ..... 75 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 7.5 volts
  Current ..... 75 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 120 pF
  Output ..... 20.5 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 56 pF
  Output ..... 21.5 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket ..... SK-300 Family
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 9.0 in; 23.0 cm
Maximum Diameter ..... 4.33 in; 11.0 cm
Weight (approximate) ..... 8.6 lb; 3.9 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB_1	RF Linear Amplifier	7,500	4.0	7,500	1,600	2.2	—	10,000†

†Useful output power

4CW25,000A

The 4CW25,000A is a tetrode intended for use in audio or radio frequency applications. It is recommended for RF linear power amplifier service for television linear amplifier service, and as a switch tube for pulsed regulator service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 25,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 160 pF
  Output ..... 24.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 67 pF
  Output ..... 25.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-300A
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 12.69 in; 322.00 mm
Maximum Diameter: ..... 4.75 in; 121.00 mm
Weight (approximate) ..... 13.5 lb; 6.1 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	5.0	10,000	750	4.5	220	36,500
C	RF Amplifier Plate Modulated	8,000	4.0	8,000	750	3.6	150	23,500
AB_1	RF Linear Amplifier	10,000	6.0	10,000	1500	4.2	—	28,500
AB_1	AF Amplifier or Modulator	10,000	6.0	10,000	1500	8.5*	—	57,000*

*Two tubes.

4CW25,000B

The 4CW25,000B is intended for use in audio or radio frequency applications and features an internal structure which results in high RF operating efficiency. It incorporates a thoriated-tungsten mesh filament and a special anode cooling jacket to achieve very low noise modulation of the electron stream.

The tube is rated at full power to 110 MHz and at reduced ratings to 225 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 25,000 watts
Screen Dissipation (Max.) ..... 450 watts
Grid Dissipation (Max.) ..... 200 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 6.3 volts
  Current ..... 160 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 160 pF
  Output ..... 24.5 pF
  Feed-through ..... 1.5 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 67 pF
  Output ..... 25.5 pF
  Feed-through ..... 0.2 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket ..... SK-300 Family
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 12.7 in; 32.2 cm
Maximum Diameter ..... 4.6 in; 11.8 cm
Weight (approximate) ..... 13.5 lb; 6.1 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	10,000	5.0	10,000	750	4.55	220	36,500
C	RF Amplifier Plate Modulated	8,000	4.0	8,000	750	3.65	150	23,500
AB_1	RF Linear Amplifier	10,000	6.0	10,000	1,500	4.25	—	28,500
AB_1	AF Amplifier or Modulator	10,000	6.0	10,000	1,500	8.5*	—	57,000*
AB_1	Grid Driven TV Service†	6,500	5.0	6,000	700	3.33	1,350	16,500

*Two tubes
†Peak Sync Level at 225 MHz

4CW50,000E

The 4CW50,000E is characterized by low input and feedback capacitances and low internal lead inductances. A rugged mesh thoriated tungsten filament provides adequate emission over the long operating life. It is recommended for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier or a Class AB push-pull AF amplifier or modulator. The 4CW50,000E is also useful as a plate and screen modulated Class C RF amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 50,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 400 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 12.0 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 310 pF
  Output ..... 52.0 pF
  Feed-through ..... 0.7 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 140 pF
  Output ..... 52.0 pF
  Feed-through ..... 0.3 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special, Coaxial
Recommended Air-System Socket SK-2011A
Recommended Water Jacket SK-2050
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 11.50 in; 292.00 mm
Maximum Diameter: ..... 9.53 in; 242.00 mm
Weight (approximate) ..... 35.0 lb; 15.9 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	17,500	12.0	15,000	1500	11.5	150	137,000
C	RF Amplifier Plate Modulated	15,000	12.0	14,000	750	9.2	685	110,000
AB_1	RF Linear Amplifier	17,500	12.0	10,000	1800	9.1	—	57,000
AB_1	AF Amplifier or Modulator	17,500	12.0	15,000	1250	18.6*	—	195,000*

*Two tubes.

4CW50,000J

The 4CW50,000J is characterized by low input and feedback capacitances and low internal lead inductances. A rugged mesh thoriated tungsten filament provides adequate emission over the long operating life. It is recommended for use as a Class AB_1 RF linear amplifier.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 50,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 300 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 12.0 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 310 pF
  Output ..... 48.0 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 123 pF
  Output ..... 50.0 pF
  Feed-through ..... 0.3 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special, coaxial
Recommended Air-System Socket SK-2011A
Recommended Water Jacket SK-2050
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 11.50 in; 292.00 mm
Maximum Diameter: ..... 9.53 in; 242.00 mm
Weight (approximate) ..... 35 lb; 15.9 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
AB	RF Linear Amplifier	17,500	12.0	8300	1500	9.8	—	45,000

4CW100,000D

The 4CW100,000D is recommended for use as a Class C RF amplifier or oscillator, a Class AB, RF linear amplifier or a Class AB, push-pull AF amplifier or modulator. The 4CW100,000D is also useful as a plate and screen modulated Class C RF amplifier, and in pulse modulator-regulator service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 295 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 440 pF
  Output ..... 55.0 pF
  Feed-through ..... 2.3 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 175 pF
  Output ..... 57.0 pF
  Feed-through ..... 0.4 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Graduated Rings
Recommended Air-System Socket SK-1500A
Recommended Water Jacket ..... Integral
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 18.00 in; 457.00 mm
Maximum Diameter: ..... 8.00 in; 203.00 mm
Weight (approximate) ..... 60.0 lb; 27.2 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	20,000	15.0	19,000	750	10.0	1165	165
C	RF Amplifier Plate Modulated	17,500	15.0	16,000	750	10.0	870	138
AB_1	RF Linear Amplifier	20,000	15.0	18,000	1500	10.0	—	123
AB_1	AF Amplifier or Modulator	20,000	15.0	18,000	1500	20.0*	—	246*
—	Switch Tube or Pulse Modulator	40,000	200†	38,000	1500	112‡	16,800‡	3600‡

*Two tubes.
†Pulse cathode current.
‡Pulse value.

4CW100,000E

The 4CW100,000E is ideal for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull AF amplifier or modulator as well as a plate- and screen-modulated Class C RF amplifier. In pulse-modulator service, it can deliver a peak output of 4 megawatts. The tube is characterized by low input and feedback capacitances and low internal lead inductances.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 108 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 370 pF
  Output ..... 60.0 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 175 pF
  Output ..... 60.0 pF
  Feed-through ..... 0.35 pF
Base ..... Special, Coaxial
Recommended Air-System Socket SK-2011A
Recommended Water Jacket SK-2100
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 12.82 in; 325.60 mm
Maximum Diameter: ..... 9.53 in; 242.10 mm
Weight (approximate) (tube only) ..... 38.5 lb; 17.5 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	20,000	16.0	20,000	1500	15.2	120	220
C	RF Amplifier Plate Modulated	17,500	16.0	15,000	750	11.7	530	140
AB_1	RF Linear Amplifier	20,000	16.0	18,000	1500	13.5	—	168
AB_1	AF Amplifier or Modulator	20,000	16.0	15,000	1500	19.5*	—	200*

*Two tubes.

4CW100,000G

The 4CW100,000G is a tetrode intended for Class C HF and VHF service. It features high-stability pyrolytic graphite grids and an internal structure which permits high efficiency operation to 250 MHz. The tube is also recommended for FM broadcast service and for VHF-TV linear amplifier service. The anode is rated for 100 kW with water cooling.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,500 watts
Grid Dissipation (Max.) ..... 1,000 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.0 volts
  Current ..... 170 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 445 pF
  Output ..... 37.0 pF
  Feed-through ..... 1.8 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 169 pF
  Output ..... 39.0 pF
  Feed-through ..... 0.17 pF
Amplification Factor (g_1–g_2) 8
Base ..... Special Coaxial
Recommended Air System Socket SK-2400
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 12.7 in; 32.3 cm
Maximum Diameter ..... 6.4 in; 16.3 cm
Weight (approximate) ..... 27.2 lb; 12.3 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	14,000	12.5	10,600	800	7.0	250	60
C	RF Amplifier†	14,000	12.5	11,500	550	6.4	1,000	53

†100.5 MHz

4CW150,000E

The 4CW150,000E is intended for use as a Class C RF amplifier or oscillator, a Class AB push-pull AF amplifier or modulator as well as a plate-and screen-modulated Class C RF amplifier. In pulse modulator service, it can deliver a peak output of 4 megawatts. The tube is characterized by low input and feedback capacitances and low internal lead inductance.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 150,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 370 pF
  Output ..... 60.0 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 175 pF
  Output ..... 60.0 pF
  Feed-through ..... 0.35 pF
Base ..... Special Coaxial
Recommended Air System Socket SK-2011A
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 14.3 in; 36.2 cm
Maximum Diameter ..... 9.5 in; 24.2 cm
Weight (approximate) ..... 47 lb; 21.4 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	22,000	20.0	20,000	1,500	15.2	120	220
C	RF Amplifier Plate Modulated	17,500	20.0	15,000	750	11.7	530	140
AB_1	RF Linear Amplifier	22,000	20.0	18,000	1,500	13.5	—	168
—	Pulse Modulator	40,000	200†	40,000	2,500	122†	—	4,100‡

†Cathode current, pulse
‡Pulse value

4CW250,000B

The 4CW250,000B is recommended as a Class C amplifier or oscillator; a Class AB RF linear amplifier; a Class AB push-pull AF linear amplifier or modulator; a plate or screen modulated Class C RF amplifier; or for pulse modulator or regulator service. Water jacket not included.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250,000 watts
Screen Dissipation (Max.) ..... 3,500 watts
Grid Dissipation (Max.) ..... 1,500 watts
Frequency for Max. Ratings (CW) ..... 50 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 12.0 volts
  Current ..... 660 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 745 pF
  Output ..... 124 pF
  Feed-through ..... 6.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 324 pF
  Output ..... 128 pF
  Feed-through ..... 1.2 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special
Recommended Filament Connector SK-1710
Recommended Grid Connector SK-1712
Recommended Anode Water Jacket SK-1720
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 27.65 in; 70.23 cm
Maximum Diameter: ..... 13.06 in; 33.17 cm
Weight (approximate) (tube only) ..... 98.0 lb; 44.5 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	20,000	40.0	19,000	800	32.5	3000	460
C	RF Amplifier Plate Modulated	17,500	30.0	14,000	800	29.0	2320	285
AB_1	RF Linear Amplifier	20,000	40.0	20,000	1800	23.0	—	330
AB_1	AF Amplifier or Modulator	20,000	40.0	20,000	1800	46.0*	—	660*

*Two tubes.

4W300B/8249

The 4W300B/8249 is a water-cooled version of the 4CX250B/7203 having an anode dissipation rating of 300 watts. It is intended for use where water cooling is preferred or when reserve anode dissipation is desired.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 300 watts
Screen Dissipation (Max.) ..... 12 watts
Grid Dissipation (Max.) ..... 2 watts
Frequency for Max. Ratings (CW) ..... 500 MHz
Cooling ..... Water and Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 6.0 volts
  Current ..... 2.6 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 15.7 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.04 pF
Capacitances (Gnd. Grid Connection)
  Input ..... 13.0 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.01 pF
Amplification Factor (g_1–g_2) 5
Base ..... 9-Pin Special
Recommended Air System Socket ..... SK-600 Series
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 3.4 in; 86.5 mm
Maximum Diameter ..... 1.56 in; 39.7 mm
Weight (approximate) ..... 5.75 oz; 163 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier up to 175 MHz	2000	0.25	2000	300	0.25	2.9	390
C	RF Amplifier Plate Modulated up to 175 MHz	1500	0.20	1500	250	0.20	1.7	235
AB_1	RF Linear Amplifier up to 175 MHz	2000	0.25	2000	350	0.25	—	300
AB_1	RF Linear Amplifier (AM Service) up to 175 MHz	2000	0.25	2000	350	0.15	—	65†
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	600*

*Two tubes
†Carrier Power

8959

The 8959 is designed for use as a Class C RF amplifier or oscillator, a Class AB RF linear amplifier, or a Class AB push-pull audio amplifier or modulator, as well as a plate and screen modulated Class C RF amplifier.

In pulse modulator service it can deliver a peak output of 4 megawatts.

The tube is characterized by low input and feedback capacitances and low internal lead inductances. Its rugged mesh thoriated tungsten filament provides ample emission for long operating life.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 108 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 370 pF
  Output ..... 60.0 pF
  Feed-through ..... 1.0 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 175 pF
  Output ..... 60.0 pF
  Feed-through ..... 0.35 pF
Base ..... Special, Coaxial
Recommended Air-System Socket SK-2011A
Maximum Seal & Envelope Temperature ..... 250°C
Maximum Length: ..... 12.57 in; 319.30 mm
Maximum Diameter: ..... 8.26 in; 209.80 mm
Weight (approximate) ..... 38.5 lb; 17.5 kg.
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	20,000	16.0	20,000	1500	15.2	120	220
C	RF Amplifier Plate Modulated	17,500	16.0	15,000	750	11.7	530	140
AB_1	RF Linear Amplifier	20,000	16.0	18,000	1500	13.5	—	168
AB_1	AF Amplifier or Modulator	20,000	16.0	15,000	1500	19.5*	—	200*
—	Switch Tube or Pulse Modulator	40,000	200†	40,000	2500	110	—	4100

*Two tubes.
†Cathode current, pulse.

8973 (X-2170)

The 8973 is a power tetrode designed for very-high-powered medium-frequency or high-frequency broadcast service and very-low-frequency communication in the half-megawatt power range.

The 8973 has a thoriated-tungsten filament mounted on water-cooled supports.

The maximum anode dissipation rating is 650 kW steady state.

Large-diameter coaxial terminals are used for the control grid and the RF filament terminals. Filament power and filament support cooling-water connections are made through special couplings with threaded clamping rings.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 650,000 watts
Screen Dissipation (Max.) ..... 7,500 watts
Grid Dissipation (Max.) ..... 2,000 watts
Frequency for Max. Ratings (CW) ..... 70 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 18.5 volts
  Current ..... 650 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 1000 pF
  Output ..... 165 pF
  Feed-through ..... 5.0 pF
Amplification Factor (g_1-g_2) 4.5
Base ..... Special, Coaxial
Recommended Filament Power/Water:
  Connectors (2 required) SK-2310
Recommended Filament RF:
  Connector (1 required) SK-2315
Recommended Anode Water:
  Connectors (2 required) SK-2320
  or SK-2321 or SK-2322
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 18.75 in; 476.20 mm
Maximum Diameter: ..... 17.03 in; 432.60 mm
Weight (approximate) ..... 153.0 lb; 69.5 kg.
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
C	RF Amplifier	22,500	65.0	21,000	1500	63.0	400	1050†
C	RF Amplifier Plate Modulated‡	17,500	50.0	17,500	800	50.0	2400	700†
AB_1	RF Linear Amplifier	22,500	65.0	20,000	1500	45.0	—	610†
AB_1	AF Amplifier or Modulator	22,500	65.0	17,500	1500	78.0*	—	950*†

*Two tubes.
†Plate power output.
‡Carrier conditions.

8974 (X-2159)

The 8974 is a power tetrode designed for very-high-powered medium-frequency or high-frequency broadcast service and very-low-frequency communication in the megawatt power range.

The 8974 has a two-section thoriated tungsten filament mounted on water-cooled supports. The two sections may be fed in quadrature to reduce hum contributed by an ac power source. The maximum anode dissipation rating is 1250 kW steady state.

Large-diameter coaxial terminals are used for the control grid and the RF filament terminals. Filament power and filament support cooling-water connections are made through three special couplings with threaded clamping rings.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1,250 kW
Screen Dissipation (Max.) ..... 15 kW
Grid Dissipation (Max.) ..... 4.0 kW
Frequency for Max. Ratings (CW) ..... 30 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten, two-section
  Voltage ..... 18.5 volts
  Current ..... 650 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 1600 pF
  Output ..... 250 pF
  Feed-through ..... 6 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 675 pF
  Output ..... 260 pF
  Feed-through ..... 1.0 pF
Amplification Factor (g_1-g_2) 4.5
Base Terminals ..... Special, Coaxial
Recommended Filament Power/Water:
  Connectors (3 required) SK-2310
Recommended Filament RF:
  Connector (1 required) SK-2315
Recommended Anode Water:
  Connectors (2 required) SK-2320
  or SK-2321 or SK-2322
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 23.75 in; 60.30 cm
Maximum Diameter: ..... 17.03 in; 43.30 cm
Weight (approximate) ..... 175.0 lb; 80.0 kg.
Operating Position ..... Vertical, base down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (kW)
C	RF Amplifier	22,500	125	21,500	1000	125	7000	2158†
C	RF Amplifier Plate Modulated‡	17,500	100	17,500	1000	95.0	6465	1384†
AB_1	RF Linear Amplifier	22,500	125	20,000	1500	86.5	—	1225†
AB_1	AF Amplifier or Modulator	22,500	125	17,500	1500	146*	—	2015*†

*Two tubes.
†Plate power output.
‡Carrier conditions.

9008 (X-2062J)

The 9008 is a water-cooled power tetrode intended for use as a pulse modulator or in pulse regulator service.

The tube is rated for 100 kVdc hold-off in a protective atmosphere, with a 90 amperes pulse cathode current rating during conduction and a 300 kW anode dissipation rating (average during the pulse).

Peak anode current capability in excess of 150 amperes for short pulse operation is practical.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 300,000 watts
Screen Dissipation (Max.) ..... 3,500 watts
Grid Dissipation (Max.) ..... 1,500 watts
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 12.0 volts
  Current ..... 660 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 770 pF
  Output ..... 122 pF
  Feed-through ..... 4.0 pF
Amplification Factor (g_1-g_2) 4.5
Recommended SF-6 Containment Hood SK-2316
Base ..... Special
Recommended Connectors:
  Filament (2 required) SK-1710
  Control Grid (1 required) SK-1712
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 28.8 in; 73.15 cm
Maximum Diameter: ..... 12.0 in; 30.48 cm
Weight (approximate) ..... 98 lb; 44.5 kg.
Operating Position ..... Vertical only

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (kW)
—	Switch Tube (Maximum regulation range 20 kv)	100,000	90	—	—	—	—	—
—	Pulse Modulator	100,000	90†	83,000*	1000	80	—	6400‡

*Anode voltage during conduction = 3000 volts.
†Peak cathode current.
‡Peak power to the load.

9009

The 9009 is a water-cooled power tetrode intended for use as a pulse modulator or in pulse regulator service.

The tube is rated for 150 kVdc hold-off in a protective atmosphere, with a 90 amperes pulse cathode current rating during conduction and a 1000 kilowatt anode dissipation rating (average during the pulse).

Peak anode current capability in excess of 150 amperes for short pulse operation is practical.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1,000,000 watts
Screen Dissipation (Max.) ..... 3,500 watts
Grid Dissipation (Max.) ..... 1,500 watts
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 12.0 volts
  Current ..... 660 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 770 pF
  Output ..... 50 pF
  Feed-through ..... 4.0 pF
Amplification Factor (g_1-g_2) 4.5
Recommended SF-6 Containment Hood SK-2306
Base ..... Special
Recommended Connectors:
  Filament (2 Required) SK-1711
  Control Grid (1 Required) SK-1712
Maximum Seal & Anode Core Temperature ..... 200°C
Maximum Length ..... 31.0 in; 79.0 cm
Maximum Diameter ..... 17.00 in; 43.18 cm
Weight (approximate) ..... 175 lb; 80 kg
Operating Position ..... Vertical only

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
—	Switch Tube (Maximum regulation range 20 Kv)	150,000	90†	—	—	—	—	—
—	Pulse Modulator	150,000	90†	120,000*	1500	50	—	5800‡

*Anode voltage during conduction = 4000 volts.
†Peak cathode current.
‡Peak power to the load.

9013/Y-676A

The Y-676A is intended for use in pulse modulator or pulse regulator service. It is rated for 75 kV holdoff in a protective atmosphere, with 150 amperes peak cathode current rating during conduction for short pulses. Anode dissipation is 100 kW.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 430 pF
  Output ..... 60.0 pF
  Feed-through ..... 1.5 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket SK-2011A
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 15.97 in; 40.56 cm
Maximum Diameter ..... 9.53 in; 24.2 cm
Weight (approximate) ..... 50.0 lb; 22.7 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (kW)
—	Pulse Modulator	75,000	150	60,000*	1,000	60†	—	3,420‡

*Anode voltage during conduction = 3000V.
†Peak cathode current.
‡Peak power to the load.

X-2062M

The X-2062M is a water-cooled power tetrode intended for use as a pulse modulator or pulse regulator.

The tube is rated for 175 kVdc holdoff in a protective atmosphere, with a 75 ampere pulse-cathode current rating during conduction and a 1000 kilowatt anode dissipation rating (average during the pulse).

Peak anode current capability in excess of 100 amperes for short-pulse operation is practical.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1,000,000 watts
Screen Dissipation (Max.) ..... 3,500 watts
Grid Dissipation (Max.) ..... 1,500 watts
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 12.0 volts
  Current ..... 660 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 770 pF
  Output ..... 45.0 pF
  Feed-through ..... 4.0 pF
Amplification Factor (g_1–g_2) 4.5
Recommended SF-6 Containment Hood SK-2306
Base ..... Special
Recommended Connectors:
  Filament (2 required) SK-1711
  Control Grid (1 required) SK-1712
Maximum Seal & Anode Core Temperature ..... 200°C
Maximum Length ..... 31.0 in; 78.74 cm
Maximum Diameter ..... 17.0 in; 43.18 cm
Weight (approximate) ..... 175 lb; 80 kg
Operating Position ..... Vertical only

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (kW)
—	Switch Tube (Maximum regulation range 20 kV)	175,000	75†	—	—	—	—	—
—	Pulse Modulator	175,000	75†	150,000*	1,000	45	—	6,600‡

*Anode voltage during conduction = 4,000 volts.
†Peak cathode current.
‡Peak power to the load.

Y-841

The Y-841 is a power tetrode intended for use as a pulse modulator or regulator. The rugged mesh filament provides ample emission for long operating life.

Operation at 100 kV is permissible in a protective atmosphere or with oil immerson between the anode and screen grid terminals. The water cooled anode is rated for 100 kW dissipation.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 100,000 watts
Screen Dissipation (Max.) ..... 1,750 watts
Grid Dissipation (Max.) ..... 500 watts
Cooling ..... Water and Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 15.5 volts
  Current ..... 215 amperes
Capacitances (Gnd. Cath. Connection)
  Input ..... 470 pF
  Output ..... 40.0 pF
  Feed-through ..... 0.5 pF
Amplification Factor (g_1–g_2) 4.5
Base ..... Special Coaxial
Recommended Air System Socket SK-2011A
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length ..... 17.01 in; 43.22 cm
Maximum Diameter ..... 9.53 in; 24.21 cm
Weight (approximate) ..... 40 lb; 18.2 kg
Operating Position ..... Vertical, base down

4-65A/8165

The 4-65A/8165 is a small radial-beam tetrode. In most applications, no forced air is required, normal radiation and convection cooling being adequate.

Short, heavy leads and low inter-electrode capacities permit its use at maximum ratings through 150 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 65 watts
Screen Dissipation (Max.) ..... 10 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
Cooling ..... Convection & Radiation
Filament ..... Thoriated Tungsten
  Voltage ..... 6.0 volts
  Current ..... 3.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 7.1 pF
  Output ..... 2.3 pF
  Feed-through ..... 0.1 pF
Amplification Factor (g_1–g_2) 6
Base ..... 5-Pin Special
Recommended Heat Dissipating Connector HR-6
Maximum Seal Temperature ..... 200°C
Maximum Envelope Temperature ..... 225°C
Maximum Length: ..... 4.37 in; 111.00 mm
Maximum Diameter: ..... 2.36 in; 60.40 mm
Weight (approximate) ..... 3 oz; 85.0 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	3000	0.15	3000	250	0.11	1.6	270
C	RF Amplifier Plate Modulated	2500	0.12	2500	250	0.10	3.1	210
AB_1	RF Linear Amplifier	3000	0.15	3000	400	0.06	—	120
AB_1	AF Amplifier or Modulator	3000	0.15	3000	400	0.12*	—	240*

*Two tubes.

4-125A/4D21

The 4-125A/4D21 is intended for use as an amplifier, oscillator, or modulator. It has a maximum plate voltage rating of 3 kV at frequencies up to 120 MHz.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 125 watts
Screen Dissipation (Max.) ..... 20 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 120 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 5.0 volts
  Current ..... 6.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 10.8 pF
  Output ..... 3.1 pF
  Feed-through ..... 0.05 pF
Amplification Factor (g_1–g_2) 5.9
Base ..... 5-Pin Special
Recommended Air-System Socket SK-410
Recommended Heat Dissipating Connector HR-6
Maximum Seal Temperature ..... 200°C
Maximum Envelope Temperature ..... 225°C
Maximum Length: ..... 5.69 in; 144.50 mm
Maximum Diameter: ..... 2.81 in; 71.40 mm
Weight (approximate) ..... 6.5 oz; 184.0 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	3000	0.22	3000	350	0.17	2.5	375
C	RF Amplifier Plate Modulated	2500	0.20	2500	350	0.15	3.3	300
AB_1	AF Amplifier or Modulator	3000	0.22	2500	600	0.23*	—	330*
AB_2	AF Amplifier or Modulator	3000	0.22	2500	350	0.26*	2.4	400*

*Two tubes.

4-250A/5D22

The 4-250A/5D22 is intended for use as an amplifier, oscillator or modulator. The low grid-plate capacitance of this tetrode coupled with its low driving-power requirement allows considerable simplification of the associated circuit and driver stage.

The 4-250A/5D22 is cooled by radiation from the plate and by circulation of forced-air through the base, around the envelope, and over the plate seal.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 250 watts
Screen Dissipation (Max.) ..... 35 watts
Grid Dissipation (Max.) ..... 10 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 5.0 volts
  Current ..... 14.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 12.7 pF
  Output ..... 4.5 pF
  Feed-through ..... 0.12 pF
Amplification Factor (g_1-g_2) 5.1
Transconductance† ..... 4000 μmhos
Base ..... 5-Pin Special
Recommended Air-System Socket SK-410
Recommended Air Chimney SK-406
Recommended Heat Dissipating Connector HR-6
Maximum Plate Seal Temperature ..... 200°C
Maximum Base Seal Temperature ..... 170°C
Maximum Length: ..... 6.38 in; 162.00 mm
Maximum Diameter: ..... 3.56 in; 90.40 mm
Weight (approximate) ..... 8 oz; 227 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	4000	0.35	4000	500	0.31	2.5	1000
C	RF Amplifier Plate Modulated	3200	0.27	3000	400	0.23	3.2	510
AB_1	RF Linear Amplifier	4000	0.35	3000	600	0.20	—	350
AB_1	AF Amplifier or Modulator	4000	0.35	3000	600	0.42*	—	750*
AB_2	AF Amplifier or Modulator	4000	0.35	3000	300	0.47*	4.6	1040*

*Two tubes.
†At I_b = 100 mA.

4-400A/8438

The 4-400A/8438 is intended for use as an amplifier, oscillator or modulator. The low grid-plate capacitance of this tetrode coupled with its low driving-power requirement allows considerable simplification of the associated circuit and driver stage.

The 4-400A/8438 is cooled by radiation from the plate and by circulation of forced-air through the base, around the envelope, and over the plate seal. Cooling can be greatly simplified by using an EIMAC SK-410 Air-System Socket and its accompanying glass chimney.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 400 watts
Screen Dissipation (Max.) ..... 35 watts
Grid Dissipation (Max.) ..... 10 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 5.0 volts
  Current ..... 14.7 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 12.5 pF
  Output ..... 4.7 pF
  Feed-through ..... 0.12 pF
Amplification Factor (g_1-g_2) 5.1
Transconductance† ..... 4000 μmhos
Base ..... 5-Pin Special
Recommended Air-System Socket SK-410
Recommended Air Chimney SK-406
Recommended Heat Dissipating Connector HR-6
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperature ..... 200°C
Maximum Length: ..... 6.38 in; 162.00 mm
Maximum Diameter: ..... 3.56 in; 90.40 mm
Weight (approximate) ..... 9.0 oz; 225 gm
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps	Drive Power (watts)	Output Power (watts)
C	RF Amplifier at 75 MHz	4000	0.35	4000	500	0.35	5.8	1100
C	RF Amplifier at 110 MHz	4000	0.35	4000	500	0.54*	20	1440††
C	RF Amplifier Plate Modulated at 75 MHz	3200	0.27	3000	500	0.27	3.5	630
AB_1	RF Linear Amplifier at 75 MHz	4000	0.35	3000	750	0.29	—	470††
AB_1	AF Amplifier or Modulator	4000	0.35	4000	750	0.59*	—	1540*
AB_2	AF Amplifier or Modulator	4000	0.35	4000	500	0.64*	7.0	1750*

*Two tubes.
††Useful Output Power.
†At I_b = 100 mA.

4-400C/6775

The 4-400C/6775 is intended for use as an amplifier, oscillator, or modulator. The low grid-plate capacitance of this tetrode coupled with its low driving-power requirement allows considerable simplification of the associated circuit and driver stage.

The 4-400C/6775 is cooled by radiation from the plate and by circulation of forced-air through the base, around the envelope, and over the plate seal. Cooling can be greatly simplified by using an EIMAC SK-410 Air-System Socket, and its accompanying glass chimney.

The 4-400C/6775 is especially recommended for applications where long life and consistent performance are of prime consideration.

CHARACTERISTICS

Plate Dissipation (Max.)	400 watts
Screen Dissipation (Max.)	35 watts
Grid Dissipation (Max.)	10 watts
Frequency for Max. Ratings (CW)	110 MHz
Cooling	Radiation & Forced Air
Filament	Thoriated Tungsten
Voltage	5.0 volts
Current	14.7 amperes
Capacitances (Gnd. Cath. Connection):	
Input	12.5 pF
Output	4.7 pF
Feed-through	0.12 pF
Amplification Factor (g_1–g_2)	5.1
Transconductance†	4000 μmhos
Base	5-Pin Special
Recommended Air-System Socket	SK-410
Recommended Air Chimney	SK-406
Recommended Heat Dissipating Connector	HR-6
Maximum Plate Seal Temperature	225°C
Maximum Base Seal Temperature	200°C
Maximum Length:	6.38 in; 162.00 mm
Maximum Diameter:	3.56 in; 90.40 mm
Weight (approximate)	9.0 oz; 255 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier at 75 MHz	4000	0.35	4000	500	0.35	5.8	1100
C	RF Amplifier at 110 MHz	4000	0.35	4000	500	0.54*	20	1400††
C	RF Amplifier Plate Modulated at 75 MHz	3200	0.27	3000	500	0.27	3.5	630
AB_1	RF Linear Amplifier at 75 MHz	4000	0.35	3000	750	0.29	—	470††
AB_1	AF Amplifier or Modulator	4000	0.35	4000	750	0.59*	—	1540
AB_2	AF Amplifier or Modulator	4000	0.35	4000	500	0.64*	7.0	1750*

*Two tubes.
††Useful Output Power.
†At I_b = 100 mA.

4-500A, 4-500B

4-500A

The 4-500A is intended for use as an amplifier, oscillator, or modulator. The low grid-plate capacitance of this tetrode coupled with its low driving-power requirement allows considerable simplification of the associated circuit and driver stage.

The 4-500A is especially recommended for applications where long life and consistent performances are of prime consideration.

The 4-500B is similar to the 4-500A except for slightly higher gain and better linearity. It is intended for use in RF linear amplifier service.

The 4-500B is especially recommended for applications where long life and consistent performances are of prime consideration.

See 4-500A for maximum ratings and typical operating data.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 500 watts
Screen Dissipation (Max.) ..... 35 watts
Grid Dissipation (Max.) ..... 12 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 10.2 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 15.0 pF
  Output ..... 5.0 pF
  Feed-through ..... 0.15 pF
Amplification Factor (g_1–g_2) 5.5
Base ..... 5-Pin Special
Recommended Air-System Socket SK-410
Recommended Air Chimney SK-426
Recommended Heat Dissipating Connector HR-6
Maximum Base Seal Temperature ..... 200°C
Maximum Plate Seal Temperature ..... 225°C
Maximum Length: ..... 7.00 in; 177.80 mm
Maximum Diameter: ..... 3.56 in; 90.40 mm
Weight (approximate) ..... 8.7 oz; 245 gm
Operating Position ..... Vertical, base up or down

4-500B

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier at 75 MHz	4000	0.45	3800	500	0.45	9.0	1265
C	RF Amplifier Plate Modulated at 30 MHz	3200	0.35	3200	500	0.34	5.8	830
AB_1	RF Linear Amplifier at 30 MHz	4000	0.45	4000	750	0.32	—	773
AB_1	AF Amplifier or Modulator	4000	0.45	3800	750	0.72*	—	1720*

*Two tubes.

4-1000A/8166

The 4-1000A/8166 is intended for use as an amplifier, oscillator, or modulator and is capable of efficient operation well into the VHF range.

In FM broadcast service on 110 MHz, two 4-1000A/8166 tetrodes will deliver a useful output power of over 5 kW.

Cooling of the tube is accomplished by radiation from the plate and by circulation of forced-air through the base and around the envelope. Cooling can be simplified through the use of an EIMAC SK-510 Air-System Socket and its accompanying glass chimney.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Screen Dissipation (Max.) ..... 75 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 21.3 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 28.1 pF
  Output ..... 8.1 pF
  Feed-through ..... 0.3 pF
Amplification Factor (g_1–g_2) 6.9
Transconductance ..... 10,000 μmhos
Base ..... 5-Pin Special
Recommended Air-System Socket SK-510
Recommended Air Chimney SK-506
Recommended Heat Dissipating Connector HR-8
Maximum Seal Temperature ..... 200°C
Maximum Envelope Temperature ..... 225°C
Maximum Length: ..... 9.63 in; 244.60 mm
Maximum Diameter: ..... 5.25 in; 133.30 mm
Weight (approximate) ..... 1.5 lb; 0.68 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
C	RF Amplifier at 30 MHz	6000	0.70	6000	500	0.70	15	3400
C	RF Amplifier at 110 MHz	6000	0.70	6000	500	1.25*	400	5200*†
C	RF Amplifier Plate Modulated at 30 MHz	5000	0.60	5000	500	0.60	11	2440†
AB_1	AF Amplifier or Modulator	6000	0.70	6000	1000	0.95*	—	3840*
AB_2	AF Amplifier or Modulator	6000	0.70	6000	500	0.95*	9.4	3900*

*Two tubes.
†Useful Output Power.

4PR60C/8252W

The 4PR60C/8252W is intended for pulse-modulator service in circuits employing inductive or resistive loads. This tube unilaterally replaces the 715C, the 5D21 and the 4PR60B/8252. The internal structure of the tube has been strengthened to minimize the effects of shock and vibration.

The 4PR60C/8252W has a maximum plate dissipation rating of 60 watts, is cooled by radiation and convection, and delivers pulse output power in the region of 300 kW with less than one kW of pulse driving power.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 60 watts
Screen Dissipation (Max.) ..... 8 watts
Grid Dissipation (Max.) ..... 1 watt
Cooling ..... Radiation & Forced Air
Cathode ..... Oxide-coated Unipotential
  Voltage ..... 26.0 volts
  Current ..... 2.1 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 43.0 pF
  Output ..... 8.5 pF
  Feed-through ..... 1.5 pF
Base ..... 4-Pin Special
Recommended Heat Dissipating Connector HR-8
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 6.00 in; 152.40 mm
Maximum Diameter: ..... 3.06 in; 77.90 mm
Weight (approximate) ..... 12 oz; 0.34 kg.
Operating Position ..... Any

Class of Operation	Type of Service	MAXIMUM RATINGS: Plate Voltage (volts)	MAXIMUM RATINGS: Plate Current (amps)	TYPICAL OPERATION: Plate Voltage (volts)	TYPICAL OPERATION: Screen Voltage (volts)	TYPICAL OPERATION: Plate Current (amps)	TYPICAL OPERATION: Drive Power (watts)	TYPICAL OPERATION: Output Power (watts)
—	Switch Tube or Pulse Modulator	20,000	18.0*	20,000	1250	18.0*	—	337,000*

*During the pulse.

4PR65A/8187

The 4PR65A/8187 is intended for use in pulse-modulator, pulsed-amplifier, and pulsed-oscillator service. This compact, high vacuum, radial-beam tetrode is recommended for use in new equipments where high voltage, high current, or high duty factor is encountered.

Cooling of the tube is accomplished by radiation from the plate and by circulation of forced-air through the base and around the envelope.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 65 watts
Screen Dissipation (Max.) ..... 10 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
(Pulsed) ..... 150 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 6 volts
Current ..... 3.5 amperes
Capacitances (Gnd. Grid Connection):
Input ..... 7.2 pF
Output ..... 2.25 pF
Feed-through ..... 0.12 pF
Amplification Factor (g_1 −g_2) 6
Base .....5-Pin Special
Maximum Seal & Envelope Temperature .....200°C
Maximum Length: ..... 4.37 in; 111 mm
Maximum Diameter: ..... 2.38 in; 60.4 mm
Weight (approximate) ..... 3 oz; 0.085 kg
Operating Position ..... Vertical base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier Plate and Screen Pulsed	10,000	1.5	10,000	500	0.2	5.3‡	1,720
C	RF Amplifier Grid Pulsed	7,500	1.5	7,500	500	0.2	4.9	1,265
—	Switch Tube or Pulse Modulator	15,000	1.0	15,000	500	0.95	44.5	13,600

‡When used as a plate and screen pulsed amplifier, the grid drive must also be pulsed to avoid overheating the grid.

4PR125A/8247

The 4PR125A/8247 is intended for use in pulse-modulator, pulsed-amplifier, and pulsed-oscillator service. This compact high vacuum, radial-beam tetrode is recommended for use in new equipments where high voltage, high current, or high duty factor is encountered.

Cooling of the tube is accomplished by radiation from the plate and by circulation of forced-air through the base and around the envelope. Cooling can be simplified by the use of the EIMAC SK-410 Air-System Socket and the SK-406 Air Chimney.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 125 watts
Screen Dissipation (Max.) ..... 20 watts
Grid Dissipation (Max.) ..... 5 watts
Frequency for Max. Ratings (CW) ..... 120 MHz
(Pulsed) ..... 120 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
Voltage ..... 5 volts
Current ..... 6.5 amperes
Capacitances (Gnd. Grid Connection):
Input ..... 10.8 pF
Output ..... 3 pF
Feed-through ..... 0.07 pF
Amplification Factor (g_1 −g_2) 5.9
Base .....5-Pin Metal Shell
Recommended Air System Socket SK-410
Recommended Air Chimney SK-406
Maximum Seal & Envelope Temperature .....200°C
Maximum Length: .....5.69 in; 1445 mm
Maximum Diameter: ..... 2.81 in; 71.4 mm
Weight (approximate) ..... 6.5 oz; 0.184 kg
Operating Position ..... Vertical Base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier Plate and Screen Pulsed	12,000	2.5	12,000	1000	0.416	3.25‡	4,000
C	RF Amplifier Grid Pulsed	9,000	2.5	9,000	1000	0.416	3.2	2,880
—	Switch Tube or Pulse Modulator	18,000	1.5	18,000	1000	1.0	7.7	17,000

‡When used as a plate and screen pulsed amplifier, the grid drive must also be pulsed to avoid overheating the grid.

4PR250C/8248

The 4PR250C/8248 is intended for use in pulse-modulator, switch tube, pulsed-amplifier, and pulsed-oscillator service. This compact, high vacuum, radial-beam tetrode, incorporating a tantalum plate and non-emitting grids, is recommended for use where voltages to 50 kV are required.

CHARACTERISTICS

Plate Dissipation (Max.)	250 watts
Screen Dissipation (Max.)	25 watts
Grid Dissipation (Max.)	5 watts
Frequency for Max. Ratings (Pulsed)	100 MHz
Cooling	Radiation & Forced Air
Filament	Thoriated Tungsten
Voltage	5.0 volts
Current	14.7 amperes
Capacitances (Gnd. Cath. Connection):	
Input	13.0 pF
Output	3.3 pF
Feed-through	0.12 pF
Amplification Factor (g_1–g_2)	5.1
Base	5-Pin Special
Recommended Air-System Socket	SK-410
Recommended Heat Dissipating Connector	HR-8
Maximum Seal & Envelope Temperature	200°C
Maximum Length:	7.63 in; 193.70 mm
Maximum Diameter:	3.59 in; 91.30 mm
Weight (approximate)	12.5 oz; 355 gm
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier Plate and Screen Pulsed	35,000	5.5*	35,000†	1500†	0.9†	4.5‡	26,500†
C	RF Amplifier Grid Pulsed	25,000	5.5*	25,000	1500	0.94†	4.7†	19,000†
—	Switch Tube or Pulse Modulator	50,000	4.0	50,000	1500	4.0†	25†	192,000†

*Cathode peak current.
†Pulse values.
‡When used as a plate and screen pulsed amplifier, the grid drive must also be pulsed to avoid overheating the grid.

4PR400A/8188

The 4PR400A/8188 is intended for use in pulse-modulator, pulsed-amplifier, and pulsed-oscillator service. This compact tetrode is recommended for use in new equipments where high voltage, high current, or high duty factor is encountered.

Cooling of the tube is accomplished by radiation from the plate and by circulation of forced air through the base and around the envelope. Cooling can be simplified by the use of the EIMAC SK-410 Air System Socket and the SK-406 Air Chimney.

CHARACTERISTICS

Plate Dissipation (Max.)	400 watts
Screen Dissipation (Max.)	35 watts
Grid Dissipation (Max.)	10 watts
Frequency for Max. Ratings (Pulsed)	110 MHz
Cooling	Radiation & Forced Air
Filament	Thoriated Tungsten
Voltage	5.0 volts
Current	14.7 amperes
Capacitances (Gnd. Cath. Connection):	
Input	12.5 pF
Output	4.7 pF
Feed-through	0.12 pF
Amplification Factor (g_1–g_2)	5.1
Base	5-Pin Special
Recommended Air-System Socket	SK-410
Recommended Air Chimney	SK-406
Recommended Heat Dissipating Connector	HR-6
Maximum Seal & Envelope Temperature	200°C
Maximum Length:	6.37 in; 161.90 mm
Maximum Diameter:	3.56 in; 90.50 mm
Weight (approximate)	9.0 oz; 255.0 gm
Operating Position	Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier Plate and Screen Pulsed	15,000	5.4*	15,000†	1500†	0.87†	9.0‡	10,500†
C	RF Amplifier Grid Pulsed	10,000	5.4*	10,000	1500	0.87†	8.5†	6,600†
—	Switch Tube or Pulse Modulator	20,000	4.0	20,000	1500	3.5†	35†	64,000†

*Cathode peak current.
†Pulse Value.
‡When used as a plate and screen pulsed amplifier, the grid drive must also be pulsed to avoid overheating the grid.

4PR1000A/8189

The 4PR1000A/8189 is intended for use in pulse-modulator, pulsed-amplifier, and pulsed-oscillator service. This compact, tetrode is recommended for use in new equipments where high voltage, high current, or high duty factor is encountered.

Cooling is accomplished by radiation from the plate and by circulation of forced air through the base and around the envelope. Cooling is simplified by the use of the EIMAC SK-510 Air-System Socket and the SK-506 Air Chimney.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1000 watts
Screen Dissipation (Max.) ..... 75 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (Pulsed) ..... 110 MHz
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.5 volts
  Current ..... 21.3 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 28.1 pF
  Output ..... 8.1 pF
  Feed-through ..... 0.25 pF
Base ..... 5-Pin Special
Recommended Air-System Socket SK-510
Recommended Air Chimney SK-506
Recommended Heat Dissipating Connector HR-8
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 9.62 in; 244.50 mm
Maximum Diameter: ..... 5.25 in; 133.30 mm
Weight (approximate) ..... 1.5 lb; 0.68 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier Plate and Screen Pulsed	20,000	8	20,000†	1500†	1.95†	15.7‡	31,500†
C	RF Amplifier Grid Pulsed	15,000	8	15,000	1500	1.95†	15.2†‡	23,000†
—	Switch Tube or Pulse Modulator	30,000	8†	30,000	1500	8.0†	116†	220,000†

†Pulse Value.
‡When used as a plate and screen pulsed amplifier, the grid drive must also be pulsed to avoid overheating the grid.

8960

The 8960 is designed for high power pulse modulator or switch tube service, operating at voltages up to 50 kVdc or anode current as high as 12 amperes.

Cooling is accomplished by radiation from the plate and by circulation of forced air through the base and around the envelope. Cooling is simplified by use of the EIMAC SK-510 Air-System Socket and the SK-506 Air Chimney.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1200 watts
Screen Dissipation (Max.) ..... 75 watts
Grid Dissipation (Max.) ..... 25 watts
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 7.0 volts
  Current ..... 36 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 28.0 pF
  Output ..... 6.3 pF
  Feed-through ..... 0.30 pF
Amplification Factor (g_1-g_2) 7
Base ..... 5-Pin special
Recommended Air-System Socket SK-510
Recommended Air Chimney SK-506
Recommended Heat Dissipating Connector HR-8
Maximum Seal & Envelope Temperature ..... 200°C
Maximum Length: ..... 9.62 in; 24.48 mm
Maximum Diameter: ..... 5.25 in; 13.33 mm
Weight (approximate) ..... 1.5 lb; 0.68 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
—	Pulse Modulator or Switch Tube	50,000	12 •	45,000	1500	10 •	75	425,000

• Peak value.

4CS250R

The 4CS250R is electrically identical to the 4CX250R except that the maximum dissipation of the 4CS250R is limited only by the maximum allowable anode and ceramic/metal seal temperatures. A beryllium oxide (BeO) thermal link is brazed to the anode providing an electrically isolated, low thermal resistance path between the anode and the heat sink. Ruggedized construction allows the 4CS250R to be operated in applications where shock and/or vibration is experienced.

CHARACTERISTICS

Plate Dissipation (Max.)	Dependent on Cooling Technique
Screen Dissipation (Max.)	12 watts
Grid Dissipation (Max.)	2 watts
Frequency for Max. Ratings (CW)	500 MHz
Cooling	Conduction
Cathode	Oxide-coated Unipotential
Voltage	6.0 volts
Current	2.6 amperes
Capacitances (Gnd. Cath. Connection):	
Input	17.0 pF
Output	4.7 pF
Feed-through	0.04 pF
Base	9-Pin Special
Recommended Socket	SK-660, SK-661
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	2.46 in; 62.60 mm
Maximum Diameter:	1.76 in; 44.90 mm
Weight (approximate)	5 oz; 141.7 gm
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier at 175 MHz	2000	0.25	2000	250	0.24	1.1	379
C	RF Amplifier Plate Modulated	1500	0.20	1500	250	0.20	1.7	235
AB_1	RF Linear Amplifier	2000	0.25	2000	400	0.24	—	470†
AB_1	AF Amplifier or Modulator	2000	0.25	2000	350	0.50*	—	595*

*Two tubes.
†Useful PEP Output Power.

8560A

The 8560A is intended for use as an RF amplifier or oscillator or in audio amplifier or modulator service. It has electrical characteristics similar but not identical to the 4CX250B/7203.

The 8560A is designed for conduction cooling and is nominally rated for 200 watts anode dissipation. A thermal link is available to insulate the anode from the heat sink while allowing for heat conduction from the anode to the sink.

CHARACTERISTICS

Plate Dissipation[1] (Max.)	200 watts
Screen Dissipation (Max.)	12 watts
Grid Dissipation (Max.)	2 watts
Frequency for Max. Ratings (CW)	500 MHz
Cooling	Conduction
Cathode	Oxide-coated Unipotential
Voltage	6.3 volts
Current	2.6 amperes
Capacitances (Gnd. Cath. Connection)	
Input	16.5 pF
Output	4.6 pF
Feed-through	0.04 pF
Amplification Factor (g_1–g_2)	5
Base	9-Pin Special
Recommended Air System Socket	EIMAC SK-660 Series
Recommended BeO Thermal Link	SK-1920
Maximum Seal & Anode Core Temperature	250°C
Maximum Length	2.45 in; 62.1 mm
Maximum Diameter	1.63 in; 41.4 mm
Weight (approximate)	8.2 oz; 235 gm
Operating Position	Any

[1]Dissipation capability is dependent upon cooling technique.

Class of Operation	Type of Service	MAXIMUM RATINGS Plate Voltage (volts)	MAXIMUM RATINGS Plate Current (amps)	TYPICAL OPERATION Plate Voltage (volts)	TYPICAL OPERATION Screen Voltage (volts)	TYPICAL OPERATION Plate Current (amps)	TYPICAL OPERATION Drive Power (watts)	TYPICAL OPERATION Output Power (watts)
C	RF Amplifier	2,000	0.25	2,000	250	0.25	2.9	390
C	RF Amplifier Plate Modulated	1,500	0.20	1,500	250	0.20	1.7	235
AB_1	RF Linear Amplifier	2,000	0.25	2,000	350	0.25	—	300†
AB_1	AF Amplifier or Modulator	2,000	0.25	2,000	350	0.50*	—	600*

*Two tubes
†Useful PEP output power.

5CX1500A

The 5CX1500A is designed for use as a Class AB_1 linear amplifier in audio or radio frequency applications. Its characteristic low intermodulation distortion makes it especially suitable for single sideband service.

The tube is also recommended for use as a Class C RF power amplifier in CW, FM and AM service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 1500 watts
Suppressor Dissipation (Max.) ..... 25 watts
Screen Dissipation (Max.) ..... 75 watts
Grid Dissipation (Max.) ..... 25 watts
Frequency for Max. Ratings (CW) ..... 110 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten mesh
  Voltage ..... 5.0 volts
  Current ..... 40 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 75.0 pF
  Output ..... 16.5 pF
  Feed-through ..... 0.2 pF
Capacitances (Gnd. Grid Connection):
  Input ..... 34.5 pF
  Output ..... 16.5 pF
  Feed-through ..... 0.05 pF
Amplification Factor (g_1 –g_2) 5.5
Transconductance‡ ..... 24,000 μmhos
Base ..... Special Ring and Breechblock
Recommended Air-System Socket SK-840
Recommended Air Chimney SK-806
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 4.95 in; 125.70 mm
Maximum Diameter: ..... 3.37 in; 85.60 mm
Weight (approximate) ..... 30 oz; 850 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	5000	1.0	4500	500	0.90	9.0	3180
C	RF Amplifier Plate Modulated	3500	0.8	3200	500	0.80	10.0	1958
AB_1	RF Linear Amplifier	4000	1.0	4000	500	0.70	—	1785
AB_1	AF Amplifier or Modulator	4000	1.0	3800	500	1.3*	—	3220*

*Two tubes.
‡At I_b = 1.0 A

5CX3000A/8966

The 5CX3000A is designed for use as a Class AB_1 linear amplifier in audio or radio-frequency applications. Its characteristics of low intermodulation distortion make it especially suitable for single sideband service.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 4000 watts
Suppressor Dissipation (Max.) ..... 100 watts
Screen Dissipation (Max.) ..... 175 watts
Grid Dissipation (Max.) ..... 50 watts
Frequency for Max. Ratings (CW) ..... 150 MHz
Cooling ..... Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 9.0 volts
  Current ..... 41.5 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 135 pF
  Output ..... 21.0 pF
  Feed-through ..... 0.4 pF
Capcitances (Gnd. Grid Connection):
  Input ..... 61.0 pF
  Output ..... 21.0 pF
Amplification Factor (g_1–g_2) 5.5
Base ..... Special Ring and Breechblock
Recommended Air-System Socket SK-1420
Recommended Air Chimney SK-1426
Maximum Seal & Anode Core Temperature ..... 250°C
Maximum Length: ..... 6.84 in; 173.70 mm
Maximum Diameter: ..... 4.63 in; 117.60 mm
Weight (approximate) ..... 5.5 lb; 2.5 kg
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier at 30 MHz	7000	2.0	6800	500	1.6	52	8,500
AB_1	RF Linear Amplifier	7000	2.0	6000	850	1.4	—	5,500
AB_1	AF Amplifier or Modulator	7000	2.0	6000	850	2.9*	—	11,000*

*Two tubes.

8295A

The 8295A is a forced-air cooled, radial beam pentode capable of high power gain and excellent efficiency at relatively low plate voltage. The 8295A is a direct replacement for the 8295.

This external-anode tube is especially suited for Class AB_1 linear RF amplifier service, but will also provide excellent performance in Class AB_2, Class B and Class C service.

CHARACTERISTICS

Plate Dissipation (Max.)	1000 watts
Screen Dissipation (Max.)	30 watts
Grid Dissipation (Max.)	5 watts
Frequency for Max. Ratings	30 MHz
Cooling	Forced Air
Cathode	Oxide-coated Unipotential
Voltage	6.0 volts
Current	8.2 amperes
Capacitances (Gnd. Cath. Connection):	
Input	40 pF
Output	18.5 pF
Feed-through	.09 pF
Base	7-Pin Special
Recommended Air System Socket	SK-184
Maximum Seal & Anode Core Temperature	250°C
Maximum Length:	5.05 in; 128 mm
Maximum Diameter:	4.03 in; 102 mm
Weight (approximate)	2.8 lb; 1.27 kg
Operating Position	Any

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	3000	1.0	3000	500*	0.82	2.1	1770†
AB_1	RF Linear Amplifier	3000	0.8	3000	500*	0.80	—	1700†

*Suppressor grid voltage = +35 Vdc.
†Useful Power Output.

5-500A

The 5-500A is intended for use as an amplifier, oscillator or modulator. The high plate current rating, low grid-plate capacitance and low driving power requirements permit maximum power capability to be combined with circuit simplicity and economic driver requirements.

The suppressor element of the 5-500A terminates at the tube base shell, and is designed to be operated at ground (zero) potential. The base shell must be grounded by means of suitable spring clips.

CHARACTERISTICS

Plate Dissipation (Max.) ..... 500 watts
Screen Dissipation (Max.) ..... 35 watts
Suppressor Dissipation ..... 10 watts
Grid Dissipation (Max.) ..... 12 watts
Cooling ..... Radiation & Forced Air
Filament ..... Thoriated Tungsten
  Voltage ..... 10.0 volts
  Current ..... 10.2 amperes
Capacitances (Gnd. Cath. Connection):
  Input ..... 17.0 pF
  Output ..... 10.8 pF
  Feed-through ..... 0.1 pF
Base ..... 5-Pin Special
Recommended Air System Socket SK-410
Recommended Air Chimney SK-426
Recommended Heat Dissipating Connector HR-6
Maximum Plate Seal Temperature ..... 225°C
Maximum Base Seal Temperatures ..... 200°C
Maximum Length: ..... 7.00 in; 177.80 mm
Maximum Diameter: ..... 3.56 in; 90.40 mm
Weight (approximate) ..... 11 oz; 312 gm
Operating Position ..... Vertical, base up or down

Class of Operation	Type of Service	MAXIMUM RATINGS		TYPICAL OPERATION				
		Plate Voltage (volts)	Plate Current (amps)	Plate Voltage (volts)	Screen Voltage (volts)	Plate Current (amps)	Drive Power (watts)	Output Power (watts)
C	RF Amplifier	4000	0.45	4000	500	0.45	14	1300
C	RF Amplifier Plate Modulated	3200	0.35	3100	470	0.26	6	580
AB_1	RF Linear Amplifier	4000	0.45	4000	750	0.32	—	832
AB_1	AF Amplifier or Modulator	4000	0.45	4000	750	0.65*	—	1664*

*Two tubes.

X-2250, X-2251

The X-2250 and X-2251 Klystrodes are intended for use in the UHF spectrum. These tubes combine the features of a klystron and a tetrode, having a magnetically focused electron beam, an output cavity and a collector. The Klystrode operates as a Class B linear amplifier in the manner of a tetrode, but with the reliability and high power handling capability of the klystron. Power gain is in the range of 18 to 23 dB and efficiency at full drive power is 50 to 60 percent.

The Klystrode beam-power-input varies with modulator depth, whereas klystron input power does not. Thus, the Klystrode is expected to operate in TV visual service at a very high average conversion efficiency.

In addition, the Klystrode is well-suited as an FM sound amplifier, operating from the visual klystron power supply.

Operating range of the X-2250 is 470–600 MHz and range of the X-2251 is 600–805 MHz.

CHARACTERISTICS

Cathode	Dispenser Type
Voltage	10–12 volts
Current	8 amperes
Magnet (Part of Circuit Assembly)	
Voltage	100 Vdc
Current	20 Adc
Cooling	Water and Forced Air
Input RF connector	Type N
Output RF connector	1⅝ or 3⅛ in. EIA Coaxial
Overall Dimensions (nominal):	
(Medium Power Tube Only)	
Length	21.63 in; 54.9 cm
Diameter	6.63 in; 16.8 cm
Length (with hardware)	61.00 in; 154.9 cm
Diameter (with hardware)	16.00 in; 40.6 cm
Weight:	
(Medium Power Tube only)	42.0 lb; 19 kg
(Medium Power Tube with hardware)	83.0 lb; 37.7 kg

FM SOUND PERFORMANCE (X-2251)
Measured Data at 775 MHz

RF Output power	20 kW
Conversion Efficiency	58%
Power Gain	23 dB
RF Driving Power	100 W
Beam Voltage	30 kVdc
Beam Current	1.15 Adc
Grid Bias	−67 Vdc
Grid Current	0.15 Adc
Body Current	50 mAdc
Collector Current	1.1 Adc

FM SOUND TYPICAL OPERATION
(X-2250, X-2251 Series)

Output Power (kW)	Beam Voltage (kV)	Grid Bias (Vdc)	KLYSTRODE series	Output Cavity
3.5	18	−50	Low Power	External
7.0	18	−50	Low Power	External
7.0	24	−60	Low Power	External
14.0	18	−50	Med. Power	External
14.0	24	−60	Med. Power	External
20.0	25	−60	Med. Power	External
14.0	31	−75	High Power	External
28.0	31	−75	High Power	External

REPLACEMENT TYPES

The following EIMAC types currently in production are for renewal use and are not suggested for new equipment design. Data on these tubes may be obtained from the Application Engineering Department of EIMAC.

2C39A
2C39BA
2C39WA
2CX10,000F*
2-01C
3C24
3CPN10A5–USE 7815
3CPX100A5–USE 7815R
3CV30,000A1*
3CV30,000A3*
3CV30,000H3*
3CW2000A7
3CW5000A7
3CW5000F7
3CX100A5–USE 7289
3CX10,000A1/8158*
3-200A3/592
4CN15A*
4CV35,000A*
4CW2000A/8244
4CX125C*
4CX250BT*
4CX250F USE 4CX250FG/8621
4E27A/5-125B
4PR60B
4PR1000B
4X150A/7034*
4X150D USE 7609
4X150G/8172*
4X500A
4-400B/7527
6C21
177WA
250R
250TH
250TL
254W
264/8576
290A
304TH
304TL
450TH
450TL
592/3-200A3
826
6155
6156
7035 USE 7609
7204 USE 4CX250FG/8621
7289
7609*
7815
7815AL
7815AL
7815R/3745
7815RAL
7855K
8403
8533
8533W
8538B
8745/7815R
8906
8906AL
8907
8907AL
8944
C-1149
Y-572BAL
Y-799/CCS-1*
Y-808(4KC/160M)*

*San Carlos

EIMAC Cavity Amplifiers Cover 40 to 970 MHz At Power Levels to 60 kW—Our Design or Yours

Varian EIMAC has complete cavity amplifier design and fabrication capability. We make sure that tube, cavity and end-use are compatible. If it's not an off-the-shelf item, we have the designers and engineers to do your specific job and the construction facilities for volume production.

We have the capability in all disciplines including pulse, CW, FM and TV. We match tube, power, bandwidth and operating mode to achieve optimum performance.

EIMAC cavities are available as a sub-system. This results in substantial savings in development cost and time. To avoid premature system obsolescence, an EIMAC tube and cavity combination should be selected for your particular requirement.

For full details on EIMAC products, or prompt consideration of your special design requirements, contact Varian EIMAC, 301 Industrial Way, San Carlos, CA 94070 (415-592-1221). Or call any of the more than 25 Varian Electron Device Group sales offices throughout the world.

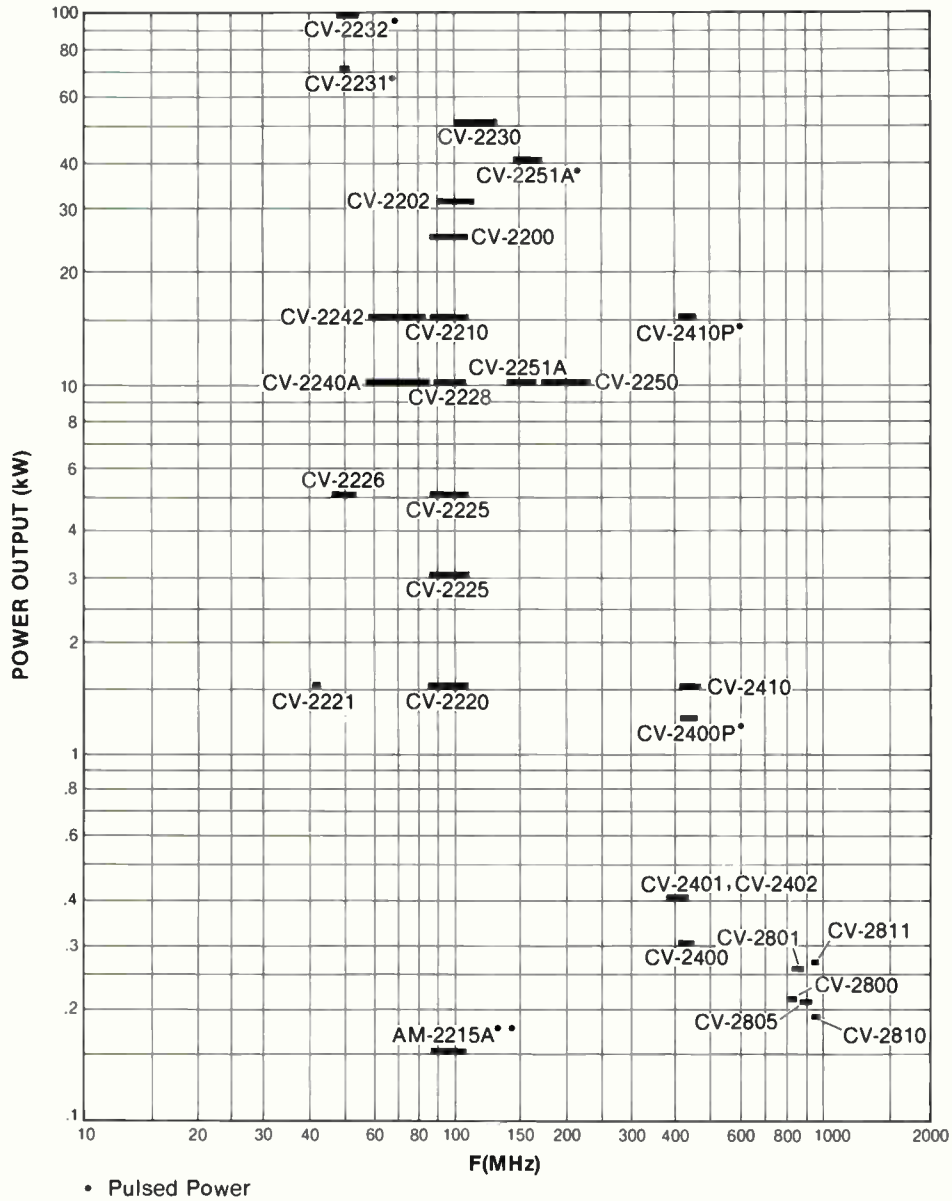
EIMAC Cavity Amplifiers

Service	Frequency Range (MHz)	Power (kW)	Tube Type	Cavity
UHF	375-420	0.5	3CX800A7	CV-2402
	390-450	0.4	3CX800A7	CV-2401
	420-470	0.35	3CX400A7/8874	CV-2400
	420-470	1.25*	Y-805	CV-2400P
	430-470	1.5	8938	CV-2410
	430-470	13*	Y-798	CV-2410P
	825-880	0.30	3CX800U7	CV-2801
	850-870	0.255	3CX400U7	CV-2800
	875-935	0.23	3CX400U7	CV-2805
	915-970	0.19	3CX400U7	CV-2810
	915-932	0.30	3CX800U7	CV-2811
TV	57-85	10#	3CX10,000U7	CV-2240A
	57-85	15#	3CX12,000U7	CV-2242
	170-228	10#	3CX10,000U7	CV-2250
VHF	40.7	1.5	3CX1500A7/8877	CV-2221
	49.9	70*	4CX40,000G	CV-2231
	45-55	5.0	4CX3500A	CV-2226
	45-55	100*	Y-676	CV-2232
	140-165	40*/10	3CX10,000U7	CV-2251A
FM	86-108	1.5	3CX1500A7/8877	CV-2220
	86-108	5.0	4CX3500A	CV-2225
	86-108	10	4CX7500A	CV-2228
	86-108	15/10	4CX12,000A/8989	CV-2210
	86-108	25	4CX20,000A/8990	CV-2200
	86-108	30	4CX20,000C	CV-2202
	86-108	60	4CX30,000G	CV-2230

* pulse power
\# peak sync

Power output levels are nominal. All cavities are capable of significantly greater output under the proper operating parameters. Contact Varian EIMAC for additional information.

EIMAC CAVITY AMPLIFIER CAPABILITY CHART



• Pulsed Power
••Solid State Module

EIMAC FM BROADCAST CAVITY AMPLIFIERS

Varian EIMAC cavity amplifiers for FM broadcast service cover the international frequency assignment of 86 to 108 MHz. Seven stock amplifiers provide power levels of 60, 30, 25, 20/15, 10, 5 and 1.5 kW. Other power levels are available on request. An EIMAC solid-state driver module is available for use as an intermediate stage, if desired.

Each of these standard FM power amplifier cavities can be modified for frequency coverage above or below the design range, or adapted for special applications such as AM or pulse service. Consult with Varian EIMAC, San Carlos, CA for information on special modifications to standard products.

Cavity design is straightforward and relatively simple. If a tetrode tube is used, it is grid driven to provide high stage gain. If a triode tube is used, it is cathode driven to eliminate neutralization. Ample ventilation is provided to prevent cavity detuning due to heat expansion and to protect the tubes. The cavities are easily disassembled for maintenance. All replaceable components are available from EIMAC.

CV-2230 for 50kW FM Broadcast Service

The EIMAC CV-2230 is designed for use as the final amplifier of a 50 kW transmitter in the 86-108 MHz band assigned for FM broadcast service.

The amplifier tube used is the EIMAC 4CX30,000G high performance tetrode designed especially for VHF applications. The tube is grid driven for a power gain of approximately 21 dB.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX30,000G
Input rf connector	Type N
Output rf connector	6⅛ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 24-in Rack
Overall Dimensions (nominal):	
Height	36.0 in; 91.44 cm
Width	24.0 in; 60.9 cm
Depth	20.25 in; 51.4 cm
Net Weight, approx. (tube not installed)	185 lbs; 84.0 kg

Typical Operation (100 MHz)

Heater Voltage	10.5 Vac
Heater Current	175 Aac
Anode Voltage	11.5 kVdc
Grid Bias Voltage	−320 Vdc
Anode Current	7.8 Adc
Grid Current[1]	25 mAdc
Driving Power[1]	665 W
Useful Power Output[1]	66.5 kW
Power Gain[1]	20.0 dB
Efficiency	74 %

[1] Approximate Value
[2] Power delivered to the load

CV-2202 for 30 kW FM Broadcast Service

The EIMAC CV-2202 is designed for use as the final amplifier of a 30 kW transmitter in the 86-108 MHZ band assigned for FM broadcast service.

The amplifier tube used is the EIMAC 4CX20,000C high performance tetrode designed especially for VHF applications. The tube is grid driven for a stage gain of approximately 21 dB.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX20,000C
Input rf connector	Type N
Output rf connector	3⅛ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	31.5 in; 80.0 cm
Width	19 in; 48.3 cm
Depth	21 in; 53.3 cm
Net Weight, approx. (tube not installed)	60 lbs; 27.3 kg

TYPICAL OPERATION (100.0MHz)

Heater Voltage	10.0 Vac
Heater Current	140 Aac
Anode Voltage	11.6 kVdc
Grid Bias Voltage	−500 Vdc
Anode Current	3.35 Adc
Grid Current[1]	61 mAdc
Driving Power[1]	249 W
Useful Power Output[1,2]	31.2 kW
Power Gain[1]	21 dB
Efficiency	80.4 %

[1] Approximate Value
[2] Power delivered to the load

CV-2200 for 20 kW FM Broadcast Service

The EIMAC CV-2200 is designed for use as the final amplifier of a 20 kW transmitter in the 86-108 MHz band assigned for FM broadcast service.

Cavity design is straightforward and relatively simple. The amplifier tube used is the EIMAC 4CX20,000A/8990 high performance tetrode designed especially for VHF applications. The tube is grid driven for a stage gain of approximately 18 dB.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX20,000A/8890
Input rf connector	Type N
Output rf connector	3⅛ in. EIA Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	36 in; 91.4 cm
Width	19 in; 48.3 cm
Depth	21 in; 27.3 cm
Net Weight, approx. (tube not installed)	60 lbs; 27.3 kg

TYPICAL OPERATION (95.7 MHz)

Heater Voltage	10.0 Vac
Heater Current (Approx.)	140 Aac
Anode Voltage	10.0 kVdc
Grid Bias Voltage	−300 Vdc
Screen Grid Voltage	750 Vdc
Anode Current	3.25 Adc
Grid Current[1]	26 mAdc
Screen Current[1]	220 mAdc
Driving Power[1]	305 W
Useful Power Output[1,2]	21 kW
Power Gain[1]	18.4 dB
Efficiency	81 %
Bandwith (−3 dB points)	3 MHz

[1] Approximate Value
[2] Power delivered to the load

CV-2210 for 10/15 kW FM Broadcast Service

The EIMAC CV-2210 is designed for use as the final amplifier of a 10 or 15 kW transmitter in the 86-108 MHz band assigned for FM broadcast service.

Cavity design is straightforward and relatively simple. The amplifier tube used is the EIMAC 4CX12,000A/8989 high performance tetrode designed especially for VHF applications. The tube is grid driven for a stage gain of approximately 18 dB.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX12,000A/8989
Input rf connector	Type N
Output rf connector	3⅛ in. EIA Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	36 in; 91.4 cm
Width	19 in; 48.3 cm
Depth	21 in; 27.3 cm
Net Weight, approx. (tube not installed)	60 lbs; 27.3 kg

TYPICAL OPERATION (95.7 MHz)

Heater Voltage	7.5	7.5 Vac
Heater Current (Approx.)	120	120 Aac
Anode Voltage	8.0	8.0 kVdc
Grid Bias Voltage	−300	−400 Vdc
Screen Grid Voltage	750	800 Vdc
Anode Current	1.6	2.58 Adc
Grid Current[1]	51	38 mAdc
Screen Current[1]	115	120 mAdc
Driving Power[1]	165	250 W
Useful Power Output[1,2]	11	15.8 kW
Power Gain[1]	18.4	18.0 dB
Efficiency	84	77 %
Bandwith (−3 dB points)	3	3 MHz

[1] Approximate Value
[2] Power delivered to the load

CV-2228 for 10 kW FM Broadcast Service

The EIMAC CV-2228 is designed for use as the final amplifier of a 10 kW transmitter in the 86-108 MHz band assigned for FM broadcast service.

The amplifier tube used is the EIMAC 4CX7500A high performance tetrode designed especially for VHF applications. The tube is grid driven for a stage gain of approximately 20 dB. The high performance features of the 4CX7500A make possible a cavity design of exceptionally small size. The EIMAC AM-2215A solid-state amplifier module is available as an intermediate amplifier for the CV-2228.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX7500A
Input rf connector	Type N
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	19 in; 48.3 cm
Width	19 in; 48.3 cm
Depth	21 in; 53.3 cm
Net Weight, approx. (tube not installed)	34 lbs; 15.5 kg

TYPICAL OPERATION (98 MHz)

Heater Voltage	7.0 Vac
Heater Current (Approx.)	110 Aac
Anode Voltage	6.5 kVdc
Grid Bias Voltage	−275 Vdc
Anode Current	2.2 Adc
Grid Current[1]	90 mAdc
Driving Power[1]	99 W
Useful Power Output[1,2]	11.1 kW
Power Gain[1]	20.5 dB
Efficiency	72.2 %

[1] Approximate Value
[2] Power delivered to the load

CV-2225 for 5 kW FM Broadcast Service

The EIMAC CV-2225 is designed for use as the final amplifier of a 3 to 5 kW transmitter in the 86-108 MHz band assigned for FM broadcast service.

Cavity design is straightforward and relatively simple. The amplifier tube used is the EIMAC 4CX3500A high performance tetrode designed especially for VHF applications. The tube is grid driven for a stage gain of approximately 18 dB. The EIMAC AM-2215A solid-state amplifier module is available as an intermediate power amplifier for the CV-2225.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	4CX35000A
Input rf connector	Type BNC
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	19 in; 48.3 cm
Width	19 in; 48.3 cm
Depth	16 in; 40.6 cm
Net Weight, approx. (tube not installed)	34 lbs; 15.5 kg

TYPICAL OPERATION (100.5 MHz)

Heater Voltage	5.0 Vac
Heater Current (Approx.)	90 Aac
Anode Voltage	4.3 kVdc
Grid Bias Voltage	−400 Vdc
Screen Grid Voltage	700 Vdc
Anode Current	1.9 Adc
Grid Current[1]	63 mAdc
Screen Current[1]	123 mAdc
Driving Power[1]	66 W
Useful Output Power[1,2]	5.53 kW
Power Gain[1]	19.0 dB
Efficiency	68 %

[1] Approximate Value
[2] Power delivered to the load

CV-2220 for 1.5 kW FM Broadcast Service

The EIMAC CV-2220 is designed for use as the final amplifier of a 1500-watt transmitter in the 86-108 MHz band assigned for FM broadcast service.

Cavity design is straightforward and relatively simple. The amplifier tube used is the EIMAC 8877/3CX1500A7 high performance focused triode. Low grid interception and high amplification factor make the drive requirements exceptionally low. The tube is cathode driven for a stage gain of 14 dB. The EIMAC AM-2215A solid-state amplifier module is available as an intermediate power amplifier for the CV-2220.

CHARACTERISTICS

Tuning Range	86-108 MHz
Tube Type Used (not supplied)	3CX1500A7/8877
Input rf connector	Type N
Output rf connector	⅞ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Panel
Overall Dimensions (nominal):	
Height	8 in; 20.3 cm
Width	14.38 in; 36.5 cm
Depth	15.75 in; 40.0 cm
Net Weight, approx. (tube not installed)	13 lbs; 15.9 kg

TYPICAL OPERATION (100.5 MHz)

Heater Voltage	5.0 Vac
Heater Current (Approx.)	10.5 Aac
Anode Voltage	3.0 kVdc
Grid Bias Voltage	−19.5 Vdc
Anode Current	1.0 Adc
Grid Current[1]	55 mAdc
Driving Power[1]	88 W
Useful Power Output[1,2]	1.96 kW
Power Gain[1]	13.5 dB
Efficiency	65 %

[1] Approximate Value
[2] Power delivered to the load

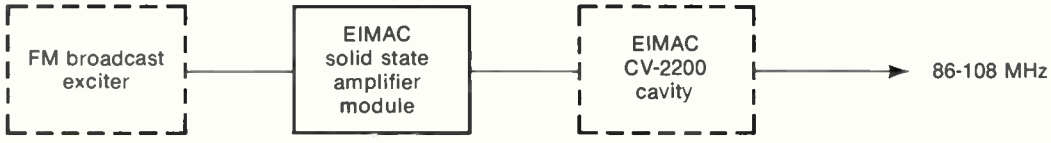
SOLID STATE AMPLIFIER MODULE

Varian EIMAC has developed an intermediate power amplifier to drive tubes and cavities in FM broadcast service. The broadband design permits operation over the entire FM band (86 to 108 MHz) without tuning. The module is solid state to minimize service and extend reliability.

AM-2215A

CHARACTERISTICS

Frequency Coverage	86-108 MHz
Input RF connector	BNC
Output RF connector	BNC
Cooling required	Conduction Cooling with Forced Air
Mounting	Any
Overall Dimensions (nominal):	
Height	2.625 in; 66.7 mm
Width	5.562 in; 141.2 mm
Depth	8.19 in; 20 8 mm
Net weight (approx.)	42 oz; 1.19 kg



GENERAL CHARACTERISTICS (TYPICAL DATA)

Module	Power Output	Drive Power	Power Gain	Supply Voltage	Supply Current	Efficiency
AM-2215A	150 W	15 W	10 dB	28 Vdc	10 Adc	53%

EIMAC TELEVISION BROADCAST CAVITY AMPLIFIERS

EIMAC television broadcast cavity amplifiers follow the general design technique used in the FM series of amplifiers with the exception that the former are broadbanded, having a bandpass characteristic suitable for the various television transmission standards in use today. The cavity amplifiers use a grounded grid, high-mu focused triode for circuit simplicity and combine excellent linearity and high overall operating efficiency.

Consult with Varian EIMAC, San Carlos, CA for requirements or modifications of these designs for your special use.

CV-2240A VHF Low Band TV (CH2–CH6) 10 kW Peak of Sync

The EIMAC CV-2240A cavity is designed for VHF low-band TV broadcast service. It is designed to utilize the EIMAC 3CX10,000U7 high-mu triode power amplifier tube. The tube and cavity combination is capable of delivering up to 10 kW peak-of-sync in video service, with typical power gain of 14 dB. In translator service the cavity can be operated at 2.5 kW peak-of-sync output with intermodulation distortion products of −52 dB or better.

The cavity can be easily mounted in a standard 19-inch rack. Counter dials are used on all tuning controls to simplify pretuning on the desired channel. Excellent linearity and efficiency make this tube and cavity combination a good choice for low-band television broadcast service.

CHARACTERISTICS

Tuning Range	54-88 MHz
Tube Type Used (not supplied)	3CX10,000U7
Input rf connector	Type N
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	32 in; 81.3 cm
Width	19 in; 48.3 cm
Depth	19 in; 48.3 cm
Net Weight, approx. (tube not installed)	55 lbs; 25 kg

TYPICAL OPERATION (79 MHz)

Heater Voltage	15.0 Vac
Heater Current (Approx.)	13.5 Aac
Anode Voltage	5.5 kVdc
Grid Bias Voltage	−29.0 Vdc
Anode Current	3.6 Adc
Grid Current[1]	39 mAdc
Drive Power[1]	389 W
Useful Output Power[1,2] (peak of sync)	10 kW
Power Gain[1]	14.1 dB
Efficiency	50.5 %
Bandwidth (−1 dB points)	7 MHz

[1] Approximate Value
[2] Power delivered to the load

CV-2242 VHF Low Band TV (CH2–CH6) 15 kW Peak of Sync

The EIMAC CV-2242 cavity is designed for VHF low-band TV broadcast service. It utilizes the EIMAC 3CX12,000U7 high-mu triode power amplifier tube. The tube and cavity combination is capable of delivering up to 15 kW peak-of-sync in video service. In translator service the cavity can be operated at 3.75 kW peak-of-sync output with intermodulation distortion products of −52 dB or better.

The cavity can be easily mounted in a standard 19-inch rack. Counter dials are used on all tuning controls to simplify pretuning on the desired channel. Excellent linearity and efficiency make this tube and cavity combination a good choice for low-band television broadcast service.

CHARACTERISTICS

Tuning Range	54-88 MHz
Tube Type Used (not supplied)	3CX12,000U7
Input rf connector	Type N
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	32.0 in; 81.3 cm
Width	19.0 in; 48.3 cm
Depth	19.0 in; 48.3 cm
Net Weight, approx. (tube not installed)	55 lbs; 25 kg

TYPICAL OPERATION (79 MHz)

Heater Voltage	15.0 Vac
Heater Current (Approx.)	13.5 Aac
Anode Voltage	5.5 kVdc
Anode Current	5.4 Adc
Driving Power[1]	600 W
Useful Output Power[1,2]	15 kW
Power Gain[1]	14 dB
Efficiency	50 %
Bandwidth (−1 dB points)	7 MHz

[1] Approximate Value
[2] Power delivered to the load

CV-2250 VHF High Band TV (CH7–CH13) (CH7–CH-E European) 10 kW Peak of Sync

The EIMAC CV-2250 cavity is designed for VHF high-band TV broadcast service. It is designed to utilize the EIMAC 3CX10,000U7 high-mu triode power amplifier tube. The tube and cavity combination is capable of delivering up to 10 kW peak-of-sync in video service, with typical power gain of 12–15 dB. In translator service the cavity can be operated at 2.5 kW peak-of-sync output with intermodulation distortion products of −52 dB or better.

The cavity is designed to be mounted behind a standard 19-inch panel. Operating frequency range is CH-7 through CH-13 Domestic, and CH-7 through CH-E European. Excellent linearity and efficiency make this tube and cavity combination a good choice for high-band television broadcast service.

CHARACTERISTICS

Tuning Range	177-228 MHz
Tube Type Used (not supplied)	3CX10,000U7
Input rf connector	Type N
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	41.75 in; 106.05 cm
Width	15.50 in; 39.37 cm
Depth	12.25 in; 31.12 cm
Net Weight, approx. (tube not installed)	80 lbs; 36.3 kg

TYPICAL OPERATION (177 MHz)

Heater Voltage	15.0 Vac
Heater Current (Approx.)	13 Aac
Anode Voltage	5.5 kVdc
Grid Bias Voltage	−31.0 Vdc
Anode Current	3.5 Adc
Grid Current[1]	87 mAdc
Driving Power[1]	335 W
Useful Output Power[1,2]	10.55 kW
Power Gain[1]	15 dB
Efficiency	54 %
Bandwidth (−1 dB points)	6.28 MHz

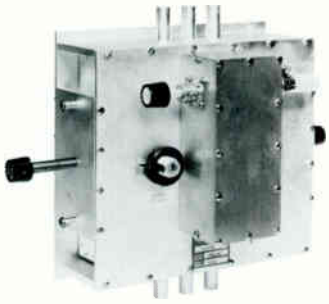
[1] Approximate Value
[2] Power delivered to the load

EIMAC UHF CAVITY AMPLIFIERS

Varian EIMAC uhf cavity amplifiers cover the range of 375 to 970 MHz. They are useful for communication service in the CW or FM mode. The designs incorporate an EIMAC high-mu power triode in a cathode driven configuration, eliminating many of the circuit complications associated with uhf tetrode cavities, but providing comparable stage gain.

Several versions of the cavities are available for pulse operation. Consult Varian EIMAC, San Carlos, CA for requirements or modifications of these designs for your special use.

CV-2401 400W Power Output, 390–450 MHz



The EIMAC CV-2401 is designed for use in the 390–450 MHz frequency range. It is designed for FM, CW or SSB linear amplifier service.

The amplifier tube is the EIMAC 3CX800A7, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven for good linearity and high stage gain. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

CHARACTERISTICS

Tuning Range	390-450 MHz
Tube Type Used (not supplied)	3CX800A7
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting Position	Optional: normally mounts to fit 19-in Rack Panel
Overall Dimensions (nominal):	
Height	5.0 in; 12.7 cm
Width	8.5 in; 21.6 cm
Depth	8.25 in; 20.9 cm
Net Weight, approx. (tube not installed)	13 lbs; 6.0 kg

TYPICAL OPERATION (450 MHz)

Heater Voltage	13.5 Vac
Heater Current	1.5 Aac
Anode Voltage	1.8 kVdc
Grid Bias Voltage	−8 Vdc
Anode Current	0.48 Adc
Grid Current[1]	10 mAdc
Driving Power[1]	15 W
Useful Power Output[1,2]	400 W
Power Gain[1]	14.2 dB
Efficiency	46 %

[1] Approximate Value
[2] Power delivered to the load

CV-2400/CV-2400P 300W(1250W pulse) Power Output, 420–470 MHz

The EIMAC CV-2400 is designed for use in the 420–470 MHz frequency range. It is designed for FM, CW or SSB linear amplifier service.

The amplifier tube is the EIMAC 8874, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven for good linearity and a stage gain of approximately 13 dB. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

The CV-2400P is intended for pulsed amplifier service and uses the EIMAC Y-805, which is a specially processed 8874.

CHARACTERISTICS

Tuning Range	420-470 MHz
Tube Type Used (not supplied)	8874
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Height	5.0 in; 12.7 cm
Width	8.5 in; 21.6 cm
Depth	8.25 in; 20.9 cm
Net Weight, approx. (tube not installed)	13 lbs; 6.0 kg

TYPICAL OPERATION (450 MHz)

	CV-2400 CW or FM	CV-2400P Pulsed	
Heater Voltage	5.0	6.3	Vac
Heater Current (Approx.)	2.8	3.0	Aac
Anode Voltage	1.5	2.5	kVdc
Grid Bias Voltage	−2.0	−15	Vdc
Anode Current	0.4	1.25	Adc
Grid Current[1]	−7.0	10	mAdc
Driving Power[1]	15	125	W
Useful Output Power[1,2]	300	1250	W
Power Gain[1]	13	10	dB
Efficiency	50	40	%
Bandwidth (3 dB points)	4	4	MHz

[1] Approximate Value
[2] Power delivered to the load

CV-2410/CV-2410P 1.5 kW (13.4 kW pulse) Power Output, 430–470 MHz

The EIMAC CV-2410 is designed for use in the 430–470 MHz frequency range. It is designed for FM, CW or SSB linear amplifier service.

The amplifier tube is the EIMAC 8938, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven for good linearity and a stage gain of approximately 14 dB. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

The CV-2410P is intended for pulsed amplifier service and uses the EIMAC Y-798, which is a specially processed 8938.

CHARACTERISTICS

Tuning Range	430-470 MHz
Tube Type Used (not supplied)	8938
Input rf connector	Type N
Output rf connector	Type LC
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Height	5.0 in; 12.7 cm
Width	8.0 in; 20.3 cm
Depth	10.0 in; 25.4 cm
Net Weight, approx. (tube not installed)	14 lbs; 6.4 kg

TYPICAL OPERATION (450 MHz)

	CV-2410 CW or FM	CV-2410P Pulsed	
Heater Voltage	4.5	5.5	Vac
Heater Current (Approx.)	10.0	11.0	Aac
Anode Voltage	2.0	4.8	kVdc
Grid Bias Voltage	−12	−50	Vdc
Anode Current	1.18	4.15	Adc
Grid Current[1]	6.0	300	mAdc
Driving Power[1]	100	722	W
Useful Output Power[1,2]	1.5	13.4	kW
Power Gain[1]	12	12.8	dB
Efficiency	62	67	%

[1] Approximate Value
[2] Power delivered to the load

CV-2801 260W Power Output, 825–880 MHz

The EIMAC CV-2801 is designed for communication service in the 825–880 MHz portion of the band assigned for land mobile service, as the base station final amplifier.

The amplifier tube is the EIMAC 3CX800U7, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven for a stage gain of approximately 11 dB. The triode design eliminates many of the cavity and equipment design complications encountered with tetrode cavities.

Over 260 watts of useful CW rf power at 880 MHz may be obtained with better than 35 percent efficiency from this cavity.

CHARACTERISTICS

Tuning Range	825-880 MHz
Tube Type Used (not supplied)	3CX800U7
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting Position	
Optional: nomally mounts to 19-in Rack Panel	
Overall Dimensions (nominal):	
Height (outside tuning and loading controls)	6.25 in; 15.9 cm
Width (outside of air-inlet tubes)	5.00 in; 12.7 cm
Depth (tube not installed)	3.91 in; 9.9 cm
Net Weight, approx. (tube not installed)	5.2 lbs; 2.4 kg

TYPICAL OPERATION (850 MHz)

	FM	CW/SSB[3]	
Heater Voltage (warmup or standby)	13.5	13.5	Vac
Heater Voltage (during operation)	10.5	13.5	Vac
Heater Current (at 13.5 volts)	1.5	1.5	Aac
Anode Voltage	1.5	2.0	kVdc
Grid Bias Voltage	−10	−8.2	Vdc
Anode Current	0.5	0.5	Adc
Grid Current[1]	5	0	mAdc
Driving Power[1]	25	25	W
Useful Output Power[1,2]	260	325	W
Power Gain[1]	10.9	11.2	dB

[1] Approximate Value
[2] Power delivered to the load
[3] Duty cycle less than 50%

CV-2800 225W Power Output, 850–870 MHz

The EIMAC CV-2800 is designed for use in the 850–870 MHz portion of the band assigned for land mobile service, as the base station final amplifier.

The amplifier tube is the EIMAC 3CX400U7/8961, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven and provides a stage gain of approximately 13.5 dB. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

CHARACTERISTICS

Tuning Range	850-870 MHz
Tube Type Used (not supplied)	3CX400U7/8961
Input & Output connector	Type N
Cooling Required	Forced Air
Mounting	Optional: normally mounts to 19-inch Rack Panel
Overall Dimensions (nominal):	
Height (outside of handles)	8.99 in; 22.80 cm
Width (outside of air-inlet tubes)	7.62 in; 19.35 cm
Depth (tube not installed)	4.64 in; 11.78 cm
Net Weight, approx. (tube not installed)	7.5 lbs; 3.4 kg

TYPICAL OPERATION

Heater Voltage (warmup or standby)	6.3 Vac
Heater Voltage (during operation)	5.0 Vac
Heater Current (at 6.3 volts)	3.0 Aac
Anode Voltage	1.5 Vdc
Grid Bias Voltage	−2.0 Vdc
Anode Current	400 mAdc
Grid Current[1]	−5.0 mAdc
Driving Power[1]	10 W
Useful Output Power[1,2]	225 W
Power Gain[1]	13.5 dB
Bandwith (−3 dB points)	6.5 MHz
Modulation	FM

[1] Approximate Value
[2] Power delivered to the load

CV-2805 230W Power Output, 875-935 MHz

The EIMAC CV-2805 is designed for use in the 875-935 MHz frequency range.

The amplifier tube is the EIMAC 3CX400U7/8961, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven and provides a stage gain of 10 to 12 dB. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

CHARACTERISTICS

Tuning Range	875-935 MHz
Tube Type Used (not supplied)	3CX4000U7/8961
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting Position	Optional: normally mounts to 19-inch Rack Panel
Overall Dimensions (nominal):	
Height (outside of tuning and loading controls)	7.31 in; 18.6 cm
Width (outside of air inlet tubes)	5.0 in; 12.7 cm
Depth (tube not installed)	3.87 in; 9.8 cm
Net Weight, approx. (tube not installed)	5.8 lbs; 2.6 kg

TYPICAL OPERATION (900 MHz)

	FM	CW/SSB[3]
Heater Voltage (warmup or standby)	6.3	6.3 Vac
Heater Voltage (during operation)	5.0	6.3 Vac
Heater Current (at 6.3 volts)	3.0	3.0 Aac
Anode Voltage	1.5	2.0 kVdc
Grid Bias Voltage	−12	−12 Vdc
Anode Current	0.4	0.4 Adc
Grid Current[1]	−10	−10 mAdc
Driving Power[1]	20	20 W
Useful Power Output[1,2]	230	320 W
Power Gain[1]	10.6	12 dB

[1] Approximate Value
[2] Power delivered to the load
[3] Duty cycle less than 50 %

CV-2810 190W Power Output, 915–970 MHz

The EIMAC CV-2810 is designed for use in the 915–970 MHz frequency range.

The amplifier tube is the EIMAC 3CX400U7/8961, a high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven and provides a stage gain of approximately 13 dB. The triode design eliminates many of the cavity and equipment design complications associated with tetrode cavities.

CHARACTERISTICS

Tuning Range	915-970 MHz
Tube Type Used (not supplied)	3CX400U7/8961
Input & Output connector	Type N
Cooling Required	Forced Air
Mounting Optional: normally mounts to 19-inch Rack Panel	
Overall Dimensions (nominal):	
Height (outside tuning & loading controls)	6.25 in; 15.9 cm
Width (outside air inlet tubes)	5.00 in; 12.7 cm
Depth (tube not installed)	3.91 in; 9.9 cm
Net Weight, approx. (tube not installed)	5.2 lbs; 2.4 kg

TYPICAL OPERATION (932 MHz)

Heater Voltage (warmup or standby)	6.3 Vac
Heater Voltage (during operation)	4.5 Vac
Heater Current (at 6.3 volts)	3.0 Aac
Anode Voltage	1.5 kVdc
Grid Bias Voltage	−2.0 Vdc
Anode Current	400 mAdc
Grid Current[1]	−5.0 mAdc
Driving Power[1]	12.3 W
Useful Output Power[1,2]	190 W
Power Gain[1]	12.1 dB
Bandwidth (−3 dB points)	6.5 MHz
Modulation	FM

[1] Approximate Value
[2] Power delivered to the load

CV-2811 275W Power Output, 915–932 MHz

The EIMAC CV-2811 is designed for use in the 915-932 MHz frequency range which includes the U.S. allocation for paging. The cavity is also useful in the 915 MHz allocation for Industrial, Scientific and Medical applications.

The amplifier tube is the EIMAC 3CX800U7 high-mu triode designed with beam-forming cathode and control grid geometry. The tube is cathode driven for good linearity and a stage gain of 10 to 11 dB. The triode design eliminates many of the cavity and equipment design complications encountered with tetrode cavities.

CHARACTERISTICS

Tuning Range	915-932 MHz
Tube Type Used (not supplied)	3CX800U7
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting . Optional: normally mounts to 19-in Rack Panel	
Overall Dimensions (nominal):	
Height (outside tuning and loading controls)	6.25 in; 15.9 cm
Width (outside of air-inlet tubes)	5.00 in; 12.7 cm
Depth (tube not installed)	3.91 in; 9.9 cm
Net Weight, approx. (tube not installed)	5.8 lbs; 2.6 kg

TYPICAL OPERATION (930 MHz)

	FM	CW/SSB[3]
Heater Voltage (warmup or standby)	13.5	13.5 Vac
Heater Voltage (during operation)	9.7	13.5 Vac
Heater Current (at 13.5 volts)	1.5	1.5 Aac
Anode Voltage	1.5	1.8 kVdc
Grid Bias Voltage	14	14 Vdc
Anode Current	0.5	0.5 Adc
Grid Current[1]	8	3 mAdc
Driving Power[1]	25	29 W
Useful Power Output[1,2]	275	400 W
Power Gain[1]	10.4	11.4 dB
Efficiency	36	34 %

[1] Approximate Value
[2] Power delivered to the load
[3] Duty cycle less than 50 %

CV-2221 1.5 kW Power Output, 40.68 MHz

The EIMAC CV-2221 cavity amplifier is designed for use as a 1500 watt power source in the 40.68 MHz band assigned for Industrial, Scientific and Medical Services.

Cavity design is straightforward and relatively simple. The EIMAC 8877/3CX1500A7 high performance focused triode is cathode driven for a stage gain of 13.5 dB with a useful power output of over 1500 watts.

CHARACTERISTICS

Tuning Range	40.68±1 MHz
Tube Type Used (not supplied)	3CX1500A7/8877
Input rf connector	Type N
Output rf connector	Type N
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Panel
Overall Dimensions (nominal):	
Height	8 in; 20.3 cm
Widht	14.375 in; 36.5 cm
Depth	15.75 in; 40.0 cm
Net Weight, approx. (tube not installed)	13 lbs; 15.9 kg

TYPICAL OPERATION (40.68 MHz)

Heater Voltage	5.0 Vac
Heater Current	10.5 Aac
Anode Voltage	3.0 kVdc
Grid Bias Voltage	−19.5 Vdc
Anode Current	1.0 Adc
Grid Current[1]	55 mAdc
Driving Power[1]	88 W
Useful Power Output[1,2]	1.96 kW
Power Gain[1]	13.5 dB
Efficiency	65 %

[1] Approximate Value
[2] Power delivered to the load

CV-2226 5 kW Power Output, 45–55 MHz

The EIMAC CV-2226 cavity amplifier is designed for use as the main component of a high gain power amplifier covering the 45 to 55 MHz frequency range.

Cavity design is straightforward and relatively simple. The EIMAC 4CX3500A high performance VHF tetrode is grid driven for a stage gain of approximately 19 dB with a useful power output of over 5500 watts.

CHARACTERISTICS

Operating Range	45-55 MHz
Tube Type Used (not supplied)	4CX3500A
Input rf connector	Type BNC
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	19.0 in; 48.3 cm
Width	19.0 in; 48.3 cm
Depth	21.0 in; 53.3 cm
Net Weight, approx. (tube not installed)	38 lbs; 17.3 kg

TYPICAL OPERATION

Heater Voltage	5.0 Vac
Heater Current	90 Aac
Anode Voltage	4.3 kVdc
Grid Bias Voltage	−400 Vdc
Anode Current	1.9 Adc
Grid Current[1]	63 mAdc
Driving Power[1]	66 W
Useful Power Output[1,2]	5530 W
Power Gain[1]	19.2 dB
Efficiency	68 %

[1] Approximate Value
[2] Power delivered to the load

CV-2251A 10 kW(40 kW pulse) Power Output, 140–165 MHz

The EIMAC CV-2251A covers the range of 140-165 MHz. It may be used as a linear AM amplifier at 10 kW PEP or as a pulse amplifier to 40 kW.

Cavity design is straightforward and simple. The EIMAC 3CX10,000U7 high performance triode is cathode driven for a stage gain of 15 dB in linear AM service.

CHARACTERISTICS

Tuning Range	140-165 MHz
Tube Type Used (not supplied)	3CX10,000U7
Input rf connector	Type N
Output rf connector	1⅝ in. Coaxial
Cooling Required	Forced Air
Mounting	Vertical: Designed to fit 19-in Rack
Overall Dimensions (nominal):	
Height	37.0 in; 94.0 cm
Width	12.25 in; 31.1 cm
Depth	12.50 in; 31.8 cm
Net Weight, approx. (tube not installed)	56.25 lbs; 25.8 kg

TYPICAL OPERATION (140 MHz), AM Linear

	Carrier Level	100% Modulated	(155 MHz, Pulsed RF Drive*)	
Heater Voltage	15.0	15.0	15.0	Vac
Heater Current	13.5	13.5	13.5	Aac
Anode Voltage	5.8	5.8	7.2	kVdc
Grid Bias Voltage	−34	−34	−54	Vdc
Anode Current	1.5	3.3 Adc	500	mAdc†
Grid Current[1]	12	153	21	mAdc†
Driving Power[1]	78	230	1582	W‡
Useful Power Output[1,2]	2.5	10	40	kW‡
Power Gain[1]	15	15	14	dB
Bandwidth (3 dB)	4	4	4	MHz

[1] Approximate Value
[2] Power delivered to the load
* Pulse duration = 10μs
PRF = 1000 pps
† Average current
‡ Peak power

CV-8008

The EIMAC CV-8008 coaxial cavity is especially designed for television translator service in the 2150 MHz educational band. It features high power gain and good efficiency.

Contact the EIMAC Salt Lake City facility for information and delivery on the CV-8008 and Y-732.

CHARACTERISTICS

Tuning Range	2140-2160 MHz
Tube Type Used (not supplied)	Y-732
Input RF Connector	Type BNC Female
Output RF Connector	Type N Female
Amplifier	TV Translator
Class of Operation	Class AB
Peak Sync Power	Up to 100 W
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Length	5.9 in; 15 cm
Diameter	2.9 in; 7.4 cm
Net Weight, approx. (tube not installed)	2 lbs; 0.9 kg

TYPICAL OPERATION (2150 MHz)

Heater Voltage	6.0 Vac
Heater Current (approx.)	1.3 Aac
Anode Voltage	1.5 kVdc
Grid Bias Voltage*	−8 Vdc
Anode Current	160 mAdc
Useful Output Power[1,2**]	60W
Power Gain[1]	15 dB
Efficiency	25%
Bandwidth (3 dB points)	25 MHz

[1]Approximate value
[2]Power delivered to the load
*Cathode resistor
**Peak sync

CV-8020

The EIMAC CV-8020 coaxial cavity amplifier is specially designed for high efficiency, linearity, and highly reliable ground TACAN operation. In grounded-grid operation with cathode drive, the EIMAC CV-8020 can deliver up to 8 kW peak power.

Contact the EIMAC Salt Lake City facility for information and delivery on the CV-8020 and the Y-739F.

CHARACTERISTICS

Tuning Range	960-1215 MHz
Tube Type Used (supplied)	Y-739F
Input RF Connector	Type SMA Female
Output RF Connector	Type N Female
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Length	17.50 in; 44.45 cm
Diameter	3.94 in; 10.01 cm
Net Weight, approx. (tube not installed)	6.6 lbs; 3.0 kg

TYPICAL OPERATION (960-1215 MHz)

Heater Voltage	6.3 Vac
Heater Current (approx.)	2.25 Aac
Anode Voltage	5.0 kVdc
Grid Bias Voltage	−100 Vdc
Anode Current, peak	3 Adc
Driving Power[1]	225 W
Useful Output Power, peak[1,2]	4.5 kW
Power Gain[1]	13 dB
Efficiency	30%
Bandwidth (3 dB points)	20 MHz

[1]Approximate value
[2]Power delivered to the load

CV-8015

The EIMAC CV-8015 coaxial cavity oscillator is specially designed for high power, high efficiency and highly reliable ECM-type service. In grounded cathode operation with grid modulation, the EIMAC CV-8015 can deliver up to 20 kW peak power, depending on the pulse width and duty desired.

Contact the EIMAC Salt Lake City facility for information and delivery on the CV-8015 and Y-739A.

CHARACTERISTICS

Tuning Range	950-2000 MHz
Tube Type Used (supplied)	Y-739A
Output RF Connector	Type HN Female
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Length	14.06 in; 35.71 cm
Diameter	3.25 in; 8.26 cm
Net Weight, approx. (tube not installed)	4.63 lbs; 2.1 kg

TYPICAL OPERATION (1000 MHz) *

Heater Voltage	6.3 Vac
Heater Current (approx.)	2.25 Aac
Anode Voltage	6.0 kVdc
Grid Bias Voltage	−150 Vdc
Anode Current (peak)	8Adc
Useful Output Power (peak)[1,2]	17 kW
Efficiency	35%

[1]Approximate value
[2]Power delivered to the load
*Single knob tuning over 25% range centered on any frequency between 950 and 2000 MHz.

CV-8028, CV-8029, CV-8046

These EIMAC coaxial cavity oscillators are specially designed for high power, high efficiency and highly reliable ECM-type service. In grounded cathode operation with grid modulation, the EIMAC oscillators can deliver up to 50 kW peak power, depending on the pulse duration and duty desired.

Contact the EIMAC Salt Lake City facility for information and delivery on the cavity oscillator and the Y-793.

CHARACTERISTICS

Tuning Range:	
(CV-8028)	700-850 MHz
(CV-8029)	500-600 MHz
(CV-8046)	600-700 MHz
Tube Type Used (supplied)	Y-793
Output rf connector	7/8 in. EIA Coaxial
Cooling Required	Forced Air
Mounting Position	Any
Overall Dimensions (nominal):	
Length	20.4 in; 51.82 cm
Diameter	6.5 in; 16.51 cm
Net Weight, approx. (tube not installed)	22 lbs; 10 kg

TYPICAL OPERATION (800 MHz)

Heater Voltage	5.5 Vac
Heater Current, approx.	12 Aac
Anode Voltage	5.5 kVdc
Grid Bias Voltage	−150 Vdc
Anode Current, peak	28 Adc
Useful Output Power[1,2,3]	50 kW
Efficiency	32 %

[1] Approximate Value
[2] Power delivered to the load
[3] Peak pulse power

SUMMARY

Additional Cavity Oscillators and Amplifiers
(Contact Varian EIMAC, Salt Lake City, UT for availability)

Cavity Model	Type	Frequency (gHz)	Anode Voltage (kV)	Power Output (W)	Dimensions (cm)		Connectors		Tube Type
					Length	Diam.	Output	Input	
CV-8013*	OSC.	1.6± .02	6.0	20,000	15.0	7.4	HN	—	Y-739F
CV-8030**	AMP.	1.215–1.300	7.0	12,000	44.4	11.4	N	SMA	Y-739F
CV-8031**	AMP.	0.42–0.35	7.0	12,000	39.0	11.4	N	SMA	Y-739F
CV-8032**	AMP.	0.162–0.173	7.0	12,000	39.0	11.4	N	SMA	Y-739F
CV-8037**	AMP.	0.1785	7.0	12,000	39.0	11.4	N	SMA	Y-739F

* Grid Pulsed, pulse duration = 10μs. Bias voltage = −150.
** Cathode Pulsed, pulse duration = 10μs. Bias voltage = − 150.

EQUIVALENT LIST

This index lists tubes of other manufacturers for which EIMAC types are suggested as equivalents. The data sheet for the particular EIMAC type should be consulted before direct replacement is made because of possible mechanical or electrical differences.

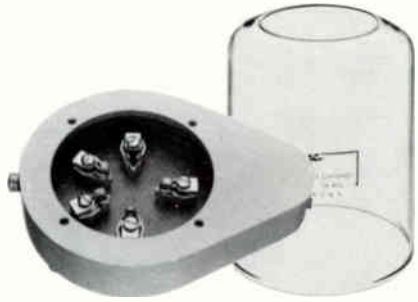
Tube Type	EIMAC Equivalent
AC55	4CX5000A/8170
AT340	4E27A/5-125B
AX4-125A	4-125A/4D21
AX4-250A	4-250A/5D22
AX9901	5867A
AY3-65	4-65/8165
BEL125	4-125A/4D21
BEL250	4-250A/5D22
BEL250CX	4CX250B/7203
B1109	3C24
B1135	100TH
C1108	6155
C1112	4-250A/5D22
C1136	4-400A/8438, 4-400C/6775
C1149	4PR60B
C1149B	4PR60C/8252W
CCS-1	Y-799
CQ10.3-1	4CX250B/7203
CV427	4PR60C/8252W
CV789	3C24
CV824	4-125A/4D21
CV1102	4-250A/5D22
CV1350	5867A
CV1905	4-65A/8165
CV2130	6155
CV2131	6156
CV2159	4X150A/7034
CV2416	4PR60C/8252W
CV2487	4CX250B/7203
CV2516	7289/3CX100A5
CV2519	4X150A/7034
CV2552	100TH
CV2572	450TH
CV2589	250TH
CV2611	304TH
CV2752	4PR60C/8252W
CV2963	4-125A/4D21
CV2964	4-250A/5D22
CV3879	4-400A/8438, 4-400C/6775
CV3880	4-1000A/8166
CV3893	4X150G/8172
CV3991	7609
CV5176	2-01C
CV5430	7289/3CX100A5
CV5959	4-400B/7527
CV6122	4-65A/8165
CV6131	4PR60C/8252W
CV6137	4CX250B/7203
CV6184	4CX10,000D/8171
CV8295	4CX5000A
CV8698	4CX350A/8321
CV8699	4CX10,000D/8171
CV9918	4CX1000A/8168
CV11106	5CX1500A
CV11107	4CX35,000C/8349
DR450TH	450TH
DX361A	4CX350FJ/8904
DX393A	8930
DX553	4CX350A/8321
EL2/275H	4CX250FG/8621
ES204A	5867A
ET1000	250TH
E152A	6155
E250A	6156
E3033	4CX10,000D/8171
E900	250TH
F450TH	450TH
ITW-10-1	3CW10,000H3
ML4-125A	4-125A/4D21
ML4-250A	4-250A/5D22
ML4-400A	4-400A/8438, 4-400C/6775
PE340	4E27A/5-125B
PL172	8295A
PL175A	4-400A/8438, 4-400C/6775
PL177WA	177WA
PL290A	290A
PL4D21	4-125A/4D21
QBL4/800	4X500A
QB3.5/750	6156
QB3.5/750G	4-250A/5D22
QB3.5/750GA	4-250A/5D22
QB3/200	4-65A/8165
QB3/300	6155
QB3/300GA	4-125A/4D21
QB4/250B	4-250A/5D22
QB4/1100GA	4-400A/8438, 4-400C/6775
QEL1/150	4X150A/7034
QEL1/150H	7609
QEL2/200	4CX250R/7580W
QEL2/275	4CX250B/7203
QEL2/275H	4CX250FG/8621
QV1-150	4X150A/7034
QV1-150A	4CX250B/7203
QV1-150D	7609
QV1-150G	4X150G/8172
QV2-250B	4CX250B/7203
QV2-250C	4CX250B/7203
QV20-P18	4PR60C/8252W
QV20-P18B	4PR60C/8252W
QY-250B	4-250A/5D22
QY3-125	6155
QY3-125B	4-125A/4D21
QY3-65A	4-65A/8165
QY4-250	6156
QY4-250B	4-250A/5D22
QY4-400	4-400B/7527
QY4-400B	4-400A/8438, 4-400C/6775
QY4-400VB	4-400A/8438, 4-400C/6775
QY4-500A	4X500A
Q160-1	4-125A/4D21
Q400-1	4-400B/7527
Q450-1	4-400A/8438, 4-400C/6775
RE125	4-125A/4D21
RE400C	4-250A/5D22
RK63	250TH
RS630	100TH
RS685	4-125A/4D21
RS686	4-250A/5D22
RS1002A	4-250A/5D22
RS1007	4-125A/4D21
RS1026	5867A
RS1046	3-1000H
RS2014CL	4CX5000A/8170
RS2016	4CX5000A/8170
RS2021	3CW40,000A5
RS2044CL	4CX5000A/8170
RS2793	4CX5000A/8170
RS2794	4CX10,000D/8171
RS4791	4CX1000A/8168
SRS360	5867A
SRS455	6155
SRS456	6156
T-1000-1	3-1000H
T-1301	100TH
T-150-1	250TL
T-300-1	450TH
T-380-1	3-400Z/8163
TB3/350	100TH
TB3/750	5867A
TB4/800	250TH
TD1/100A	7289/3CX100A5
TH328	Y-730
TH338	Y-831
TH347	Y-834
TH4327	4E27A/5-125B
TT16	4-125A/4D21
TT16D	6155
WL5D22	4-250A/5D22
X103	6155
X424D	4X150A/7034
X651Z	8930
YD1042	Y-579
YD1130	3-500Z
YD1130	3-400Z/8163
YD1270	Y-579A
YD1381	Y-732
YL1170	4CX250R/7580W
YL1340	4CX350A/8321
YL1341	4CX350F/8322
YL1461	4-400A/8438, 4-400C/6775
152RA	2-150D
2T24	3C24
3C200	250TH
3F60P	4PR60C/8252W
3F65	4-65A/8165
3HC/151JYY	7289/3CX100A5
3H151J	7289/3CX100A5
3S035T	5867A
35R	2-50A
381	7289/3CX100A5
3861B	4X150A/7034
4CX250F	4CX250FG/8621
4D21	4-125A/4D21
4F15R	4X150A/7034
4F17R	4X150G/8172
4F20R	7609
4F21	4-125A/4D21
4H/135M	4X150A/7034
4H/136M	7609
4H/160M	4CX250B/7203
4KC/160M	Y-808
4S016-T	4-125A/4D21
4S040T	4-250A/5D22
4T10R	7289/3CX100A5
4T16	100TL
4T17	100TH
4T25R	4X150G/8172
4X150D	7609
4X250B	4CX250B/7203
5D22	4-250A/5D22
5F15R	4X150A/7034
5F16R	7609
5F17R	4X150G/8172
5F20RA	4CX250B/7203
5F22	4-250A/5D22
5F22A	6156
5F23	4-400A/8438, 4-400C/6775
5F23A	4-400B/7527
5F25R	4CX250FG/8621
5F35R	4CX350A/8321
5T20	250TL
5T21	250TH
5T30	450TL
5T31	450TH
5T34	304TL
5T35	304TH
6F50R	4X500A
6F50RA	4X500A
6T51	3-1000H
6569	5867A
7F25	4-1000A/8166
7F25A	4-1000A/8166
7092	3-1000H
7525	4-1000A/8166
8F10R	4CX5000A/8170
8F11R	4CX10,000D/8171
8F45R	4CX5000R/8170W
8560AS	8560A
8597	Y-743

SOCKETS

These sockets and accessories are specifically designed for use with EIMAC tubes. Choice of the proper socket insures longer tube life and better performance. All sockets incorporate low loss insulating materials. All metal parts are plated for corrosion protection. Tube contact surfaces are non-ferrous spring alloy, silver plated for good RF conductivity and heat treated for positive contact and long life. Open construction permits adequate air flow for tube cooling.

SK-184
SK-184A, SK-265A and SK-291A resemble SK-184 in general appearance

SK-300A
SK-300 and SK-310 resemble SK-300A in general appearance



SK-400 SK-406
SK-500 resembles SK-400 in general appearance
SK-416, SK-506, and SK-516 resemble SK-406

SK-410
SK-510 resembles SK-410 in general appearance

SK-600A SK-606
SK-600, SK-602, SK-602A, SK-607, SK-610, SK-610A, SK-611 and SK-611A resemble SK-600A in general appearance

SK-620A SK-626 SK-636B
SK-630A resembles SK-620A in general appearance

SK-640

SK-650 SK-655
Socket and screen bypass units

SK-660 SK-660A
Heat sink sockets

SK-680
Screen bypass unit

SK-700
SK-710 and SK-712A resemble SK-700 in general appearance

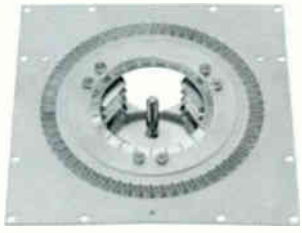
SOCKETS

For special applications which require features different from these standard sockets, custom designed sockets are offered. These may be modifications of the standard sockets or completely new designs, manufactured to customer drawings or EIMAC design. Common modifications include contact spacing, mounting features, encapsulation of components, grounded contacts, bypass capacitors, insulating materials, contact materials, and plating.

SK-740

SK-760
SK-761 and SK-770 resemble SK-760

SK-800B SK-806
SK-810B and SK-890 resemble SK-800B



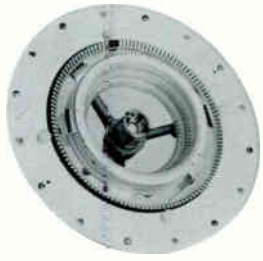
SK-820
SK-830A, SK-831, SK-840, and SK-860 resemble SK-820

SK-900 SK-906

SK-1300 SK-1306
SK-1310 and SK-1320 resemble SK-1300

SK-1400A SK-1406
SK-1420, SK-1470A, and SK-1490 resemble SK-1400A

SK-1500A
SK-1510A resembles SK-1500A



SK-2011A
SK-2000 and SK-2001 resemble SK-2011A

SK-2200 SK-2216
SK-2210 resembles SK-2200

SK-2220

SK-2450

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-184	C-184	g^2 g^3	2000 2500	1000 500	8295A	8295A	Air-system socket. C-184 chimney included.
SK-184A	C-184	g^2	2000	1000	8295A	8295A	Air-system socket. C-184 chimney included. Suppressor grid grounded to shell.
SK-265A	C-265	g^2	2000	1000	8576	264	Air-system socket. C-265 chimney included. Suppressor grid grounded to shell.
SK-291A	C-291	g^2	2000	1000	—	290A	Air-system socket. C-291 chimney included. Suppressor grid grounded to shell.
SK-300	SK-306 SK-306 SK-306 none req'd none req'd none req'd none req'd none req'd	—	—	—	8170 8170W — — — — — 9016	4CX5000A 4CX5000R 4CX5000J 4CW10,000A 4CW10,000B 4CW25,000A 4CW25,000B 4CPW10,000R	Air-system socket. For replacement only—not for new designs. Chimney is molded fiberglass reinforced silicon resin. PARTSKIT-300 available for maintenance/repair.
SK-300A	SK-306 SK-306 SK-306 SK-1306 SK-1306 SK-336 SK-316 SK-316 SK-316 none req'd none req'd none req'd none req'd none req'd	—	—	—	8170 — 8170W 8171 — 8989 8281 8910 — — — — — 9016	4CX5000A 4CX5000J 4CX5000R 4CX10,000D 4CX10,000J 4CX12,000A 4CX15,000A 4CX15,000J 4CX15,000R 4CW10,000A 4CW10,000B 4CW25,000A 4CW25,000B 4CPW10,000R	Air-system socket. Improved air pressure drop characteristics. Direct physical replacement for SK-300. For VHF service the SK-360 is recommended. PARTSKIT-300 is available for maintenance/repair.
SK-310	none req'd	—	—	—	—	4CV35,000A	Air-system socket. Cutouts in side deleted. Openings in cup base to allow for tube base cooling.
SK-320	SK-326 SK-326 SK-326 SK-326	—	—	—	8990 — — 9015	4CX20,000A 4CX20,000B 4CX20,000C 4CX20,000D	Air-system socket. Low pressure drop characteristics. For dc and LF/HF applications. For VHF service the SK-360 is recommended.
SK-340	SK-356 SK-346	—	—	—	— —	4CX3500A 4CX7500A	Air-system socket. For use in pulse, LF/HF and dc applications. Construction similar to SK-300A. For VHF applications the SK-350 socket is recommended.
SK-350	SK-356 SK-346	fil g^2	15000 use SK-355	2500	— —	4CX3500A 4CX7500A	Air-system socket. For VHF applications. Low inductance filament bypassing incorporated. Includes provisions for mounting the SK-355 screen grid bypass kit.
SK-355	Capacitor	g^2	8000	5000	— —	4CX3500A 4CX7500A	Screen grid bypass capacitor kit for SK-350 and SK-360 sockets.

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-360	SK-306	fil	15000	2500	8170	4CX5000A	Air-system socket. For VHF applications. Low inductance filament bypassing incorporated. Provisions included for mounting the SK-355 screen grid bypass capacitor kit.
	SK-306	g^2	use SK-355		8170W	4CX5000R	
	SK-306				—	4CX5000J	
	SK-1306				8171	4CX10,000D	
	SK-1306				—	4CX10,000J	
	SK-336				8989	4CX12,000A	
	SK-316				8281	4CX15,000A	
	SK-316				8910	4CX15,000J	
	SK-316				—	4CX15,000R	
	SK-326				8990	4CX20,000A	
	SK-326				—	4CX20,000B	
	SK-326				—	4CX20,000C	
	SK-326				9015	4CX20,000D	
	none req'd				—	4CW10,000A	
	none req'd				—	4CW10,000B	
	none req'd				—	4CW25,000A	
	none req'd				—	4CW25,000B	
	none req'd				9016	4CPW10,000R	
SK-400	SK-406	—	—	—	4D21	4-125A	Air-system socket. Has cast aluminum body. For sub-chassis mounting. Should not be used with any tube which does not have a metal shell reinforced base (EIA #A5-97). NOTE: For replacement only. Use SK-410 for new equipment designs.
	SK-406				4D21A	4D21A	
	SK-406				8247	4PR125A	
	SK-406				5D22	4-250A	
	SK-406				8438	4-400A	
	SK-406				8188	4PR400A	
	SK-406				6775	4-400C	
	SK-426				—	4-500A	
	none avail				8248	4PR250C	
	SK-426				—	5-500A	
SK-410	SK-436	—	—	—	—	3CX1200A7	Air-system socket. Compact and lightweight. Recommended for use with tubes with or without metal-shell reinforced base (EIA #A5-97)
	SK-406				4D21	4-125A	
	SK-406				4D21A	4D21A	
	SK-406				6155	6155	
	SK-406				8247	4PR125A	
	SK-406				5D22	4-250A	
	none avail				8248	4PR250C	
	SK-406				6156	6156	
	SK-406				5867A	5867A	
	SK-416				8163	3-400Z	
	SK-406				8438	4-400A	
	SK-406				8188	4PR400A	
	SK-406				7527	4-400B	
	SK-406				6775	4-400C	
	SK-406				—	3-500Z	
	SK-426				—	4-500A	
	SK-426				—	4-500B	
	SK-426				—	5-500A	
SK-500	SK-506	—	—	—	8166	4-1000A	Air-system socket. Cast aluminum body. Should not be used with any tube which does not have metal shell reinforced base. NOTE: For replacement only. Use SK-510 for new equipment designs.
	SK-506				8189	4PR1000A	
	SK-506				8189W	4PR1000B	
	SK-506				8960	8960	
SK-510	SK-506	—	—	—	8166	4-1000A	Air-system socket. Compact and lightweight. Recommended for tubes with or without metal shell reinforced base.
	SK-506				8189	4PR1000A	
	SK-506				8189W	4PR1000B	
	SK-506				8960	8960	
	SK-506				8164	3-1000Z	
	SK-506				—	3-1000H	
SK-520	none avail	—	—	—	—	3CX1000A3	—
	none req'd				—	3CW1500A3	

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-600A	SK-606	g^2	2700	1000	7034	4X150A	Air-system socket. Low-inductance cathode terminals insulated from shell. Chimney is high-alumina ceramic. Bypass capacitor is encapsulated for dust/moisture protection.
	SK-606				7609	7609	
	SK-606				7203	4CX250B	
	SK-606				8957	4CX250BC	
	SK-606				—	4CX250B/M	
	SK-606				—	4CX250BT	
	SK-606				8621	4CX250FG	
	SK-606				7580W	4CX250R	
	SK-606				—	4CX250RM	
	SK-646				8930	8930	
	none req'd				8249	4W300B	
	SK-606				8321	4CX350A	
	SK-606				8322	4CX350F	
	SK-606				8904	4CX350FJ	
SK-607	SK-646	g^2	2700	1000	8809	4CX600J	Air-system socket. No grounded terminals.
	SK-656				8921	4CX600JA	
SK-610A	same as SK-600A	g^2	2700	1000	—	same as SK-600A	Same as SK-600A except the 4 cathode terminals are grounded to the shell. Bypass capacitor is encapsulated for dust/moisture protection.
SK-612	same as SK-600A	g^2	2700	1000	—	same as SK-600A	Modified SK-600A: all 4 cathode and 1 heater contact grounded to shell.
SK-620A	SK-626 or SK-636B all types listed	g^2	1100	1000	7034	4X150A	Air-system socket. Low inductance cathode terminals insulated from shell. Bypass capacitor encapsulated for dust/moisture protection. SK-626 chimney is high alumina ceramic, help in position by gravity. The SK-636B includes an anode connector and clamp arrangement for positive retention of tube in any mounting position.
					7609	7609	
					7203	4CX250B	
					8957	4CX250BC	
					—	4CX250B/M	
					8621	4CX250FG	
					7580W	4CX250R	
					—	4CX250RM	
					—	4CX250BT	
					8321	4CX350A	
					8322	4CX350F	
					8904	4CX350FJ	
SK-630A	same as SK-620A	g^2	1100	1000	—	same as SK-620A	Modified SK-620A: all 4 cathode terminals are connected to the shell. For use with standard SK-626 chimney or SK-636B clamping chimney.
SK-636B	Special Chimney	—	—	—	—	same as SK-620A	Molded thermoseting plastic; clamps socket to chassis and has anode clamping band.
SK-650	SK-626	—	—	—	—	same as SK-620A	Air-system socket. Lightweight, simplified. Includes mounting flange. Use with SK-655 bypass capacitor assembly.
SK-655	Capacitor	g^2	1100	1000	—	same as SK-600A plus	Bypass capacitor assembly for use with SK-650 for tetrode screen grid bypassing, or with listed triodes for grid bypassing.
					8961	3CX400U7	
					—	3CX800A7	
					—	3CX800U7	
					8874	3CX400A7	
					—	8875	
SK-660	none req'd	—	—	—	—	4CS250R	High-alumina ceramic body. For use in heat-sink applications. Socket has threaded mounting inserts in ears.
	none req'd				—	8560A	

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-660A	none req'd none req'd	—	—	—	— —	4CS250R 8560A	Modified SK-660; threaded inserts deleted.
SK-680	SK-646 SK-646 none req'd none req'd	g^2	6000	500	— — — —	4CX600B 4CX600F 4CW800B 4CW800F	Bypass capacitor unit; fastens directly to the base of the tube.
SK-711A	none avail SK-606 SK-606	g^2	1100	400	— 8167 8561	4CX125C 4CX300A 4CX300Y	Air-system socket. Cathode and one heater terminal grounded to shell. Teflon™ body insulation. Capacitor is encapsulated.
SK-712A	same as SK-711A	—	—	—	—	same as SK-711A	Same as SK-711A but only one heater terminal is grounded to shell.
SK-740	none req'd none req'd none req'd none req'd	—	—	—	— — 8167 8561	4CX125C 4CN15A 4CX300A 4CX300Y	Lightweight thermosetting plastic body. Not an air-system socket. For use in non-corrosive liquid cooling applications.
SK-760	integral integral integral	—	—	—	— 8167 8561	4CN15A 4CX300A 4CX300Y	Similar to SK-740 but has an integral chimney.
SK-800B	SK-806 SK-806 none req'd	g^2	1500	400	8168 8660 8244	4CX1000A 4CX1500B 4CW2000A	Air-system socket. No grounded contacts.
SK-810B	same as SK-800B	g^2	1500	400	—	same as SK-800B	Same as SK-800B except cathode and one heater contacts are grounded to shell.
SK-820	SK-806	cath	500	400	8352	4CX1000K	Air-system socket. Screen grid grounded.
SK-830A	SK-806	g^2	2500	1000	8352	4CX1000K	Air-system socket. Cathode grounded to shell.
SK-831	SK-806 SK-806	g^2	2500	1000	8352 —	4CX1000K 4CX1500A	Air-system socket. Heavy filament leads. Same square mounting plate as SK-840. No tube elements are grounded.
SK-840	SK-806	g^2	2500	1000	—	5CX1500A	Air-system socket. Suppressor grid grounded. PARTSKIT-840 is available for maintenance/repair.
SK-860	SK-816	—	—	—	8283	3CX1000A7	Air-system socket. No grounded terminals. Continuous ring contact to heater/cathode.
SK-870	SK-816	—	—	—	8283	3CX1000A7	Modified SK-860: grid contacts grounded to shell.
SK-890B	same as SK-800B	—	1500	400	—	same as SK-800B	Modified SK-800B: bypass capacitor isolated for use as required by equipment design. Capacitor rotated 60° to allow for addition of inductance.
SK-900	SK-906	g^2	650	700	—	4X500A	Air-system socket. Bypass capacitor assembly is detachable. SK-906 chimney include anode clamp to allow inverse mounting of tube.

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-1300	none req'd	—	—	—	—	3CW10,000A3	Air-system socket. No grounded contacts. PARTSKIT-1300 is available for maintenance/ repair.
	none req'd				—	3CW20,000A1	
	none req'd				—	3CW20,000A3	
	none req'd				—	3CW20,000A7	
	none req'd				—	3CW30,000A7	
	none req'd				—	3CW40,000A5	
	SK-1316				—	3CX5000A3	
	SK-1306				8158	3CX10,000A1	
	SK-1306				8159	3CX10,000A3	
	SK-1306				8160	3CX10,000A7	
	SK-1306				—	3CX15,000A3	
	SK-1306				—	3CX15,000A7	
	SK-1326				—	3CX20,000A3	
	SK-1336				—	3CX20,000A7	
SK-1310	none req'd	—	—	—	—	3CV30,000A1	Modified SK-1300: no mounting flange; opening in cup base for cooling air path. PARTSKIT-1300 is available for maintenance/ repair.
	none req'd				—	3CV30,000A3	
SK-1320	same as SK-1300	—	—	—	—	same as SK-1300	Air-system socket. Grid contacts grounded to shell. PARTSKIT-1300 is available for maintenance/ repair.
SK-1400A	SK-1406	g^2	1800	1000	8169	4CX3000A	Air-system socket. No contacts grounded.
SK-1420	SK-1426	g^2	1800	1000	8966	5CX3000A	Air-system socket. Suppressor grid grounded.
SK-1470A	SK-1406	—	—	—	8169	4CX3000A	Modified SK-1400A: screen contacts grounded. No bypass capacitor.
SK-1490	none req'd	—	—	—	—	4CV8000A	Modified SK-1400A: mounting flange removed. No bypass capacitor. No grounded contacts.
	Note: BR-101 boiler required for anode cooling, plus associated accessories such as water lines, water level controller, water reservoir, etc.						
SK-1500A	none avail	—	—	—	8349	4CX35,000C	Not an air-system socket but includes attachment for tube stem cooling. Mounting flange common to screen grid contact ring. No tube seating device included. PARTSKIT-1500 is available for maintenance/repair.
	none req'd				8351	4CV100,000C	
	none req'd				—	4CW100,000D	
	none avail				—	Y546	
	none req'd				—	Y647	
	Note: BR-300A boiler required for anode cooling with 4CV100,000C, plus associated accessories such as water lines, water level controller, condenser, water reservoir, etc.						
SK-1510A	same as SK-1500A	—	—	—	—	same as SK-1500A	Modified SK-1500A: tube seating device added. PARTSKIT-1500 is available for maintenance/ repair.
SK-1511	Seating Device	—	—	—	—	—	Tube seating device for use with SK-1500A socket.
SK-1710	none req'd	—	—	—	—	3CW50,000H3	Filament connector—2 required.
	none req'd				—	4CV250,000B	
	none req'd				—	4CW250,000B	
	SK-2316				9008	X2062J	SK-2306 and SK-2306 provide containment for protective gas atmosphere.
	SK-2306				9009	X2062K	
	SK-2306				—	X2062L	
	SK-2306				—	X2062M	
	Note: BR-620 boiler required for anode cooling with 4CV250,000B, plus associated accessories such as water lines, water level controller, condenser, water reservoir, etc.						

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-1711	none req'd	—	—	—	—	3CW250,000H3	Filament connector—2 required.
	none req'd				—	4CV250,000B	Preferred to SK-1710 for new
	none req'd				—	4CW250,000B	installations.
	SK-2316				9008	X2062J	SK-2316 and SK-2306 provide
	SK-2306				9009	X2062K	containment for protective gas
	SK-2306				—	X2062L	atmosphere.
	SK-2306				—	X2062M	
	Note: BR-620 boiler required for anode cooling with 4CV250,000B, plus associated accessories such as water lines, water level controller, condenser, water reservoir, etc.						
SK-1712	none req'd	—	—	—	—	3CW250,000H3	Grid connector—1 required.
	none req'd				—	4CV250,000B	
	none req'd				—	4CW250,000B	
	SK-2316				9008	X2062J	SK-2316 and SK-2306 provide
	SK-2306				9009	X2062K	containment for protective gas
	SK-2306				—	X2062L	atmosphere.
	SK-2306				—	X2062M	
	Note: BR-620 boiler required for anode cooling with 4CV250,000B, plus associated accessories such as water lines, water level controller, condenser, water reservoir, etc.						
SK-1720	Water Jacket	—	—	—	—	4CW250,000B	Anode water jacket, not supplied with tube.
SK-1900	SK-1906	—	—	—	—	3CX800A7	For other than vertical mounting
	none req'd				8873	8873	(anode up) of 3CX800A7 chimney
	SK-606				8874	3CX400A7	clamp SK-1916 should be used.
	none req'd				8875	8875	
SK-1920	Thermal Link*	—	—	—	8873	8873	Beryllium-oxide ceramic thermal
					8560A	8560A	link, for combined electrical insulation and heat conduction from anode to heat sink.
SK-2000	none req'd	g²	7200	4000	—	4CV50,000E	Standard socket. Filament
	none req'd				—	4CV50,000J	grounded.
	none req'd				—	4CW50,000E	
	none req'd				—	4CW50,000J	
	none req'd				—	4CW100,000E	
	none req'd				8959	8959	
	none req'd				—	4CW150,000E	
	none req'd				—	Y567B	
	none req'd				—	Y767	
	none req'd				—	Y676A	
	Note: BR-710B boiler required for anode cooling with 4CV50,000E or 4CV50,000J, plus associated accessories such as water lines, water level controller, condenser, water reservoir, etc.						
SK-2001	none req'd	g²	7200	4000		same as SK-2000	Modified SK-2000: no grounded contacts.
SK-2011A	none req'd	g²	11000	4000		same as SK-2000	Preferred for radio-frequency applications. See SK-2020 and SK-2021. No ground contacts.
SK-2020	Corona Ring		—	—		same as SK-2000	Corona ring which may be attached to the SK-2011A for improved high voltage holdoff.
SK-2021	Corona Ring		—	—		same as SK-2000	Corona ring which may be attached to the anode flange of the listed tubes. Use in conjunction with the SK-2020.
SK-2050	Water Jacket		—	—	—	4CW50,000E	Water jacket, not supplied with tube.
					—	4CW50,000J	
SK-2100	Water Jacket		—	—	—	4CW100,000E	Water jacket, not supplied with tube.
					8959	8959	
					—	Y676	
					—	Y676A	
SK-2110	Water Jacket		—	—	—	4CW100,000E	Modified SK-2100. External metal surface is silver plated. Spacing between water fittings increased by 0.045 inch.
					8959	8959	

*Before use read EIMAC OPERATING HAZARDS sheet.

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-2200	SK-2216 SK-2216 none req'd	—	—	—	8877 — 8244	3CX1500A7 3CPX1500A7 3CW2000A7	Air-system socket. Chimney made of Teflon™. No grounded contacts.
SK-2210	SK-2216	—	—	—	8877 —	3CX1500A7 3CPX1500A7	Modified SK-2200: grid grounded to shell.
SK-2220	SK-2216 none avail	—	—	—	8938 8962	8938 3CX1500U7	Air-system socket, for use up to 200 MHz. Grid grounded to shell.
SK-2306	Hood	—	—	—	9009 — —	X2062K X2062L X2062M	Containment for protective gas atmosphere, required for operation at rated maximum voltage.
SK-2310	Connector	—	—	—	— 8971 8972 8973 8974	4CM400,000A X2177 X2176 X2170 X2159	Water-cooled filament connector; 2 required. 2 required. 3 required. 2 required. 3 required.
SK-2315	Connector	—	—	—	— 8971 8972 8973 8974	4CM400,000A X2177 X2176 X2170 X2159	Low-inductance connector for rf return, filament to ground.
SK-2316	Hood	—	—	—	9008	X2062J	Containment for protective gas atmosphere, required for operation at rated maximum voltage.
SK-2320	Fitting	—	—	—	8973 8974 8971 8972 9009 — — —	X2170 X2159 X2177 X2176 X2062K X2062L X2062M 4CM400,000A	Water fitting for anode cooling jacket. Has knurled nut which mates with water fitting on jacket, a replaceable electrolytic target, section of flexible canvas hose about 20" long, a corona shield, and a 2½" female pipe fitting for connecting to rigid pipe. Two required per tube.
SK-2321	Fitting	—	—	—	8973 8974 8971 8972 9009 — — —	X2170 X2159 X2177 X2176 X2062K X2062L X2062M 4CM400,000A	Water fitting, anode cooling jacket. Corona shield and electrolytic target included. For direct connection to flexible canvas hose. Two SK-2320 or SK-2321 required per tube.
SK-2322	—	—	—	—	8971 8972 8973 8974 9009 — — —	X2177 X2176 X2170 X2159 X2062K X2062L X2062M 4CM400,000A	Water connection for anode cooling water. Intended for direct connection to 2" NPT fittings.
SK-2323	—	—	—	—	8971 8972 8973 8974 9009 — — —	X2177 X2176 X2170 X2159 X2062K X2062L X2062M 4CM400,000A	Water connection for anode cooling water. Use with 1⅝" I.D. hose held to the connector with hose clamps.

SOCKETS, CHIMNEYS AND HARDWARE FOR EIMAC TUBES

Socket No.	Chimney No.	Bypass Capacitor Element	pF	DCWV	For Tube Type EIA#	Catalog #	Comment
SK-2350	none avail	—	—	—	8172	4X150G	Full set of contact collets.
	none avail				8245	4CX250K	
SK-2400	SK-2406	—	—	—	—	4CX30,000G	Air-system socket, for use in pulse, dc, and LF/HF rf applications.
	SK-2406				—	4CX40,000G	
	none req'd				—	4CW100,000G	
SK-2450	none req'd	—	—	—	9000	4CW300,000G	Air-system socket.
SK-2500	none avail	—	—	—	—	3CX5000U7	Air-system socket. Grounded grid use is optional, depending on mounting.
	SK-2506				—	3CX10,000U7	
	SK-2506				—	3CX12,000U7	

TUBE COLLETS

Tube	Terminal	EIMAC Part No.
3CW5000A3/8242 3CX2500A3/8161 3CX3000A1/8238 3CX3000A7 3CW5000A7	Filament (inner) Filament (outer)	149575 149576
3CX400U7/8961	Heater (inner) Heater (outer) Cathode Grid Anode (cooler)	008290 008291 008292 882931 154418
3CX600U7	Heater (inner) Heater/cathode Grid Anode (cooler) Anode (contact ring)	008290 154684 154685 154683 154418
3CX800A7	Grid Grid (w/socket mounting) Anode (cooler) Anode (cooler) Assy	882931 720359 720829 720834
3CX800U7	Heater (inner) Heater (outer) Cathode Grid Anode (cooler) Anode (cooler) Assy	008290 008291 008292 882931 720829 720834
3CX1500U7/8962 8938	Heater (inner) Heater (outer) Cathode Grid Anode (cooler) Anode (cooler) Assy	135310 153307 135306 135305 135304 242955
3CX5000U7	Heater Heater/cathode Grid	720638 720637 720636
3CX10,000U7 3CX12,000U7	Heater Heater/cathode Grid Anode	720638 720637 720636 720635
4CPX250K/8590 4CX250K/8245 4CX250M/8246 4X150G/8172	Heater Heater/cathode Grid Screen Anode (cooler)	008290 008291 008292 882931 008294
4CV250,000B 4CW250,000B	Filament (2 req'd) Grid	SK-1711 SK-1712
8538B 8755 8757 8847 8847A	Anode radiator (100 W) Anode radiator (150 W)	157254 157271
8873 8874/3CX400A7 8875	Grid Plate (8874 only) Grid (w/socket mounting)	882931 008294 720359
8877/3CX1500A7	Grid Grid Clip (4 req'd) Anode (cooler) Assy	135305 149842 242955
3CW2000A7	Grid	135305
8930	Anode (cooler)	154418

2C39A	7815	7855KAL	8907AL
2C39BA	7815AL	8533	8944
2C39WA	7815R/8745	8533W	Y579
7211	7815RAL	8906	Y667
7289	7855	8906AL	Y667A
7698	7855K	8907	

Collets are available from Instrument Specialties Co., P.O. Box A, Delaware Water Gap, PA 18327:

Anode	97-20
Grid	97-72
Grid	97-74
Cathode/heater	97-76
Heater	97-280

PARTS KITS

EIMAC Parts Kits are available for repair of the following sockets:

Socket SK-300/SK-300A order Parts kit-300
Socket SK-840 order Parts kit-840
Socket SK-1300/1310/1320 order Parts kit-1300
Socket SK-1500—SK-1510 order Parts kit-1500

PLANAR TRIODE HEAT SINK ADAPTORS

Socket No.	Chimney No.	Bypass Capacitor pF	Bypass Capacitor DCWV	For Tube Type EIA#	For Tube Type Catalog #	Comment
SK-3010	Thermal Link*	—	—	8755 8757 8847 8847A — —	8755 8757 8847 8847A Y518 Y519	Heat sink adaptor for the listed planar triode tube types. (Beryllium oxide)
SK-3011	Thermal Link*	—	—	—	Y540	Heat sink adaptor for the listed planar triode tube type. (Beryllium oxide)
SK-3012	Thermal Link*	—	—	—	Y540	Heat sink adaptor for the listed planar triode tube type. (Beryllium oxide)
SK-3020	Thermal Link*	—	—	— —	Y540 Y634	Heat sink adaptor for the listed planar triode tube types. (Beryllium oxide)
SK-3060	Thermal Link*	—	—	8940 8941 8942 — — —	8940 8941 8942 Y678 ¶ Y690 # Y690A	Heat sink adaptor for the listed planar triode tube types. (Beryllium oxide)
SK-3064	Thermal Link*	—	—	8941 8942 — —	8941 8942 Y678 ¶ Y690 #	Heat sink adaptor for the listed planar triode tube types. (Beryllium oxide)

* Before use read EIMAC OPERATING HAZARDS sheet
\# 8941 with solder terminals
¶ 8942 with solder terminals

SK-3010

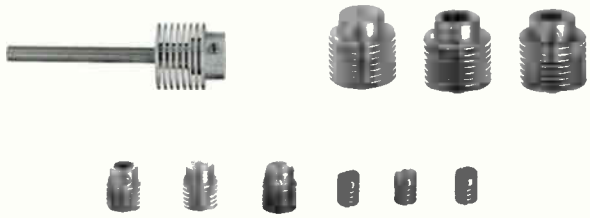
SK-3020

E.F. JOHNSON SOCKETS, PURCHASED AND AVAILABLE FOR EIMAC CUSTOMERS

EIMAC NO.	JOHNSON NO.	FOR TUBE TYPE
048291	122-247-202	4-65A, 4PR65A
048292	122-237-200	4E27A/5-125B
149990	122-234-200	4PR60B, 8252W/4PR60C, C-1149
149998	124-213-200	304TL, 304TH
149999	124-214-200	2-250A
154353 (SK-1900)	124-311-100	8873, 8874/3CX400A7, 8875, 3CX800A7

HEAT DISSIPATING CONNECTORS

EIMAC HR Heat Dissipating Connectors are used to make electrical connections to the plate and grid terminals of EIMAC Tubes, and at the same time, provide efficient heat transfer from the tube element and glass seal to the air. These connectors are machined from solid dural rod and are supplied with the necessary set screws. For marking per MIL-STD-130B add prefix letter "M" to the part number for connectors HR-4 through HR-10. Note HR-1 through HR-3 are too small to permit marking.



Type	Height	Dia.	Hole Dia.
HR-1	11/16"	1/2"	.052"
HR-2	11/16"	1/2"	.062"
HR-3	11/16"	1/2"	.072"
HR-4	7/8"	3/4"	.102"
HR-5	7/8"	3/4"	.127"
HR-6	7/8"	3/4"	.367"
HR-7	1-11/32"	1-3/8"	.127"
HR-8	1-11/32"	1-3/8"	.575"
HR-9	1-11/32"	1-3/8"	.569"
HR-10	1-11/32"	1-3/8"	.510"

HEAT DISSIPATING CONNECTORS (Cross-Reference)

Tube	Plate Connector	Grid Connector
2-50A	HR-3	—
2-150D	HR-6	—
3C24	HR-1	HR-1
3-500Z	HR-6	—
3-1000Z/8164	HR-8	—
3-1000H	HR-8	
4-65A	HR-6	—
4-125A/4D21	HR-6	—
4-250A/5D22	HR-6	—
4-400B/7527	HR-6	—
4-400C/6775	HR-6	—
4PR60C/8252W	HR-8	—
4PR65A/8187	HR-6	—
4PR125A/8247	HR-6	—
4PR250C/8248	HR-6	—
4PR1000A/8189	HR-8	—
4-500A	HR-6	—
4-500B	HR-6	
4-1000A/8189	HR-8	—
5-500A	HR-6	—
6C21	HR-8	HR-8
100TH-TL	HR-6	HR-2

Tube	Plate Connector	Grid Connector
177WA	HR-6	—
250R	HR-6	—
250TH-TL	HR-6	HR-3
253	HR-8	—
254W	HR-3	HR-3
304TH-TL	HR-7	HR-6
450TH-TL	HR-8	HR-8
592/3-200A3	HR-10	HR-5
5867A	HR-6	—
6155	HR-6	—
6156	HR-6	—
6775/4-400C	HR-6	—
7527/4-400B	HR-6	—
8960	HR-8	—

TUBE EXTRACTORS

SK-604

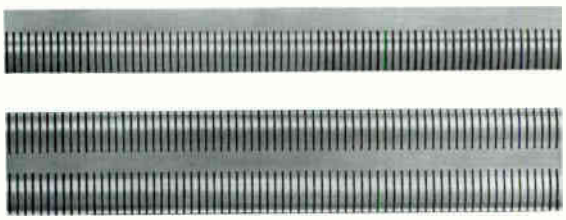
This tube extractor is designed for use in removing coaxial-base and 9-pin-base tubes from their sockets without damage. The 4X150 series and 4CX250 series tubes may be removed with this extractor.

SK-605

These special pliers are designed for use in removing breechlock base tubes from their sockets without damage. The 4CX300 series and 4CX1000/4CX1500 series tubes may be removed with these pliers.

For 8933 use EIMAC extractor 157521.

PREFORMED CONTACT FINGER STOCK



EIMAC Preformed Finger Stock is a prepared strip of spring material slotted and formed into a series of fingers designed to make a sliding contact. It is especially suitable for making connections to tubes with coaxial terminals or to moving parts, such as long-line and cavity circuits or screen-room doors. EIMAC finger stock is available in 9 different shapes and sizes, three of which incorporate "spooned" contact fingers. All sizes come in standard 36 inch lengths. Stock is available on special factory order in the following semi-finished states: Slotted and formed (Not heat treated or plated). Slotted, formed, and heat treated (Not plated). Slotted, formed, and plated (Not heat treated). Untreated and unplated stock are listed as CF101, CF301, CF501 and CF901.

Type	Finger Radius (Inches)	Finger Width (Inches)	Slot Width (Inches)	Slot Depth (Inches)	Comments
CF-100(*)	1/16	1/8	0.040	9/32	spooned
CF-200	1/16	1/8	0.040	9/32	double-edged
CF-300(*)	13/64	1/8	0.040	19/32	finger tip has reverse radius
CF-400	13/64	1/8	0.040	35/64	double-edged
CF-500(*)	16/32	1/8	0.040	7/8	finger tip has reverse radius
CF-600	15/32	1/8	0.040	29/32	double-edged with reverse tip radii
CF-700	1/16	1/8	0.040	9/32	spooned
CF-800	1/16	1/8	0.040	15/32	spooned and bent
CF-900(*)	0.030	1/16	0.020	15/64	smallest fingers

*Availabled untreated and unplated

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