Amperex®

COMMUNICATION COMPONENTS

- RF Power Transistors
- RF Power Tubes (Large)
- RF Power Tubes (Small)
- TV Tetrode Cavities
- Temperature Compensated Crystal Oscillators
- Vacuum Capacitors
- Microwave Diodes and Assemblies
- RF Circulators
- Rectifiers
- Klystrons

Amperex® Electronic Corporation...

is a pioneer in the development of industrial electronic components and for four decades has been producing high quality devices for industrial, military and commercial equipment manufacturers.

Creative engineering and precision manufacturing have been responsible for a steady growth in the facilities and operations of Amperex. Founded in 1932, the Company originally manufactured special purpose tubes. Today, the Hicksville Division of Amperex manufactures and markets computer components, instrumentation components, microwave devices, scientific products, industrial power components, and communication components.

This catalog is one in a series of six containing condensed technical data on these products. The contents of this catalog as well as the others in the series is listed below:

COMMUNICATION COMPONENTS

RF POWER TRANSISTORS
RF POWER TUBES (LARGE)
RF POWER TUBES (SMALL)
TV TETRODE CAVITIES
TEMPERATURE COMPENSATED–
CRYSTAL OSCILLATORS
VACUUM CAPACITORS
MICROWAVE DIODES AND ASSEMBLIES
RF CIRCULATORS
RECTIFIERS
KLYSTRONS

SCIENTIFIC PRODUCTS

PHOTOMULTIPLIER TUBES
RADIATION COUNTER TUBES
CHANNEL ELECTRON MULTIPLIERS
COAXIAL THERMOCOUPLE AND HEATER WIRE
SEMICONDUCTOR RADIATION DETECTORS
RECTIFIER STACKS
X-RAY COMPONENTS

MICROWAVE DEVICES

MICROWAVE DIODES AND ASSEMBLIES
INDUSTRIAL MAGNETRONS
RADAR TUBES
RECTIFIER STACKS
KLYSTRONS

INDUSTRIAL POWER COMPONENTS

RF POWER TUBES (LARGE)
VACUUM CAPACITORS
RECTIFIER STACKS
INDUSTRIAL MAGNETRONS
MERCURY RECTIFIERS
THYRATRONS
IGNITRONS

INSTRUMENTATION COMPONENTS

TEMPERATURE COMPENSATED–
CRYSTAL OSCILLATORS
REED SWITCHES
TRIGGER TUBES
PREMIUM QUALITY TUBES

COMPUTER COMPONENTS

REED SWITCHES
TEMPERATURE COMPENSATED–
CRYSTAL OSCILLATORS
TRIGGER TUBES

The Hicksville Division...

occupies seven acres in Hicksville, Long Island, New York and contains 140,000 square feet of manufacturing space and 17,000 square feet devoted to research and development activities.

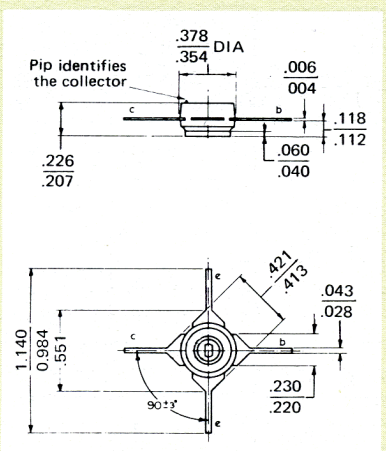
Amperex is a wholly owned subsidiary of the North American Philips Corporation, an affiliation that supplements its general capabilities in electronics technology and gives it ready access to the basic product technology and international research facilities of the renowned N.V. Philips of Holland.

Amperex®

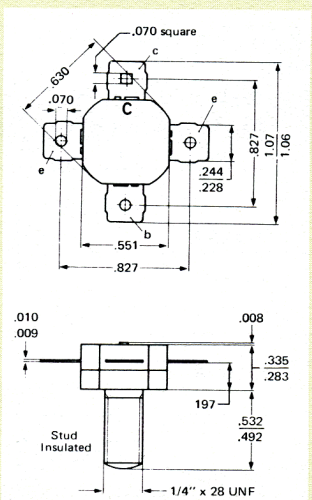
RF Power Transistors

SUMMARY OF SELECTED DEVICE PARAMETERS

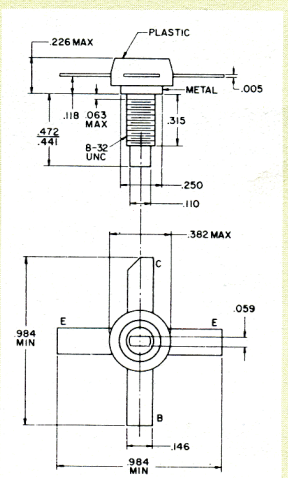
TYPE NO.	f_T (MHz)	OPERATING FREQ. (MHz)	P_o (W)	P_{in} (W)	G_p (dB)	EFFICIENCY %	NF AT OPER. F (dB)	PACKAGE
BLX13	500	28	8	0.2	16	—	d_3=—40dB	SOT56
BLX14	300	28	50	2.5	13	—	d_3=—30dB	SOT55
BLX65	900	470	2	0.5	6	65	—	TO39
BLX66	900	470	2.5	0.35	8.5	65	—	TO131
BLX67	900	470	2.5	0.35	8.5	65	—	SOT48
BLX68	800	470	7	2	5.5	70	—	SOT48
BLX69	1000	470	17	6.8	4	65	—	SOT48
BLY33	450	175	3	0.28	—	65	—	TO39
BLY34	450	175	3	0.5	—	80	—	TO39
BLY87A	700	175	8	1.0	9	70	—	SOT48
BLY88A	700	175	15	2.65	7.5	65	—	SOT48
BLY89A	650	175	25	6.25	6	70	—	SOT56
BLY90	700	175	50	18	4.5	75	—	SOT55
BLY91A	500	175	8	0.5	12	65	—	SOT48
BLY92A	500	175	15	1.5	10	65	—	SOT48
BLY93A	500	175	25	3.1	9	60	—	SOT56
BLY94	500	175	50	10	7	65	—	SOT55
1N4885	Tripler	450	24	40	—	60	—	DO4
1N4886	Tripler	450	16	25	—	64	—	DO4
2N3866	700	250	1.5	0.1	12	50	—	TO39
2N4427	700	175	1	0.1	10	50	—	TO39



TO131



SOT55



SOT48

RF Power Transistors (Continued)

RF POWER PRODUCT LINE

P_o (W)	30 MHz SSB 28V	175 MHz FM 13.5V	175 MHz FM 28V	175 MHz AM 13.5V	470 MHz FM 13.5V	470 MHz FM 28V
0.5					2N4427	
1.0		2N4427				
1.5			2N3866			
2.0				BLY33	BLX65	
2.5					BLX66	
3.0		BLY34	BLY33		BLX67	BLX92
4.0		BFS22A	BFS23A			
6.0						
7.0				A235	BLX68	BLX93
8.0	BLX13	BLY87A	BLY91A			
13.0			A235			
15.0		BLY88A	BLY92A			
20.0					BLX69	BLX94
25.0		BLY89A	BLY93A			
50.0	BLX14	BLY90	BLY94			
100.0	BLX15					

TO-39
BFS23A
BFS22A
BLY33
BLY34
BLX65
2N3866
2N4427

TO-60
A235

SOT55 (JUMBO STUD)
BLY90
BLY94
BLX14
BLX15

TO-131 (STUDLESS)
BLX66

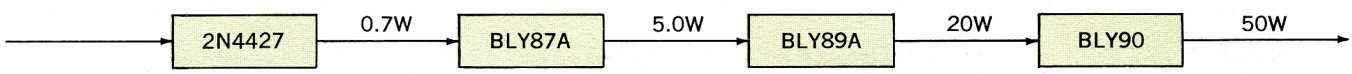
SOT48 (STUD)
BLY87A
BLY88A
BLY91A
BLY92A
BLX67
BLX68
BLX69

SOT56 (STUD)
BLX13
BLY89A
BLY93A

SUGGESTED TRANSMITTER LINE-UPS

XMTR POWER=	VHF 175 MHz 6W 13.5V	VHF 175 MHz 12W 13.5V	VHF 175 MHz 25W 13.5V	VHF 175 MHz 50W 13.5V	UHF 470 MHz 7W 13.5V	UHF 470 MHz 20W 13.5V	SSB 28 MHz 50W 28V	FM 30-70 MHz 50W 28V
Device P_o								
0.55W		2N4427						
0.7				2N4427				
1.0	2N4427		2N4427					
2.0					BLX66	BLX66		
2.5		BLY34						
5.0				BLY87A				
6.0	BLY87A						BLX13	BLX13
6.25			BLY87A					
7.0					BLX68	BLX68		
12.0		BLY88A						
20.0				BLY89A		BLX69		
25.0			BLY89A					
50.0				BLY90			BLX14	BLX14

EXAMPLE: 50W XMTR POWER AT 175 MHz



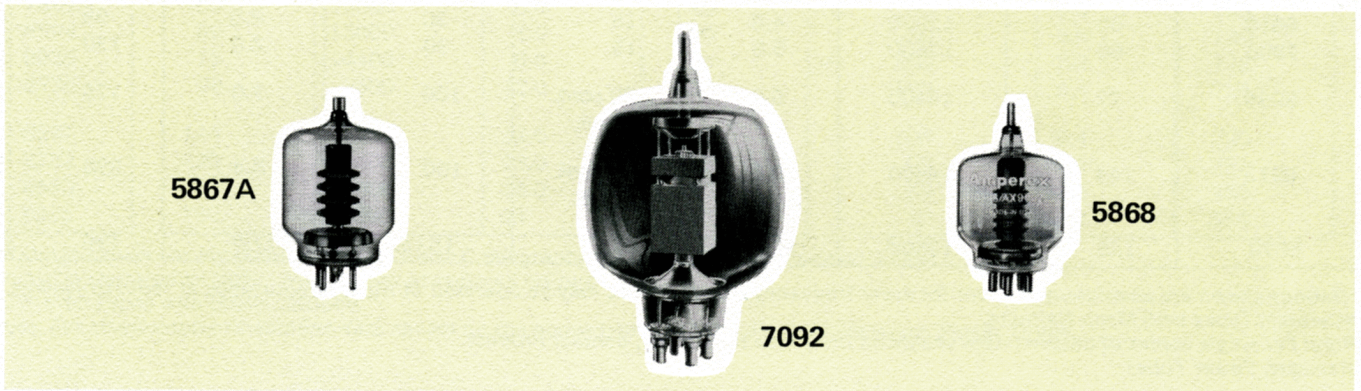
Amperex®

RF Power Tubes - Large

RADIATION COOLED TRIODES

	TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISSIPATION	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT
	5866/AX9900	512 W	2500 V	205 mA	135 W	150/200 MHz	6.3 V	5.4 A
	5866A/7986	512	3000	255	150	150	6.3	5.8
	3-400Z/8163**	1200	3000	400	400	110	5.0	14.1
	3-500Z/8802**	1200	3000	400	500	110	5.0	14.1
	5867A/AX9901	1550	4000	420	350	100	5.0	1.41
R	833A	1800	4000	500	400	20/75	10.0	10.0
	8078	2500	7000	560	500	50	5.0	32.5
	5868/AX9902	2600	4000	650	450	100	10.0	9.9
	7092	4000	7000	750	800	50	6.3	32.5
R	ZB3200	8000	10000	1250	2500	10/50	21.5	40.5

R—Replacement Types
**Ratings shown are absolute-maximum Class C Telegraphy for lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.*
***Ratings shown are absolute-maximum Class B zero bias.*
Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Power Tubes.



FORCED AIR-COOLED TRIODES

TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISS.	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT
YD1300	0.36 kW	1800	0.2 A	0.3 kW	1000 MHz	5.0 V	2.1A
YD1301	0.36	1800	0.2	0.3	1000	5.0	2.1
YD1331	1.93	3500	0.55	0.9	960	6.3	5.4
YD1333	1.93	3500	0.55	0.9	960	6.3	5.4
YD1330	2.45	3500	0.7	1.8	960	6.3	6.5
YD1332	2.45	3500	0.7	1.8	960	6.3	6.5
501RA/ 5759	3	3500	1.0	1	150	7.5	24
YD1240	6	5500	1.4	1.5	250	6.3	33
8728	6.5	7200	1.1	2.5	85/160	6.3	33
7753	7	8000	1.0	1.7	50	6.3	65
5924A	9	6000	1.5	6	75/220	12.6	33

**Ratings shown are absolute-maximum for lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.*

Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Power Tubes.

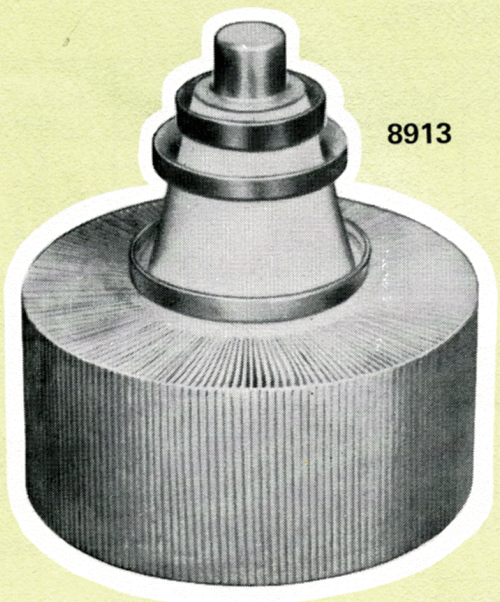
(continued)

RF Power Tubes-Large (Continued)

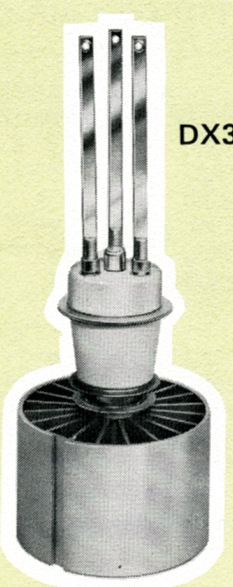
FORCED AIR-COOLED TRIODES Continued

	TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISS.	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT
	7459	9	6000	1.5	4	75/220	12.6	33
	7900	9	6000	1.5	4	75	12.6	33
	8269	12	8000	1.8	6	50	12.6	33
●	8731	12.5	7200	2.8	5	85/150	6.3	66
	DX345	14	7200	2.2	4	30	12.6	33
	6961A	14	7200	2.2	6	30	12.6	33
	7237A	14	7200	2.2	6	30/50	12.6	33
	8670A	18	9000	2.2	6	30	12.6	33
	SD612	18	9000	2.2	6	30	12.6/6.3	33/66
●	8734	20	12000	2.0	10	50	5.4	65
●	8666	24	7200	4.0	10	120	5.8	130
	7804	30	8000	4.0	10	30	6.3	130
●	8801	45	9000	6.0	20 cont. 25 int.	100	7.0	175
	6618	60	13000	4.8	15	30	8.0	98
	7806	60	13000	5.0	15	30	8.0	130
●	8935	72	14400	6.0	20 cont. 25 int.	100	7.0	175
●	8913	144	14400	12.0	30 cont. 50 int.	100	8.4	235
	6078	165	13500	12.5	45	15/30	17.5	196

**Ratings shown are absolute-maximum for lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.*
●Ceramic Types with Mesh Cathode.
Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Power Tubes.



8913



DX345

YD1333

RF Power Tubes-Large (Continued)

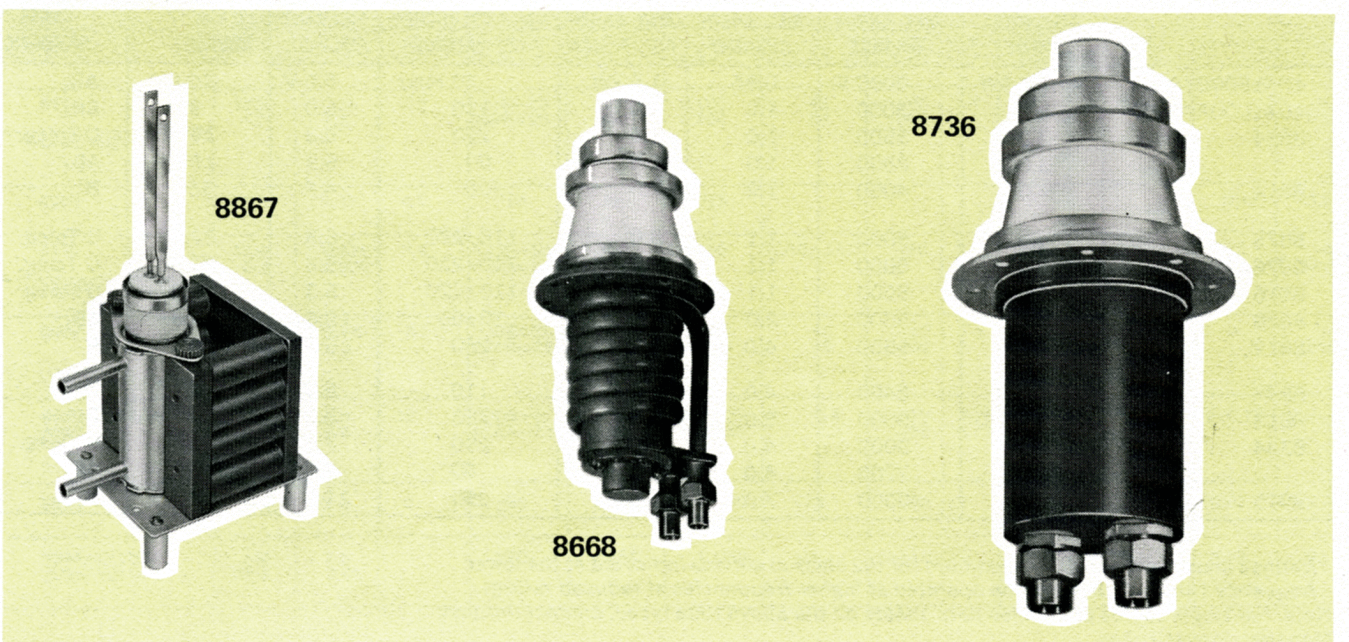
WATER COOLED TRIODES

TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISSIPATION	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT
8867	4 kW	5500 V	0.85 A	2 kW	5 MHz	5.0 V	6.1 A
5923	9	6000	1.5	6	75/220	12.6	33
8268	12	8000	1.8	6	50	12.6	33
8593	12	8000	1.8	6	50	12.6	33
8732	12.5	7200	2.8	5	85/150	6.3	66
8733	12.5	7200	2.8	5	85/150	6.3	66
6960A	14	7200	2.2	6	30	12.6	33
8592A	14	7200	2.2	6	30	12.6	33
8669A	18	9000	2.2	6	30	12.6	33
8830A	18	9000	2.2	6	30	12.6	33
● 8667	24	7200	4.0	10	120	5.8	130
● 8668	24	7200	4.0	10	120	5.8	130
7805	30	8000	4.0	15	30	6.3	130
8591	30	8000	4.0	15	30	6.3	130
● 8735	45	9000	6.0	25	100	7.0	175
6617	60	13000	4.8	20	30	8.0	98
7807	60	13000	5.0	20	30	8.0	130
8594	60	13000	5.0	20	30	8.0	130
● 8936	72	14400	6.0	25	100	7.0	175
● 8736	96	9600	12.0	50	100	8.4	235
● 8937	144	14400	12.0	50	100	8.4	235
● 8752	220	14400	18.0	100	30	12.2	250
● 8680	375	16800	28.0	160	30	12.6	380
● 8918	750	19200	45	300	30	14.0	555

**Ratings shown are absolute-maximum Class C telegraphy for lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.*

●Ceramic Types with Mesh Cathode.

Note: For single copies of detailed data sheets on the above types, contact Product Manager, Power Tubes.



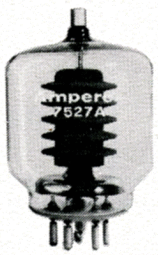
RF Power Tubes–Large (Continued)

RADIATION COOLED TETRODES

TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISSIPATION	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT	CLASS OF SERVICE
4-65A/8165	450 W	3000 V	150 mA	65 W	150/250 MHz	6.0 V	3.5 A	AB_1,C Teleg.
4-125A/4D21	625	3000	225	125	120/200	5.0	6.5	AB_1,C Teleg.
6155	625	3000	225	125	120/200	5.0	6.5	AB_1,C Teleg.
4-250A/5D22	1250	4000	350	250	110	5.0	14.1	AB_1,C Teleg.
6156	1250	4000	350	250	110	5.0	14.1	AB_1,C Teleg.
4-400A/8438	1400	4000	350	400	110	5.0	14.1	AB_1,C Teleg.
● 4-400A/8438A	1400	4000	350	400	110	5.0	14.1	AB_1,C Teleg.
7527	1400	4000	350	400	110	5.0	14.1	AB_1,C Teleg.
● 7527A	1400	4000	350	400	110	5.0	14.1	
6079/AX9908	2250	5000	450	500	75/100	10.0	9.9	C Teleg.
	2250	5000	600	500	75/100	10.0	9.9	AB_1
8179	3500	5500	700	800	30	7.5	22.6	C Teleg.
	2500	5500	600	800	30	7.5	22.6	AB_1

*Ratings shown are absolute-maximum for the class of service indicated at the lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.
●Low HUM Version, guaranteed HUM level better than —60 dB.
Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Power Tubes.


4-65A



7527A

6076


FORCED AIR-COOLED TETRODES

TYPE	MAX. PWR. INPUT	MAX. ANODE VOLTAGE	MAX. ANODE CURRENT	MAX. ANODE DISSIPATION	MAX.* FREQUENCY FOR RATINGS	FILAMENT VOLTAGE	FILAMENT CURRENT	CLASS OF SERVICE
4CX1500B/8660	2.7 kW	3000 V	0.9A	1.5 kW	30 MHz	6.0 V	10.0 A	AB_1
4CX1000A/8168	3.0	3000	1.0	1.0	110	6.0	9.0	AB_1
8654	3.0	3500	1.0	1.5	220	6.3	19.5	C Teleg.
	3.0	3500	1.0	1.5	60	6.3	19.5	AB_1
8814	4.0	4000	1.2	1.5	250	4.2	53	B
6076	5.5	5000	1.1	3.0	110/220	6.3	32.5	C Teleg.
6076A	5.5	5000	1.1	3.0	110/220	6.3	32.5	C Teleg.
8516	5.5	5000	1.1	3.0	110/220	6.3	32.5	C Teleg.
8679	9.5	5500	2.0	4.0	30/60	12.6	14.5	AB_1
8812	12.0	6500	4.0	6.0	250	6.3	120	B
8888	18.5	8400	4.0	6.0	110	6.8	120	B
8813	24.0	9000	5.0	12.0	250	8.0	120	B
8744	32.0	8000	4.0	10.0	250	7.0	127	C Teleg.
	28.8	7200	4.0	10.0	60	7.0	127	AB_1
8915	40.0	9000	7.0	18.0	250	11.5	120	B

*Ratings shown are absolute-maximum for the class of service indicated at the lower frequency shown. Tubes may be operated at higher frequencies at reduced ratings.
Note: For single copies of detailed data sheets on the above tube types, contact Product Manager, Power Tubes.

Amperex®

RF Power Tubes (Small)

POWER TUBES—TETRODES & PENTODES

TYPE NO.	FILAMENT Volts	FILAMENT Amps	MU GRID #1 TO GRID #2	MAX. DISS. WATTS	TYPICAL OPERATION PLATE Volts DC	PLATE Amps DC	PLATE Output Watts	GRID Volts DC	GRID mA DC	SCREEN Volts DC	MAX. FREQ. MHz Full Input	INTERELECTRODE CAPACITANCE—pF G.P.	G.F.	P.F.	DESCRIPTION
DX393	6.0	2.6	4	400	2,000	.0250	360	—250	50	400	500	0.03	17	4.5	Forced-air cooled beam power tetrode of ceramic and metal construction. Designed especially for SSB and other linear RF amplifier applications at altitudes to 20,000 ft.
DX393A	6.0	2.6	4	400	2,000	.0250	360	—250	50	400	500	0.03	17	4.5	Same as DX393 except utilizes a universal cathode.
SD613A	6.0	2.6	4		2,000	.0250	360	—250	50	400	500	0.03	17	4.5	Same as DX393 except incorporates a solid anode for conduction cooled applications.
SD621	6.0	3.2	13	350	2,200	0.290	385	—27	2	400	500	—	21.5	5.5	Same as 4CX350A except incorporates a beryllia block for heat sinking in conduction-cooled applications.
SD694	6.0	2.6	5.2	250	2,000	0.250	390	—90	26	250	1000	0.06	15.7	4.5	Same as 4CX250B except uses coaxial input and universal cathode, max frequency is 1000 MHz.
SD696	26.5	0.57	5	250	1,250	0.200	140	—115	10	280	500	0.03	Input Output	15.5 4.5	Same as 7609 except utilizes a universal cathode.
4CX250BA	6.0	2.6	5.2	250	2,000	0.250	390	—90	26	250	500	0.06	15.7	4.5	Same as 7203 except incorporates Amperex universal cathode.
4CX350FJ	26.5	0.73	—	350	2,200	0.290	385	—27	2	400	500	—	21.5	5.5	Same as 8322 except improved for 3 1M characteristics. Approx —40 dB with 70 ma quiescent current.
4CX1000A	6.0	9		1000	2,000	890 mA	930	—60		325	30	.004	35.5	12	High power ceramic-metal tetrode. Designed for VHF operation as class AB amplifier. Features improved isolation between input and output circuits.
4CX1500B	6.0	10		1500	2,000	1.6	1600	—60		325	30	.03	80	11	A ceramic-metal radial-beam tetrode, low inter-modulation distortion characteristics, ideal for RF and AF linear amplifier design.
4X150AS	6.0	2.6	5	250	1,250	0.200	140	—115	11	280	500	0.03	16	4.4	Same as 7034 except incorporates Amperex universal cathode.
807	6.3	0.9	8	25	600	0.100	40	—45	4	250	60	0.2	11.0	7.0	Radiation-cooled tetrode. Popular replacement as well as for initial equipment.
813	10	5	8.5	125	2,000	0.18	275	—120	10	040	120	0.25	16.3	14	Beam power pentode designed for use as an RF amplifier and oscillator.
5894 **5894A** **5894B (SEE 8737)**	12.6 6.3	0.9 1.8	8.2	CCS=40 ICAS=45	CCS=600 ICAS=750	0.200	CCS=85 ICAS=105	—80	5	250	250	0.08	Input 6.7 Output 2.1 (Push-Pull)		Radiation and/or forced-air cooled twin-tetrode of original Amperex design as HF version of conventional 829-B makes ideal multiplier, as well as straight amplifier and modulator.
5895	6.3 3.15	10.68 1.36	7.5	CCS=12 ICAS=16	600	0.8	33.6	—80	2.6	200	186	0.05	Input 5.7 Output 1.7 (Push-Pull)		Radiation cooled twin, four electrode tube. Designed for use as a radio frequency power amplifier, oscillator, modulator and frequency multiplier. This tube features a directly heated cathode, making it suitable for instant heating applications.
6146B/8298A, **6159B,** **6883B/8032A/** **8552**	6.3 26.5 12.6	1.125 0.3 0.562	4.5 4.5 4.5	27 27 27	600 600 600	150 150 150	63 63 63	—70 —70 —70	2.8 2.8 2.8	200 200 200	60 60 60	<0.22 <0.22 <0.22	13.0 13.0 13.0	8.5 8.5 8.5	Compact radiation cooled beam power tetrodes designed for use as RF power amplifiers, oscillators, AF power amplifiers and modulators in mobile and base station equipment operating at frequencies up to 175MHz.
6159	26.5	0.3	4.5	CCS=20 ICAS=25	600 750	0.112 0.12	52 70	—58 —62	2.8 3.1	150 160	60	0.22	13.5	8.5	Beam power tetrode for use as RF power amplifier, oscillator frequency multiplier, AF power amplifier or modulator for fixed and mobile equipment.
6252 **6252 USN**	12.6 6.3	0.65 1.3	8.5	CCS=20 ICAS=25	600 750	0.100 0.150	42 79	—60 —60	1.4 2	250 250	300	—	Input 4.0 Output 1.3		Radiation and/or forced-air cooled twin tetrode of Amperex design. HF version of conventional 832A. Makes ideal multiplier as well as straight amplifier and modulator. Useful up to 700 MHz at reduced ratings. Delivers 15 watts at 600 MHz under CCS conditions.
6293	6.3	1.25	4.5	10	3k	0.015						0.22	13.5	8.5	Compact radiation cooled beam power amplifier designed for pulse modulator service.
6360 **6360A**	12.6 6.3	0.410 0.820	7.5	CCS=10 ICAS=14	300	0.100	ICAS=18.5	—45	3	200	200	<0.1	Input 6.2 Output 2.6		High-gain twin tetrode for use as Class C amplifier, oscillator, frequency multiplier and modulator, ICAS plate input=30 watts up to 200 MHz. Capable of delivering 18.5 watts output at 200 MHz.
6907	12.6 6.3	0.65 1.3	8.5	CCS=20 ICAS=25	600 750	0.100 0.150	42 79	—60 —60	1.4 2	250 250	300	—	Input 4.0 Output 1.3		Twin tetrode, radiation-cooled. Special Amperex design for mobile service. HF version of conventional 832A. Ideal multiplier & straight amplifier & modulator. Useful up to 1000 MHz. Delivers 15 watts at 600 MHz, CCS.
6939, 8577, **8595**	12.6 6.3	0.3 0.6	31	CCS=6 ICAS=7.5	180 200	2x0.027 2x0.030	5.8 7.2	—20 —20	0.75 0.75	180 200	500	2x0.15	2x6.4	2x1.6	High-gain twin tetrode for use as Class C amplifier, oscillator, frequency multiplier & modulator. ICAS plate input=14 watts up to 500 MHz. Capable of delivering 7.5 watts output at 500 MHz.
6979	6.0	2.6	5	250	2,000	0.250	410	—90	12	250	250	0.03	15.7	4.5	Forced-air cooled external tetrode. Brazed radiator. Replaced with 7034/4X150A.
7034/4X150A **7035/4X150D**	6.0 26.5	2.6 0.58	5	250	1,250	0.200	140	—115	11	280	500	0.03	16	4.4	Forced-air cooled external anode tetrode. Suited for high power mobile applications. Makes an excellent wide-band amplifier for video application.

(continued)

RF Power Tubes-Small (Continued)

POWER TUBES—TETRODES & PENTODES Continued

TYPE NO.	FILAMENT Volts	FILAMENT Amps	MU GRID #1 TO GRID #2	MAX. DISS. WATTS	TYPICAL OPERATION PLATE Volts DC	PLATE Amps DC	PLATE Output Watts	GRID Volts DC	GRID mA DC	SCREEN Volts DC	MAX. FREQ. MHz Full Input	INTERELECTRODE CAPACITANCE—pF G.P.	G.F.	P.F.	DESCRIPTION
7203/4CX250B 7204/4CX250F	6.0 26.5	2.6 0.56	5.2	250	2,000	0.250	390	—90	26	250	500	0.06	15.7	4.5	Forced-air cooled external anode tetrodes with brazed radiator. For airborne and mobile applications extending into the UHF region. Also excellent for single sideband and pulse application.
7377	12.6 6.3	0.3 0.6	28	8	250	0.035	7	—15	0.75	160	960	0.145	4.5	1.35	Radiation cooled twin tetrode designed for push-pull Class C operation at frequencies up to 1000 MHz.
7378	6.3	3.9	5.7	100	750	0.385	200	—90	7	250	30	0.9	30 Input	12.7 Output	Radiation and convection cooled all-glass beam-power tetrode designed for use as an AF and RF amplifier, oscillator and multiplier for frequencies to 30 MHz.
7580 W	6.0	2.6	4	250	2,000	0.250	360	—250	50	400	500	0.03	17	4.5	Forced-air cooled beam power tetrode of ceramic and metal construction. Designed especially for SSB and other linear RF amplifier applications at altitudes to 20,000 ft.
7609 SD696	26.5	0.57	5	250	1,250	0.200	140	—115	10	280	500	0.03	Input 15.5 Output 4.5		A tetrode designed for use as an RF power amplifier and oscillator. The plate is forced air cooled; the cathode is oxide coated, indirectly heated. Similar to 4X150D except that it is designed for aircraft use and other applications in which resistance to vibration is important.
7645	6.3 12.6	0.6 0.3	31	CCS=5.5 ICAS=7	180	0.04	4.2	—20	0.6	180	400	0.15	6.4	1.6	Miniature twin tetrode featuring frame grid construction. It is a reduced height version of the 6939 for compact equipment.
7650	6.3	7.85	13	700	2,250	0.450	650	—45	10	400	1215	0.11	—	—	Ceramic and coaxial forced-air cooled power tetrode with integral radiator. Designed for use as a UHF amplifier or oscillator at frequencies to 1215 MHz.
7854	12.6 6.3	0.9 1.8	8.2	60	1,000	0.200	134	—85	5.4	250	175	0.09	Input 11.6 Output 3.7		Twin tetrode. Designed for use as an RF power amplifier, oscillator, modulator and frequency multiplier. Heat sink or forced-air cooling is necessary at or near maximum ratings. Built-in cross neutralizing capacitors insure neutralization over entire band. Useful to 500 MHz.
7983	3.15	1.65	7.5	7	300	0.55	11	—40	1.5	155	200	0.08	6.8	3.2	Quick heating twin tetrode having a filament designed for hybrid mobile transceivers for power output, driver or frequency multiplier circuits. Internally neutralized up to 200 MHz.
8042	1.6	3.2	4.5	25	650	0.160	65	—71	2.8	180	—	0.24	13	8.5	"Harp Cathode" instant heating beam power tetrode for use as power output, oscillator or frequency multiplier in mobile or base equipment. Full output power is available in less than one half second after filament power is applied.
8116 8116A	26.5 13.25	0.433 0.866	7	2x30	1,000	2x0.110 2x0.131	141 PEP	—34	0	250	175	0.09	11.8 Input	3.7 Output	Twin tetrode designed and rated for SSB applications where 26.5 V is available for heater. Particularly adapted to heat sink cooling because of calibrated glass envelope.
8117 8117A	12.6 6.3	0.9 1.8	7	2x30	1,000	2x0.131	141 PEP	—34	0	250	175	0.09	11.8 Input	3.7 Output	Twin tetrode designed and rated for SSB applications where 12.6 V is available for the heater.
8245/4CX250K	6.0	2.6	5.2	250	2,000	0.250	390	—90	26	250	1000	0.06	15.7	4.5	Same as 7034 except utilizes coaxial input.
8300	2.0	3.4	7	CCS=2x30 ICAS=2x34	1,000	200	140	—100	6	250	75	0.09	10.5 Input	3.2 Output	Instant heating radiation cooled, beam power, twin tetrode for RF power amplifier, oscillator and multiplier service in transistorized mobile and base station equipment.
8321/4CX350A	6.0	3.2	13	350	2,200	0.290	385	—27	2	400	500	—	21.5	5.5	Ceramic and metal constructed radial beam tetrodes. Designed to be used in class-AB audio or RF amplifier service up to 500 MHz internally ruggedized Forced-Air cooled.
8322/4CX350F	26.5	0.73													
8348	1.6	2.5	7.5	CCS=10 ICAS=14	300	0.100	ICAS=17.0	—45	3	200	200	0.1	8.5 Input	3.2 Output	"Harp Cathode" instant heating tetrode intended for use as intermittent or continuous filament service in transistorized mobile equipment for output stages. The tube is internally neutralized for frequencies up to 200 MHz.
8408	1.1	3.0	26	8.0	275	0.080	15	—25	2x1.25	200	500	0.19	4.1 Input	1.0 Output	Instant heating twin tetrode for use as an RF amplifier, frequency multiplier and modulator. The tube is designed for intermittent or continuous filament operation in transistorized mobile or fixed transmitters.
8457	6.75 13.5	0.76 0.38	7.5	CCS=10 ICAS=14	300	0.100	ICAS=18.5	—45	3	200	200	—	6.2 Input	2.6 Output	Twin tetrode for use as Class C amplifier and oscillator, frequency multiplier and modulator for frequencies up to 200 MHz. The heater is designed to withstand battery voltage fluctuations encountered in mobile service.
8458	6.75 13.5	0.76 0.38	7.5	CCS=15 ICAS=20	450	0.110	ICAS=30.0	—50	3.1	200	200	0.1	6.8 Input	3.2 Output	Twin tetrode employing an indirectly heated cathode in an all glass novar base construction. It is designed for mobile service as a Class C amplifier, oscillator or frequency multiplier up to 200 MHz.
8505/8505A	6.75 13.5	1.32 0.66	8.0	CCS=25 PTTS=25	550 600	.136 .175	51 73	—50 —50	5 5	210 241	250	0.2	11.5 Input	5.0 Output	Compact, single-ended, beam power tetrode designed for use as an RF Power amplifier Oscillator and Multiplier at frequencies to 250 MHz. Features special modified magnoval base with anode pin displaced from normal pin circle. Under PTTS ratings it supplies 73 watts output with 1.1 watts drive power.

(continued)

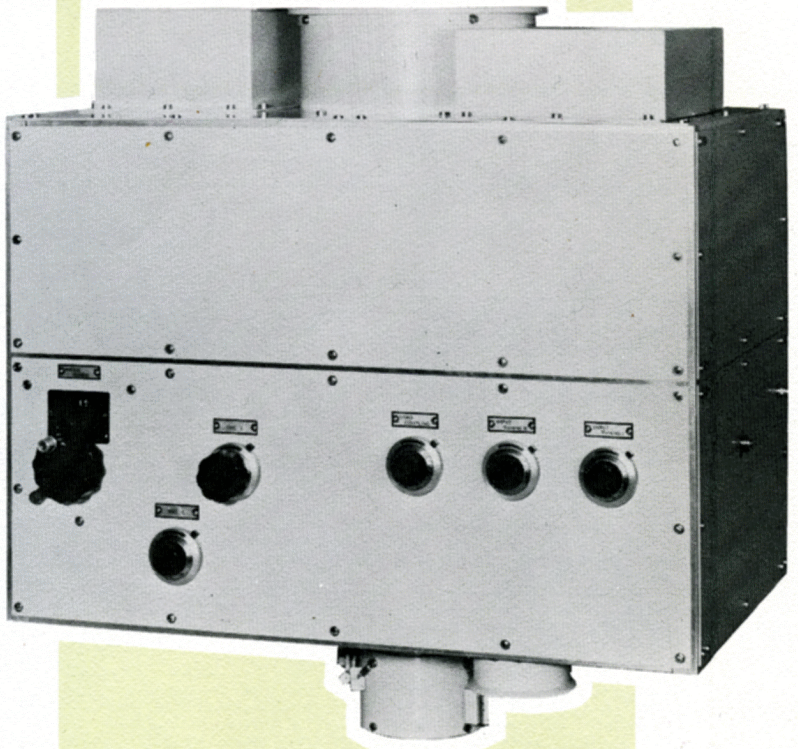
RF Power Tubes-Small (Continued)

POWER TUBES—TETRODES & PENTODES continued

TYPE NO.	FILAMENT Volts	FILAMENT Amps	MU GRID #1 TO GRID #2	MAX. DISS. WATTS	TYPICAL OPERATION PLATE Volts DC	PLATE Amps DC	PLATE Output Watts	GRID Volts DC	GRID mA DC	SCREEN Volts DC	MAX. FREQ. MHz Full Input	INTERELECTRODE CAPACITANCE—pF G.P.	G.F.	P.F.	DESCRIPTION
8509	2.0	3.25	8.2	2x20	750	2x.08	85	—80	2x1.5	250	250	0.06	9.4 Input	11.6 Output	Instant heating twin tetrode for RF power amplifier, oscillator, modulator and frequency multiplier for operation at frequencies to 500 MHz. Similar in electrical characteristics to the popular 5894.
8560AS	6.0	2.6	5.2	150	2,000	0.2	270	—90	16	200	200	0.03	15.7 Input	4.5 Output	A compact conduction cooled power tetrode designed for power amplifier service to 175 MHz. Uses external anode, metal and ceramic envelope with a universal cathode.
8579	6.3 12.6	2.6 1.3	4.7	75	600	.325	100	—50	0.5	250	60	0.2	22 Input	4.5 Output	Beam power tetrode designed primarily for use as an RF amplifier in SSB transmitters for frequencies up to 60 MHz. Features low intermodulation distortion as well as low cost power supply requirements.
8595	6.3 12.6	0.6 0.3	31	CCS=4 ICAS=5	180	2x.02	4.2	—20	2x.3	180	500	0.16	6.6 Input	1.7 Output	Miniature twin tetrode for applications where high levels of vibration are encountered. It is similar in electrical characteristics to the 6939.
8621 **4CX250FG** **8621 JAN**	25.6	0.56	5.2	Class AB, Linear Amplifier—Single Sideband 250	2,000	0.166	269 PEP Two Tone	72	0	350	500	0.06	15.7 Input	4.5 Output	External anode, oxide coated cathode power tetrode. Made completely of ceramic and metal. Designed for use in class ABI Linear RF amplifier and single side band service similar to the 7204. Forced air cooled. 1 AVG. DC Two Tone.
8624	2.0	3.4	7	CCS 2x20 PTTS 2x26	850 950	200 mA 230 mA	112 141	—100	5.0	250	175	0.09	10.5 Input	3.2 Output	Instant Heating version of the 7854. Radiation cooled beam power twin tetrode designed for use as an RF power amplifier oscillator and frequency multiplier in transistorized mobile and base station equipment operating at frequencies up to 175 MHz. Uses a glass envelope and the Amperex "Harp Cathode." Full output power after less than ½ second.
8639 **8639 JAN**	6.3 12.6	1.8 0.9	80	40	4,000	220 mA	—	—175	10.0	450	—	0.3	20.0 Input	6.5 Output	Radiation cooled beam power tetrode having an indirectly heated cathode. Designed for use as a pass tube in regulated high voltage power supplies. Will replace the 3D21WB or 7403 in most pass tube applications with only a change in top cap connector.
8643	7.25	2.0	7	CCS 2x30 PTTS 2x38	750	210 mA 264 mA	135=PTTS	—90	5.6 8.1	230	175	0.09	Input 11.6 Output 3.7		Radiation cooled beam power twin tetrode incorporating the new wide range cathode. Designed for use as an RF power amplifier, oscillator and frequency multiplier up to 175 MHz with maximum power input. However may be operated at frequencies up to 500 MHz at reduced ratings.
8737/5894B	13.5 6.75	1.0 2.0	8.2	CCS=2x20	CCS=450 ICAS=600	CCS= 75 ICAS= 83	71W	CCS= 105 ICAS= 130	CCS= 2x3.8 ICAS= 2x1.7	250	250		Push-Pull Input 6.7 Output 2.1		Radiation cooled beam power twin tetrode incorporating the new Wide Range Cathode. It is especially designed for use as an RF power amplifier, oscillator and frequency multiplier up to 250 MHz. It may be operated at frequencies up to 500 MHz at reduced ratings.
8753	2	3.45		CCS=2x7.5 ICAS=2x10 PTTS=2x25	PTTS 580	PTTS 200 mA	PTTS 66	PTTS —88	PTTS 3.8	PTTS 176	175	0.15	Input 8.8 Output 4.1		Radiation cooled, beam power tetrode which provides full output power in less than ½ second. It is designed for use as an RF power amplifier, oscillator, and frequency multiplier in mobile transmitting equipment up to 175 MHz.

POWER TUBES—TRIODES

TYPE NO.	FILAMENT Volts	FILAMENT Amps	MU	MAX. DISS. WATTS	TYPICAL OPERATION PLATE Volts DC	PLATE Amps DC	PLATE Output kW	GRID Volts DC	GRID Amps DC	MAX. FREQ. MHz Full Input	INTERELECTRODE CAPACITANCE—pF G.P.	G.F.	P.F.	DESCRIPTION
8119	3.4	19	33	400	Grounded Grid Operation 2,000	400	510+85	—140	120	900	6.5	11.5 input	<0.12 output	Forced-air cooled, coaxial transmitting triode with a ceramic envelope designed for use in HF amplifier, oscillator, or frequency multiplier operation at frequencies up to 900 MHz.
8120	3.4	19.0	70	500	2,500	0.38	620+50	—70	160	400	3.8	11	0.05	Forced-air cooled transmitting triode with ceramic envelope and coaxial terminal arrangement. Can be used as "plug-in" in coaxial circuits. Designed for use as an RF amplifier, oscillator or frequency multiplier at frequencies up to 1000 MHz.



Amperex®

TV Tetrode Cavities

TYPE	SYNC POWER OUTPUT AT 7MHz BANDWIDTH	SYNC POWER GAIN	SYNC DRIVE POWER	PLATE VOLTAGE	PEDESTAL PLATE CURRENT	TUBE TYPE	APPROXIMATE DIMENSIONS W x D x H
HCTVV 1.5	1.55 kw	26	60 w	3 kv	0.7A	8814	13 x 13 x 27 IN.
HCTVV 8.75	8.6	24	350	5	2.1	8812	24 x 15 x 24
HCTVV 17.5	18.4	25	720	7	2.9	8813	24 x 15 x 24
HCTVV 25	27.5	28.5	965	8	3.9	8915	26 x 16 x 27
LCTVV 1.5	1.5*	16	94	2.5	0.9	8814	13 x 13 x 20
LCTVV 6.25	6.25	18.5	340	4	2.1	8812	20 x 20 x 28
LCTVV 12.5	13.2	20	660	5.5	3.2	8813	20 x 20 x 28
LCTVV 17.5	20	24	835	6.5	4.1	8915	20 x 20 x 28

* SYNC POWER OUTPUT FOR 6 MHz BANDWIDTH AT 55 MHz, and 7 MHz BANDWIDTH AT 83 MHz.

EXPLANATION OF TYPE NUMBERS

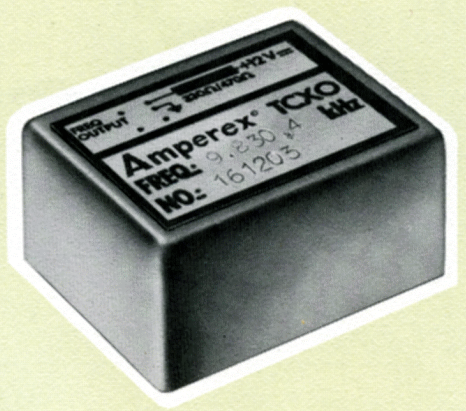
H CTV V 1.5

(CH-7-13) (CH-2-6) — H=High Band, L=Low Band

CTV — TV Cavity

V — V=Vision

1.5 — Sync Level Power Output



Amperex®

Temperature Compensated Crystal Oscillators

TYPE NO.	FREQ. RANGE	FREQ. TOLERANCE	STABILITY		FREQ. ADJ.	DIMENSIONS (IN.)		
			TEMP. RANGE	AGING		LENGTH	WIDTH	HEIGHT
4322-190	4.5-15 MHz	$\pm 2 \times 10^{-6}$	−30°C to +60°C	$\pm 1 \times 10^{-6}$/year	Int. Capacitor	.984	1.28	.591
4322-191	4.5-15 MHz	$\pm 2 \times 10^{-6}$	−30°C to +60°C	$\pm 1 \times 10^{-6}$/year	Ext. Capacitor	.984	1.28	.591
4322-195	20-60 MHz	$\pm 2 \times 10^{-6}$	−30°C to +60°C	$\pm 1 \times 10^{-6}$/year	Int. Capacitor	.984	1.28	.591
4322-196	20-60 MHz	$\pm 2 \times 10^{-6}$	−30°C to +60°C	$\pm 1 \times 10^{-6}$/year	Ext. Capacitor	.984	1.28	.591

Variable Vacuum Capacitors

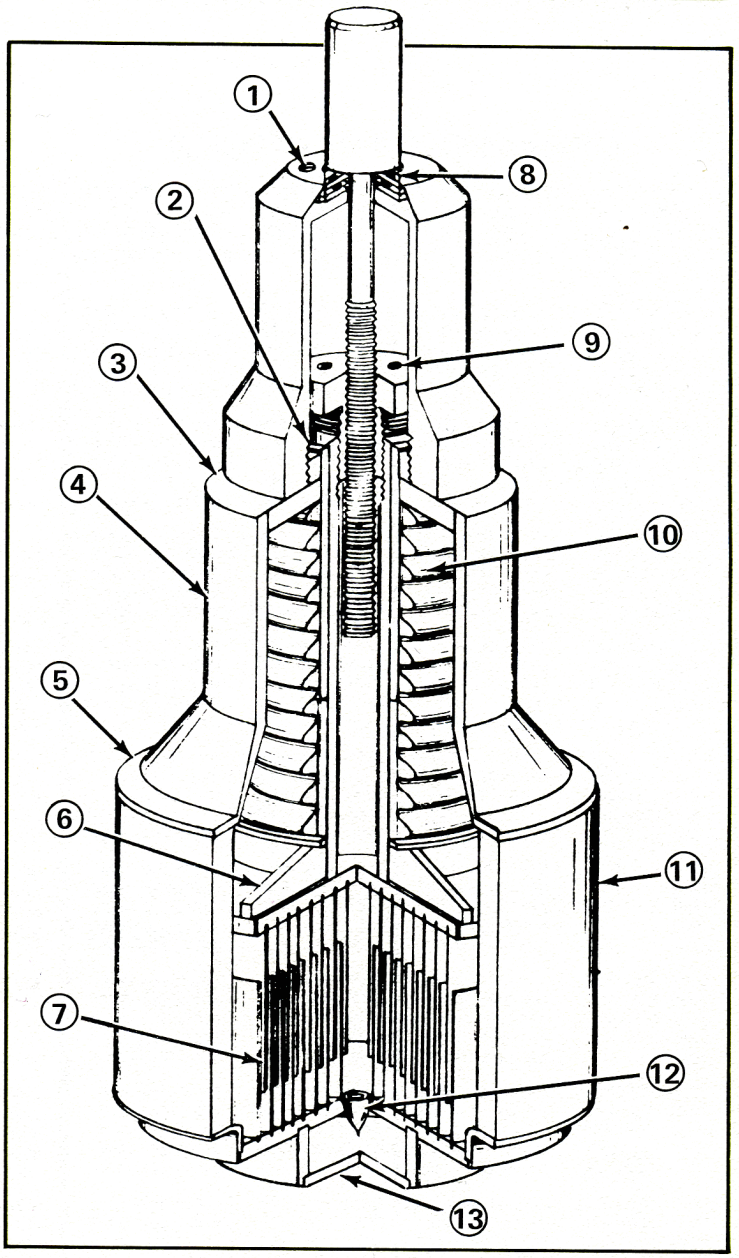
INTRODUCTION

Creative engineering and precision manufacturing are key components to the high quality that is "built into" every Amperex vacuum capacitor. The utilization of superior equipment, coupled with skilled operators and experienced supervision assures the buyer that he is purchasing the finest in capacitors.

Amperex research, development and manufacturing facilities are outstanding. At the Hicksville, N.Y. plant the company maintains a precision machine shop, super-clean assembly area, chemical laboratory, primary standards laboratory, and a variety of special-purpose processing and test areas.

Quality control is evident throughout the manufacturing cycle. Starting with vendor surveillance, quality control personnel check basic materials upon arrival at the plant, constantly supervise fabrication and assembly activities, and conduct a final inspection and test of all capacitors before they are shipped.

Founded in 1932, Amperex markets a variety of electronic components—electron tubes, microcircuits, semiconductors, electro-optical devices and passive electronic components for commercial and military applications. Amperex is a wholly owned subsidiary of the North American Philips Company, an affiliation that gives it ready access to the basic research facilities and know-how of the world-renowned Philips Laboratories.



LEGEND

1—Minimum Capacitance Stop
2—Antishock Locking Mech.
3—Arc welded Assy.
4—Heavy Silver Plated OFHC Copper Contact Surfaces
5—High Temp. Silver Brazing throughout
6—Shock Suppressing Brace
7—Close Tolerance OFHC Copper Electrodes
8—Ball Bearing drive Mech. Locked Shaft in both directions
9—Maximum Capacitance Stop
10—Short duty cycle bellows for Long Life
11—High Strength, Low Loss Alumina Ceramic
12—All Metal Tip-off Removed from R.F. Field
13—Fully enclosed Tip-off

Variable Vacuum Capacitors (Continued)

CERAMIC CAPACITORS

Competitor's Capacitor	Amperex Equivalent	Competitor's Capacitor	Amperex Equivalent
CADA—600—10S	CVC40/6C—10KV	CVEP—1500—10S	CVC100/15C—10KV
CADC—30—7.5S	CVC 3/30—25KV	CVEP—1500—15S	CVC100/15C—15KV
CADC—30—10S	CVC 3/30—10KV	CVEP—1500—20S	CVC100/15C—20KV
CADC—30—15S	CVC 3/30—15.5KV	CVEP—2000—10S	CVC100/2K—10KV
CAQA—200—3S	CVC10/2C—3KV	CVEP—2000—15S	CVC100/2K—15KV
CAQA—200—4S	CVC10/2C—4KV	CVFP—250—30S	CVC15/250—30KV
CVCC—2000—3S	CVC25/2K—3KV	CVFP—250—35S	CVC15/250—35KV
CVCC—2000—5S	CVC25/2K—5KV	CVFP—250—40S	CVC15/250—40KV
CVCC—2500—3S	CVC25/25C—3KV	CVFP—450—30S	CVC25/450—30KV
CVCC—2500—5S	CVC25/25C—5KV	CVFP—450—35S	CVC25/450—35KV
CVCD—250—3S	CVC 5/250—3KV	CVFP—450—40S	CVC25/450—40KV
CVCD—250—5S	CVC 5/250—5KV	CVFP—750—30S	CVC20/750—30KV
CVCD—500—3S	CVC 5/5C—3KV	CVFP—750—35S	CVC20/750—35KV
CVCD—500—5S	CVC 5/5C—5KV	CVFP—750—40S	CVC20/750—40KV
CVCD—1000—3S	CVC10/1K—3KV	CVFP—1000—30S	CVC35/1K—30KV
CVCD—1000—5S	CVC10/1K—5KV	CVFP—1000—35S	CVC35/1K—35KV
CVCD—1500—3S	CVC10/15C—3KV	CVFP—1000—40S	CVC35/1K—40KV
CVCD—1500—5S	CVC10/15C—5KV	CVFP—1500—30S	CVC100/15C—30KV
CVCD—2000—3S	CVC20/2K—3KV	CVFP—1500—35S	CVC100/15C—35KV
CVCD—2000—5S	CVC20/2K—5KV	CVFP—2000—25S	CVC100/2K—25KV
CVCD—3000—3S	CVC50/3K—3KV	CVFP—2000—30S	CVC100/2K—30KV
CVCD—3000—5S	CVC50/3K—5KV	CVFP—2000—35S	CVC100/2K—35KV
CVCE—750—3S	CVC10/750—3KV	CVHC—1200—45S	CVC100/12C—45KV
CVCE—750—5S	CVC10/750—5KV	CVHC—1600—40S	CVC100/16C—40KV
CVDD—50—7.5S	CVC6.5/50—7.5KV	CVHE—650—45S	CVC25/650—45KV
CVDD—50—10S	CVC6.5/50—10KV	CVHE—650—50S	CVC25/650—50KV
CDDD—50—15S	CVC6.5/50—15KV	CVHE—650—55S	CVC25/650—55KV
CVDD—100—7.5S	CVC10/1C—7.5KV	CVHP—250—45S	CVC10/250—45KV
CVDD—100—10S	CVC10/1C—10KV	CVHP—250—50S	CVC10/250—50KV
CVDD—100—15S	CVC10/1C—15KV	CVHP—250—55S	CVC10/250—55KV
CVDD—300—7.5S	CVC10/3C—7.5KV	CVHP—450—45S	CVC25/450—45KV
CVDD—300—10S	CVC10/3C—10KV	CVHP—450—50S	CVC25/450—50KV
CVDD—300—15S	CVC10/3C—15KV	CVHP—450—55S	CVC25/450—55KV
CVDD—500—7.5S	CVC20/5C—7.5KV	CVHP—650—45S	CVC30/650—45KV
CVDD—500—10S	CVC20/5C—10KV	CVHP—650—50S	CVC30/650—50KV
CVDD—500—15S	CVC20/5C—15KV	CVHP—650—55S	CVC30/650—55KV
CVDD—750—7.5S	CVC25/750—7.5KV	CVHP—1000—40S	CVC60/1K—40KV
CVDD—750—10S	CVC25/750—10KV	CVHP—1000—45S	CVC60/1K—45KV
CVDD—750—15S	CVC25/750—15KV	CVHP—1000—50S	CVC60/1K—50KV
CVDD—1000—7.5S	CVC25/1K—7.5KV	CVHW—250—40S	CVC20/250—40KV
CVDP—1500—7.5S	CVC35/15C—7.5KV	CVHW—250—45S	CVC20/250—45KV
CVDP—1500—10S	CVC35/15C—10KV	CVHW—250—50S	CVC20/250—50KV
CVDP—1500—15S	CVC35/15C—15KV	CVHW—450—40S	CVC25/450-40KV-P1
CVDP—2300—7.5S	CVC50/23C—7.5KV	CVHW—450—45S	CVC24/450-45KV-P1
CVDP—2300—10S	CVC50/23C—10KV	CVHW—450—50S	CVC25/450-50KV-P1
CVDP—2300—15S	CVC50/23C—15KV	CVHW—1000—40S	CVC100/1K—40KV
CVEP—500—10S	CVC20/5C-10KV-P1	CVHW—1000—45S	CVC100/1K—45KV
CVEP—500—15S	CVC20/5C-15KV-P1	CVHW—1000—50S	CVC100/1K—50KV
CVEP—500—20S	CVC20/5C-20KV-P1	CVTW—1600—60S	CVC100/16C—60KV
CVEP—750—10S	CVC50/750—10KV	CVTW—1600—65S	CVC100/16C—65KV
CVEP—750—15S	CVC50/750—15KV		
CVEP—750—20S	CVC50/750—20KV		
CVEP—1000—10S	CVC50/1K—10KV		
CVEP—1000—15S	CVC50/1K—15KV		
CVEP—1000—20S	CVC50/1K—20KV		

GLASS CAPACITORS

Competitor's Capacitor	Amperex Equivalent	Competitor's Capacitor	Amperex Equivalent
ECS—8—10S	CVG2/8—10KV	UCSL—1000—5S	CVG7/1K—5KV
ECS—8—15S	CVG2/8—15KV	UCSL—1500—3S	CVG10/15C—3KV
ECS—30—10S	CVG3/30—10KV	UCSL—1500—5S	CVG10/15C—5KV
ECS—30—15S	CVG3/30—15KV	UCSL—2000—3S	CVG20/2K—3KV
GCS—55—7.5S	CVG5/55—7.5KV	UCSL—2000—5S	CVG20/2K—5KV
GCS—55—10S	CVG5/55—10KV	UCSL—3000—2S	CVG50/3K—2KV
GCS—55—15S	CVG5/55—15KV	UCSL—3000—3S	CVG50/3K—3KV
GCS—100—7.5S	CVG5/1C—7.5KV	UCSL—5000—2S	CVG100/5K—2KV
GCS—100—10S	CVG5/1C—10KV	UCSL—500—3S	CVG100/5C—3KV
GCS—100—15S	CVG5/1C—15KV	UCSV—110—7.5S	CVG8/110—7.5KV
TC—25—20S	CVG5/25—20KV	UCSV—110—10S	CVG8/110—10KV
VC—250—10S	CVG50/250—10KV	UCSV—110—15S	CVG/110—15KV
VC—250—15S	CVG50/250—15KV	UCSV—250—7.5S	CVG125/250—7.5KV
VC—250—20S	CVG50/250—20KV	UCSV—250—10S	CVG125/250—10KV
UCS—200—7.5S	CVG5/2C—7.5KV	UCSV—250—15S	CVG125/250—15KV
UCE—200—10S	CVG5/2C—10KV	UCSVH—35—25S	CVG8/35—25KV
UCS—200—15S	CVG5/2C—15KV	UCSVH—35—35S	CVG8/35—35KV
UCS—300—7.5S	CVG10/3C—7.5KV	UCSX—700—7.5S	CVG25/7C—7.5KV
UCS—300—10S	CVG10/3C—10KV	UCSX—700—10S	CVG25/7C—10KV
UCS—300—15S	CVG10/3C—15KV	UCSX—700—15S	CVG25/7C—15KV
UCS—400—7.5S	CVG10/4C—7.5KV	UCSX—1000—7.5S	CVG25/1K—7.5KV
UCS—400—10S	CVG10/4C—10KV	UCSX—1000—10S	CVG25/1K—10KV
UCS—400—15S	CVG10/4C—15KV	UCSX—1000—15S	CVG25/1K—15KV
UCS—500—7.5S	CVG25/5C—7.5KV	UCSXF—1000—7.5S	CVG12/1K—7.5KV
UCS—500—10S	CVG25/5C—10KV	UCSXF—1000—10S	CVG12/1K—10KV
UCS—500—15S	CVG25/5C—15KV	UCSXF—1000—15S	CVG12/1K—15KV
UCSB—100—7.5S	CVG5/1C—7.5KV-P1	UCSXF—1200—7.5S	CVG15/12C—7.5KV
UCSB—100—10S	CVG5/1C—10KV-P1	UCSXF—1200—10S	CVG15/12C—10KV
UCSB—100—15S	CVG5/1C—15KV-P1	UCSXF—1200—15S	CVG15/12C—15KV
UCSF—250—7.5S	CVG5/250—7.5KV	UCSXF—1500—7.5S	CVG20/15C—7.5KV
UCSF—250—10S	CVG5/250—10KV	UCSXF—1500—10S	CVG20/15C—10KV
UCSF—250—15S	CVG5/250—15KV	UCSXF—1500—15S	CVG20/15C—12KV
UCSF—500—7.5S	CVG12/5C—7.5KV	UCSXF—2000—7.5S	CVG50/2K—7.5KV
UCSF—500—10S	CVG12/5C—10KV	UCSXF—2000—10S	CVG50/2K—10KV
UCSF—500—15S	CVG12/5C—15KV	UCSXF—2000—12S	CVG50/2K—12KV
UCSF—1700—7.5S	CVG50/17C—7.5KV	UCSXF—2300—7.5S	CVG50/23C—7.5KV
UCSF—1700—10S	CVG50/17C—10KV	UCSXF—2300—10S	CVG50/23C—10KV
UCSF—1700—15S	CVG50/17C—15KV	UCSXF—2300—12S	CVG50/23C—12KV
UCSL—250—3S	CVG5/5C—3KV	UCSXH—200—35S	CVG10/2C—35KV
UCSL—250—5S	CVG5/5C—5KV	UCSXH—200—45S	CVG10/2C—45KV
UCSL—500—3S	CVG5/5C—3KV	UCSXHF—450—35S	CVG20/450—35KV
UCSL—500—5S	CVG5/5C—5KV	UCSXHF—450—40S	CVG20/450—40KV
UCSL—750—3S	CVG5/750—3KV	USL—500—3S	CVG5/5C—3KV—P1
UCSL—750—5S	CVG5/750—5KV	USL—500—5S	CVG5/5C—5KV—P1
UCSL—1000—3S	CVG7/1K—3KV	USLC—465—5S	CVG5/465—5KV

CODING SYSTEM

1. The first two letters, "CV," indicate capacitor, variable.
2. The third letter indicates the material in the envelope — "G" for glass or "C" for ceramic.
3. The next letters indicate capacitance values — "C" for hundred and "K" for thousands. They are preceded by numerals to show multiples. Variable capacitors separate minimum and maximum capacitance by a slash.
   Thus, capacitance is shown as follows:
   CVC-05/5C — capacitor, variable, ceramic, 5 to 500 pF
   CVG-10/1K — capacitor, variable, glass, 10 to 1,000 pF
4. The final designation is voltage, shown after capacitance, separated by a dash, with "KV" after the number.

Microwave Diodes and Assemblies

GUNN EFFECT DIODES

Our range of Gunn effect diodes offers a wide variety of power outputs and frequencies. They are often used as fundamental oscillators in the local oscillators used in radar and in communications, and as transmitter sources in doppler radars, navigational beacons, intruder alarms and proximity detectors.

type	frequency range (GHz)	minimum power output (mW)	nominal operating voltage (V)	outline
CXY11A	8 – 12	5	7	SOD-31
CXY11B	8 – 12	10	7	SOD-31
CXY11C	8 – 12	15	7	SOD-31
CXY16A	8 – 12	50	8	SOD-31
CXY16B	8 – 12	75	8	SOD-31
CXY16C	8 – 12	100	8	SOD-31
CXY16D	8 – 12	200	8	SOD-31
CXY16E	8 – 12	300	8	SOD-31
CXY16F	8 – 12	400	8	SOD-31
CXY14A	12 – 18	5	6	SOD-31
CXY14B	12 – 18	10	6	SOD-31
CXY14C	12 – 18	15	6	SOD-31
CXY18A	12 – 18	50	6	SOD-31
CXY18B	12 – 18	75	6	SOD-31
CXY18C	12 – 18	100	6	SOD-31
CXY18D	12 – 18	200	6	SOD-31
CXY18E	12 – 18	300	6	SOD-31
CXY17A	6 – 8	50	10	SOD-31
CXY17B	6 – 8	75	10	SOD-31
CXY17C	6 – 8	100	10	SOD-31
CXY17D	6 – 8	200	10	SOD-31
CXY17E	6 – 8	300	10	SOD-31
823CXY/A	26 – 32	4	3.5	MO-21

SCHOTTKY BARRIER DIODES

A range of microwave Schottky barrier diodes for low noise mixer and detector applications up to 18 GHz. Schottky barrier diodes have the advantages of low 1/F noise and greater mechanical stability than point contact diodes. The BAV46 is specially optimised for applications requiring low 1/F noise, e.g. Doppler Radars and intruder alarms.

MATCHED PAIRS
All types are available as matched pairs. When ordering a matched pair, add the prefix 2/ and the suffix M to the basic type number. For example: 2/BAW95EM for a matched pair BAW95E.

[1]) Includes 1.5 dB i.f. amplifier noise.
[2]) Measured with an i.f. of 1 kHz.

Test frequency: 9.375 GHz

type	max overall N.F. [1]) (dB)	i.f. impedance (Ω)	outline
BAW95D	8.2	250 – 500	DO-22
BAW95E	7.5	250 – 500	DO-22
BAW95F	7.0	250 – 500	DO-22
BAW95G	6.5	250 – 500	DO-22
BAV96A	7.5	200 – 400	MO-26
BAV96B	7.0	200 – 400	MO-26
BAV96C	6.5	200 – 400	MO-26
BAV96D	6.0	200 – 400	MO-26
BAV46	15 [2])	850	DO-23
826BAY	7.5	250 – 500	MO-28
540BAY	7.0	250 – 500	MO-27

EQUIVALENTS

JEDEC	Pro-Electron
1N23D/1N23DR	BAW95D
1N23E/1N23ER	BAW95E
1N23WE	BAW95E
1N23F/1N23FR	BAW95F
1N23G/1N23GR	BAW95G

JEDEC	Pro-Electron
1N415D	BAW95D
1N415E	BAW95E
1N415F	BAW95F
1N415G	BA W95G

MATCHED PAIRS
1N415DM 2/BAW95DM etc.

Microwave Diodes and Assemblies (Cont'd)

TUNING VARACTOR DIODES

A series of high-Q gallium arsenide Schottky barrier diodes for electronic tuning in microwave circuits. These varactors offer a wide capacitance range from a 12 V supply; their low series resistance ensures low losses.

[1]) Measured at $V_R = 0$.
[2]) Measured at $I_R = 10\ \mu A$.

type	junction [1]) capacitance (pF)	minimum breakdown voltage [2]) (V)	maximum series resistance [1]) (Ω)	outline
821CXY/A	0.8 – 1.2	12	3.0	SOD-31
821CXY/B	1.2 – 1.8	12	2.0	SOD-31
821CXY/C	1.6 – 2.5	12	1.5	SOD-31
821CXY/D	2.5 – 3.5	12	1.0	SOD-31

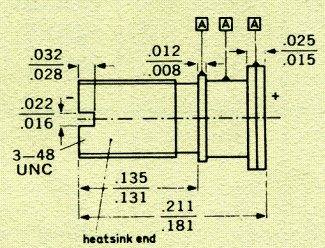
IMPATT DIODES

Impatt diodes are more efficient at high power than Gunn diodes; Their power level can be adjusted via the supply current.
The 532BXY is the first of a series of high power Impatt diodes for use as oscillators or negative resistance amplifiers in telecommunications of radar equipment.

type	frequency range (GHz)	minimum power output (mW)	operating voltage (V)	operating current (mA)	maximum thermal resistance (°C/W)	outline
532BXY	7 – 9	400	100	100	15	SOD-31
194BAY/7*	6 – 8	750	—	—	—	SOD-31
194BAY/9	8 – 10	500	—	—	—	SOD-31
194BAY/11	10 – 12	500	—	—	—	MO-19
194BAY/13	12 – 14	400	—	—	—	MO-20

* 194BAY in development

MO-19



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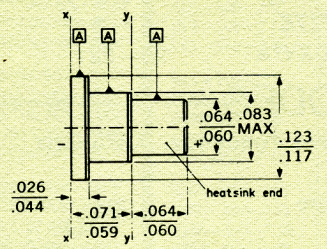
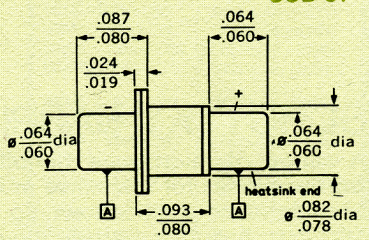


SOD-31



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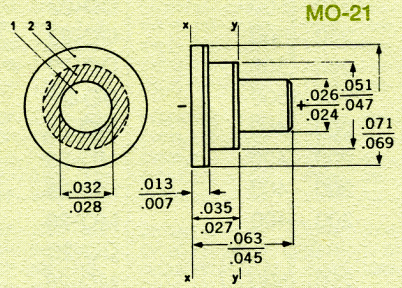

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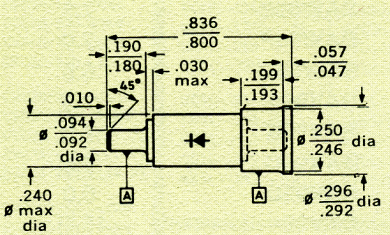

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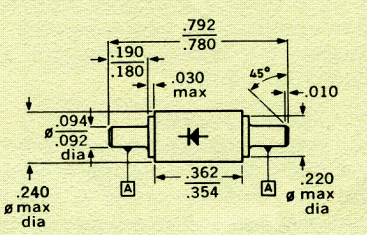

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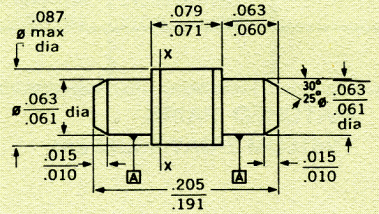

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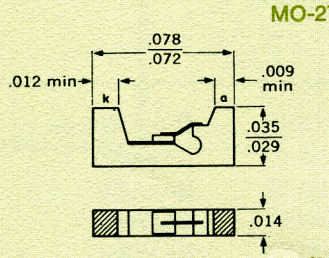

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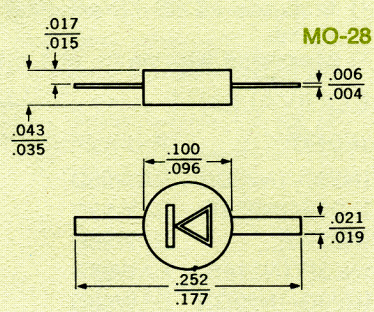
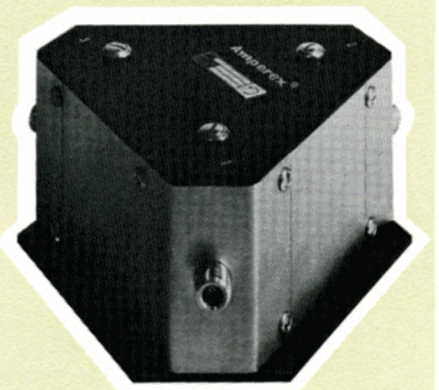


RF Circulators

COAXIAL 3-PORT CIRCULATORS

100 W CW 100 W PEAK SYNC

TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR1—40.6—47 Guaranteed	406—470MHz	>20db	<0.35dB	<1.25	+10 to +70°C
Typical	—	22dB	0.20dB	1.15	at 25°C
CR1—47—60 Guaranteed	470—600MHz	>20db	<0.35dB	<1.25	+10 to +70°C
Typical	—	22dB	0.20dB	1.15	at 25°C
CR1—59—72 Guaranteed	590—720MHz	>20db	<0.35dB	<1.25	+10 to +70°C
Typical	—	22dB	0.20dB	1.15	at 25°C
CR1—71—86 Guaranteed	710—860MHz	>20db	<0.35dB	<1.25	+10 to +70°C
Typical	—	22dB	0.20dB	1.15	at 25°C



100 W CW 200 W PEAK SYNC

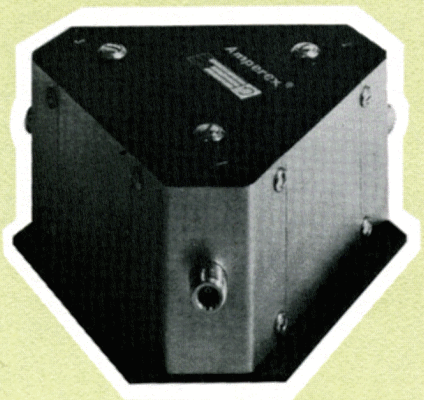
TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR1—47—60HP Guaranteed	470—600MHz	≥20dB	≤0.5dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.35dB	1.15	at 25°C
CR1—60—80HP Guaranteed	600—800MHz	≥20dB	≤0.5dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.35dB	1.15	at 25°C

300 W CW 500 W PEAK SYNC

TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR3—40—47 Guaranteed	400—470MHz	≥20dB	≤0.35dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.20dB	1.15	at 25°C
CR3—47—60 Guaranteed	470—600MHz	≥20dB	≤0.35dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.20dB	1.15	at 25°C
CR3—59—72 Guaranteed	590—720MHz	≥20dB	≤0.35dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.20dB	1.15	at 25°C
CR3—60—80 Guaranteed	600—800MHz	≥20dB	≤0.35dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.20dB	1.15	at 25°C
CR3—71—86 Guaranteed	710—860MHz	≥20dB	≤0.35dB	≤1.25	—10 to +60°C
Typical	—	25dB	0.20dB	1.15	at 25°C

RF Circulators (Continued)

COAXIAL 3-PORT CIRCULATORS Continued



500 W CW 800 W PEAK SYNC

TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR5—47—60 Guaranteed	470—600MHz	>22dB	<0.35dB	<1.2	—10 to +70°C
Typical	—	24dB	0.3 dB	1.15	at 25°C
CR5—59—72 Guaranteed	590—720MHz	>22dB	<0.35dB	<1.2	—10 to +70°C
Typical	—	24dB	0.3 dB	1.15	at 25°C
CR5—71—86 Guaranteed	710—860MHz	>22dB	<0.35dB	<1.2	—10 to +70°C
Typical	—	24dB	0.3 dB	1.15	at 25°C

1000 W CW 1700 W PEAK SYNC

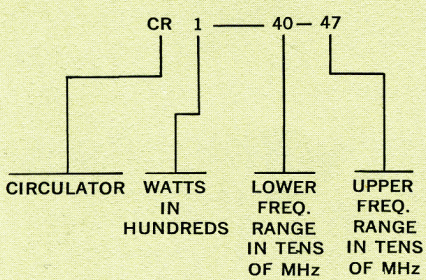
TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR10—15—16 Guaranteed	150—160MHz	>20dB	<0.30dB	<1.25	+10 to +70°C
Typical	—	22dB	0.25dB	1.1	at 25°C
CR10—16—19 Guaranteed	160—190MHz	>20dB	<0.35dB	<1.25	+10 to +60°C
Typical	—	22dB	0.25dB	1.1	at 25°C
CR10—17—20 Guaranteed	170—200MHz	>20dB	<0.35dB	<1.25	+10 to +60°C
Typical	—	22dB	0.25dB	1.1	at 25°C
CR10—19—22 Guaranteed	190—220MHz	>20dB	<0.35dB	<1.25	+10 to +60°C
Typical	—	22dB	0.25dB	1.1	at 25°C
CR10—19.5—23 Guaranteed	195—230MHz	>20dB	<0.35dB	<1.25	+10 to +60°C
Typical	—	22dB	0.25dB	1.1	at 25°C

2000 W CW 2000 W PEAK SYNC

TYPE	FREQUENCY RANGE	ISOLATION	INSERTION LOSS	V.S.W.R.	TEMPERATURE RANGE
CR20—47—60 Guaranteed	470—600MHz	>20dB	<0.35dB	<1.25	—10 to +40°C
Typical	—	24dB	0.17dB	1.12	at 25°C
CR20—59—72 Guaranteed	590—720MHz	>22dB	<0.35dB	<1.2	—10 to +40°C
Typical	—	27dB	0.15dB	1.1	at 25°C
CR20—60—80 Guaranteed	600—800MHz	>20dB	<0.35dB	<1.25	—10 to +40°C
Typical	—	24dB	0.17dB	1.13	at 25°C
CR20—71—86 Guaranteed	710—860MHz	>22dB	<0.35dB	<1.2	—10 to +40°C
Typical	—	26dB	0.16dB	1.15	at 25°C

All circulators except 2000 W have type N female 50 ohm connectors.
2000 W types have DIN 47223 HF 7/16 connectors.

EXPLANATION OF TYPE NUMBERS

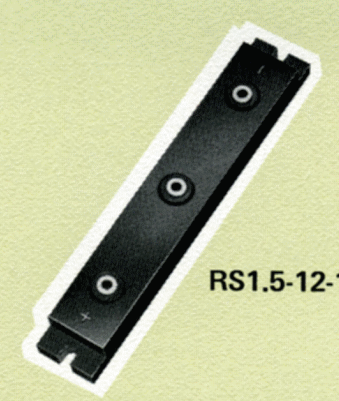


Amperex®

Rectifiers

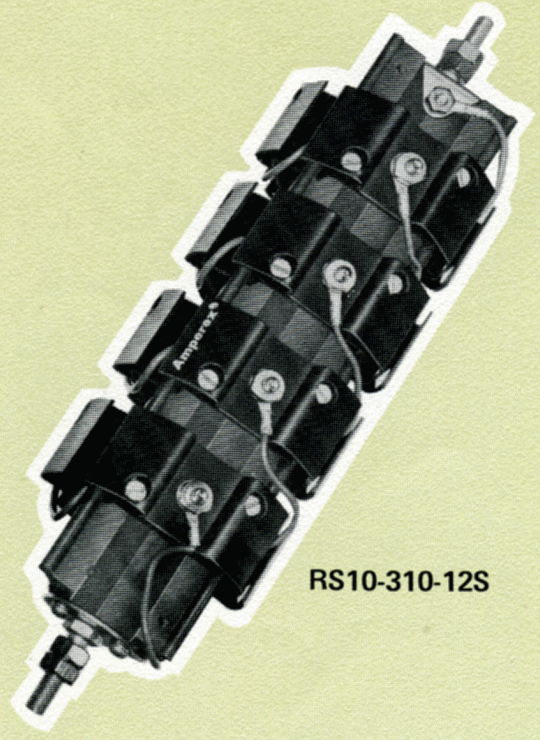
RECTIFIER STACKS

TYPE	MAXIMUM POWER SUPPLY AVG. D.C. OUTPUT VOLTAGE			MINIMUM STACK AVALANCHE VOLTAGE	MAX. POWER SUPPLY AVG. D.C. OUTPUT CURRENT		MAX. PWR. SUPPLY R.M.S. SHORT CIRCUIT CURRENT		
	1 ϕ C.T.	1 ϕ BRIDGE	3 ϕ BRIDGE		1ϕ C.T. or BRIDGE	3ϕ BRIDGE	½ CYCLE	4 CYCLES	10 CYCLES
RS0.5-12-16M	2870	5740	8550	18,000	1A	1.5A	1ϕ=35.4 3ϕ=47.5	1ϕ=16.3 3ϕ=21.8	1ϕ=11.3 3ϕ=15.2
RS1.5-12-12M	2390	4775	7150	15,000	3A	4.5A	1ϕ=49.4A 3ϕ=60.5A	1ϕ=16.9A 3ϕ=20.8A	1ϕ=13.4A 3ϕ=16.4A
RS3.5-24-9S	1790	3580	5350	11,250					
RS3.5-24-12S	2390	4775	7150	15,000					
RS3.5-24-15S	2985	5970	8930	18,750					
RS3.5-24-18S	3580	7160	10,710	22,500			1 PHASE	1 PHASE	1 PHASE
RS3.5-24-21S	4180	8360	12,500	26,250			141A	33.8A	25.4A
RS3.5-24-24S	4775	9550	14,300	30,000	7A	10.5A			
RS3.5-24-27S	5375	10,750	16,100	33,750			3 PHASE	3 PHASE	3 PHASE
RS3.5-24-30S	5970	11,940	17,880	37,500			173A	41.5A	31.2A
RS3.5-24-33S	6570	13,140	19,650	41,250					
RS3.5-24-36S	7160	14,320	21,420	45,000					
RS3.5-24-39S	7760	15,520	23,200	48,750					
RS4-55-9S	1790	3580	5350	11,250					
RS4-55-12S	2390	4775	7150	15,000					
RS4-55-15S	2985	5970	8930	18,750					
RS4-55-18S	3580	7160	10,710	22,500			1 PHASE	1 PHASE	1 PHASE
RS4-55-21S	4180	8360	12,500	26,250			282A	77.5A	53.6A
RS4-55-24S	4775	9550	14,300	30,000	8A	12A			
RS4-55-27S	5375	10,750	16,100	33,750			3 PHASE	3 PHASE	3 PHASE
RS4-55-30S	5970	11,940	17,880	37,500			346A	95.2A	65.8A
RS4-55-33S	6570	13,140	19,650	41,250					
RS4-55-36S	7160	14,320	21,420	45,000					
RS4-55-39S	7760	15,520	23,200	48,750					
RS5-110-9S	1790	3580	5350	11,250					
RS5-110-12S	2390	4775	7150	15,000					
RS5-110-15S	2985	5970	8930	18,750					
RS5-110-18S	3580	7160	10,710	22,500			1 PHASE	1 PHASE	1 PHASE
RS5-110-21S	4180	8360	12,500	26,250			508A	155A	106A
RS5-110-24S	4775	9550	14,300	30,000	10A	15A			
RS5-110-27S	5375	10,750	16,100	33,750			3 PHASE	3 PHASE	3 PHASE
RS5-110-30S	5970	11,940	17,880	37,500			624A	190A	130A
RS5-110-33S	6570	13,140	19,650	41,250					
RS5-110-36S	7160	14,320	21,420	45,000					
RS5-110-39S	7760	15,520	23,200	48,750					
RS10-310-9S	1790	3580	5350	11,250					
RS10-310-12S	2390	4775	7150	15,000					
RS10-310-15S	2985	5970	8930	18,750					
RS10-310-18S	3580	7160	10,710	22,500			1 PHASE	1 PHASE	1 PHASE
RS10-310-21S	4180	8360	12,500	26,250			1129A	437A	352A
RS10-310-24S	4775	9550	14,300	30,000	20A	30A			
RS10-310-27S	5375	10,750	16,100	33,750			3 PHASE	3 PHASE	3 PHASE
RS10-310-30S	5970	11,940	17,880	37,500			1384A	536A	433A
RS10-310-33S	6570	13,140	19,650	41,250					
RS10-310-36S	7160	14,320	21,420	45,000					
RS10-310-39S	7760	15,520	23,200	48,750					



RS1.5-12-12M

RS0.5-12-16M



RS10-310-12S

Rectifiers (Continued)

MERCURY RECTIFIERS

TYPE	PIV kV	AVERAGE PLATE CURRENT AMPS	FILAMENT VOLTS	FILAMENT AMPS	SINGLE-PHASE FULL WAVE (2 Tubes) [A] AC INPUT RMS VOLTS	SINGLE-PHASE FULL WAVE (2 Tubes) AVG. DC OUTPUT TO FILTER VOLTS	SINGLE-PHASE FULL WAVE (2 Tubes) AVG. DC LOAD CURRENT AMPS	SINGLE-PHASE BRIDGE (4 Tubes) [B] AC INPUT RMS VOLTS	SINGLE-PHASE BRIDGE (4 Tubes) AVG. DC OUTPUT TO FILTER VOLTS	SINGLE-PHASE BRIDGE (4 Tubes) AVG. DC LOAD CURRENT AMPS	3-PHASE FULL WAVE (6 Tubes) [C] AC INPUT RMS VOLTS	3-PHASE FULL WAVE (6 Tubes) AVG. DC OUTPUT TO FILTER VOLTS	3-PHASE FULL WAVE (6 Tubes) AVG. DC LOAD CURRENT AMPS	RECOMMENDED THYRATRONS TYPE
866A	10	0.25	2.5	5.0	3535	3180	0.5	7070	6360	0.5	7070	9570	0.75	5869
Δ866AX	10	0.25	2.5	4.8	3535	3180	0.5	7070	6360	0.5	7070	9570	0.75	5869
872A	10	1.25	5.0	7.5	3535	3180	2.5	7070	6360	2.5	7070	9570	3.75	5870, 8270, 8482
Δ872AX	13.5	1.5	5.0	7.0	4775	4300	3.0	9550	8600	3.0	9550	12900	4.5	5870, 8270, 8482
8008	10	1.25	5.0	7.5	3535	3180	2.5	7070	6360	2.5	7070	9570	3.75	5870, 8270, 8482
Δ8008AX	13.5	1.5	5.0	7.0	4775	4300	3.0	9550	8600	3.0	9550	12900	4.5	5870, 8270, 8482
575A	15	1.5	5.0	10.0	5300	4800	3.0	10600	9600	3.0	10600	14300	4.5	5870, 8270, 8482
Δ7136	15	2.5	5.0	11.5	5300	4800	5.0	10600	9600	5.0	10600	14300	7.5	5870, 8270, 8482
7136A	15	2.5	5.0	11.5	5300	4800	5.0	10600	9600	5.0	10600	14300	7.5	5870, 8270, 8482
Δ6693	15	3.0	5.0	11.5	5300	4800	6.0	10600	9600	6.0	10600	14300	9.0	8270, 8482
869B/869BL*	20	2.5	5.0	18.0	7000	6300	5.0	14000	12600	5.0	14000	18900	7.5	5870, 8270, 8482
**	15	5.0	5.0	18.0	5250	4725	10.0	10500	9450	10.0	10500	14200	15.0	6786
6508	21	2.5	5.0	12.5	7400	6675	5.0	14800	13350	5.0	14800	20000	7.5	5870, 8270, 8482
857B	22	10.0	5.0	30.0	7750	7000	20.0	15500	14000	20.0	15500	21000	30.0	6786

NOTES:

1. *Ratings shown are absolute—maximum*
2. *Recommended filament excitation: 120° ±30° relative to applied plate voltage*

Δ *Amperex extra quality types—for use where highest reliability is required*

* *Ratings for filament excitation in-phase with applied plate voltage*

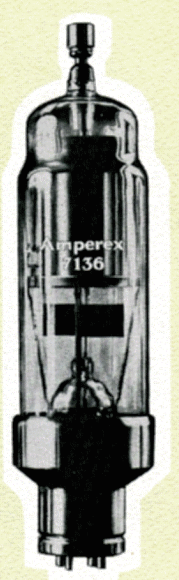
** *Ratings for filament excitation 120° ±30° relative to applied plate voltage*

For single copies of detailed data sheets on the above tube types, Contact Product Manager, Power Tubes.

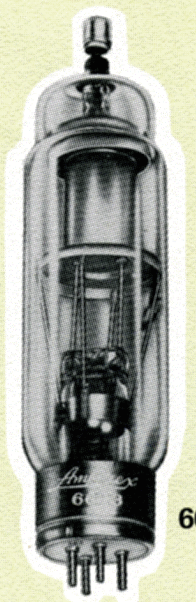
[A] *Line to transformer center tap*

[B] *Line to line*

[C] *Line to line (=1.73 X line to neutral)*



7136



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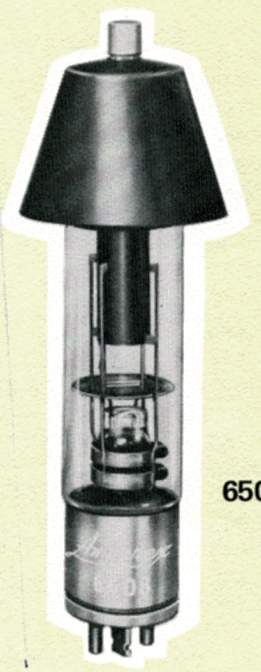


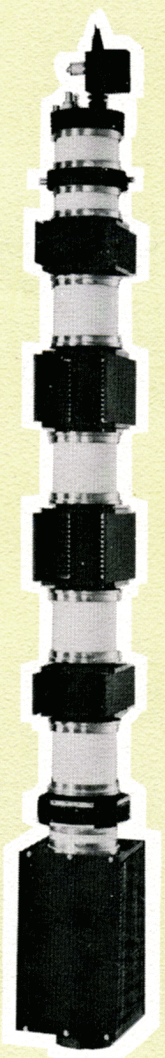
6508

Klystrons

UHF T.V. HIGH POWER KLYSTRONS

WITH PERMANENT MAGNET FOCUSING

TYPE	DESCRIPTION	FREQUENCY RANGE MHz	HEATER		COOLING	MAX. OUTPUT POWER kW	TYPICAL OPERATION			
			VOLTS	AMPS			DRIVING POWER W	COLLECTOR TO CATHODE VOLTAGE kV	COLLECTOR TO BODY VOLTAGE kV	CATHODE CURRENT AMPS
YK1001	FOUR CAVITIES	470-860	7.5	32	FORCED AIR	13.5	10	18	—0.5	1.9
YK1002	FOUR CAVITIES	470-860	7.5	32	WATER AND FORCED AIR	13.5	10	18	—0.5	1.9
YK1151	FOUR CAVITIES	470-860	8.0	32	FORCED AIR	2.5 12.5	25 2.5	20 16	—4 —4	3.0 2.1



YK1001

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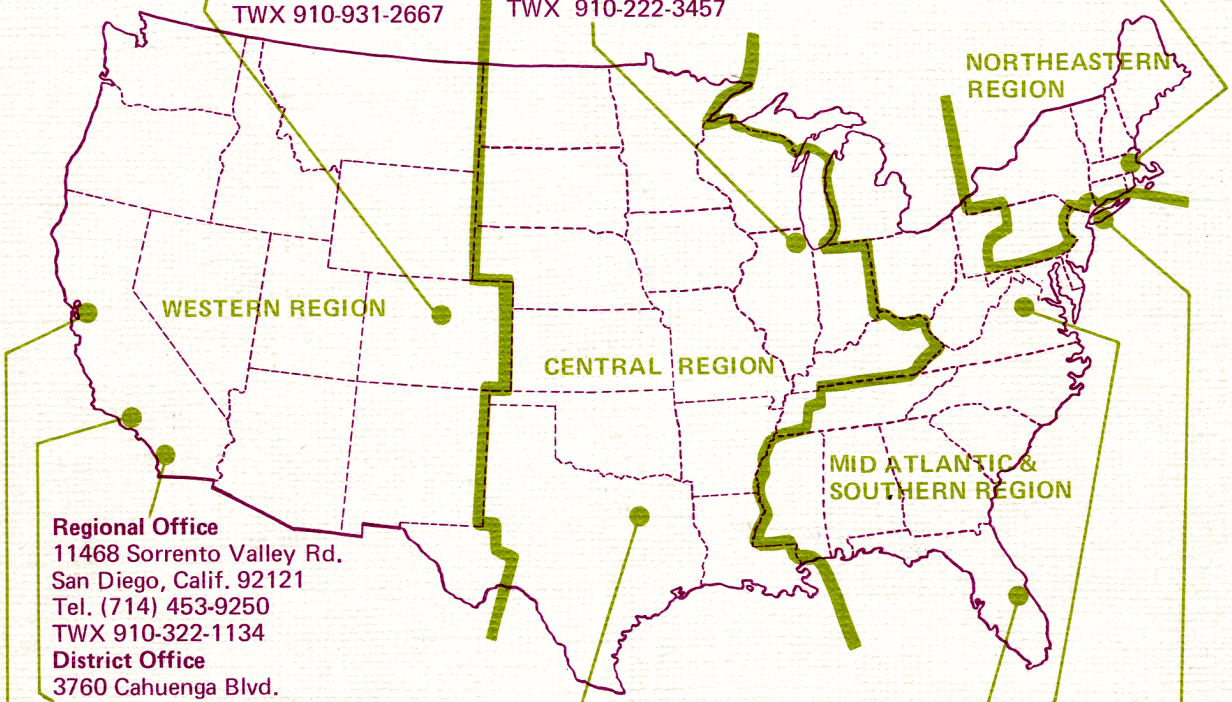

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