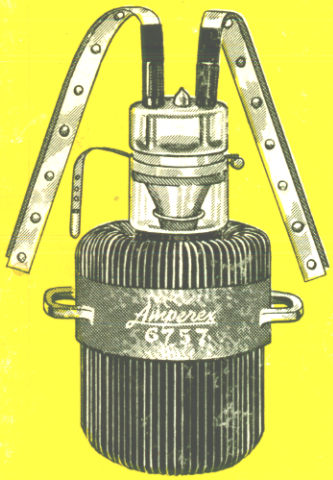
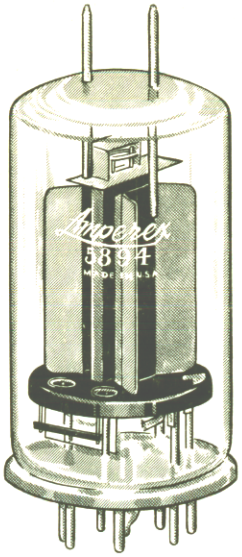
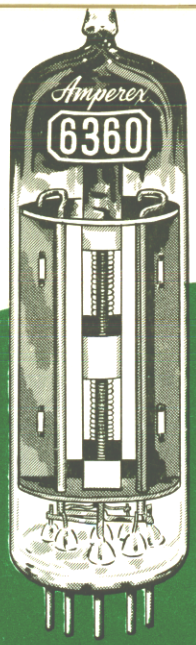






ELECTRON TUBES & SEMICONDUCTORS

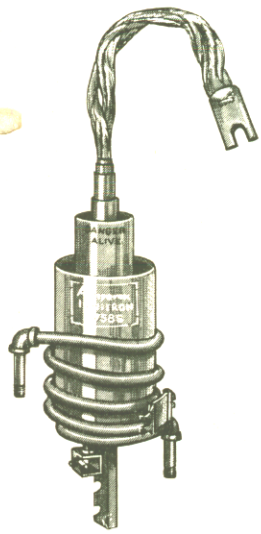
by

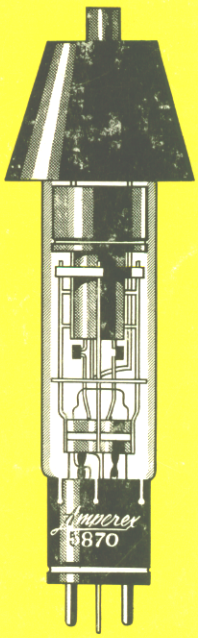
Amperex®

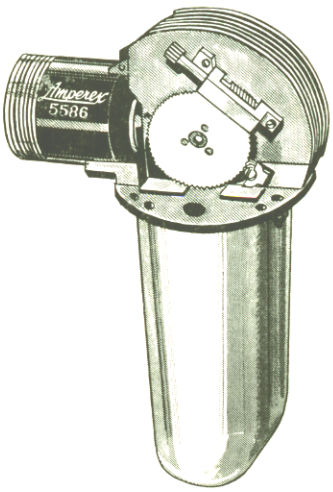
for

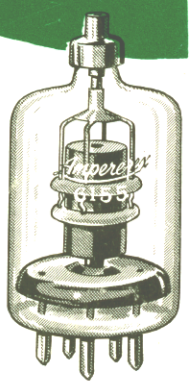
COMMUNICATION
INDUSTRIAL USE
RECTIFICATION
RADIATION DETECTION
ELECTRO-MEDICAL USE
AMATEUR USE
SPECIAL PURPOSES

REVISED DECEMBER 1959









AMPEREX ELECTRONIC CORPORATION • 230 DUFFY AVE. • HICKSVILLE, L. I., N. Y.

FOREWORD

This condensed catalog has been compiled for those in the engineering field who seek the proper tubes and semiconductors to suit their applications.

It is also intended to serve as a quick reference guide for initial equipment as well as for replacement purposes.

More detailed data sheets and brochures on the various products listed herein are available upon request. A detailed engineering transmitting, and power tube manual (2 volumes) giving complete tube characteristics and application data is available to engineers at the nominal cost of $11.00. A semiconductor and special purpose tube manual is also available at $5.50.

AMPEREX is always interested in quoting on all tube and semiconductor requirements. Our research, development and manufacturing facilities are such that we welcome inquiries on new products.

AMEPEREX ELECTRONIC CORPORATION

INDEX

POWER TUBES
TETRODES & PENTODES

TYPE NO.	FILAMENT		Mu	Max. Diss., Watts	TYPICAL OPERATION					
					PLATE			GRID		SCREEN
	Volts	Amps			Volts DC	Amps DC	Output Watts	Volts DC	Amps DC	Volts DC
PE06/40N	6.3	1.3	5.5 [1]	25	600	195	72	-75	0	300
4W300B	6.0	2.9	5.2 [1]	300	2,000	-	390	-	-	-
4X150A	6.0	2.6	5 [1]	250	1,250	0.200	140	-115	0.011	280
4X250B [2] (ceramic)	6.0	2.6	5.2 [1]	250	2,000	0.250	390	-90	0.026	250
4X250F (ceramic)	26.5	0.56								
4X500A	5.0	13.5	6.2 [1]	500	4,000	0.315	930	-150	0.016	500
4-125A/4D21	5.0	6.5	5.9 [1]	125	2,500	0.200	375	-150	0.012	350
4-250A/5D22	5.0	14.5	5.1 [1]	250	4,000	0.312	1,000	-225	0.090	500
4-400A	5.0	14.5	5.1 [1]	400	4,000	0.350	1,100	-220	0.018	500
807	6.3	0.9	8 [1]	25	600	0.100	40	-45	0.004	250
5894	12.6 6.3	0.9 1.8	8.2 [1]	CCS=40 ICAS=45	CCS=600 ICAS=750	0.200	CCS=85 ICAS=105	-80	0.005	250
6075/AX-9907	6.3 6.3	33.5 33.5	7.5 [1] 7.5 [1]	3,000 3,000	4,000 5,000	1.10 1.10	3,300 4,100	-250 -250	0.070 0.070	800 800
6076/AX-9907-R	6.3 6.3	33.5 33.5	7.5 7.5	3,000 3,000	4,000 5,000	1.10 1.10	3,300 4,100	-250 -250	0.070 0.070	800 800
6079/AX-9908	10.0	9.7	9.5 [1]	500	5,000	0.452	1,760	-200	0.030	700
6083/AX-9909	12.6	1.35	6.7	45	1,000	0.017	132	-120	0.005	250
6146	6.3	1.25	4.5	CCS=20 ICAS=25	600 750	0.112 0.12	52 70	-58 -62	0.0028 0.0031	150 160
6155	5.0	6.5	6.2 [1]	125	2,500	0.200	375	-150	0.010	350
6156	5.0	14.1	5.1 [1]	250	3,000	0.345	800	-180	0.010	500
6159	26.5	1.25	4.5	CCS=20 ICAS=25	600 750	0.112 0.12	52 70	-58 -62	0.0028 0.0031	150 160
6252/AX-9910	12.6 6.3	0.65 1.3	8.5 [1]	CCS=20 ICAS=25	600 750	0.100 0.150	42 79	-60 -60	0.0014 0.002	250 250
6360	12.6 6.3	0.410 0.820	7.5 [1]	CCS=10 ICAS=14	300	0.100	ICAS 18.5	-45	0.003	200
6907	12.6 6.3	0.65 1.3	8.5 [1]	CCS=20 ICAS=25	600 750	0.100 0.150	42 79	-60 -60	0.0014 0.002	250 250

1 Grid No. 2 to Grid No. 1
2 A glass seal version of 4X250B (ceramic) is available. See tube Type 6979.

MAX. FREQ. mc/sec	INTERELECTRODE CAPACITANCE - μμf			DESCRIPTION	TYPE NO.
Full Input Watts	G-P	G-F	P-F		
88	0.1	15	8.7	Radiation cooled all-glass pentode designed for use as an RF amplifier, oscillator, frequency multiplier, and modulator at frequencies up to 88 Mc/S.	PE06/40N
500	0.06	17.2	5.0	External anode tetrode electrically identical to 4X250B. Anode is water cooled. Designed for applications in which reserve anode dissipation is desirable.	4W300B
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.	4X150A
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 applications.	4X250B (ceramic) 4X250F (ceramic)
120	0.05	12.8	5.6	Forced-air cooled external anode tetrode. Useful as power amplifier in FM, TV and VHF communication transmitters.	4X500A
120	0.05	10.8	3.1	Radiation and forced-air cooled tetrode. Designed for use as power amplifier, modulator or oscillator.	4-125A/4D21
110	0.12	12.7	4.5	Radiation and forced-air cooled tetrode. Designed for use as RF power amplifier, modulator or oscillator.	4-250A/5D22
75	0.12	12.5	4.7	Radiation and forced-air cooled tetrode. Designed for use as power amplifier, modulator or oscillator at frequencies up to 110 Mc/S.	4-400A
60	0.2	11.0	7.0	Radiation-cooled tetrode. Popular replacement as well as for initial equipment.	807
250	0.08	Input 6.7 Output 2.1 (Push-Pull)		Radiation and/or forced-air-cooled twin-tetrode of original Amperex design as H-F version of conventional 829-B. Makes ideal multiplier, as well as straight amplifier and modulator.	5894
220 75		24.0 24.0	8.5 8.5	Water-cooled low drive, H-F tetrode designed for F-M and television transmitter power amplifier.	6075/AX-9907
220 75	0.2 0.2	24.0 24.0	8.5 8.5	Forced-air-cooled external anode version of 6075/AX-9907.	6076/AX-9907-R
75	0.24	Input 25 Output 7.2		Radiation and/or forced-air-cooled low drive H-F tetrode for F-M and A-M transmitters. Also ideal in screen modulator stages.	6079/AX-9908
60	0.1	22.5	11.0	Radiation-cooled pentode with low voltage - high current characteristics. Powder glass dish type base with short internal lead connections. Up to 150 watts, Class C Telephony, ICAS.	6083/AX-9908
60	0.22	13.5	8.5	Beam power tube for use as R-F power amplifier, oscillator, frequency multiplier, AF power amplifier or modulator for mobile and fixed equipment. Anode capable of dissipating 25 watts ICAS.	6146
120	0.05	10.8	3.5	Convection and forced-air-cooled tetrode. "Magnisorb" anode and low drive make it excellent R-F amplifier tube in F. M. broadcasting. Improved version of 4-125A/4D21.	6155
75	0.12	12.7	4.5	Convection and forced-air-cooled tetrode. "Magnisorb" anode and low drive characteristics with "sintered" glass base. Improved version of 4-250A/5D22.	6156
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 & mobile equipment.	6159
300	-	Input 4.0 Output 1.3		Radiation and/or forced-air-cooled twin tetrode of Amperex design. H. F. version of conventional 832A. Makes ideal multiplier as well as straight amplifier and modulator. Useful up to 700 mc. at reduced ratings. Delivers 15 watts at 600 mc. under CCS conditions.	6252/AX-9910
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 mc. Capable of delivering 18.5 watts output at 200 mc.	6360
300	-	Input 4.0 Output 1.3		Twin tetrode, radiation-cooled. Special AMPEREX design for mobile service. HF version of conventional 832A. Ideal multiplier and straight amplifier and modulator. Useful up to 1000 mc. Delivers 15 watts at 600 mc, CCS.	6907

POWER TUBES
TETRODES & PENTODES

TYPE NO.	FILAMENT		Mu	Max. Diss. Watts	TYPICAL OPERATION					
					PLATE			GRID		SCREEN
	Volts	Amps			Volts DC	Amps DC	Output Watts	Volts DC	Amps DC	Volts DC
6939	12.6 6.3	0.375 0.75	33 [1]	CCS=6 ICAS=7.5	180 200	0.055 0.060	5.8 7.5	-20 -20	0.002 0.002	180 200
6979	6.0	2.6	5 [1]	250	2,000	0.250	410	-90	0.012	250
7377	12.6 6.3	0.3 0.6	28 [1]	8	250	0.035	7	-15	0.00075	160
7378	6.3	3.9	5.7 [1]	100	750	0.385	200	-90	0.007 0.010	250
7527	5	14.1	5.1 [1]	400	4,000	0.270	800	-170	0.0095	500

[1]Grid No. 2 to Grid No. 1

POWER TUBES
TRIODES

TYPE NO.	FILAMENT		Mu	Max. Diss. Watts	TYPICAL OPERATION					
					PLATE			GRID		SCREEN
	Volts	Amps			Volts DC	Amps DC	Output Watts	Volts DC	Amps DC	Volts DC
HF-200	10.0	4	18	200	2,500	0.200	380	-300	0.020	-
HF-201A	10.5	4	18	200	2,500	0.200	380	-300	0.018	-
HF-300	11.0	4	23	200	3,000	0.250	600	-400	0.028	-
ZB-3200	22.0	40.5	75	2,500	8,000	0.960	5,800	-400	0.150	-
TBL2/400	3.4	19	33	400	2,000	0.400	510	-	.120	-
TBL2/500	3.4	19.0	70	500	2,500	0.38	620 + 50	-70	0.16	-
TBL6/14	6.3	130	17.5	CCS= 10,000	6,000	3.3	14,300	-	0.8	-
TBL12/38	8	130	21	15,000	12,000	4.5	39,300	-	0.9	-
TBW6/14	6.3	130	17.5	15,000	6,000	3.3	14,300	-	0.8	-
TBW12/38	8	130	21	15,000	12,000	4.5	39,300	-	0.9	-
450-TH	7.5	12.0	38	450	5,000	0.450	1,800	-300	0.090	-
450-TL	7.5	12.0	18	450	5,000	0.450	1,800	-500	0.054	-
504R	7.5	24	17	1,000	3,500	0.860	2,175	-750	0.150	-
833-A	10.0	10.0	35	400	4,000	0.450	1,440	-200	0.075	-
849	11.0	5	19	500	2,500	0.350	630	-250	0.013	-
849-A	11.0	7.7	19	500	3,000	0.500	1,200	-500	0.100	-
880	12.6	315	20	20,000	10,000	6.0	40,000	-1200	0.800	-
889-A	11.0	125	21	5,000	7,500	2.0	10,000	-800	0.240	-
889-RA	11.0	125	21	5,000	7,500	2.0	10,000	-800	0.240	-
891	22.0	60.0	8	6,000	10,000	1.45	10,000	-3000	0.150	-

MAX. FREQ. mc/sec / Full Input Watts	INTERELECTRODE CAPACITANCE - μμf G-P	G-F	P-F	DESCRIPTION	TYPE NO.
500	-	Input 3.8 Output 0.8		High-gain twin tetrode for use as Class C amplifier, oscillator, frequency multiplier and modulator. ICAS plate input = 14 watts up to 500 mc. Capable of delivering 7.5 watts output at 500 mc.	6939
250	0.03	15.7	4.5	Forced-air cooled external anode tetrode. Brazed radiator. Interchangeable with 4X150A where higher plate dissipation is required.	6979
960	0.145	4.5	1.35	Radiation cooled twin tetrode designed for push-pull Class C operation at frequencies up to 1000 Mc.	7377
30	0.9	-	-	Radiation and convection cooled all-glass beam-power tetrode especially designed for use as an AF and RF amplifier, oscillator, and frequency multiplier for operation at frequencies up to 30 Mc/S.	7378
75	0.12	12.7	4.9	All glass tetrode. Designed for amplifier, oscillator, or modulator service extending in the VHF region at frequencies up to 110 Mc/S.	7527

MAX. FREQ. mc/sec / Full Input Watts	INTERELECTRODE CAPACITANCE - μμf G-P	G-F	P-F	DESCRIPTION	TYPE NO.
30	6.9	6.2	1.2	Radiation-cooled triode. Original Amperex design and ruggedness make it ideally suited for R-F ' ting as well as for broadcasters and amateurs.	HF-200
30	7.0	8.8	1.2	Radiation-cooled triode, similar to HF-200, with different tube capacitance. Low voltage, high current characteristics.	HF-201A
20	7.0	6.0	1.0	Radiation-cooled triode. Ideally suited for initial equipment and replacement for competitive types. Widely used in R-F heating applications, many commercial, police, and amateur transmitters.	HF-300
10	10.0	13.0	2.0	Forced-air-cooled triode. Original Amperex design. 5.8 kw output at 10 mc with zero bias. Used principally in broadcasting.	ZB-3200
800	6.5	11.5	0.12	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 Mc/S.	TBL2/400
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 Mc/S.	TBL2/500
30	40	40	1.0	Forced-air cooled external anode triode. Designed for use as an oscillator in industrial equipment.	TBL6/14
30	23.5	42.5	0.9	Same as for TBL6/14.	TBL12/38
30	40	40	1.0	Water cooled version of TBL6/14.	TBW6/14
30	23.5	42.5	0.9	Water cooled version of TBL12/38.	TBW12/38
40	5.0	8.8	0.8	Radiation-cooled triode. Very popular in A-M broadcast stations and Government transmitters. Also used in R-F heating applications.	450-TH
40	4.5	6.8	0.8	Radiation-cooled, medium mu version of 450-TH.	450-TL
150	10.5	14.0	1.3	Forced-air cooled triode similar to AMPEREX 501R minus flexible leads. Interchangeable with 7C26 with very minor circuit changes.	504R
30	6.3	12.3	8.5	Radiation and forced-air cooled triode used widely in A-M transmitters and also some R-F heating applications. (Refer to AX-9902 data).	833-A
3	33.0	11.0	2.0	Radiation and forced-air-cooled triode. Still popular as replacement in some A-M broadcast transmitters and R-F heating.	849
20	11.5	14.0	1.8	Same information as above. Interelectrode capacitance different.	849-A
25	26.0	29.0	2.6	Water-cooled triode. This rugged "powerhouse" very popular in broadcasting stations and ideal for R-F heating applications.	880
50	17.8	19.5	3.0	Water-cooled triode. Another rugged high power R-F tube for broadcasting stations and R-F heating applications.	889-A
25	20.7	19.5	3.0	Forced-air-cooled triode version of 889-A, with improved radiator design.	889-RA
1.6	28.0	16.0	3.0	Water-cooled triode. This is one of the tubes that built Amperex reputation. Used in 5 and 10 kw broadcasting stations. Also popular in R-F heating.	891

POWER TUBES
TRIODES

TYPE NO.	FILAMENT		Mu	Max. Diss. Watts	TYPICAL OPERATION					
					PLATE			GRID		SCREEN
	Volts	Amps			Volts DC	Amps DC	Output Watts	Volts DC	Amps DC	Volts DC
891-R	22.0	60.0	8	4,000	10,000	1.4	10,000	-2000	0.150	-
892	22.0	60.0	50	10,000	12,000	1.55	14,250	-1600	0.165	-
892-R	22.0	60.0	50	4,000	10,000	1.40	10,500	-1300	0.160	-
5604	11.0	176.0	19	10,000	12,000	2.5	22,500	-1170	0.220	-
5619	11.0	176.0	19	20,000	12,000	2.5	22,500	-1170	0.220	-
5658	12.0	290.0	20.5	10,000	10,000	3.8	28,000	-870	0.550	-
5666	11.0	120.0	21	12,500	9,000	2.0	12,200	-750	0.210	-
5667	11.0	120.0	21	7,500	9,000	2.0	12,200	-750	0.210	-
5759/501-R	7.5	24	17	1,000	3,500	0.870	2,175	-250	0.133	-
5760/502	7.5	24	17	1,500	3,500	0.860	2,175	-450	0.150	-
5761/502-R	7.5	24	17	1,500	3,500	0.860	2,175	-450	0.150	-
5771	7.5	170	20	22,500	12,500	4.8	44,000	-630	0.750	-
5866/AX-9900	6.3	5.4	25	135	2,500	0.200	390	-300	0.045	-
5867/AX-9901	5.0	14.1	25	250	3,000	0.363	840	-250	0.069	-
5868/AX-9902	10.0	10.0	27	450	4,000	0.475	1,673	-350	0.100	-
5923/AX-9904	12.6	33.0	32	6,000	6,000	1.5	6,900	-400	0.310	-
5924/AX-9904-R	12.6	33.0	32	5,000	6,000	1.5	6,900	-400	0.310	-
5924A	12.6	33.0	32	CLASS B, TV SERVICE, SYNC. LEVEL						-
				6,000	5,000	1.90	6,250	-140	0.350	
6246/508	30	80	28	25,000	15,000	3.75	40,000	-900	0.420	-
6333	22.0	60.0	50	10,000	12,000	1.55	14,250	-1600	0.165	-
6445	22.0	60.0	50	5,000	10,000	1.40	10,500	-1300	0.160	-
6446	22.0	60.0	50	20,000	15,000	2.0	20,000	-1250	0.250	-
6447	22.0	60.0	50	10,000	12,000	2.0	17,500	-500	0.230	-
6756	7.5	100	13.5	20,000	12,000	3.5	30,640	-1220	0.210	-
6757	7.5	100	13.5	15,000	12,000	3.5	30,640	-1220	0.210	-
6800	7.5	100	19.5	20,000	12,500	3.5	33,000	-1200	0.250	-
6801	7.5	107	19.5	10,000	12,500	3.0	28,000	-1200	0.43	-
6960	12.6	33	32	6,000	6,500	2.0	10,000	-450	0.600	-
6961	12.6	33	32	6,000	6,500	2.0	10,000	-450	0.600	-
7004	3.4	19.0	32	300	2,500	0.260	45	-200	0.100	-
7092	6.3	32.5	22	800	6,000	0.600	2,840	-450	0.150	-
				1,300 [2]	6,000	0.950	4,400	-475	0.190	-
7237	12.6	33	32	6,000	6,500	2.0	10,000	-450	0.600	-
7459	12.6	30	32	4,000	6,000	1.5	6,900	-400	0.31	-

[1] Derated for 155 watts output

[2] 50% duty cycle

MAX. FREQ. mc/sec Full Input Watts	INTERELECTRODE CAPACITANCE - μμf G-P	 G-F	 P-F	DESCRIPTION	TYPE NO.
1.6	30.0	16.0	3.0	Forced-air-cooled version of 891.	891-R
1.6	32.0	17.0	1.8	Water-cooled triode. Widely used all over the world in broadcasting stations. Also another ideal R-F heating tube. Also see 6333 improved version.	892
1.6	32.0	17.0	2.0	Forced-air-cooled version of 892. Also see 6445 improved version.	892-R
22.5	25.0	30.0	1.25	Forced-air-cooled triode. Ideal oscillator for R-F heating and broadcast service.	5604
22.5	24.0	30.0	1.0	Water-cooled version of 5604.	5619
15	24.0	39.0	2.5	Industrial water-cooled version of type 880.	5658
22.5	18.0	23.5	2.6	Water-cooled triode. Heavy duty version of 889-A for industrial R-F heating application.	5666
22.5	18.5	23.5	3.0	Forced-air cooled triode. Heavy duty version of 889-RA for industrial R-F heating application.	5667
150	10.0	14.0	1.3	Forced-air cooled triode. Low voltage, high current characteristics. Ideal for R-F heating. Has a thoriated-tungsten filament.	5759/501-R
150	10.0	14.0	1.3	Water-cooled triode. Thoriated-tungsten filament. Compactness and low voltage, high current make it ideally suitable for R-F heating.	5760/502
150	10.0	14.0	1.3	Forced-air version of 502.	5761/502-R
25	24.5	47.0	3.0	Improved version of 880 with thoriated tungsten filament for high emission capability and a saving of 70% in filament power. Has rugged Kovar grid and filament seals. For industrial & communication application.	5771
150	5.5	5.8	0.1	Radiation and/or forced-air-cooled H. F. triode of original Amperex design. Powdered glass dish-type base with extremely low lead inductance makes this tube ideally suited for almost any H-F application.	5866/AX-9900
100	5.0	6.3	0.16	Radiation and/or forced-air-cooled H. F. low drive triode of original Amperex design.	5867/AX-9901
100	8.0	11.0	0.35	Radiation and/or forced-air-cooled H-F triode with rugged 100 watt filament. Of original Amperex design, for all heavy duty R-F applications.	5868/AX-9902
75	11.0	16.0	0.3	Water-cooled low drive H. F. triode. Rugged for H. F. heating application.	5923/AX-9904
75	11.0	16.0	0.3	Forced-air cooled version of type 5923.	5924/AX-9904-R
75 Full Input 220 Derated	11.0	16.0	0.3	Forced-air cooled triode for FM & TV transmitters. Brazed radiator shell & external surfaces silverplated throughout.	5924A
40	17.0	26.0	2.5	Water-cooled triode. 40 kw output makes it ideally suited as high power R-F heating oscillator and R-F amplifier in A-M transmitters.	6246/508
5	32.0	17.0	1.8	Improved ruggedized version of standard 892 with spiral filament, Kovar seals, powdered glass stem. Grid side arm deleted and replaced with Kovar ring. Excellent industrial tube for heavy duty, also communication.	6333
5	32.0	17.0	1.8	Forced-air-cooled version of type 6333. See above.	6445
5	32.0	17.0	1.8	Improved, ruggedized, heavy-wall version of type 892. Has powdered glass stem, Kovar grid ring, Kovar anode seal, stronger spiral filament giving more uniform heat distribution over anode surface. Also has strong conical, low-inductance grid support. An unusual industrial tube without equal.	6446
5	32.0	17.0	1.8	Forced-air-cooled version of type 6446. See above.	6447
30	47.6	25.1	1.5	Water-cooled triode with special characteristics as a low impedance, R. F. industrial oscillator. Particularly suited to induction and dielectric heating applications.	6756
30	50.0	25.1	2.0	Forced-air-cooled version of type 6756.	6757
22.5	26.0	25.0	1.0	Thoriated tungsten filamentary triode. 20 kw anode dissipation. Water-cooled. High power RF amplifier and industrial oscillator.	6800
22.5	27.0	25.0	1.25	Same as 6800 except 10 kw anode dissipation. Forced-air-cooled.	6801
55	11.0	16.0	0.3	Industrial water-cooled triode with large overload capacity on grid and plate currents. Suitable for 7.5 kw induction and dielectric heaters and 10 kw plastic sealers.	6960
55	11.0	16.0	0.3	Forced-air cooled version of 6960. Suitable for 7.5 kw induction and dielectric heaters and 10 kw plastic sealers.	6961
175 900 [1]	4.0	9.0	0.12 Max.	Compact, coaxial transmitting triode. Forced-air-cooled. UHF oscillator, amplifier and frequency multiplier. Useful up to 900 mc.	7004
50	6.2	10.5	0.25	Radiation cooled triode for industrial oscillator and amplifier applications. Rugged construction: Graphite anode with unusual overload capability. Thoriated tungsten filament.	7092
55	11.0	16.0	0.3	Identical with Amperex Type 6961 except with radiator design intended for interchangeability with competitive types 6366 and 6367.	7237
110	11	16	0.3	Forced air cooled triode designed for use in broadcast FM & TV communication transmitters. It will replace the 5762/7C24 in most applications.	7459

THYRATRONS–HYDROGEN

TYPE NO.	Peak Forward Anode Voltage Max.	Peak Anode Current Max. (Amps)	Av. Anode Current Max. (mA)	Pulse Width Max.
5949/1907	25,000	500	500 (absolute value)	2 μ sec
6268/AX-9911	8,000	90	100	2 μ sec
6279/AX-9912	16,000	325	200	2 μ sec

THYRATRONS–MERCURY VAPOR & INERT GAS–TRIODES & TETRODES

TYPE NO.	Heater or Filament		Filament Heating Time (sec.)	Tube Drop (Volts)	Peak Voltage		Anode Current		Max. Grid Volts	Ionization Time μ sec.
	Volts	Amps			Forward Volts	Inverse Volts	Peak Amps	Average Amps		
AX-105	5.0	10.0	300	16	10000	10000	8.0	4.0	-500	10
AX-255	5.0	16.0	300	12	1500	2500	80.0	12.5	-300	10
AX-260	5.0	25.0	600	10	1500	2500	160.0	25.0	-300	10
2D21	6.3	0.6	10	8	650	1300	0.5	0.1	-100	0.5
1701	2.5	5.0	5	16	2500	5000	1.0	0.5	-500	10
5544	2.5	12.0	60	16	1500	1500	40.0	3.2	-250	-
5545	2.5	21.0	60	16	1500	1500	80.0	6.4	-250	-
5559	5.0	4.5	300	16	1000	1500	15.0	2.5	-500	10
5560/FG95	5.0	4.5	300	16	1000	1000	15.0	2.5	-1000	10
5632/C3J	2.5	8.5	60	10	900	1250	30.0	2.5	-300	10
5684/C3JA	2.5	8.5	60	10	1000	1250	30.0	2.5	-300	10
5727	6.3	0.6	10	8	650	1300	0.5	0.1	-100	0.5
5869/AGR-9950	5.0	6.5	120	15	13000	13000	4.0	1.0	-100	10
5870/AGR-9951	5.0	14.0	120	12	27000	27000	10.0	2.5	-100	10
6786	5.0	15-20	600	12	15000	15000	45.0	10-15		-

ENTERTAINMENT & AUDIO TUBES *

TYPE NO.	FILAMENT		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS								
	Volts	Amps	Circuit Application	Applied Voltages			Plate Current (mA)	Screen Current (mA)	Amplification Factor	Plate Resistance (K ohms)	Transconductance (micrombos)
				Plate	Screen	Grid					
2ER5	2.1	0.6	RF Amplifier	200	0	-1.2	10	0	80	8	10,500
3ER5	2.8	0.45									
4ES8	4.2	0.6	Low Noise Cascode RF Amplifier	90	-	-1.2	15	-	34	2.72	12,500
5AR4/GZ34	5.0	1.9	Full Wave Rectifier				AC Supply (Plate-to-Plate) Voltage (RMS) DC Output Current (max.) Max. Capacity Condenser Input Filter DC Output Voltage				

* For additional entertainment rectifiers see RECTIFIERS - DIODES section

DESCRIPTION	TYPE NO.
These tubes are used as drivers for pulsing magnetrons and other oscillators and as high speed switches. Hydrogen-filled, they have extremely low de-ionization time. They are zero bias tubes, triggered by a positive grid pulse. Maximum pulse repetition frequency (prf in pulses per second) will depend on the peak forward anode voltage (epy in volts) according to formula: $(epy)^2 \times (prf) = 2.6 \times 10^{11}$ max.	
Especially designed for use in pulse modulator circuits of microwave radar systems.	5949/1907
Completely interchangeable with 4C35 in every respect except that it has self-contained source of hydrogen providing life expectancy of minimum 1000 hours.	6268/AX-9911
Completely interchangeable with 5C22 in every respect except that it has self-contained source of hydrogen providing life expectancy of minimum 1000 hours.	6279/AX-9912

Deion-ization Time μ sec.	Condensed Mercury Temp. Range - °C	DESCRIPTION	TYPE NO.
1000	+40° to +80°	Radiation-cooled mercury-vapor thyratron-tetrode.	AX-105
1000	+35° to +75°	Heavy-duty, mercury vapor thyratron for motor control and A. C. welder control.	AX-255
1000	+35° to +75°	Heavy-duty, mercury vapor thyratron for motor control and A. C. welder control.	AX-260
-	-	High control ratio, temperature independent Thyratron with high circuit sensitivity. Inert gas filled. Negative control characteristics.	2D21
1000	+30° to +80°	Radiation-cooled mercury-vapor low voltage thyratron. Similar in structure to 866-A.	1701
400	-	Xenon filled thyratron with reliable operation over wide temperature range. For electronic control of D. C. motor speed, regulation of current and voltage, counting and sorting devices and electronic switching machines.	5544
500	-	Same as for type 5544 above.	5545
1000	+40° to +75°	Indirectly heated, mercury-vapor triode with negative control characteristics.	5559
1000	+40° to +80°	Four electrode, mercury vapor thyratron with negative control characteristics. Designed for applications where the available grid power is very small and where it is desired to actuate the grid from a high impedance source.	5560/FG95
1000	-	Xenon filled, three-electrode thyratron with negative-control characteristics for reliable operation over wide temperature range. Especially suitable for control relay service, motor control, and ignitor firing service.	5632/C3J
1000	-	Xenon filled, three-electrode thyratron with negative-control characteristics for reliable operation over wide temperature range. Especially suitable for control relay service, motor control, and ignitor firing service.	5684/C3JA
35 min.	-	Ruggedized version of 2D21. Particularly suitable for mobile and aircraft operation where mechanical strength and reliability are important. Designed for relay, servo control applications, etc.	5727
250	+25° to +55°	Radiation-cooled mercury-vapor thyratron. Oxide coated filament. Used for stepless control of voltage output and D-C motor control.	5869/AGR-9950
250	+30° to +45°	Same as above for type 5869/AGR-9950.	5870/AGR-9951
-	+25° to +55°	High voltage, grid controlled mercury vapor thyratron. For industrial RF generators and transmitting equipment.	6786

Max. Power Output - 2 Tubes, Push-Pull Class B	Load Resistance (K ohms)	Cut-Off Bias (volts)	DESCRIPTION	TYPE NO.
-	-	-	High gain remote cut-off tetrodes designed for use as an amplifier, oscillator, or mixer in TV tuners. The screen grid is primarily a shield designed to reduce grid-to-plate capacitance. Frame grid construction.	2ER5 3ER5
-	-	-	High performance frame-grid twin-triode with remote cut-off characteristics. Designed for use as a low noise cascode tube for 600 mA series string operation in premium TV tuners.	4ES8
= 2 X 550 volts = 250 mA = 60 μf = 610 volts dc			Indirectly heated, full-wave rectifier with 5.0 volt, 1.9 amp heater and 250 mA output capacity. Octal base.	5AR4/GZ34

ENTERTAINMENT & AUDIO TUBES

TYPE NO.	FILAMENT		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS								
	Volts	Amps	Circuit Application	Applied Voltages			Plate Current (mA)	Screen Current (mA)	Amplification Factor	Plate Resistance (K ohms)	Transconductance (micromhos)
				Plate	Screen	Grid					
6AQ8/ECC85	6.3	0.435	RF Amplifier and Mixer	RF Amp 230	-	-2.0	10.0	-	57	9.7	6,000
				Mixer 190	-	[1]	5.2	-	57	2.2	2,300
6AU6	6.3	0.3	RF-IF Amplifier Triode	250	Plate	-	12.2	-	36	-	4,800
			RF-IF Amplifier Pentode	250	150	6.5	10.6	4.3	36	1000	5,200
6BL8/ECF80	6.3	0.43	AM/FM Oscillator	170	170	-2	10	2.8	47 [3]	400	6,200
			Mixer	100	-	-2	14	-	20	4	5,000
6BM8/ECL82	6.3	0.78	Voltage Amplifier & Power Output Tube	V. Amp. 100	-	0	3.5	-	70	28.0	2,500
				Output 100	100	-6.0	26	5.0	-	-	6,800
6BQ5/EL84	6.3	0.76	Power Output Tube	300	300	-14.5	2 x 46	2 x 11	-	-	11,300
6CA4/EZ81	6.3	1.0	Full Wave Rectifier					AC Supply (Plate-to-Plate) Voltage (RMS) DC Output Current (max.) Max. Capacity Condenser Input Filter DC Output Voltage			
6CA7/EL34	6.3	1.5	Power Output Tube	800	400	-39	2 x 91	2 x 19	-	-	11,300
6CW5/EL86	6.3	0.76	Medium Power Hi-Fi Amplifiers	250	200	-18.5	70	170	8	23	10,000
6DC8/EBF89	6.3	0.30	AM detector and AGC RF or IF Amplifier	200	-	-	0.8	-	-	-	-
				250	100	2.0	9	2.7	20	1000	3,800
6DJ8/ECC88	6.3	0.365	Cascode RF Amplifier Mixer	90	-	-1.2	15.0	-	33.	2.65	12,500
6DX8/ECL84	6.3	0.72	Video Output Tube - Pentode	-	220	-	18	3.1	-	3	9,700
			Keyed AGC, Sync-Separation, Sync-Amplification, Noise Suppression Triode	200	-	1.7	3	-	65	-	4,000
6EH7/EF183	6.3	0.3	IF Amplifier	190/200	90	-2	12	4.5	-	500	12,500
6EJ7/EF184	6.3	0.3	IF Amplifier	200	200	-2.5	10	4.1	60	350	15,000
6ER5	6.3	0.18	RF Amplifier	200	0	-1.2	10	0	80	8	10,500
6ES8/ECC189	6.3	0.365	Cascode AGC controlled RF amplifier	90	-	-1.2	15.0	-	33	2.65	12,500
6GM8/ECC86	6.3	0.33	RF Amplifier	25	-	0	7.5	-	14	2.1	7,800
			Mixer	25	-	-	2.6	-	-	0.5	2,000
6V4/EZ80	6.3	0.6	Full Wave Rectifier					AC Supply (Plate-to-Plate) Voltage (RMS) DC Output Current (max.) Max. Capacity Condenser Input Filter DC Output Voltage			
12AT7/ECC81	12.6 6.3	0.15 0.30	Voltage Amplifier	250	-	-2.0	10.0	-	55	-	5,500
12AU7/ECC82	12.6 6.3	0.15 0.30	Voltage Amplifier	250	-	-8.5	10.5	-	17	7.7	2,200
12AX7/ECC83	12.6 6.3	0.15 0.30	Voltage Amplifier	250	-	-2.0	1.2	-	100	62.5	1,600
45B5/UL84	45	0.1	IDENTICAL ELECTRICAL CHARACTERISTICS AS 6CW5/EL86								
6267/EF86	6.3	0.2	Voltage Amplifier	250	140	-2.0	3.0	0.6	-	2500	2,000

[1] Grid leak resistance = 1 megohm [2] Conversion Conductance [3] Grid 1 to Grid 2

Max. Power Output - 2 Tubes, Push-Pull Class B	Load Resistance (K ohms)	Cut-Off Bias (volts)	DESCRIPTION	TYPE NO.
-	-	-	Twin triode specifically designed for use in "front-end" stages of FM receivers as a combined RF Amplifier and self-oscillating additive mixer. Features extensive internal screening between the two triodes which reduces oscillator radiation. The high mutual conductance, input resistance and amplification factor make possible an average overall "front-end" gain of 350. .	6AQ8/ECC85
-	-	-		
-	-	-	Sharp cut-off triode-pentode designed for use as high gain RF or IF amplifier. Valuable in UHF wide band applications.	6AU6
-	-	-		
-	-	-	Single-envelope triode-pentode designed for applications in television and AM/FM receivers as a combined oscillator and mixer.	6BL8/ECF80
-	-	-		
-	-	-	Single-envelope triode-pentode designed for application in medium power hi-fi amplifiers. Suitable for one-tube phono amplifiers, simple stereo circuits and for vertical deflection in TV applications.	6BM8/ECL82
-	-	-		
17	8 Plate-to-Plate	-	High quality pentodes designed especially for high fidelity audio systems. High efficiency with low distortion. High sensitivity. Exceedingly small spread in characteristics between individual tubes so that maximum rated output is obtained with all tubes.	6BQ5/EL84
= 2 X 350 volts = 150 mA = 50 μf = 347 volts dc			Indirectly heated, full-wave rectifier with 6.3 volt, 1 amp heater, 150 mA output capacity and 9 pin miniature construction.	6CA4/EZ81
100	11 Plate-to-Plate	-	High quality pentodes designed especially for high fidelity audio systems. High efficiency with low distortion. High sensitivity. Exceedingly small spread in characteristics between individual tubes so that maximum rated output is obtained with all tubes.	6CA7/EL34
25	-	-	High current, low voltage output pentode for use in medium power hi-fi amplifiers. Useful in single ended push-pull circuits. In a typical transformerless circuit, a pair of tubes can deliver up to 10 watts in class AB.	6CW5/EL86
-	-	-	Double diode pentode designed especially for use as an RF or IF amplifier. The diodes are for AM detection and AGC. The pentode features high mutual conduction - important in AM, FM and TV applications.	6DC8/EBF89
-	-	-		
-	-	-	Twin triode designed for use in cascode circuits, RF and IF amplifiers, mixer and phase inverter stages. Frame grid construction provides high transconductance, low noise and extreme reproducibility of characteristics. Operation at low voltage has been successfully shown in D.C. coupled amplifiers and 12 volt B+, FM and VHF receivers.	6DJ8/ECC88
-	-	-	Triode-pentode with separate cathodes. Triode designed for use in circuits for keyed AGC, sync-separation, sync-amplification and noise suppression. The pentode is designed for use as a video output tube.	6DX8/ECL84
-	-	-		
-	-	-	Frame grid remote cut-off pentode designed for use as an IF amplifier in TV receivers. High transconductance, low capacities, and low feed back capacity, enables construction of simplified broad band amplifiers with high stability.	6EH7/EF183
-	-	-	Frame grid sharp cut-off pentode designed for use as an IF amplifier in TV receivers. High transconductance, low capacities, and low feed back capacity, enables construction of simplified broad band amplifiers with high stability.	6EJ7/EF184
-	-	-	High gain remote cut-off tetrodes designed for use as an amplifier, oscillator, or mixer in TV tuners. The screen grid is primarily a shield designed to reduce direct grid-to-plate capacitance. Frame grid construction.	6ER5
-	-	-	High performance, frame grid twin triode with remote cut-off characteristics. Designed for use as low noise cascode tube in premium TV tuners.	6ES8/ECC189
-	-	-	Frame grid twin triode designed for low voltage applications. Suitable for instrumentation and industrial applications as a direct-coupled wide band amplifier and for automobile radio sets and as a RF amplifier and self-oscillating mixer. May be operated directly from a storage battery.	6GM8/ECC86
-	-	-		
= 2 X 300 volts = 90 mA = 50 μ f = 310 volts dc			Indirectly heated, full-wave rectifier with 90 mA output capacity and 9 pin miniature construction.	6V4/EZ80
-	-	-12.0	Medium-gain dual triode with low hum, noise and microphonics. Replaces the 12AT7 without circuit changes.	12AT7/ECC81
-	-	-	Low noise dual triode with low hum, noise and microphonics. Replaces the 12AU7 without circuit changes.	12AU7/ECC82
-	-	-	High-gain dual triode with low hum, noise and microphonics. Replaces the 12AX7 without circuit changes.	12AX7/ECC83
				45B5/UL84
-	-	-	High gain pentode particularly suitable for pre-amplifier and input stages in which hum, noise and microphony must be kept to a minimum. Electrode structure rigid. Heater is bifilar, twisted pair of wires with magnetic field of one opposed to that of the other.	6267/EF86

ENTERTAINMENT & AUDIO TUBES

TYPE NO.	FILAMENT		TYPICAL OPERATING CONDITIONS AND CHARACTERISTICS								
	Volts	Amps	Circuit Application	Applied Voltages			Plate Current (mA)	Screen Current (mA)	Amplification Factor	Plate Resistance (K ohms)	Transconductance (micromhos)
				Plate	Screen	Grid					
7025	12.6 6.3	0.15 0.30	Voltage Amplifier	250	-	-2.0	1.2	-	100	62.5	1,600
7189	6.3	0.76	Power Output Tube	250	250	-7.3	48	5.5	19.5	40	11,300

INDICATOR TUBES

TYPE NO.	FILAMENT		SUPPLY AND SCREEN VOLTS	SCREEN CURRENT AT START OF CONTROL (mA)	ANODE SERIES RESISTANCE (Megohms)	GRID BIAS FOR END OF CONTROL RANGE (Volts)
	Volts	Amps				
IM3/DM70	1.4	0.025	85	0.17	-	-10
IN3/DM71	1.4	0.025	85	0.17	-	-10
6BR5/EM80	6.3	0.3	250	2.0	0.5	-16
6CD7/EM34	6.3	0.2	250	2.0	1.0	Section 1 = -5 Section 2 = -16
6DA5/EM81	6.3	0.3	250	2.0	0.5	-16
6FG6/EM84	6.3	0.27	250	1.1	0.47	-22
6370/E1T	6.3	0.3	Special "Beam Deflecting" miniature cathode ray tube. Max. counting rate 100,000 cps. For nuclear scalers,			

			ANODE VOLTAGE	MAX. LIGHT OUTPUT	ZERO LIGHT OUTPUT V_f = 7.0 V.A.C.		
					One side grounded	Center tap grounded	Neg. terminal grounded
6977	1.0 A.C. or D.C.	0.03	+50 V. D. C.	$V_g = 0$ $I_a = 0.6$ mA	V_g = 3.5 V.	V_g = 3.0 V.	V_g = 2.5 V.

PREMIUM QUALITY TUBES

TYPE NO.	PROTOTYPE	HEATER		AMPLIFICATION FACTOR	TRANSCONDUCTANCE (MICROMHOS)	TYPICAL OPERATION					
		VOLTS	AMPS			PLATE			GRID VOLTS DC	SCREEN	
						VOLTS DC	CURRENT mA-DC	RESISTANCE K OHMS		VOLTS DC	CURRENT mA-DC
E99F		6.3	0.15	27	3600	250	9.2	1000	-20	100	3.3
5726	6AL5	6.3	0.3	Max. plate 117 V. rms at 9 mA-DC total output; Peak plate current 54 mA max							
5654	6AK5	6.3	0.175	-	5000	120	7.5	340	R_k=200	120	2.5
6201	12AT7	6.3 12.6	0.30 0.15	60	5500	250	10	10.9	R_k=200	-	-
6218/E80T		6.3	0.15	-	-	100	1.35	-	0	70	-
7316		6.3	0.3	19.5	3100	100	11.8	6250	-8.5	-	-

Max. Power Output - 2 Tubes, Push-Pull Class B	Load Resistance (K ohms)	Cut-Off Bias (volts)	DESCRIPTION	TYPE NO.
-	-	-	High gain dual triode with low hum, noise and microphonics, the 7025 is a direct, high quality replacement for the 12AX7/ECC83.	7025
24	-	-	Miniature pentode designed for use as a power amplifier in high fidelity audio equipment. It is a specially tested and improved tube intended for use in amplifiers of over 20 watt capabilities.	7189

DESCRIPTION	TYPE NO.
Tuning indicator especially designed for battery operated sets featuring low filament consumption (25mA), subminiature size and "on-off" indication. Ideal for transistorized computers.	IM3/DM70
Tuning indicator especially designed for battery operated sets featuring low filament consumption (25mA), subminiature size and "on-off" indication. Ideal for transistorized computers.	IN3/DM71
9 pin miniature tuning indicator featuring small size, ease of installation and high sensitivity for weak signals.	6BR5/EM80
Tuning indicator featuring double sensitivity, clear indication even with weak signals.	6CD7/EM34
Same as EM80 except for different fluorescent pattern. Suitable for radios, tape recorders and measuring equipment. Pattern makes it useful also as a level indicator.	6DA5/EM81
9 pin miniature tuning indicator for use in broadcast receivers and tape recorders. The deflection electrode is connected separately to a pin at the base. Converging dual fluorescent bar pattern.	6FG6/EM84
Decade counter with luminescent spot at numbers on face 0 to 9. computers, industrial counters, control and memory applications.	6370/E1T
Subminiature vacuum triode with fluorescent anode. Designed for electronic computer and business machine applications to replace neon lamps. Particularly suited to use in transistorized circuits. Designed for 20,000 hour life.	6977

			CAPACITANCES-$\mu\mu f$				
POWER OUTPUT Watts	LOAD RESISTANCE K ohms	CUT-OFF BIAS Volts	G-P	INPUT	OUTPUT	DESCRIPTION	TYPE NO.
-	-	-	.0035	4.5	5.2	Ruggedized, remote cut-off, miniature pentode designed for mobile and industrial applications.	E99F
			-	-	-	High perveance twin diode. Rugged and reliable. For use in critical applications in which operational dependability is of primary importance.	5726
-	-	-12	0.02	4.0	2.9	Sharp cut-off pentode particularly suited for use as a wide band, high frequency amplifier. Ruggedized construction makes it suitable for critical applications in which operational dependability is of primary importance.	5654
-	-	-20	1.6	2.5	0.45	Premium quality twin triode designed for use as RF amplifier in grounded grid circuits; as a frequency changer below 300 Mc/S; in mobile and industrial equipment with intermittent operation; and in on-off control applications where operation under cut-off conditions is required.	6201
-	-	-	-	2.2	2.0 max	Ruggedized beam deflecting tube designed for use as a phase discriminator in impulse-governed oscillators.	6218/E80T
-	-	-	1.6	1.8	0.5	Medium μ long life, reliable twin triode with separate cathodes designed for application in computer circuits not critical as to hum, microphony and noise.	7316

PREMIUM QUALITY TUBES[1]

TYPE	Heater		Capacitances			MAXIMUM RATINGS					TYPICAL CHARACTERISTICS				
	Voltage	Current	Cold Values	Input	Output	Max. Anode Dissipation	Anode Voltage	Suppressor Grid Voltage	Screen Grid Voltage	Cathode Current	Screen Grid Voltage	Anode Voltage	Cathode Resistor	Anode Current	Screen Grid Current
	volts	amp.		μμf	μμf	watts	volts	volts	volts	mA	volts	volts	ohms	mA	mA
E92CC[1] Twin Triode	6.3	0.4	one section	3.1	0.3	2.0[2] (absolute value)	300	-	-	15	-	150	-	8.5	-
5842[1] Triode	6.3	0.3	-	9.0	1.8	4.5	400	-	-	38	-	130	360	27	-
5920/E90CC[1] Twin Triode	6.3	0.4	one section	3.4	0.35	2.0[2] (absolute value)	300	-	-	15	-	100	-	8.5	-
6084/E80F[1,3] Sharp cut-off amplifier pentode	6.3	0.3	-	5.0	7.3	1.3 (absolute value)	300	0	200	9	100	250	550	3	0.65
6085/E80CC[1,3] Twin Triode	Series 12.6	0.3	one section	2.6	3.5	2.0[2] (absolute value)	300	-	-	12	-	250	920	6	-
	Par. 6.3	0.6													
6211[1] Twin Triode	6.3	0.3	one section	2.9	0.35	1.5[2] (absolute value)	200	-	-	14	-	100	470	4.6	-
	12.6	0.15													
6227/E80L[1,3] Power Pentode	6.3	0.75	-	11.0	7.0	8.0 (absolute value)	300	0	300	50	250	250	270	24	3.3
6463[1] medium μ twin triode	6.3	0.6	one section	3.4	0.5	4.4	330	-	-	31	-	250	620	14.5	-
	12.6	0.3													
6686/E81L[1] Power Pentode	6.3	0.375	-	11.5	6.5	4.5 (design center value)	210	0	210	30	210	210	120	20	5.3
6687/E91H[1] dual control heptode	6.3	0.27	-	5.4	7.6	1.0	250	-100 +0	100	20	Dual control heptode for use control at -10 volts and plate control grids at 0 volts, the				
6688/E180F[1,3] Broad-band amplifier pentode	6.3	0.3	-	7.5	3.0	3.0 (absolute value)	210	0	175	25	160	190	630	13	3.3
6689/E83F[1] wide-band amplifier pentode	6.3	0.3	-	8.0	3.6	2.1 (design center value)	210	0	210	16	120	210	165	10	2.1
6922/E88CC[1,3] Twin Triode	6.3	0.3	one section	3.1	0.5	1.5[2] (design center value)	220	-	-	20	-	100	680	15	-
7062[1] Twin Triode	6.3	0.400	one section	3.5	0.5	2.0[2] (absolute value)	600	-	-	20	-	150	-	8.5	-
	12.6	0.200													

1 These tubes are designed for a life of 10,000 hours or more
2 Ratings and operating conditions apply to one section
3 Rugged construction

TYPICAL OPERATION																	
Transconductance	Amplification Factor	Plate Resistance	Anode Current	Anode Resistance	Screen Grid Resistor	Cathode Resistor	Cathode By-Pass Capacitor	Input Resistance Following Amplifier Stage	Grid Leak Resistor	Output Voltage	Amplification	Distortion	Output Power	Input Voltage	Maximum Length	Maximum Diameter	TYPE
micromhos		megohms	mA	kilohms	kilohms	kilohms	μf	kilohms	megohms	volts effective	V_o/V_i	%	watts	volts effective	inches	inches	
6,000	45	0.0083	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	3/4	E92CC [1] Twin Triode
2,700	43	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	1-3/4	7/8	5842 [1] Triode
6,000	27	0.0045	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	3/4	5920/E90CC [1] Twin Triode
1,850	25	1.5	0.8	220	1200	1.5	50	680	1.0	25	175	1.4	-	-	2-5/8	7/8	6084/E80F [1,3] Sharp cut-off amplifier pentode
2,700	27	0.01	0.67	220	-	3.9	50	680	-	29	21	2.6	-	-	3-1/16	7/8	6085/E80CC [1,3] Twin Triode
3,600	27	0.0075	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	7/8	6211 [1] Twin Triode
9,000	21.5	0.09	30	10	1.0	0.13	50	-	1.0	-	-	10	2.7	2.9	3-1/16	7/8	6227/E80L [1,3] Power Pentode
5,200	20	-	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	7/8	6463 [1] medium μ twin triode
11,000	36	0.3	20	15	-	0.12	50	-	0.1	-	-	5	1.0	-	2-5/8	7/8	6686/E81L [1] Power Pentode
as a gated amplifier in computer and "on-off" control circuits. With either voltage at 150 volts, the plate current will be less than 0.2 mA. With both plate current is nominally 5.75 mA. Direct replacement for 5915A.															2-1/8	3/4	6687/E91H [1] dual control heptode
16,500	50	0.09	-	1.0	-	-	-	-	0.5	-	-	0.9	-	0.1	1-3/4	7/8	6688/E180F [1,3] Broad-band amplifier pentode
9,000	34	0.5	8.3	20	5.6	0.18	50	-	0.1	-	-	10	0.66	1.1	2-5/8	7/8	6689/E83F [1] wide-band amplifier pentode
12,500	33	0.00264	-	-	-	-	-	-	-	-	-	-	-	-	2-3/16	7/8	6922/E88CC [1,3] Twin Triode
6,400	46	0.0072	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	7/8	7062 [1] Twin Triode

PREMIUM QUALITY TUBES

TYPE	Heater		Capacitances			MAXIMUM RATINGS					TYPICAL CHARACTERISTICS				
	Voltage	Current	Cold Values	Input	Output	Max. Anode Dissipation	Anode Voltage	Suppressor Grid Voltage	Screen Grid Voltage	Cathode Current	Screen Grid Voltage	Anode Voltage	Cathode Resistor	Anode Current	Screen Grid Current
	volts	amp.		μμf	μμf	watts	volts	volts	volts	mA	volts	volts	ohms	mA	mA
7119/E182CC [1] Twin Triode	Series 12.6	0.4	one section	5.3	6.7	4.5 (absolute value)	300	-	-	60	-	120	-	36	-
	Par. 6.3	0.8													
7308/E188CC Twin Triode	6.3	0.335	one section	3.1	1.75	2.0	250	-	-	22	-	100 (supply)	680	15	-
7534 [1] Pentode	6.3	1.7		35	17	27.5	900	-	250	300	150	250	-	100	4

[1] These tubes are designed for a life of 10,000 hours or more

SUBMINIATURE TUBES (SCREEN GRID TYPES)

TYPE NO.	Filament		Capacitances μμf			Plate		Grid No. 1	Grid No. 2	Plate	
	D-C Volts	Current mA	G-P	Input	Output	Volts	Diss. Milliwatts	Volts	Volts	Micro-Amps	Resistance Megohms
6007/5913	1.25	13.3	0.2	2.5	2.2	45	25	-0.2	45	475	0.4
6008/5911	0.625	13.3	0.2		1.5	45	1.5	-0.2	45	50	0.4

UHF SPECIAL PURPOSE TUBES

TYPE NO.	Filament		Plate Dissipation Watts	Mu	Transconductance (micromhos)	Plate		Power Output Characteristics
	Volts	Amps				Volts	Amps	
DX145A/EC157	6.3	0.73	-	-	-	200	0.060	1.8
6923/EA52	6.3	0.3	-	-	-	1000 V at <100 mc; 1000 x $\frac{fo}{f}$ [1] at >100 mc	0.0003	-
EFP60	6.3	0.37	2	-	25,000	300	0.020	-
6Q4/EC80	6.3	0.45	4	30	12,000	550	0.015	15 db gain at 300 mc (Bandwidth 4.5 mc)
6R4/EC81	6.3	0.24	5	16	5,500	300	0.0277	Power output 1.1 w at 750 mc
5847	6.3	0.3	3.0	-	12,500	180	0.35	-

[1] fo = 100 mc.

			TYPICAL OPERATION														
Transconductance	Amplification Factor	Plate Resistance	Anode Current	Anode Resistance	Screen Grid Resistor	Cathode Resistor	Cathode By-Pass Capacitor	Input Resistance Following Amplifier Stage	Grid Leak Resistor	Output Voltage	Amplification	Distortion	Output Power	Input Voltage	Maximum Length	Maximum Diameter	TYPE
micromhos		megohms	mA	kilohms	kilohms	kilohms	μf	kilohms	megohms	volts effective	V_o/V_i	%	watts	volts effective	inches	inches	
15,500	24.5	0.0016	-	-	-	-	-	-	-	-	-	-	-	-	2-5/8	7/8	7119/E182CC Twin Triode
12,500	33	-	-	-	-	-	-	-	-	-	-	-	-	-	2-3/16	7/8	7308/E188CC Twin Triode
25,000	6.5	-	-	-	-	-	-	-	-	-	-	-	-	-	5	1-9/16	7534 Pentode

Transconductance Micromhos	Output Milliwatts	DESCRIPTION	TYPE NO.
420	6	Radiation-cooled pentode output amplifier for hearing aids and other purposes, where small size, light weight and low battery drain are important. An ideal tube for receivers.	6007/5913
100	2.25	Same as above except this tube is a voltage amplifier.	6008/5911

Max. Freq. mc/sec.	Capacitances in μμf			DESCRIPTION	TYPE NO.
	G-P	Input	Output		
4000	-	-	-	CW amplifier triode - disc seal triode, indirectly heated. Features "L" type, high emission, long life cathode. For frequencies up to 4000 Mc.	DX145A/EC157
1000	-	≤0.5	-	Disc-seal, vacuum diode for UHF voltmeters and monitoring devices. Anode pin connection adaptable for use as probe contact.	6923/EA52
-	0.004	9.2	6	Secondary emission pentode for wide band amplifier application where stability and high ratio of transconductance to capacities is important. Used in high speed computer service and high quality TV applications.	EFP60
500	0.06	5.4	3.4	Radiation-cooled triode, button type base, indirectly heated cathode. For use as amplifier and mixer up to 500 mc. Ideally suited for UHF television, baloon sondes, measuring equipment, etc.	6Q4/EC80
1200	1.5	1.7	0.5	Radiation-cooled triode, standard button base, indirectly heated cathode. Used as oscillator up to 1200 mc. High efficiency at high frequencies.	6R4/EC81
	0.05	7.0	2.5	High-gain miniature pentode with high figure of merit. For broad-band applications. Plug-in replacement for Western Electric 404A.	5847

PERMANENT SENSITIVITY RADIATION COUNTER TUBES[1]

TYPE NO.	Filling	Operating Voltage	Plateau	Slope Plateau	Dead Time (Approx.)	Background (Shielded 2" Lead)
75N-7 [2]	Neon + quenching admixture	700 D. C. [2]	in excess of 125 volts	15% per 100 volts max.	100 micro-seconds	50 counts per minute max.
75NB3-7 [2]	Neon + quenching admixture	700 D. C. [2]	in excess of 125 volts	15% per 100 volts max.	100 micro-seconds	50 counts per minute max.
90CB	Neon + quenching admixture	1400 D. C.	in excess of 200 volts	10% per 100 volts max.	100 micro-seconds	50 counts per minute max.
90NB	Neon + quenching admixture	900 D. C.	in excess of 200 volts	10% per 100 volts max.	100 micro-seconds	50 counts per minute max.
100C	Argon + quenching admixture	1200 D. C.	in excess of 300 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
100CB	Argon + quenching admixture	1200 D. C.	in excess of 300 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
100HB	Helium + organic quenching agent	1300 D. C.	in excess of 250 volts	1.5% per 100 volts	150 micro-seconds	50 counts per minute max.
100N	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
100NB	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
120C	Argon + quenching admixture	1200 D. C.	in excess of 300 volts	5% to 10% per 100 volts	300 micro-seconds	100 counts per minute max.
120N	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	300 micro-seconds	100 counts per minute max.
120NB	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	300 micro-seconds	100 counts per minute max.
150N	Neon + quenching admixture	700 D. C.	in excess of 180 volts	10% per 100 volts max.	150 micro-seconds	75 counts per minute max.
150NB	Neon + quenching admixture	700 D. C.	in excess of 180 volts	10% per 100 volts max.	150 micro-seconds	75 counts per minute max.
153C	Argon + quenching admixture	1500 D. C.	in excess of 400 volts	3% to 8% per 100 volts	150 micro-seconds	60 counts per minute max.
160G	Neon + halogen quenching admixture	-	680-780 volts	15% per 100 volts	-	40 counts per minute max.
170G	Neon + halogen quenching admixture	-	680-780 volts	15% per 100 volts	-	80 counts per minute max.
200C	Argon + quenching admixture	1200 D. C.	in excess of 300 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
200CB	Argon + quenching admixture	1200 D. C.	in excess of 300 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
200HB	Helium + organic quenching agent	1300 D. C.	in excess of 250 volts	1.5% per 100 volts	150 micro-seconds	50 counts per minute max.
200N	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
200NB	Neon + quenching admixture	700 D. C.	in excess of 200 volts	5% to 10% per 100 volts	200 micro-seconds	50 counts per minute max.
230N	Neon + quenching admixture	850 D. C.	in excess of 150 volts	Less than 15% per 100 volts	100 micro-seconds	15 counts per minute max.
240C	Neon + quenching admixture	1200 D. C.	in excess of 200 volts	Less than 10% per 100 volts	100 micro-seconds	50 counts per minute max.
240N	Neon + quenching admixture	850-900 D. C.	in excess of 150 volts	Less than 15% per 100 volts	100 micro-seconds	50 counts per minute max.
912NB [3]	Neon + quenching admixture	900 D. C.	in excess of 200 volts	10% per 100 volts max.	100 micro-seconds	75 counts per minute max.
18515	Neon, argon, + halogen quenching admixture	550 D. C.	450-650 volts	3% per 100 volts	150 micro-seconds	5 counts per [4] minute max.
18516	Neon, argon, + halogen quenching admixture	550 D. C.	450-650 volts	3% per 100 volts	200 micro-seconds	8 counts per [4] minute max.
18517	Neon, argon, + halogen quenching admixture	1000 D. C.	800-1200 volts	4% per 100 volts	1 milli-second	80 counts per [4] minute max.
18518	Neon, argon, + halogen quenching admixture	1000 D. C.	800-1200 volts	4% per 100 volts	1 milli-second	80 counts per [4] minute max.

NOTE: All cathodes are stainless steel. Operating temperature range, -55°C to +75°C.

1 Detailed data available upon request.

2 Also available in 600 volt operating voltage. Specify Type 75N-6 or 75NB3-6. For 900 volt operation, specify Type 75N-9 or 75NB3-9.

Average Mica Window or Wall Thickness	Effective Dia. of Mica Window	Effective Cathode Dimensions (Inches)	Max. Overall Tube Dimensions (Inches)	Life Expectancy (Counts)	Application
150 mg/cm^2	-	2-11/16 long x 5/8 O.D. x .009" Wall	5/8 x 4-3/8		Gamma
150 mg/cm^2	-	2-11/16 long x 5/8 O.D. x .009" Wall	5/8 x 4-5/16 (3 Pin Base)	Unlimited by use	Gamma
30-40 mg/cm^2	-	3 long x 5/8 O.D.	5/8 O.D. x 5-5/8 (3 Pin Base)		Beta & Gamma
30-40 mg/cm^2	-	3 long x 5/8 O.D.	5/8 O.D. x 5-5/8 (3 Pin Base)		Beta & Gamma
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-1/2 x 3-3/4		Beta & X-Ray
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)		Beta & X-Ray
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)	1.5×10^8 approx.	Beta
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-1/2 x 3-3/4	Unlimited by use	Beta
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)		Beta
.0008 in. = 5.6 mg/cm^2 = 20.32 microns	1-29/32"	2-11/16 lg. x 2 O.D. x 5/64 Wall	2-3/8 x 5-1/8		Beta & X-Ray
.0008 in. = 5.6 mg/cm^2 = 20.32 microns	1-29/32"	2-11/16 lg. x 2 O.D. x 5/64 Wall	2-3/8 x 5-1/8		Beta
.0008 in. = 5.6 mg/cm^2 = 20.32 microns	1-29/32"	2-11/16 lg. x 2 O.D. x 5/64 Wall	2-5/16 x 5-3/4 (4 Pin Base)		Beta
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	25/32"	4 lg. x 7/8 O.D. x 3/64 Wall	1 x 6-5/8 (4 Pin Base)		Beta & Gamma
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	25/32"	4 lg. x 7/8 O.D. x 3/64 Wall	1-5/32 x 7-1/8		Beta & Gamma
.0005 in. = 3.5 mg/cm^2 = 12.70 microns	25/32"	4-3/8 lg. x 7/8 O.D.	1 O.D. x 6 lg.		X-Ray
-	-	6-5/16 lg. x 13/32 O.D x 3/16 Wall	13/32 x 8-1/8		Gamma
-	-	17 lg. x 13/32 O.D. x 3/16 Wall	13/32 x 19	Unlimited by use	Gamma
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-1/2 x 3-3/4		Alpha, Beta, Gamma & X-Ray
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)		Alpha, Beta, Gamma & X-Ray
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)	1.5×10^8 approx.	Alpha & Beta
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-1/2 x 3-3/4	Unlimited by use	Alpha & Beta
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	1-3/32"	1-1/2 lg. x 1-3/16 O.D. x 3/32 Wall	1-3/8 x 4-11/32 (4 Pin Base)		Alpha & Beta
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	13/32"	1-1/4 lg. x 5/8 O.D. x .010" Wall	5/8 x 3-1/4 (3 Pin Base)		Alpha & Beta
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	13/32"	4 lg. x 5/8 O.D. x .010" Wall	5/8 x 5-7/8 (3 Pin Base)		Alpha, Beta & Gamma
.0002 in. = 1.4 mg/cm^2 = 5.08 microns	13/32"	4 lg. x 5/8 O.D. x .010" Wall	5/8 x 5-7/8 (3 Pin Base)		X-Ray
30-40 mg/cm^2	-	7 lg. x 5/8 O.D.	5/8 O.D. x 11-25/32 (4 Pin Base)		Beta & Gamma
1.5 - 2.0 mg/cm^2	25/32"	1/2 lg. x 25/32 O.D. x 3/64 Wall	1-1/32 x 1-9/32		Beta
10 mg/cm^2	1-3/32"	23/32 lg. x 1-3/32 I.D. x 1/16 Wall	1-11/32 x 1-15/32		Beta
-	-	-	-		Gamma & Cosmic Ray
-	-	-	-		Gamma & Cosmic Ray

[3] Also available with 3 Pin Base, specify Type 912NB-3. Overall tube length = 11-3/8".
[4] Shielded with 2" mercury within 4" iron.

MAGNETRONS

Type	Description	Freq. Range mc/sec.	Heater		E_A (KV)	I_A (Amps)	Duty	Pulling Figure (Mc)	Type [1] Output	Pulse Dur. (μsec.)	Po(KW)
			Volts	Amps							
5J26	Osc. Tunable	1220-1350	23.5	2.2	28	46	.001	-	CO	1	600
5609	CW Osc. Fixed Freq.	2425-2475	6.3	3.8	1.47	0.125	CW	6	CO	CW	.115
7090	CW Osc. Fixed Freq.	2425-2475	5.3	3.2	1.6	0.200	CW	5	CO	CW	.200
7091	CW Osc. Fixed Freq.	2425-2475	5	32	4.5	0.75	CW	4	CO	CW	2.5
7292	Same as 7091 except liquid cooled. 7091 is forced air cooled.										
5586	Osc. Tunable	2700-2900	16.0	3	27-32	70	.0005	15	CO	1	800
5657	Osc. Tunable	2900-3100	16.0	3	27.5-32.5	70	.0005	15	CO	1	800
6589	Osc. Tunable	3350-3500	16.0	3	26-30	50	.0005	10	WG	1	500
4J59	Osc. Fixed Freq.	6275-6375	12.6	3.5	16-19	30	.001	15	WG	1	210
4J58	Osc. Fixed Freq.	6375-6475	12.6	3.5	16-19	30	.001	15	WG	1	210
4J57	Osc. Fixed Freq.	6475-6575	12.6	3.5	16-19	30	.001	15	WG	1	210
2J51	Osc. Tunable	8500-9600	6.3	1.0	14	14	.001	18	WG	1	63
2J51A	Osc. Tunable Hi-Stab.	8500-9600	6.3	1.0	14	14	.00033	18	WG	0.1	60
DX125	Osc. Tunable	8500-9600	20	4	28-34	25	.001	16	WG	1	225
4J78	Osc. Fixed Freq.	9003-9168	13.7	3.5	20-23	27.5	.001	15	WG	1	225
55032	Osc. Fixed Freq.	9003-9168	13.7	3.5	20-23	27.5	.001	17.5	WG	1	225
55031	Osc. Fixed Freq.	9168-9345	13.7	3.5	20-23	27.5	.001	17.5	WG	1	225
JP9-7A	Osc. Fixed Freq.	9210-9270	6.3	.6	5.5	4.5	.001	15	WG	1	7
7028	Osc. Fixed Freq.	9345-9475	6.3	.5	3.5	2.5	.0002	14	WG	0.1	3
2J42	Osc. Fixed Freq.	9345-9405	6.3	.6	5.5	4.5	.001	15	WG	1	7
JP9-7D	Osc. Fixed Freq.	9345-9405	6.3	.6	5.5	5.5	.0001	15	WG	0.1	8
JP9-15	Osc. Fixed Freq.	9345-9405	6.3	.6	6.5-8	6.5	.001	18	WG	2	19.5
725A	Osc. Fixed Freq.	9345-9405	6.3	1.0	12	12	.001	15	WG	1	50
6972	Osc. Fixed Freq.	9345-9405	10	2.8	15	15	.0002	15	WG	0.1	75
4J52A	Osc. Fixed Freq.	9375±25MC	12.6	2.2	15	15	.001	15	WG	5	80
4J50	Osc. Fixed Freq.	9345-9405	13.7	3.5	20-23	27.5	.001	15	WG	1	225
55030	Osc. Fixed Freq.	9345-9405	13.7	3.5	20-23	27.5	.001	17.5	WG	1	225
55029	Osc. Fixed Freq.	9405-9505	13.7	3.5	20-23	27.5	.001	17.5	WG	1	225
7093	Osc. Fixed Freq.	34,512-35,208	4	4	13.5-15	15.5	.0001	40	WG	0.02	25
DX164	Osc. Fixed Freq.	75,000	4.8	4.0	13	10	.0002	-	WG	0.1	25

1 CO = Coaxial
WG = Waveguide

COLD CATHODE TRIGGER TUBES

TYPE NO.	Plate Voltage (volts)	Starter Ignition Current (μA)	Plate Burning Voltage (volts)	Plate Burning Current (mA)	DESCRIPTION
Z50T	130	50	61	2-6	Designed for "on-off" control applications in low current electrical circuits and relays. Visual control is possible by presence of a bluish glow.
Z70U	250	20	118	3	Subminiature trigger tube equipped with priming cathode for operation of the tube independent of lighting conditions. Designed for use in D.C. counting, switching, and timer circuits.
Z300T	140	55	70	25	Designed for operation in welding timers, relay and counting circuits, power switching and similar applications.
Z804U	180	50	106-115	20	Relay tube with negative starter voltage designed for relay applications with a negative d.c. trigger voltage or a 220 volt a.c. trigger voltage.
5823	175	160 max	62	25	Miniature relay type designed for "on-off" control applications in low current electrical circuits and relays.

KLYSTRONS

Type	Description	Freq. Range mc/sec.	Heater		Beam Voltage (volts)	Reflector Voltage (volts)	Beam Current (mA)	ETR mc/sec.	Po(W)
			Volts	Amps					
55334	Osc. Multireflex.	3336-3414	6.3	.75	3000	850	24	-	10
2K25	Osc. Reflex, Tunable	8500-9660	6.3	.44	300	85-200	25	35	.025
DX122	Osc. 2 cav. Fixed Freq.	8500-10,500	11	1.2	2750	-	35	-	5
DX123	Osc. 2 cav. Fixed Freq.	8500-10,500	11	1.2	4350	-	71	-	33
DX124	Osc. 2 cav. Fixed Freq.	8500-10,500	11	1.2	8800	-	180	-	210
723A/B	Osc. Reflex, Tunable	8702- 9,548	6.3	.44	300	130-185	25	40	.030
DX184	Osc. Reflex, Tunable	31,000-36,000	6.3	.8	2250	100-500	15	60	.100
DX151	Osc. Reflex, Tunable	68,000-75,000	3.5	1.8	2400	300	17	100	.100

VOLTAGE REFERENCE & REGULATOR TUBES

TYPE NO.	Operating Voltage (Approx. Volts)	Operating Voltage Limits [1] (Volts)	Recommended Quiescent Current (Milliamperes)	Ignition Voltage [2] (Volts)	Internal Resistance (Max. Ohms)	Current Range (Milliamperes)	Regulation [3] (Max. Volts)
OA2	150	144-164	17.5	185 max.	240	5-30	6
OB2	108	106-111	17.5	133 max.	140	5-30	3.5
OE3/85A1 [6] [5]	85	83-87	4	120 max.	-	1-8	3.15
OG3/85A2 [6] [5]	85	83-87	6	125 max.	450	1-10	4
90C1	90	86-94	20	125 max.	350	1-40	14
5651 [6]	87	82-92	2.5	115 min.	-	1.5-3.5	3
6354/150B2	150	146-154 [4]	10	180 max.	500	5-15	5

1 Spread in operating voltage from tube to tube at recommended quiescent current
2 Over tube life
3 Over full current range
4 Voltage Reference Tubes
5 Drift in operating voltage during the first 300 hours of life: max. 0.3%. Short term drift in operating voltage (100 hours max.) after the first 300 hours of operation: max. 0.1%. Temperature coefficient of operating voltage = -2.7 mV/°C
6 Drift in operating voltage during 1000 hours: max. 1%

NOISE DIODES

Type	Description	Heater		Ignition Voltage (volts)	Anode Voltage (volts)	Anode Current (mA)	Noise Level (db)	Frequency Range
		Volts	Amps					
K50A	Gas filled noise diode	2	2	6000	165	125	18.7	X-Band
K51A	Gas filled noise diode	2	3.5	6000	140	200	19.1	S-Band

TRAVELING WAVE TUBES

Type	Description	Freq. Range Kmc/sec.	Type Output	Heater		Helix Voltage (volts)	Mag. Field (Gauss)	Gain (db)	Power Output Watts
				Volts	Amps				
2EO	Amplifier	3.8 - 4.2	Waveguide	6.3	0.8	1100	600	37	5
7537	Amplifier	4.4 - 5	Waveguide	6.3	0.8	1100	600	34	3.5

IGNITRONS–WELDER CONTROL SERVICE

TYPE NO.	R.M.S. Volts Range	Max. KVA Demand & Corresponding Average Current		Max. Average Current & Corresponding KVA Demand		Type Cooling
		K.V.A.	Amps	K.V.A.	Amps	
5555/653B	2400	2400	135.0	1105	207	Water
5822-A	220-600	424	20	188	70	Water

IGNITRONS–RECTIFIER SERVICE

TYPE NO.	Typical D.C. Output Voltage (v)	Max. Peak Inverse & Forward Voltage (v)	Max. Peak Anode Current (A)	Max. Continuous Average Anode Current (A)	Max. Average Current (A) 1 minute	Type Cooling
5555/653B	300 [1]	2100	1800	200	400	Water
	600 [1]	2100	1200	150	300	

[1] Six-phase, double Y, single way circuits.

RECTIFIERS–DIODES

TYPE NO.	Filament		Fil. Heating Time (sec)	Tube Drop	Peak Inverse Anode Volts	Anode Current		Surge Current	Temperature °C
	Volts	Amps		Volts	Volts	Peak Amps	Average Amps	Amps	Ambient
1S2A	1.4	0.55	-	-	22,000 (absolute max)	0.04	-	-	-
3B-28	2.5	5.0	5	10.0	10,000	1.0	0.250	-	-
4B-32	5.0	7.5	30	10.0	10,000	5.0	1.25	50.0	-
6R3	6.3	0.81	-	-	5,000	0.45	0.15	-	-
249-B	2.5	7.5	15	15.0	7,500	2.5	0.640	-	-
575-A	5.0	10.0	30	10.0	15,000	6.0	1.5	60.0	-
673	5.0	10.0	30	10.0	15,000	6.0	1.5	60.0	-
857-B	5.0	30.0	60	10.0	22,000	40.0	10.0	400.0	-
866-AX	2.5	5.0	20	10.0	10,000	1.0	0.250	-	-
869-B	5.0	18.0	60	10.0	20,000	10.0	2.50	-	-
869-BL	5.0	18.0	60	10.0	20,000	10.0	2.50	-	-
872-AX	5.0	7.5	30	10.0	10,000	5.0	1.25	50.0	-
6339	6.3	1.5	30	-	WITH LIQUID COOLING				
					16,000 10,000	0.250 0.400	0.065 0.100	-	-65 to +165°
					WITHOUT COOLING - AIR OPERATION				
					12,000	0.200	0.050	-	-55 to +85°
6508	5.0	12.5	90	12.0	21,000	10.0	2.5	100.0	-
6693	5.0	11.5	60	12.0	2,500 15,000	10.0 12.0	5.0 3.0	200.0 120.0	+15 to +55° +15 to +35°
7136	5.0	11.5	60	12.0	15,000	12.0	2.5	120.0	+15 to +35°
8008-AX	5.0	7.5	30	10.0	10,000	5.0	1.25	50.0	-
8020-AX	5.0	6.0	5	200V at 100ma	40,000	0.750	0.100	-	-

IGNITRONS–THERMOSTATICALLY CONTROLLED[1]

TYPE NO.	R.M.S. Volts Range	Max. KVA Demand & Corresponding Average Current		Max. Average Current & Corresponding KVA Demand		Type Cooling
		K.V.A.	Amps	K.V.A.	Amps	
5551-A	250-600	600	30.2	200	56	Water
5552-A	250-600	1200	75.6	400	140	Water
5553-B	250-600	2400	192.0	800	355	Water
5822-A	220-600	424	20.0	188	70	Water
7585	220-600	1200	75.6	400	140	Water

1 These tubes are identical with the corresponding types 5551, 5552 and 5553 except that they are fitted with a "sensing" plate for adaptation of a thermostat. They do not include the thermostat or thermostat mounting under these designations. If thermostatic control is required, one of the following accessory groups should be ordered with each tube:

(A) AMPEREX "Water Saver" Thermostat Assembly, Cat. No. S-17024. (Consists of Thermostat No. C 4391-7-51, mounting clamp, terminal block and four sets of nuts, bolts and washers)

(B) AMPEREX "Overload Protection" Thermostat Assembly, Cat. No. S-17025. (Consists of Thermostat No. C 4391-7-52, mounting clamp, terminal block and four sets of nuts, bolts and washers)

Range Mercury	DESCRIPTION	TYPE NO.
-	Miniature half-wave vacuum rectifier designed for use in high voltage, low current applications in TV scanning systems.	1S2A
-	Xenon gas filled half-wave rectifier with wider temperature ranges than mercury-vapor tubes. Used largely by armed services to replace 866-A's.	3B-28
-	Xenon gas filled half-wave rectifier with wider temperature ranges than mercury-vapor tubes. Used largely by armed services to replace 872-A's.	4B-32
-	Booster diode designed for application in line time-base circuits in television receivers.	6R3
+25 to +70°	Convection-cooled mercury-vapor half-wave rectifier. Used in most Western Electric r-f equipment.	249-B
+20 to +50°	Convection-cooled mercury-vapor half-wave rectifier. Refer to 7136 for improved version.	575-A
+20 to +50°	Convection-cooled mercury-vapor half-wave rectifier. Refer to 6693 for improved version.	673
+30 to +40°	Mercury-vapor half-wave rectifier with low voltage drop. Extremely popular in most high power broadcasting stations. Convection cooled.	857-B
+25 to +70°	Mercury-vapor half-wave rectifier of Amperex own design. More rugged trouble-free operation at only slight additional cost. Convection cooled.	866-AX
+30 to +40°	Mercury-vapor half-wave rectifier. Refer to type 6508, economy version.	869-B
+30 to +40°	Electrically same as 869-B. Base has flexible filament leads with spade lugs for better, low-resistance contact with socket.	869-BL
+20 to +60°	Mercury-vapor half-wave rectifier. Universally used by almost every user and designer of H-V equipment. Convection cooled.	872-AX
-	High vacuum clipper diode and rectifier. Miniature version of 3B29 for liquid immersion cooling or air operation.	6339
+25 to +45°	Mercury vapor rectifier for relatively high voltage and current. A high quality, long-life tube priced lower than any tube in its class on the market.	6508
+25 to +75° +25 to +55°	Single-anode, mercury vapor rectifier with ratings, intermediate between standard types 575A and 869B. Delivers 9 amps up to 12 KV in a full wave, 3 phase power supply. Three tubes in a three phase half-wave power supply deliver 6 KV ay 9 amps using only one filament transformer. Has large contact area, industrial base preventing base contact oxidation. Priced low for replacement market and original equipment.	6693
+25 to +55°	Single anode, mercury vapor, high voltage rectifier. Plate current ratings intermediate between types 575-A and 6693. Cathode and anode design similar to 6693 but with 575-A base. Recommended replacement for 575-A in older equipment. For new equipment design, the 6693 is recommended.	7136
+20 to +60°	Mercury-vapor half-wave rectifier similar to 872-A characteristics; with heavy long pin industrial base. Used by armed services and in commercial applications. Convection cooled.	8008-AX
-	Half-wave, high vacuum rectifier with high inverse voltage and low average current. Used in radar and precipitator power supplies.	8020-AX

GERMANIUM DIODES [4]

Single Ended - Type 1			Description	Max. Continuous Operating Inverse Voltage (Volts)	Maximum Peak Inverse Voltage (Volts)	Maximum Peak Rectified Current (MA)	Maximum Average Rectified Current (MA)	Min. Forward Current (MA) At	
								+1 Volt	+3 Volts
	OA5		High-Current Computer Switching Gold Bonded	100	100	350	115	200	
	OA7		High-Current Computer Switching Gold Bonded	15	25	50	50	8 at .4V	30 at 0.56V
	OA9		High-Current Computer Switching Gold Bonded	25	25	500	100	90 at .4V	500 at .9V
Clip In	*Solder-In*	*Subminature*							
1N34A	1N34		General Purpose	60	75	150	50	5	
1N38A	1N38		High Peak Voltage	100	120	150	50	4	
1N54A	1N54		High Back Resistance	50	75	150	50	5	
1N58A	1N58		High Peak Voltage	100	120	150	50	4	
	1N60		Video Detector	25	30	150	50	1.55 volts output 150 K ohms to	
1N63			High Back Resistance	100	125	150	50	4	
		1N67A	High Back Resistance	80	100	90	30	4	
		1N68A	High Peak Voltage	100	130	90	30	3	
	1N87	1N87A	Video Detector	25	30	150	50	0.1 at 0.25V.	
	1N88		D.C. Restorer	85	110	150	50	2.5	
		1N89	General Purpose	80	100	90	30	3.5	
		1N90	General Purpose	60	75	90	30	5	
		1N95	General Purpose	60	75	90	30	10	
		1N99	High Back Resistance	80	100	90	30	10	
		1N116	High Back Resistance	60	75	90	30	5	
		1N117	High Back Resistance	60	75	90	30	10	
1N119 [1]	1N480 [1]	1N191 [1]	Computer	60	90	150	35	5	400 K ohms at
1N120 [1]	1N490 [1]	1N192 [1]	Computer	60	90	150	35	5	200 K ohms at
		1N126	General Purpose	60	75	90	30	5	
		1N128	General Purpose	40	50	90	30	3	
		1N198	General Purpose	80	100	90	30	5	
1N477 [3]	1N476 [3]		High Peak Voltage	90	115	150	50	3	25
1N479 [3]	1N478 [3]		High Peak Voltage	90	115	150	50	5	30
	1N541		A.M. Detector	30	45	100	10	1.5	18
	1N542		FM Ratio Detector	The 1N542 is a matched pair of 1N541 diodes					
	1N616 [3]		Video Detector	30	40	150	30	8	
		1N617 [3]	High Peak Voltage	90	115	150	50	3	25
		1N618 [3]	High Peak Voltage	90	115	150	50	5	35
		1N698 [5]	Gold Bond Computer	15	25	50	50	0.1 at 0.23V	50 at 0.73V

[1] Reverse recovery time for these diodes is specified and defined as the time required for the diode to recover to a given reverse current when the operating voltage necessary to give 30 mA forward current is rapidly switched to -35 volts.

	Recovery Time (μ sec.)	Reverse Current (μ Amp)
1N119 & 1N480	0.5	700
	3.5	87.5
1N120 & 1N490	0.5	700
	3.5	175

[2] These values tested at 75°C.
[3] Both minimum and maximum limits are listed on detailed specifications. Characteristics are also specified at 60°C.
[4] Characteristics at 25°C unless otherwise specified.

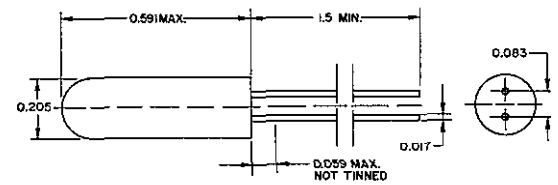
Max. Inverse Current Microamps At						Maximum Surge Current (MA) Maximum 1 Second
-1.5 Volts	-5 Volts	-10 Volts	-50 Volts	-75 Volts	-100 Volts	
-5		-6	-9		30	500
0.35		0.75	1.9 at 25V			400
0.35		0.75	1.9 at 25V			800
		30	500			500
5 at -3V					500	500
		7	100			500
		50			600	500
in test circuit, -10 volts						500
			50			400
	5		50			250
					625	350
25	60% rect. eff. damping resistance = 3000 ohms in specified test circuit.					400
			100			400
	8		100			250
			500			250
			500			300
	5		50			300
			100			300
			100			300
55°C, -20 to -50 volts						500
55°C, -20 to -50 volts						500
		50	850			300
		10				300
		75 [2]	250 [2]			300
		11	80	180	275	500
	5 at -3V	7	65	155	250	500
2.8		18	150 at -30V.	350 at -45V		200
18		150 at -30V	350 at -45V			200
		11	87	180	275	500
4.5	5	7	50	115	250	500
1.0	2.0	4.5	30 at -25V	-	-	400

5. Reverse recovery time under following condition

Square wave gen. freq. = 50Kc/s, 50% duty cycle
Rise Time of gen < .02 usec.
I_f = 5 mA, V_r = -5 volts
JAN 256 test circuit, R_L = 2000 ohms

At: t = 0.5 usec.; $I_r \leq 250$ uA
t = 3.5 usec.; $I_r \leq$ 25 uA

SINGLE ENDED



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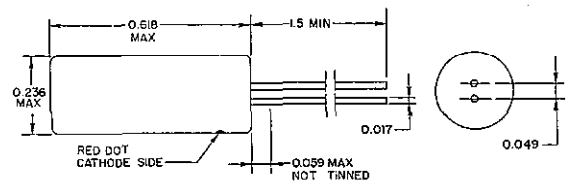
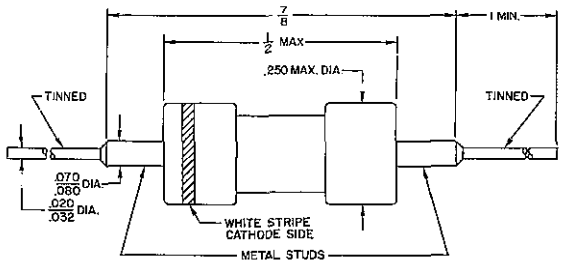


Type 2

CLIP IN



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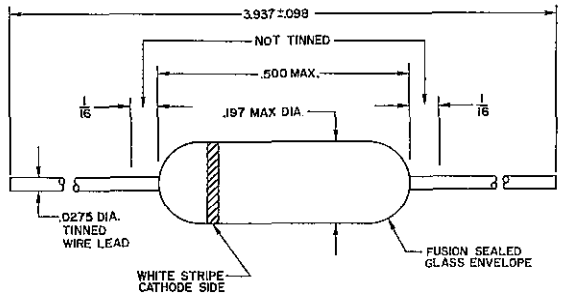

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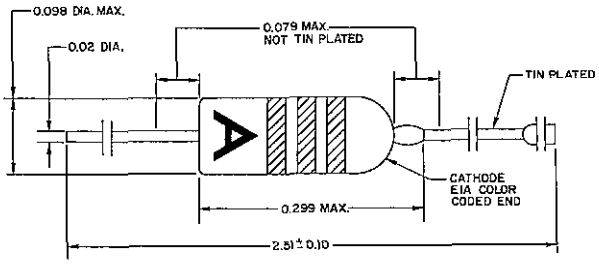


SILICON DIODES

Subminature	Description	Max. Continuous Operating Inverse Voltage (Volts)	Maximum Peak Inverse Voltage (Volts)	Maximum Peak Rectified Current (MA)	Maximum Average Rectified Current (MA)	Min. Forward Current (MA) At -1 Volt	Min. Forward Current (MA) At +3 Volts
OA200	General Purpose	50	50	150	50	.1 at. 53V	30 at. 9V
OA202	General Purpose	150	150	100	30	.1 at. 53V	30 at. 9V
S262	General Purpose	15 [1]	30 [1]		30 [1]	3	
1N456	General Purpose	25	30		90	40	
1N457	General Purpose	60	70		75	20	
1N458	General Purpose	125	150		55	7	
1N459	General Purpose	175	200		40	3	
1N461	General Purpose	25	30		60	15	
1N462	General Purpose	60	70		50	5	
1N463	General Purpose	175	200		30	1	
1N464	General Purpose	125	150		40	3	

[1] These values tested at 55°C.

SILICON REFERENCE DIODES

Single Ended Type 2	Description	Nominal Zener Voltage ($-V_Z$) (Volts)	Max. Zener Current ($-I_D$) (MA)	Dynamic Impedance R_Z at I_Z =5mA (ohms)
OAZ 200	Voltage Reference For Low Current Stabilizer	4.7	40	60
OAZ 201	Voltage Reference For Low Current Stabilizer	5.1	40	50
OAZ 202	Voltage Reference For Low Current Stabilizer	5.6	40	25
OAZ 203	Voltage Reference For Low Current Stabilizer	6.2	40	6
OAZ 204	Voltage Reference For Low Current Stabilizer	6.8	40	4
OAZ 205	Voltage Reference For Low Current Stabilizer	7.5	40	4
OAZ 206	Voltage Reference For Low Current Stabilizer	8.2	40	4
OAZ 207	Voltage Reference For Low Current Stabilizer	9.1	40	4

PHOTODIODES

	Description	Max. Inverse Voltage (Volts)	Max. Inverse Current (mA)
OAP 12	Germanium Junction PN Alloy Type Metal Case With Glass Lens On Top	30	3

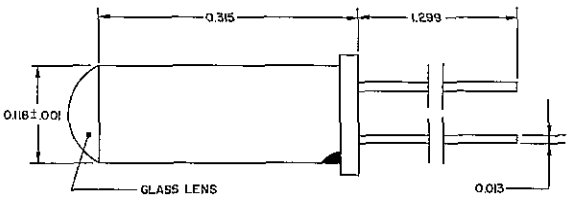
RECTIFIER DIODES

Germanium Rectifier Type 1	Description	Peak Inverse Voltage (Volts)	Average Forward Current (Amps)
OA 31	Power Rectifier Junction Diode	85	12
Silicon Rectifier Type 2			
OA 210	400 V Diode 500 mA Forward Current	400	0.5 [1]
OA 211 [2]	800 V Diode 400 mA Forward Current	800	0.4 [1]
OA 214 [2]	700 V Diode 500 mA Forward Current	700	0.5 [1]

[1] Sine wave input voltage and capacitive load.
[2] A heat sink with a minimum area of 2 sq. in. is required.

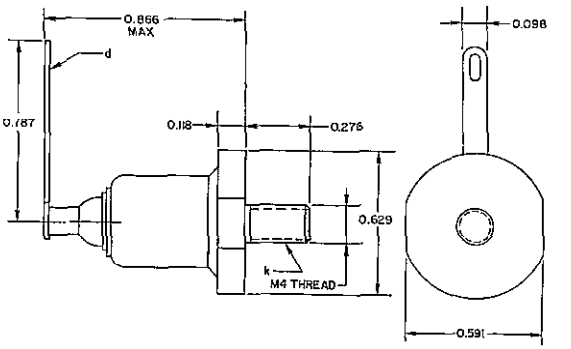
Maximum Inverse Current (Microamps) At						Maximum Surge Current (MA)
-1.5 Volts	-5 Volts	-10 Volts	-50 Volts	-75 Volts	-100 Volts	Maximum1 Second
			.05			
					.05 at 150V	
		150at15V[1]				300
			.025at25V			700
				.025at60V		600
					.025 at125V	500
					.025at175V	400
			.5at25V			550
				.5at60V		500
					.5at175V	400
					.5at125V	400

PHOTODIODES

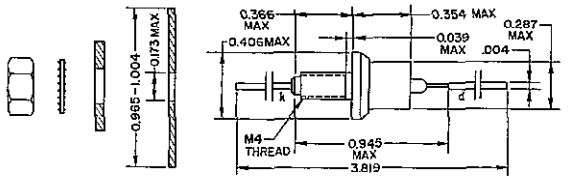


Reverse Current at V_D =2 V (milli μA)	Typical Change In Zener Voltage With Temperature I_Z = mA (mV/° CD)	Forward Voltage At I_D =10 mA (Volts)
250	-2	0.72
100	-1.8	0.72
30	-1.5	0.72
10	+1	0.72
10	+3	0.72
5	+4	0.72
5	+5.5	0.72
5	+6.5	0.72

RECTIFIERS



Type 1



Type 2

Sensitivity at T_c =2500 ° K N (μA/100 lux)	Dark Current (T_{amb} =25 ° C; V =-10V) I_o (μA)	Wave Length for Max. Sensitivity λm (μ)
>5	<15	1.55 (infra - red)

Peak Forward Current (Amps)	Max. Load Capacitance (μf)	Min. Circuit Resistance (Ohms)
12	1000	-
5	200	4
4	100	8
5	100	7

TRANSISTORS
AF TYPES

Type	Maximum ratings: Collector-emitter voltage [1] Peak (V)	Maximum ratings: Collector-emitter voltage [1] D.C. (V)	Peak collector current (MA)	Max. Continuous junction temperature (°C)	Collector dissipation at 25°C amb. P_C (mW)	Current gain h_{fe}	at [3] I_E (mA)	$-I_{CBO}$ (μA)
Small Signal Amplifier Applications								
OC 53	7	3	10	55	10	35	0.25	3.5
OC 54	7	3	10	55	10	55	0.25	3.5
OC 55	7	3	10	55	10	80	0.25	3.5
OC 56	7	3	10	55	10			3.5
OC 57	7	3	10	55	10	35	0.25	1.5
OC 58	7	3	10	55	10	55	0.25	1.5
OC 59	7	3	10	55	10	80	0.25	1.5
OC 60	7	3	10	55	10	60	0.25	1.5
OC 75	30 [2]	30 [2]	50	75	125	90	3	5
2N279 [11]	30 [2]	30 [2]	50	75	125	30	0.5	5
2N280 [12]	30 [2]	30 [2]	50	75	125	50	3	5
Large Signal Amplifier Applications								
OC 26	32	16	3500	90	13000 [4]	33 [3]	1000	<100
OC 30 [10]	32 [2]	16 [2]	1400	75	3600 [6]	35 [3]	100	12
OC 74 [10]	20 [2]	20 [2]	300	75	550 [8]	65 [3]	300	10
OC 79	26	26	300	75	550 [8]	42 [3]	300	10
2N281 [10]	32 [7]	32 [7]	250	75	165 [8]	70	10	4.5

[1] Thermal stability must be ensured.
[2] Base-to-ground impedance <500 ohms.
[3] Large-signal current gain h_{FE}.
[4] Total heat resistance K = 5° C/W (junction to ambient).
[5] Base-to-ground impedance <100 ohms.
[6] Total heat resistance K = 14° C/W (junction to ambient)
[7] Base-to-ground impedance <1000 ohms.

TRANSISTORS
RF TYPES

Type	Maximum ratings: Collector-emitter voltage [1] Peak (V)	Maximum ratings: Collector-emitter voltage [1] D.C. (V)	Peak collector current (mA)	Max. Continuous junction temperature (°C)	Collector dissipation at 25°C amb. Pc (mW)	Current gain h_{fe}	at I_E (mA)	$-I_{CBO}$ (μA)	at $-V_{CB}$ (V)	fob (Mc/s)
Converter, Mixer, Oscillator Applications										
OC 44	15 [2]	15 [2]	10	75	83	100	1	0.5	2	15
OC 45	15 [2]	15 [2]	10	75	83	50	1	0.5	2	6
								transfer admittance micromhos Y_{fe}	input conductance micromhos g_{ie}	input capacitance $\mu\mu f$ C_{ie}
OC 169 [3]	20 [4]	20 [4]	10	75	83	60	1	28000	3000	50
OC 170 [3]	20 [4]	20 [4]	10	75	83	100	1	30000	3000	65
								Y_{fb}	g_{ib}	C_{ib}
OC 171 [3]	20 [4]	20 [4]	5	75	83	-	-	15000	20000	-15

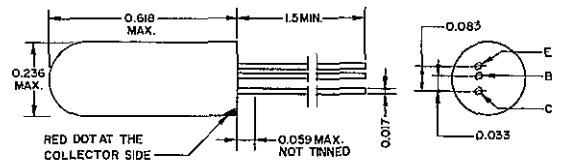
[1] Thermal stability must be ensured
[2] Base-to-ground impedance <1000 ohms
[3] Alloy-diffused Ge-PNP Transistor

Characteristics at 25°C				Outline drawing No.	Typical application
at $-V_{CB}$ (V)	f_{ab} (Mc/s)	at $-V_{CB}$ (V)	at I_E (mA)		
Class A (PNP, Ge-Types)					
2		0.5	0.25	5	Prestages in Hearing Aids
2		0.5	0.25	5	Prestages in Hearing Aids
2		0.5	0.25	5	Prestages in Hearing Aids
2				5	Output Stages in Hearing Aids
2	1.4	0.5	0.25	5	Prestages in Hearing Aids
2	1.6	0.5	0.25	5	Prestages in Hearing Aids
2	2.2	0.5	0.25	5	Prestages in Hearing Aids
2	1.6	0.5	0.25	5	Output Stages in Hearing Aids
4.5	0.75	2	3	2	General Purpose High Gain
4.5	0.45	2	0.5	2	General Purpose
4.5	0.5	2	3	2	General Purpose
Class A & B (PNP, Ge Types)					
0.5	0.15	6	1000	8	Medium Gain Power
14	0.3	7	100	6	Medium Gain Power
9	1.5	6	50	1	Large Signal Output And Driver Stages
12	1.2	6	50	1	Medium Power Output
10	0.9	6	10	1	Medium Power Output And Driver

[8] With cooling fin 56200 and heat sink of at least 0.5 sq. in.
[9] Also available in 7 volt version.
[10] Also available in matched pairs (2x2N281 = 2N282).
[11] Also available as OC 70
[12] Also available as OC 71

Characteristics at 25°C		Outline drawing No.	Typical application
at $-V_{CB}$ (V)	at I_E (mA)		
(PNP, Ge Types)			
6	1	2	Mixer-oscillator In Medium-wave receivers
6	1	2	IF Amplifiers in AM Receivers

Output conductance micromhos	Output capacitance $\mu\mu f$	at (V)	(mA)	(Mc/s)		
g_{oe}	C_{oe}	V_{CE}	I_E	f		
85	5.0	-6	1	10.7	4	Mixer-oscillator in IF automobile radio application; IF amplifier in AM & FM receivers.
60	4.5	-6	1	10.7	4	Mixer-oscillator in short-wave receivers; IF amplifier in FM receivers
g_{ob}	C_{ob}	V_{CB}	I_E	f		
300	2.5	-6	1	100	4	Pre-and mixer-stage in FM receivers.



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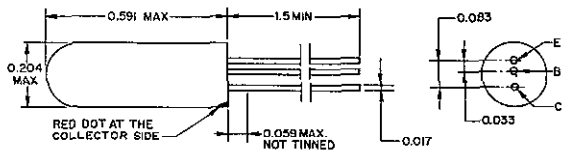

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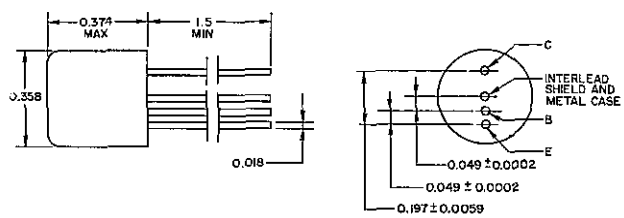

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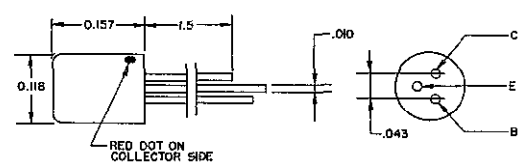

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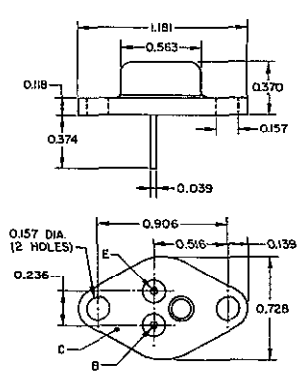


6

TRANSISTORS
INDUSTRIAL, SWITCHING, AND COMPUTER TYPES

Type	Maximum ratings					Current gain h_{fe}	at I_E (mA)		at $-V_{CB}$ (V)	
	Collector-emitter voltage [1]		Peak collector current (mA)	Max. Continuous junction temperature (°C)	Collector dissipation at 25°C amb P_C(mW)			-ICBO (μA)		fab (Mc/s)
	Peak (V)	D.C. (V)								
High-speed Switching Applications										
OC 22	32 [2]	24 [2]	1000	75	10000 [3]	150 [4]	1000	30	10	2.5
OC 23	40 [2]	24 [2]	1000	75	10000 [3]	150 [4]	1000	30	10	2.5
OC 24	32 [2]	24 [2]	1000	75	10000 [3]	150 [4]	1000	30	10	2.5
OC 46	20	20	125	75	83	<80	15	<3	5	> 3
OC 47	20	20	125	75	83	<200	15	<3	5	> 5.5
Low-speed Switching Applications										
OC 28	60/80 [5]	60/80 [5]	6000	90	13000 [3]	32 [4]	1000	<100	0.5	0.2
OC 29	32/48/60 [6]	32/48/60 [6]	6000	90	13000 [3]	90 [4]	1000	<100	0.5	0.2
OC 35	32/48/60 [6]	32/48/60 [6]	6000	90	13000 [3]	50 [4]	1000	<100	0.5	0.2
OC 36	32/60/80 [7]	32/60/80 [7]	6000	90	13000 [3]	70 [4]	1000	<100	0.5	0.2
OC 80	32	32	600	75	550 [10]	85 [4]	600	10	12	2.0
2N284 [12]	32 [8]	32 [8]	250	75	165 [10]	45 [4]	250	4.5	10	0.9
2N284A	60 [9]	60 [9]	250	75	165 [10]	52 [4]	250	4.5	10	0.9
High-speed Switching Applications										
OC 139 [11]	20	20	250	75	100	45 [4]	15	0.8	5	> 3.5
OC 140 [11]	20	20	250	75	100	75 [4]	15	0.8	5	>4.5
OC 141 [11]	20	20	250	75	100	150 [4]	15	0.8	5	>9
Industrial Applications										
OC 200	25	25	50	150	250	20	1	0.01	10	1
OC 201	25	25	50	150	250	30	1	0.01	10	4

[1] Thermal stability must be ensured.
[2] Base-to-ground impedance <100 ohms
[3] Total heat resistance K = 5°C/W (junction to ambient)
[4] Large-signal current gain h_{FE}
[5] Min. avalanche-voltage = 60 V at V_{BE} = 2 V and $-I_C$ = 6 A
Min. breakdown-voltage = 80 V at V_{BE} = 1 V and $-I_C$ ≤3mA
[6] $-V_{CE}$ >32 V at $-I_C$ = 6 A and V_{BE} = 2 V
$-V_{CE}$ >48 V at $-I_C$ = 0.5 A and V_{BE} = 2 V
$-V_{CE}$ >60 V at $-I_C$ ≤3mA and V_{BE} = 1 V

PHOTOTRANSISTORS

Type	Maximum ratings					Characteristics at 25°C		
	Collector-emitter voltage		Peak Collector Current (mA)	Max. Continuous junction temperature (°C)	Collector dissipation at 25° C amb. P_C (mW)	Dark Current (μA)	At	Light Current (μA)
	Peak (V)	D.C. (V)						
OCP 70	7.5	7.5	20	65	25	-325	I_B = 0 V_{CE} = -4.5 V	750

Characteristics at 25°C at $-V_{CB}$ (V)	at I_E (mA)	Outline drawing No.	Typical application
(PNP, Ge Types)			
2	400	9	Digital Computers, High Quality Audio Amplifiers
2	400	9	Pulse Generator For Ferrite Store
2	400	9	Medium Frequency Transmitter Carrier Telephony
5	3	2	Medium Current
5	3	2	Medium Current
(PNP, Ge Types)			
6	300	8	High Voltage and High Current Applications, DC-Converters
6	300	8	High Current Applications
6	300	8	High Current Applications DC-Converters
6	300	8	High Voltage And High Current Applications
6	50	1	Pulse Oscillators, DC-Converters
6	10	1	Pulse Oscillators, DC-Converters
6	10	1	Pulse Oscillators, DC-Converters
(NPN [13] Ge-Types)			
5	3	10	Computers
5	3	10	Computers
5	3	10	Computers
(PNP, Si-Types)			
6	1	1	General Purpose Audio Amplifier
6	1	1	General Purpose Audio Amplifier

7 $-V_{CE} > 32$ V at $-I_C = 6$ A and $V_{BE} = 2$ V
$-V_{CE} > 60$ V at $-I_C = 0.5$ A and $V_{BE} = 2$ V
$-V_{CE} > 80$ V at $-I_C \leq 3$mA and $V_{BE} = 1$ V

8 Base-to-ground impedance <1000 ohms

9 Base-to-ground impedance <500 ohms

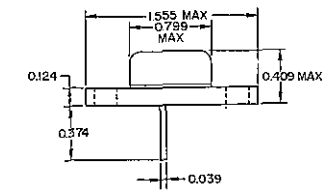
10 With cooling fin 56200 and heat sink of at least 0.5 sq. in.

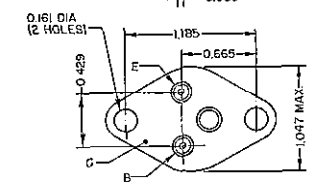
11 Bi-directional Ge-NPN Transistor

12 Also available in matched pairs

13 The voltages andcurrents of NPN types have the inverse polarity.

At	Peak Spectral Response (μ)	Outline drawing No.	Typical application
$V_{CE} = -2V$ Illumination = 75 ft. candles; color temp of source = 2700° K; angle of incidence = see outline 11.	1.55	11	All glass phototransistor





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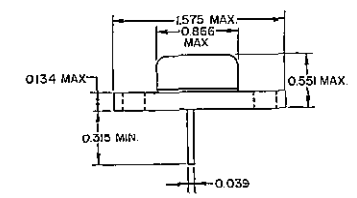

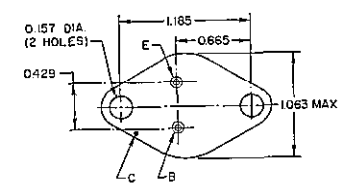

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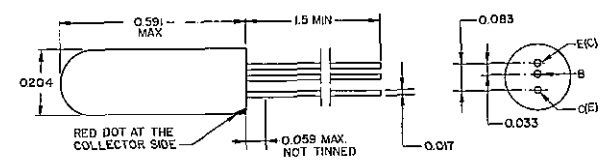

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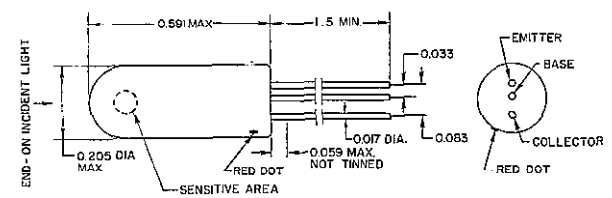
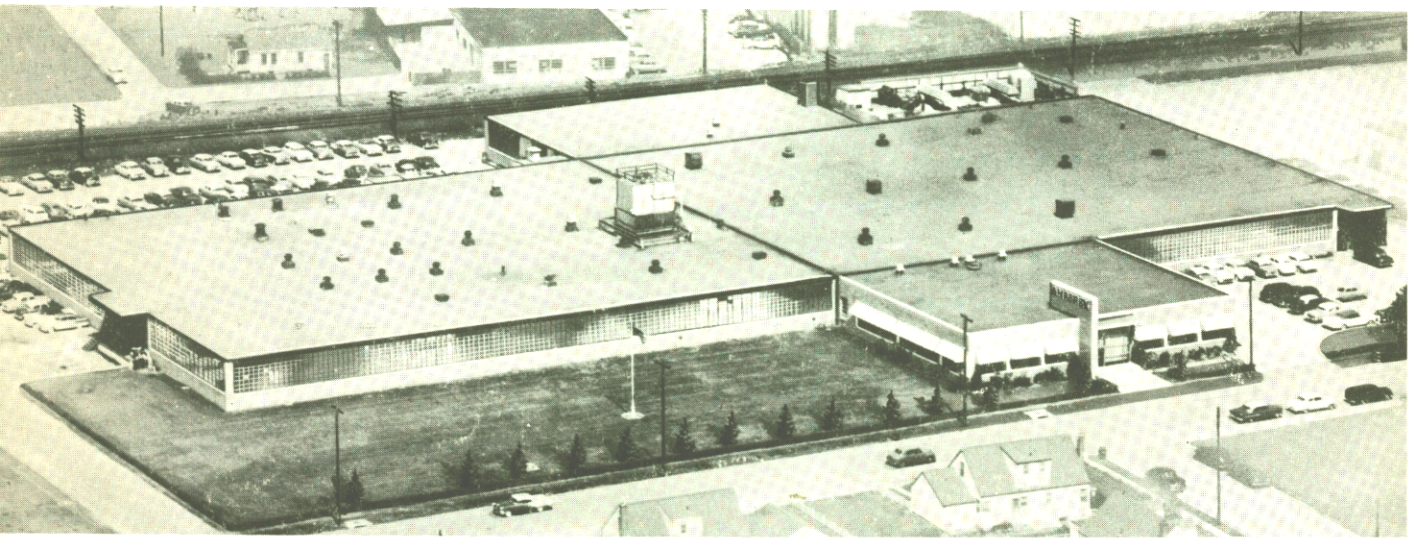


11

NOTES

THE AMPEREX PLANT AT HICKSVILLE, L. I., NEW YORK



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