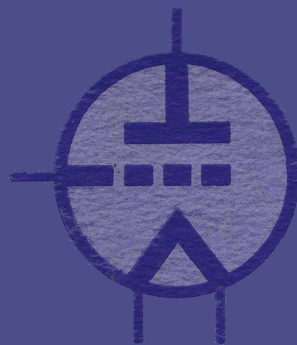


*Western Electric*

**ELECTRON TUBES**



**DESIGNS BY BELL TELEPHONE LABORATORIES**

## *FOREWORD*



*T*his bulletin presents in concise tabular form the essential data on Western Electric electron tubes, which are designed by Bell Telephone Laboratories. The text material has been selected and arranged with the view of guiding the circuit designer most readily to the Western Electric tube which will meet his requirements for particular applications. While certain special-purpose tubes designed for military applications and having limited fields of use have not been covered in this General Bulletin, information on them will be made available on request to those contemplating specific applications.

## Price and Delivery Information

The Graybar Electric Company is the national distributor of Western Electric electronic products. To secure price and delivery information, contact your nearest Graybar office. A listing of the main Graybar offices throughout the country is presented on page 16 of this bulletin.

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## Technical Inquiries

It is the objective of the Western Electric Company to furnish to those engaged in the design, fabrication and use of electronic equipment all available information relating to our electron tubes and their application. If some special application or characteristic is required of a tube, we shall be glad to recommend a suitable type and to suggest design and operating precautions necessary for realizing the capabilities of such tubes. Please address all inquiries for technical information to:

**WESTERN ELECTRIC COMPANY**

*Radio Division, Department 9284*

**120 Broadway, New York 5, New York**

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# General Purpose Tubes

Code	Type	Cathode		Absolute Maximum Ratings					Average Characteristics — Class A						Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code	
		Type	Volts	Amps.	Plate Volts	Scr. Volts	Plate Diss. Watts	Scr. Diss. Watts	Htr.-Cath. Volts	Plate Volts	Plate Cur. Ma.	Ampl. Fact.	Trans. cond. $\mu$ mhos	Plate Res. Ohms	Power Output Watts	Height				Diam.
2C51	Miniature Double Triode	H	6.3	0.300	330	—	1.6 (per section)	—	100	150	8.2	35	5500	6400	—	1 3/4	7/8	Small Button 9-pin	70	2C51
6AJ5	Miniature Pentode	H	6.3	0.175	200	155	1.85	0.55	100	28	3.0	250	2750	90000	—	1 3/4	3/4	Min. Button 7-pin	74	6AJ5
6AK5	Miniature Pentode	H	6.3	0.175	200	155	1.85	0.55	100	120	7.5	1700	5000	340000	—	1 3/4	3/4	Min. Button 7-pin	74	6AK5
6AS6	Miniature Pentode	H	6.3	0.175	200	155	1.85	0.85	100	120	5.2	480	3200	150000	—	1 3/4	3/4	Min. Button 7-pin	75	6AS6
101D	Triode	O-F 4.2	1.0	—	200	—	2.0	—	—	130	7.7	6.2	1070	5800	.065	4 1/2	1 13/16	100L or 100R	1	101D
101F	Triode	O-F 4.0	0.5	—	200	—	2.0	—	—	130	6.8	6.5	1120	5800	.060	4 1/2	1 13/16	100L or 100R	1	101F
102D	Triode	O-F 2.1	1.0	—	200	—	—	—	—	130	0.8	29.6	510	58000	—	4 1/2	1 13/16	100L or 100R	1	102D
102F	Triode	O-F 2.1	0.5	—	200	—	—	—	—	130	0.85	31.0	620	50000	—	4 1/2	1 13/16	100L or 100R	1	102F
104D	Triode	O-F 4.2	1.0	—	200	—	—	—	—	130	25	2.5	1180	2100	.160	4 1/2	1 13/16	100L or 100R	1	104D
205F	Triode	O-F 4.5	1.6	—	400	—	1.4	—	—	350	35	7.3	1870	3900	—	4 1/2	1 13/16	100M or 115B	6	205F
215A	Triode	O-F 1.0	0.25	—	110	—	—	—	—	60	2.0	5.7	420	13500	.0029	2 11/16	11/16	125B	1	215A
231D	Triode	O-F 3.1	0.06	—	150	—	—	—	—	90	2.1	8.4	510	16300	.0045	4	1 3/32	Small 4-pin	2A	231D
244A	Triode	H	2.0	1.6	200	—	1.2	—	100	135	5.5	10.1	1010	10000	.049	4 7/8	1 13/16	Med. 5-pin Bay.	22	244A
245A	Tetrode	H	2.0	1.6	200	75	—	—	100	135	4.8	135	750	180000	—	5 1/4	1 13/16	Med. 5-pin Bay.	23	245A
246A	Tetrode	O-F 3.3	0.1	—	200	75	—	—	—	135	1.5	285	390	725000	—	5 1/4	1 13/16	Med. 4-pin Bay.	8	246A
247A	Triode	H	2.0	1.6	200	—	1.2	—	100	135	3.2	15.2	940	16000	.037	4 7/8	1 13/16	Med. 5-pin	22A	247A
252A	Triode	O-F 5.0	2.0	—	550	—	35	—	—	450	60	5.1	3450	1500	7.0	6 3/4	2 7/16	Med. 4-pin Bay.	2	252A
257A	Triode	O-F 3.1	0.06	—	150	—	—	—	—	90	2.1	8.4	510	16300	.0045	4 9/16	1 3/32	Small 4-pin	11	257A
259A	Tetrode	H	2.0	1.6	275	100	—	—	100	180	5.5	550	1380	400000	—	5 1/4	1 13/16	Med. 5-pin Bay.	23	259A
262B	Triode	H	10.0	0.32	200	—	—	—	30	135	2.8	15.7	900	17500	.035	4 3/4	1 9/16	Small 4-pin	12	262B
264C	Triode	O-F 1.5	0.30	—	110	—	—	—	—	100	2.1	7.2	580	12400	.033	4	1 3/16	Small 4-pin	2A	264C
271A	Triode	H	5.0	2.0	500	—	—	—	100	400	37.5	8.3	2920	2830	2.8	6 3/4	2 7/16	Med. 5-pin	22A	271A
272A	Triode	H	10.0	0.32	200	—	1.4	—	100	140	5.4	5.6	760	7400	.120	4 7/8	1 13/16	Med. 5-pin Bay.	22	272A
275A	Triode	O-F 5.0	1.2	—	330	—	17	—	—	200	47	2.8	2770	1030	1.9	5 5/8	2 3/16	Med. 4-pin Bay.	2	275A
281A	Tetrode	O-F 5.0	1.6	—	250	75	—	—	—	130	35	5.0	1470	3400	2.2	6 3/4	2 11/16	Med. 5-pin	21	281A
283A	Tetrode (Var. Mu)	H	2.0	1.6	275	100	—	—	100	180	5.9	585	1360	430000	—	5 1/4	1 13/16	Med. 5-pin Bay.	23	283A
285A	Pentode	H	2.0	1.6	275	220	—	—	100	180	8.8	135	880	153000	.65	5 1/4	1 13/16	Med. 5-pin Bay.	24	285A

# General Purpose Tubes (Continued)

Code	Type	Cathode		Absolute Maximum Ratings					Average Characteristics — Class A						Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code	
		Type	Volts	Amps.	Plate Volts	Scr. Volts	Plate Diss. Watts	Scr. Diss. Watts	Htr.-Cath. Volts	Plate Volts	Plate Cur. Ma.	Ampl. Fact.	Trans. cond. $\mu$ mhos	Plate Res. Ohms	Power Output Watts	Height				Diam.
300B	Triode	O-F	5.0	1.2	480	—	40	—	—	300	60	3.8	5400	700	6.0	6 1/2	2 7/16	Med. 4-pin Bay.	50	300B
309A	Pentode (Var. Mu.)	H	10.0	0.32	275	100	—	150	—	180	4.8	1100	1100	1000000	—	4 29/32	1 9/16	Small 5-pin	24A	309A
310A	Pentode	H	10.0	0.32	275	180	2.5	0.4	150	135	5.5	1200	1800	650000	.250	4 29/32	1 9/16	Small 6-pin	32	310A
310B	Pentode	H	10.0	0.32	275	180	2.5	0.4	30	135	5.5	1200	1800	650000	.250	4 29/32	1 9/16	Small 6-pin	32	310B
311A	Pentode	H	10.0	0.64	200	160	—	150	—	135	30	122	2800	43000	2.0	4 29/32	1 9/16	Small 5-pin	24A	311A
328A	Pentode	H	7.5	0.425	275	180	2.5	0.4	150	135	5.5	1350	1800	750000	.250	4 29/32	1 9/16	Small 6-pin	32	328A
329A	Pentode	H	7.5	0.85	200	160	—	150	—	135	30	122	2800	43000	2.0	4 29/32	1 9/16	Small 5-pin	24A	329A
336A	Pentode	H	10.0	0.64	275	275	9.4	3.1	60	250	30	336	4200	80000	3.5	4 7/16	1 9/16	Small 6-pin	29	336A
337A	Pentode (Var. Mu.)	H	10.0	0.32	275	180	2.5	0.4	150	135	6.0	1070	1650	650000	—	4 29/32	1 9/16	Small 6-pin	32	337A
347A	Triode	H	6.3	0.50	200	—	—	—	30	135	2.8	15.7	900	17500	.035	4 3/4	1 9/16	Octal	37	347A
348A	Pentode	H	6.3	0.50	275	180	2.5	0.4	30	135	5.5	1200	1800	650000	.250	4 29/32	1 9/16	Octal	38	348A
349A	Pentode	H	6.3	1.0	275	275	9.4	3.1	60	250	30	336	4200	80000	3.5	4 7/16	1 9/16	Octal	39	349A
350B	Beam Tetrode	H	6.3	1.6	400	300	30	4	150	400	53	400	6250	64000	15	5 13/32	2 1/16	Octal	31	350B
352A	Duodiode - Triode	H	10.0	0.32	200	—	—	—	100	135	2.1	13.3	650	20500	.042	4 3/4	1 9/16	Small 6-pin	27	352A
373A	Pentode	O-F	2.0	0.25	250	150	—	—	—	150	2.0	1900	1320	1400000	—	3 1/4	1 7/16	Octal	67	373A
374A	Pentode	O-F	3.0	0.53	150	150	4.8	1.0	—	135	18	210	3000	70000	1.3	3 1/4	1 7/16	Octal	68	374A
375A	Beam Tetrode	H	20	0.32	130	130	6.0	1.3	—	45	12.5	72	4700	15300	0.23	4 7/8	1 7/16	Octal	64	375A
382A	Triode	H	6.3	0.15	200	—	1.6	—	100	120	4.5	25	2800	9000	—	1 17/32*	3/8	None	58	382A
383A	Triode	H	6.3	0.15	200	—	1.6	—	100	120	4.5	25	2800	9000	—	1 7/8	3/8	Octal	57	383A
384A	Pentode	H	6.3	0.15	275	130	1.85	0.55	100	120	5.6	1230	2560	480000	23dbm	1 25/32*	3/8	None	66	384A
385A	Pentode	H	6.3	0.15	275	130	1.85	0.55	100	120	5.6	1230	2560	480000	23dbm	2 5/16	3/8	Octal	65	385A
386A	Pentode	H	6.3	0.15	180	120	1.85	0.55	100	120	7.5	1550	4000	390000	—	1 25/32*	3/8	None	66	386A
387A	Pentode	H	6.3	0.15	180	120	1.85	0.55	100	120	7.5	1550	4000	390000	—	2 5/16	3/8	Octal	65	387A
5590	Miniature Pentode	H	6.3	0.15	200	155	1.85	0.55	100	90	3.9	600	2000	300000	—	1 3/4	3/4	Min. Button 7-pin	74	5590
5591	Miniature Pentode	H	6.3	0.15	200	155	1.85	0.55	100	120	7.5	1700	5000	340000	—	1 3/4	3/4	Min. Button 7-pin	74	5591
5603	Pentode	O-F	6.3	0.50	165	165	8	2.5	—	135	50	92	5400	17000	2.2	3	1 7/16	Octal	81	5603

## Key to Symbols and Abbreviations:

Ampl. Fact.	—	Amplification Factor	dbm	—	Decibels Above One Milliwatt	Htr.	—	Heater	Res.	—	Resistance
Amps.	—	Amperes	Diam.	—	Diameter	Ma.	—	Milliamperes	Scr.	—	Screen
Bay.	—	Bayonet	Diss.	—	Dissipation	Med.	—	Medium	Transcond.	—	Transconductance
Cath.	—	Cathode	F	—	Filament-Type Cathode	Min.	—	Miniature	Var. Mu	—	Variable Amplification Factor
Cur.	—	Current	H	—	Heater-Type Cathode	O	—	Oxide-Coated	$\mu$ mhos	—	Micromhos

\* — Excluding Flexible Leads

# Transmitting Tubes

Code	Type	Cooling	Cathode		Absolute Maximum Ratings			Average Static Characteristics			Typical Power Output		Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
			Type	Volts	Amps.	Plate Volts	Plate Cur. Amps.	Plate Diss. Watts	Freq. F1 Mc	Plate Volts	Plate Cur. Amps.	Trans. cond. $\mu$ mos	Class	Watts	Height	Diam.	
5D2I	Tetrode (Pulse Ampl.)	Air	H	26.0	2.1	20000	.030	60	— (Non-Inductive Load. Peak Anode Current = 15 amperes)	20000	.030	60	—	5 7/8	2 9/16	76	5D2I
212E	Triode	Air	T-F	14.0	6.0	3000	.300	275	1.5	2000	.165	16	8500	13 5/8	3 5/8	4	212E
220C	Triode	Water	W-F	21.5	41.0	15000	1.5	10000	4	10000	.64	40	5000	20 7/8	6 1/16	44	220C
220CA	Triode	F Air	W-F	21.5	41.0	15000	1.5	5000	4	10000	.50	40	4400	21 3/16	7 7/32	44	220CA
228A	Triode	Water	W-F	21.5	41.0	6000	1.5	5000	3	5000	.90	16	6500	18	3 1/2	41	228A
232B	Triode	Water	W-F	20.0	60.0	20000	3.0	25000	3	15000	1.35	40	6500	21 15/16	6 1/16	44	232B
236A	Triode	Water	W-F	21.5	41.0	20000	2.0	20000	3	15000	1.0	40	6450	30	3 3/4	44	236A
240B	Triode	Water	W-F	21.5	41.0	12000	1.7	10000	20	10000	.64	40	5000	25 17/32	6 7/32	44	240B
241B	Triode	Air	T-F	14.0	6.0	3000	.350	275	7.5	2000	.165	16	8500	14 1/2	3 5/8	5	241B
242C	Triode	Air	T-F	10.0	3.25	1250	.150	100	6	1250	.068	12.5	3600	7 15/16	2 5/16	3	242C
251A	Triode	Air	T-F	10.0	16.0	3000	.600	1000	30	2500	.240	10.5	3800	21 11/16	6 1/8	44	251A
254A	Tetrode	Air	T-F	5.0	3.25	750	.060	20	15	750	.027	80	1000	6 15/16	2 7/16	10	254A
254B	Tetrode	Air	T-F	7.5	3.25	750	.075	25	15	750	.033	100	1160	6 15/16	2 7/16	10	254B
268A	Triode	Air	T-F	5.0	3.25	750	.060	25	30	750	.025	5	800	6 15/16	2 7/16	15	268A
270A	Triode	Air	T-F	10.0	9.75	3000	.375	350	7.5	2500	.120	16	5700	17	4	41	270A
276A	Triode	Air	T-F	10.0	3.0	1250	.125	100	30	1250	.068	12	4000	7 15/16	2 5/16	3	276A
279A	Triode	Air	T-F	10.0	21.0	3000	.800	1200	20	2500	.300	10	5000	21 11/16	6 1/8	44	279A
282A	Tetrode	Air	T-F	10.0	3.0	1000	.100	70	30	1000	.070	100	1430	6 15/16	2 7/16	10	282A
284D	Triode	Air	T-F	10.0	3.25	1250	.150	85	6	1250	.064	4.8	2500	7 15/16	2 5/16	3	284D
295A	Triode	Air	T-F	10.0	3.25	1250	.175	100	6	1250	.080	25	4200	7 15/16	2 5/16	3	295A
298A	Triode	Water	W-F	27.0	225	20000	11.0	100000	4	18000	4.2	32	22000	52 1/16	9 9/16	44	298A
298B	Triode	Water	W-F	27.0	225	20000	11.0	100000	4	18000	3.0	57.5	20000	52 1/16	9 9/16	44	298B
305A	Tetrode	Air	T-F	10.0	3.1	1000	.125	60	50	1000	.060	56	1400	7 3/16	2 7/16	16	305A
306A	Pentode	Air	O-F	2.75	2.0	300	.060	15	50	250	.043	250	4050	6 1/8	2 1/16	26	306A
307A	Pentode	Air	O-F	5.5	1.0	500	.060	15	40	250	.050	120	4000	6 1/8	2 1/16	30	307A
308B	Triode	Air	T-F	14.0	6.0	2250	.325	250	1.5	1500	.167	8	7500	13 5/8	3 5/8	4	308B
312A	Pentode	Air	T-F	10.0	2.8	1250	.100	50	20	1000	.050	1100	3800	7 3/4	2 5/16	33	312A



# Transmitting Tubes (Continued)

Code	Type	Cooling	Cathode		Absolute Maximum Ratings			Average Static Characteristics			Typical Power Output		Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
			Type	Volts	Amps.	Plate Volts	Plate Cur. Amps.	Plate Diss. Watts	Freq. Mc	Plate Volts	Cur. Amps.	Trans. cond. $\mu$ mhos	Class	Watts	Height	Diam.	
316A	Triode	Air	T-F	2.0	3.65	450	.080	30	500	450	.067	6.5	OSC. (PM)	6.5	2 25/32	2 11/16	316A
320A	Triode	Water	W-F	35.0	435	18000	15.0	150000	2	18000	8.0	30	B-RF	75000	94	12	320A
322A	Pentode	Air	T-F	10.0	5.0	2000	.175	125	20	2000	.0625	1400	C-RF (SM)	53	9 3/8	2 9/16	322A
331A	Triode	Air	T-F	10.0	3.25	1500	.200	125	30	1500	.085	40	B-Audio (2)	370	8 1/2	2 5/16	331A
332A	Pentode	Air	T-F	10.0	5.0	2000	.175	125	20	2000	.0625	1400	C-RF (PM)	135	9 3/8	2 9/16	332A
339A	Pentode	Air	O-F	5.0	1.2	575	.125	45	—	400	.073	96	B-RF	30	7 1/16	2 7/16	339A
340A	Triode	Water	W-F	20.0	72.0	20000	2.5	25000	10	15000	1.3	40	B-RF	9000	21 15/16	6 1/16	340A
341AA	Triode	F Air	W-F	21.5	57.5	10000	1.5	5000	—	7000	0.7	9	B-Audio	8000	21 3/16	7 7/32	341AA
342A	Triode	Water	W-F	20.0	67.0	20000	2.5	25000	4	15000	1.3	40	B-RF	8500	21 15/16	6 1/16	342A
343A	Triode	Water	W-F	21.5	57.5	18000	2.0	10000	4	10000	.64	40	B-RF	3500	20 7/8	6 1/16	343A
343AA	Triode	F Air	W-F	21.5	57.5	18000	1.5	5000	4	10000	0.50	40	B-RF	3500	21 3/16	7 7/32	343AA
350A	Beam Tetrode	Air	H	6.3	1.6	600	.125	30	—	500	.055	430	B-RF	20	5 31/32	2 1/16	350A
356B	Triode	Air	T-F	5.0	5.0	1500	.120	60	100	600	.100	50	C-RF (PM)	85	4 7/8	2 5/16	356B
357B	Triode	Air	T-F	10.0	10.0	4000	.500	400	100	700	.500	30	C-RF (PM)	780	8	5 1/8	357B
363A	Pentode	Air	T-F	10.0	10.0	4000	.500	350	85	700	.500	350	C-RF (UM)	1000	8	5 1/8	363A
364A	Triode	Air	T-F	5.0	5.0	1500	.120	50	150	1000	.100	50	C-RF (PM)	85	3 3/8	2 5/8	364A
368A	Triode	Air	T-F	1.15	4.5	350	.075	20	1250	300	.060	8	OSC.	3.0	2	2 7/64	368A
368AS	Triode	Air	T-F	1.15	4.5	350	.075	20	1000	300	.060	8	OSC.	2.5	2	2 7/64	368AS
379A	Triode	Air	T-F	10.0	21.0	3000	.800	1200	20	2500	.300	10	B-RF	600	21 11/16	6 1/8	379A
389AA	Triode	F Air	W-F	11.0	150	8500	2.5	7500	50	5000	1.5	22	C-RF (UM)	13500	11 11/16	8 19/32	389AA
715C	Tetrode (Pulse Ampl.)	Air	H	26.0	2.1	15000	.030	60	—	(Inductive Load. Peak Anode Current = 15 amperes)					5 7/8	2 9/16	715C
5530	Triode	F Air	T-F	5.0	55	5000	1.75	3000	110	1700	1.75	26	C-RF (FM)	3000	7 53/64	5 9/64	5530
5541	Triode	F Air	T-F	7.5	55	8500	2.75	10000	110	3600	2.75	26	C-RF (FM)	10000	10 3/16	8 1/64	5541

## Key to Symbols and Abbreviations:

<b>A-Audio</b>	— Class A Audio Frequency	<b>B-RF</b>	— Class B Radio Frequency	<b>F</b>	— Filament-Type Cathode	<b>O</b>	— Oxide-Coated	<b>T</b>	— Thoriated Tungsten
<b>Ampl.</b>	— Amplifier	<b>C-RF</b>	— Class C Radio Frequency	<b>F Air</b>	— Forced Air	<b>Osc</b>	— Oscillator	<b>Transcond.</b>	— Transconductance
<b>Ampl. Fact.</b>	— Amplification Factor	<b>Cur.</b>	— Current	<b>Freq. F1</b>	— Maximum Frequency for Operation at Full Plate Voltage	<b>PM</b>	— Plate Modulated	<b>UM</b>	— Unmodulated
<b>Amps.</b>	— Amperes	<b>Diam.</b>	— Diameter	<b>H</b>	— Heater-Type Cathode	<b>SM</b>	— Suppressor Grid Modulated	<b>W</b>	— Tungsten
<b>B-Audio (2)</b>	— Class B Audio Frequency Two Tubes	<b>Diss.</b>	— Dissipation	<b>Mc</b>	— Megacycles	<b>Spl. Mtg.</b>	— Special Mounting	$\mu$ mhos	— Micromhos
<b>Bay.</b>	— Bayonet	<b>FM</b>	— Frequency Modulated	<b>Med.</b>	— Medium				

# Rectifiers

Code	Type	Cooling	Cathode		Maximum Peak Inverse Anode Volts	Maximum Peak Anode Amps.		Maximum Average Anode Amps.		Max. Time of Averaging Anode Amps. Seconds	Condensed Mercury Temp. Range °C	Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
			Type	Volts	Amps.	In Phase	Quad.	In Phase	Quad.			Height	Diam.			
3824W	Rh-V	Air	T-F	5.0	3.0	.300	—	.060	—	—	—	4 13/16	1 9/16	Med. 4-pin Bay.	71	3824W
222A	Rh-V	Water	W-F	21.5	41	5.0	—	1.5	—	—	—	18	3 9/16	132A or 133A	7	222A
233A	Rh-V	Water	W-F	21.5	41	5.0	—	1.5	—	—	—	23 1/4	4 3/16	132A or 133A	7	233A
249B	Rh-Hg	Air	O-F	2.5	7.5	2.5	—	0.64	—	5	20-70	7 5/8	2 11/16	Med. 4-pin Bay.	13	249B
253A	Rh-Hg	Air	O-F	2.5	3.0	1.0	—	0.25	—	5	20-60	6 13/16	2 3/16	138B or 139A	7A	253A
255B	Rh-Hg	Air	O-F	5.0	19	10.0	20.0	2.5	5.0	30	20-40	17 1/2	5 3/16	Spl. Mtg.	7A	255B
258B	Rh-Hg	Air	O-F	2.5	7.5	2.5	—	0.64	—	5	20-70	7 15/16	2 11/16	138B or 139A	7A	258B
266B	Rh-Hg	Air	O-F	5.0	42	20.0	40.0	5.0	10.0	60	20-40	21 3/4	7 1/8	Spl. Mtg.	49	266B
266C	Rh-Hg	Air	O-F	5.0	42	20.0	40.0	5.0	10.0	60	20-40	19 7/8*	7 1/8	Spl. Mtg.	49	266C
267B	Rh-Hg	Air	O-F	5.0	6.75	4.0	8.0	1.0	2.0	15	35-75	8 13/16	2 5/16	138B or 139A	7A	267B
274A	Rf-V	Air	O-F	5.0	2.0	.525	—	.175†	—	—	—	5 5/8	2 3/16	Med. 4-pin Bay.	9	274A
274B	Rf-V	Air	O-F	5.0	2.0	.525	—	.175†	—	—	—	5 7/16	2 1/16	Octal	28	274B
301A	Rf-Hg	Air	O-F	5.0	3.0	2	—	1.0†	—	5	20-80	6 1/2	2 7/16	Med. 4-pin Bay.	9A	301A
314A	Rf-Hg	Air	O-F	5.0	5.0	5	—	2.5†	—	5	20-80	6 1/2	2 7/16	Med. 4-pin	82	314A
315A	Rh-Hg	Air	O-F	5.0	10.0	4.0	8.0	1.0	2.0	15	20-55	12 1/4	3 7/8	138B or 139A	7A	315A
319A	Rh-Hg	Air	O-F	5.0	6.75	4.0	8.0	1.0	2.0	15	35-75	8 1/2	2 5/16	148A	17	319A
321A	Rh-Hg	Air	O-F	5.0	10.0	4.0	8.0	1.0	2.0	15	20-55	11 7/8	3 7/8	148A	17	321A
345A	Rf-V	Air	H	6.3	1.0	.330	—	.110†	—	—	—	4 1/4	1 9/16	Small 5-pin	35	345A
351A	Rf-V	Air	H	6.3	1.0	.330	—	.110†	—	—	—	4 1/4	1 9/16	Octal	40	351A
705A	Rh-V	Air	T-F	5.0	5.0	.400	—	.100	—	—	—	5 1/16	2 5/16	152A	69	705A

Key to Symbols and Abbreviations:

Amps. --- Amperes	H --- Heater-Type	Cathode	Quad. --- Quadrature	Temp. --- Temperature
Bay. --- Bayonet	Hg --- Mercury		Rf --- Full-Wave	V --- High Vacuum
Diam. --- Diameter	Max. --- Maximum		Rh --- Half-Wave	W --- Tungsten
Diss. --- Dissipation	Med. --- Medium		Spl. Mtg. --- Special Mounting	* --- Excluding Flexible Leads
F --- Filament-Type	O --- Oxide-Coated		T --- Thoriated Tungsten	† --- Total Output Current for Full-Wave Rectifier

# Special-Purpose Diodes

Code	Cooling	Cathode		Maximum Peak Inverse Anode Volts	Maximum Anode Amps.		Maximum Anode Dissipation Watts	Anode-Cathode Capacitance $\mu\mu\text{f.}$	Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
		Type	Volts	Amps.	Peak	Average			Height	Diam.			
380A	Air	H	6.3	.15	.0285	.005	—	1.1	1 17/32*	1 3/8	None	62	380A
381A	Air	H	6.3	.15	.0285	.005	—	1.4	1 7/8	1 3/8	Octal	61	381A
704A	Air	H	4.5	.50	.050	.010	—	.75	1 5/16*	9/16*	None	63	704A
719A	Air	H	7.0	7.0	10.0	.500	75	7.2	5 7/8	2 9/16	152A	56	719A

Key to Symbols and Abbreviations:

Amps. — Amperes

H — Heater-Type Cathode

$\mu\mu\text{f.}$  — Micromicrofarads

\* — Excluding Flexible Leads

# Thyratrons

Code	Gas	Cathode		Max. Inst. Anode Amps.	Aver. Anode Amps.	Max. Time of Averaging Anode Cur. Seconds	Max. Peak Volts Anode to Grid	Operating Ambient Temp. Range °C	Operating Condensed Mercury Temp. Range °C	Nominal Deionization Time $\mu\text{sec.}$	Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
		Type	Volts	Amps.							Height	Diam.			
256A	A	H	2.3	1.7	0.075	0.075	—	—20 to +50	—	1000	4 7/8	1 13/16	Med. 5-pin	228	256A
269A	A	O-F	2.2	0.55	0.120	0.020	0.5	—20 to +50	—	100	4 9/16	1 13/16	Med. 4-pin	28	269A
287A	Hg	O-F	2.5	7.0	{ 2.5 6.0 }	0.64 1.5	5 5	—	+30 to +80 +30 to +80	1000 1000	6 5/8	2 1/16	Med. 5-pin	25	287A
297A	A	O-F	1.75	0.350	0.060	0.010	0.5	—20 to +50	—	100	4	1 3/16	Small 4-pin	28	297A
323B	A & Hg	O-F	2.5	7.0	6.0	1.5	5	—	—40 to +80	1000	6 5/8	2 1/16	Med. 5-pin	25	323B
338A	A	H	10.0	0.5	0.600	0.100	5	—20 to +50	—	1000	4 7/16	1 9/16	Small 5-pin	22B	338A
354A	Hg	O-F	2.5	16.0	16.0	4.0	15	—	+30 to +70	1000	9 1/2	3 3/16	*	14	354A
355A	A & Hg	O-F	2.5	16.0	16.0	4.0	15	—	—20 to +80	1000	9 1/2	3 3/16	*	14	355A
393A	A & Hg	O-F	2.5	7.0	6.0	1.5	5	—	—40 to +80	1000	6 5/8	2 1/16	Octal	59	393A
394A	A & Hg	O-F	2.5	3.25	2.5	0.64	5	—	—40 to +80	1000	6	1 25/32	Octal	60	394A

Key to Symbols and Abbreviations:

A — Argon

Amps. — Amperes

Aver. — Average

Cur. — Current

F — Filament-Type Cathode

H — Heater-Type Cathode

Hg

Inst.

Max.

Mercury

— Instantaneous

— Maximum

Med. — Medium

O — Oxide-Coated

Temp. — Temperature

$\mu\text{sec.}$  — Microseconds

\* — Westinghouse S # 793202

# Cold Cathode Tubes

Code	Number of Elements	Starter Gap		Main Gap		Maximum Transfer Current μA. DC (Anode at 130V)			Forward Current Milliamperes DC for Life of			Peak Inverse Current Ma. DC.	Nominal Deionization Time		Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Dia-gram Number	Code
		Nominal Breakdown Volts DC (At 20 Ma.)	Nominal Sustaining Volts DC (At 20 Ma.)	Minimum Breakdown Volts DC (At 20 Ma.)	Nominal Sustaining Volts DC (At 20 Ma.)	μA. DC	10 Hrs.	100 Hrs.	1000 Hrs.	10000 Hrs.	Ma. DC.		Milli-seconds Main Gap	Starters Gap	Height	Diam.			
313C	3	70	60	150	75	5	100	35	20	10	5	3	10	3	3 13/32	1 3/16	Small 4-pin	18	313C
313CA	3	72	60	200	75	5	72	25	14	7	5	3	10	3	3 13/32	1 3/16	Small 4-pin	18	313CA
313CB	3	70	60	185	76	5	72	25	14	7	5	3	10	3	3 13/32	1 3/16	Small 4-pin	18	313CB
313CC	3	72	60	170	75	5	72	25	14	7	5	3	10	3	3 13/32	1 3/16	Small 4-pin	18	313CC
313CD	3	72	60	—	—	5	72	25	14	7	5	3	10	3	3 13/32	1 3/16	Small 4-pin	18	313CD
333A	3	70	60	150	75	5	100	35	20	10	5	3	10	3	3 5/16	1 3/16	Bkt. Mtg.	19A	333A
346B	3	70	60	225	80	200†	100	35	20	10	5	3	8	2	3 29/32	1 3/16	Bkt. Mtg.	19	346B
353A	3	70	60	150	75	5	100	35	20	10	5	3	10	3	3 17/32	1 3/16	Bkt. Mtg.	19	353A
358A	2	70	60	—	—	—	50	18	10	5	—	—	—	—	1 13/16	3/4	None	43	358A
359A	3	75	60*	180	75*	50	40	15	8	4	1	2*	8*	2*	2 21/32	1/2	None	51	359A
372A	3	70	60	150	75	5	100	35	20	10	5	3	10	3	3 5/16	1 3/16	Bkt. Mtg.	19A	372A
395A	3	77	60*	155	75*	5	35	13	7	4	1	3*	10*	3*	3 1/4	1/2	None	51	395A
5589	3	80	60	275	65	200	100	60	35	20	5	1	2	1	4 1/8	1 3/16	Octal	78	5589

Key to Symbols and Abbreviations:

Bkt. Mtg. — Bracket Mounting  
 DC — Direct Current  
 Diam. — Diameter  
 Hrs. — Hours  
 Ma. — Milliampere  
 μA — Microampere  
 \* — At 10 Milliamperes DC  
 † — Anode at 110 Volts

# Ballast Lamps

Code	Ballasted Current Amperes	Ballast Range Volts	Maximum Dimensions Inches		Western Electric Socket or Base Type	Basing Diagram Number	Code
			Height	Diameter			
2A2I 4B 5A	.98 to 1.01 1.08 to 1.17 .95 to 1.01	6.5 to 9.5 3 to 9.5 3 to 9.5	3 15/16 5 4 3/8	1 3/16 1 5/16 2 3/8	Octal Medium Screw Medium Screw	73 72 72	2A2I 4B 5A
5B 7A 8A	1.08 to 1.16 .499 to .530 .494 to .525	3 to 9.5 3 to 10 3 to 10	4 3/8 3 1/2 3 1/2	2 3/8 1 5/16 1 5/16	Medium Screw Medium Screw Medium Screw	72 72 72	5B 7A 8A
111A 117A 119A	4.94 to 5.46 .478 to .510 1.90 to 2.10	1 to 3 3 to 10 6 to 18	4 3 1/2 6 3/16	1 5/16 1 5/16 2 7/16	Small 4-pin Medium Screw Medium 4-pin	79 72 80	111A 117A 119A
120A 121B 122A	.386 to .475 .765 to .965 1.65 to 2.15	5.5 to 12 5.5 to 12 3.0 to 7.5	4 4 4	1 5/16 1 5/16 1 5/16	Small 4-pin Small 4-pin Small 4-pin	80 80 80	120A 121B 122A
123A 124A 125A	2.50 to 3.50 8.2 to 11.7 1.60 to 2.35	4 to 12 5 to 12 10 to 60	6 3/16 7 3/4 7 3/4	2 7/16 2 1/8 2 1/8	Medium 4-pin Mogul Screw Mogul Screw	80 72 72	123A 124A 125A
126B 127A	.94 to 1.00 2.52 to 2.88	5.5 to 14.5 25 to 55	4 1/2 7 3/4	1 9/16 2 1/8	Medium Screw Mogul Screw	72 72	126B 127A

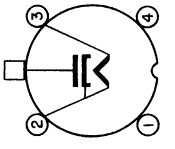
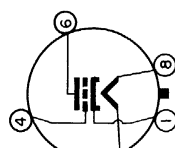
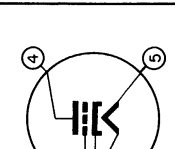
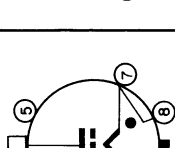
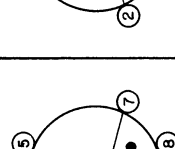
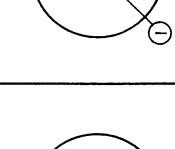
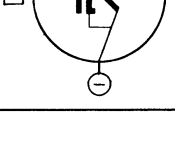
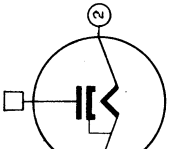
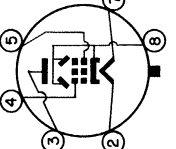
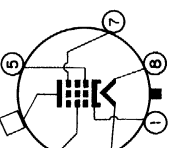
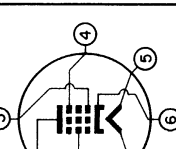
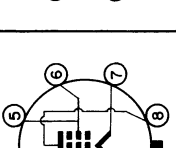
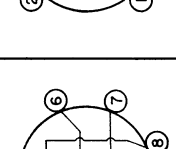
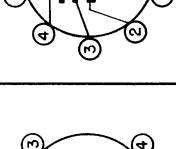
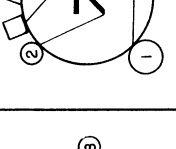
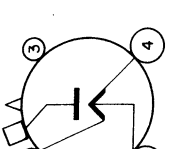
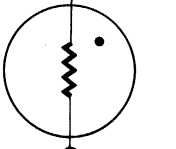
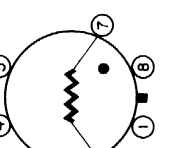
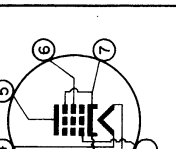
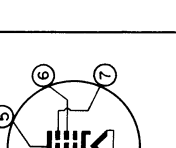
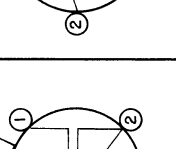
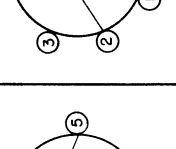
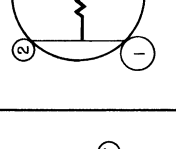
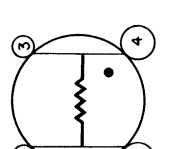
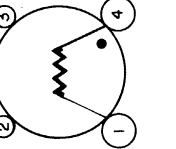
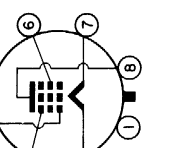
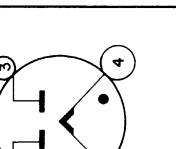
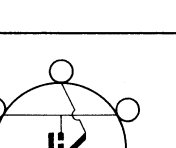
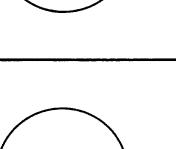

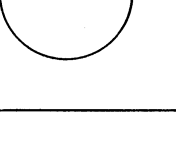
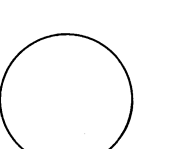
# BASING DIAGRAMS (VIEWED FROM BOTTOM OF BASE)

	1		2		2A		2B		3		4		5		6
	7		7A		8		9		9A		10		11		12
	13		14		15		16		17		18 NOTE A		19		19A
	20		21		22		22A		22B		23		24		24A


# KEY TO SYMBOLS IN BASING DIAGRAM

NOTE A: Elements 1 and 4 interchangeable.  
 NOTE B: Elements 1 and 2 interchangeable.  
 NOTE C: Four base pins in lower half of envelope arranged in T formation  
 NOTE D: 1 Yellow, 2 Black, 3 Red.


# BASING DIAGRAMS (CONTINUED)

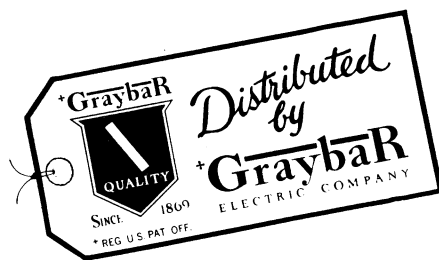
Base pin—small Flexible lead in base Connection in bulb	Gas-filled Base pin—large Flexible connection in bulb	Center connection in screw type base Shell connection in screw type base	IS Internal shield Bayonet pin Bayonet and base pin in same radial plane	Key Keyway Thermometer well
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# Discontinued Codes

DISCONTINUED CODE	TYPE	REPLACING CODE	DISCONTINUED CODE	TYPE	REPLACING CODE
101A	Triode	101D	235D	Triode	—
101B	Triode	101D	237A	Rectifier	—
101G	Triode	—	239A	Triode	—
101H	Triode	—	240A	Triode	240B
101DW	Triode	101D	241A	Triode	241B
102A	Triode	102D	242A	Triode	242C
102DW	Triode	102D	242B	Triode	242C
102E	Triode	102D	243A	Triode	—
102H	Triode	—	248A	Triode	—
104A	Triode	104D	249A	Rectifier	249B
104C	Triode	—	255A	Rectifier	255B
104DW	Triode	104D	258A	Rectifier	258B
104H	Triode	—	259B	Tetrode	259A
104G	Triode	—	260A	Tetrode	—
105A	Triode	205F	261A	Triode	276A
112A	Triode	212E	262A	Triode	262B
113A	Triode	242C	264A	Triode	264C
115A	Triode	215A	264B	Triode	264C
117AW	Rectifier	—	265A	Triode	—
118AW	Triode	—	266A	Rectifier	266B
201A	Triode	—	267A	Rectifier	267B
201B	Triode	102D	280A	Rectifier	—
203A	Triode	—	282B	Tetrode	282A
203B	Triode	—	284A	Triode	284D
203C	Triode	—	284B	Triode	284D
203D	Triode	—	288A	Rectifier	—
205A	Triode	205F	289A	Rectifier	—
205B	Triode	205F	292A	Duplex-Diode Triode	352A
205D	Triode	205F	300A	Triode	300B
205E	Triode	205F	302A	Cathode Ray Tube	—
208A	Triode	101D	304A	Triode	—
208C	Triode	—	304B	Triode	—
209A	Triode	102D	308A	Triode	308B
210A	Triode	104D	313A	Cold Cathode Gas Triode	313C
211A	Triode	242C	313B	Cold Cathode Gas Triode	313CA
211D	Triode	—	313AA	Cold Cathode Gas Triode	313CA
211E	Triode	242C	323A	Thyratron	323B
212A	Triode	212E	325A	Cathode Ray Tube	—
212D	Triode	212E	325B	Cathode Ray Tube	—
214A	Rectifier	—	325C	Cathode Ray Tube	—
214D	Rectifier	—	326A	Cathode Ray Tube	—
216A	Triode	—	326B	Cathode Ray Tube	—
217A	Rectifier	—	326C	Cathode Ray Tube	—
219A	Rectifier	—	327A	Rectifier	—
219D	Rectifier	—	330A	Cathode Ray Tube	—
220A	Triode	220C	330B	Cathode Ray Tube	—
220B	Triode	220C	330C	Cathode Ray Tube	—
221D	Triode	—	334A	Thyratron	—
222B	Rectifier	222A	335A	Thyratron	—
223A	Triode	—	346A	Cold Cathode Gas Triode	346B
224A	Cathode Ray Tube	—	356A	Triode	356B
224B	Cathode Ray Tube	—	360A	Pentode	—
224C	Cathode Ray Tube	—	361A	Pentode	—
225A	Triode	—	362A	Pentode	—
226A	Rectifier	—	365A	Rectifier	—
227A	Diode	—	CW931	(Same as 205B)	205F
229D	Triode	—	CW933	(Same as 203B)	—
232A	Triode	232B	VT 1	(Same as 203B)	—
233B	Rectifier	233A	VT 2	(Same as 205A)	205F
234A	Rectifier	—	VT 5	(Same as 215A)	215A

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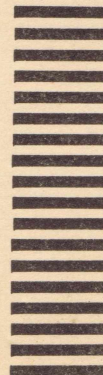
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