

# Comprehensive Tube Data

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Material taken from the **Component Data** chapter of the *1988 ARRL Handbook*. A sincere thanks to both Bob Cheney, N1DQM, and John “Red” Shaw, K1DEU, who provided guidance in compiling this Tube Data. For newer listings, see the **Component Data** chapter in the *2002 Handbook* pages 24.28-24.29 and *2002 Handbook CD* pages 24.43, 24.46 and 24.50.

—2002 ARRL Handbook Editor

# Table 13—EIA Vacuum-Tube Base Diagrams

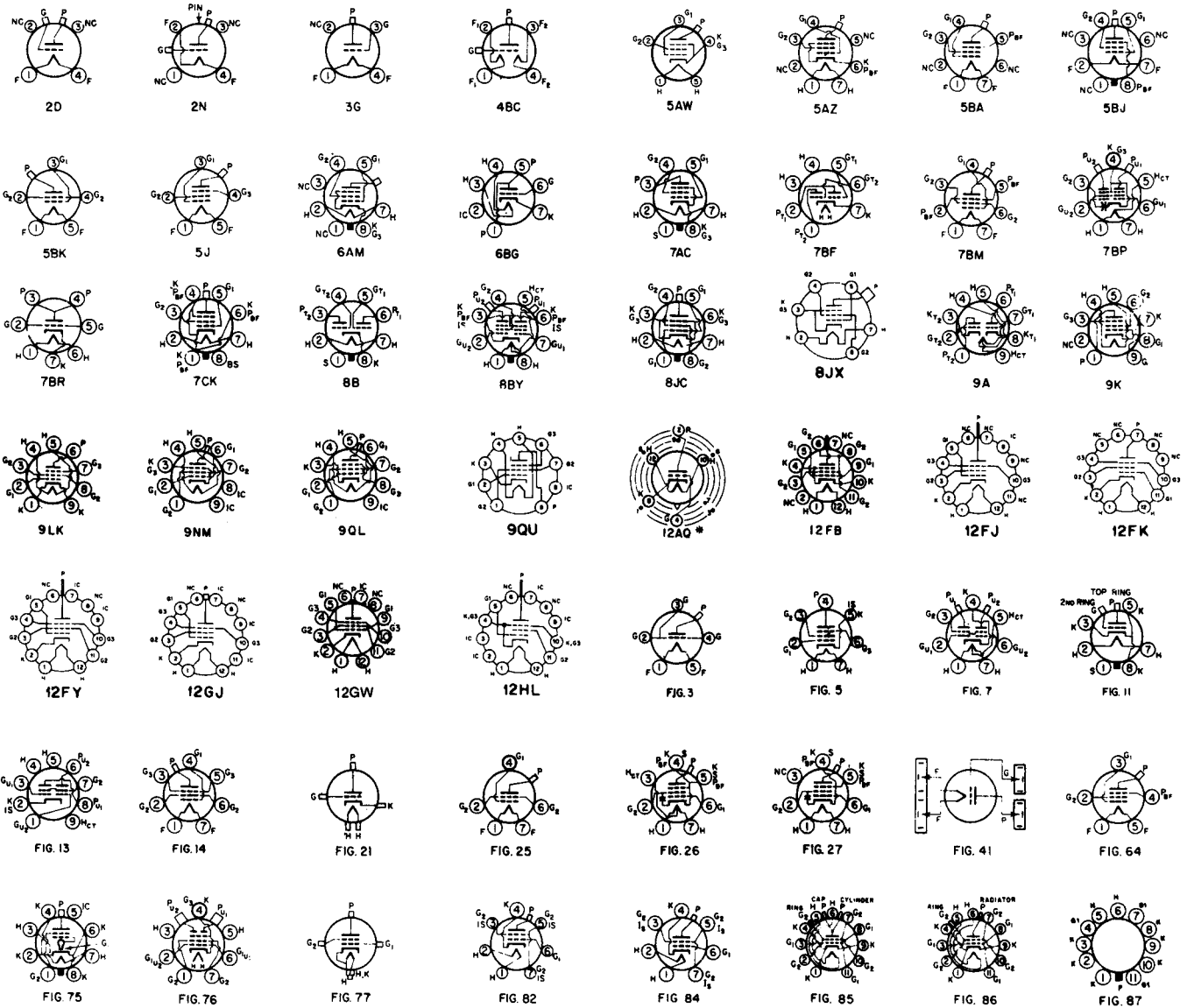
Socket connections correspond to the base designations given in the column headed "Base" in the classified tube-data tables. Bottom views are shown throughout. Terminal designations are as follows:

- |                  |                      |                                |                            |
|------------------|----------------------|--------------------------------|----------------------------|
| A — Anode        | B — Deflecting Plate | IS — Internal Shield           | RC — Ray-Control Electrode |
| B — Beam         | F — Filament         | K — Cathode                    | Ref — Reflector            |
| BP — Bayonet Pin | FE — Focus Elect.    | NC — No Connection             | S — Shell                  |
| BS — Base Sleeve | G — Grid             | P — Plate (Anode)              | TA — Target                |
| C — Ext. Coating | H — Heater           | P <sub>1</sub> — Starter-Anode | U — Unit                   |
| CL — Collector   | IC — Internal Con.   | PBF — Beam Plates              | ● — Gas-Type Tube          |

Alphabetical subscripts D, P, T and HX indicate, respectively, diode unit, pentode unit, triode unit or hexode unit in multi-unit types. Subscript CT indicates filament or heater tap.

Generally when the No. 1 pin of a metal-type tube, with the exception of all triodes, is shown connected to the shell, the No. 1 pin in the glass (G or GT) equivalent is connected to an internal shield.

\*On 12AQ, 12AS and 12CT: index = large lug; ● = pin cut off



**Table 14—Triode Transmitting Tubes**

Type	Maximum Ratings						Cathode			Capacitances			Base	Typical Operation						
	Plate Dissipation Watts	Plate Voltage	Plate Current mA	DC Grid Current mA	Freq. MHz, Full Ratings	Amplification Factor	Volts	Ampere	C <sub>in</sub> pF	C <sub>gk</sub> pF	C <sub>out</sub> pF	Class of Service		Plate Voltage	Grid Voltage	Plate Current mA	DC Grid Current mA	Approx. Driving Power Watts	P-to-P Load Ohms	Approx. Output Power Watts
6J6A <sup>2</sup>	1.5	300	30	16	250	32	6.3	0.45	2.2	1.6	0.4	7BF	C-T	150	-10	30	1.6	0.035	—	3.5
6F4	2.0	150	20	8.0	500	17	6.3	0.225	2.0	1.9	0.6	7BR	C-T-O	150	-15 550* 2000*	20	7.5	0.2	—	1.8
12AU7A <sup>2</sup>	2.76 <sup>6</sup>	350	12 <sup>6</sup>	3.5 <sup>6</sup>	54	18	6.3	0.3	1.5	1.5	0.5	9A	C-T-O	350	-100	24	7	—	—	6.0
6C4	5.0	350	25	8.0	54	18	6.3	0.15	1.8	1.6	1.3	6BG	C-T-O	300	-27	25	7.0	0.35	—	5.5
5675	5	165	30	8	3000	20	6.3	0.135	2.3	1.3	0.09	Fig. 21	G-G-O	120	-8	25	4	—	—	0.05
6N7GT <sup>2</sup>	5.5 <sup>6</sup>	350	30 <sup>6</sup>	5.0 <sup>6</sup>	10	35	6.3	0.8	—	—	—	8B	C-T-O	350	-100	60	10	—	—	14.5
2C40	6.5	500	25	—	500	36	6.3	0.75	2.1	1.3	0.05	Fig. 11	C-T-O	250	-5	20	0.3	—	—	0.075
5893	8.0	400	40	13	1000	27	6.0	0.33	2.5	1.75	0.05	Fig. 21	C-T	350	-33	35	13	2.4	—	6.5
2C43	12	500	40	—	1250	48	6.3	0.9	2.9	1.7	0.05	Fig. 11	C-P	300	-45	30	12	2.0	—	6.5
3C24	25	2000	75	7 <sup>13</sup>	60	24	6.3	3.0	1.7	1.6	0.2	2D	C-T-O	470	—	38 <sup>7</sup>	—	—	—	9 <sup>7</sup>
	17	1600	60										C-T	2000	-130	63	18	4	—	100
	25	2000	75										C-P	1600	-170	53	11	3.1	—	68
1623	30	1000	100	25	60	20	6.3	2.5	5.7	6.7	0.9	3G	AB <sub>2</sub> <sup>7</sup>	1250	-42	24/130	270 <sup>9</sup>	3.4 <sup>8</sup>	21.4K	112
													C-T-O	1000	-90	100	20	3.1	—	75
													C-P	750	-125	100	20	4.0	—	55
811-A	65	1500	175	50	60	160	6.3	4.0	5.9	5.6	0.7	3G	B <sup>7</sup>	1000	-40	30/200	230 <sup>9</sup>	4.2 <sup>9</sup>	12K	145
													C-T	1500	-70	173	40	7.1	—	200
													C-P	1250	-120	140	45	10.0	—	135
812-A	65	1500	175	35	60	29	6.3	4.0	5.4	5.5	0.77	3G	G-G-B	1250	0	27/175	28	12	—	165
													AB <sub>1</sub>	1250	0	27/175	13	3.0	—	155
													C-T	1500	-120	173	30	6.5	—	190
100TH	100	3000	225	60	40	40	5.0	6.3	2.9	2.0	0.4	2D	C-P	1250	-115	140	35	7.6	—	130
													B <sup>7</sup>	1500	-48	28/310	270 <sup>9</sup>	5.0	13.2K	340
													C-T	3000	-200	165	51	18	—	400
3-100A2 100TL	100	3000	225	50	40	14	5.0	6.3	2.3	2.0	0.4	2D	B <sup>7</sup>	3000	-65	40/215	335 <sup>9</sup>	5.0 <sup>8</sup>	31K	650
													C-T	3000	-400	165	30	20	—	400
													C-P	3000	-185	40/215	640 <sup>9</sup>	6.0 <sup>8</sup>	30K	450
3CX100A5 <sup>15</sup>	100	1000	125 <sup>14</sup>	50	2500	100	6.0	1.05	7.0	2.15	0.035	—	G-M-A	3000	-560	60	2.0	7.0	—	90
													B <sup>7</sup>	3000	-185	40/215	640 <sup>9</sup>	6.0 <sup>8</sup>	30K	450
													G-G-A	800	-20	80	30	6	—	27
2C39	100	1000	60	40	500	100	6.3	1.1	6.5	1.95	0.03	—	C-P	600	-15	75	40	6	—	18
													G-I-C	600	-35	60	40	5.0	—	20
													C-T-O	900	-40	90	30	—	—	40
AX9900/ 5866 <sup>15</sup>	135	2500	200	40	150	25	6.3	5.4	5.8	5.5	0.1	Fig. 3	C-P	600	-150	100 <sup>14</sup>	50	—	—	—
													C-T	2500	-200	200	40	16	—	390
													C-P	2000	-225	127	40	16	—	204
572B/T160L	160	2750	275	—	170	6.3	4.0	—	—	—	—	3G	B <sup>7</sup>	2500	-90	80/330	350 <sup>9</sup>	14 <sup>8</sup>	15.68K	560
													C-T	1650	-70	165	32	6	—	205
													G-G-B <sup>7</sup>	2400	-2.0	90/500	—	100	—	600
810	175	2500	300	75	30	36	10	4.5	8.7	4.8	12	2N	C-T	2500	-180	300	60	19	—	575
													C-P	2000	-350	250	70	35	—	380
													G-M-A	2250	-140	100	2.0	4	—	75
8873	200	2200	250	—	500	160	6.3	3.2	19.5	7.0	0.03	Fig. 87	B <sup>7</sup>	2250	-60	70/450	380 <sup>9</sup>	13 <sup>8</sup>	11.6K	725
													AB <sub>2</sub>	2000	—	22/500	98 <sup>8</sup>	27 <sup>8</sup>	—	505
													C-T-O	2000	-100	357	94	29	—	464
250TH	250	4000	350	40 <sup>13</sup>	40	37	5.0	10.5	4.6	2.9	0.5	2N	C-T-O	3000	-150	333	90	32	—	750
													C-P	2000	-160	250	60	22	—	335
													AB <sub>2</sub> <sup>7</sup>	1500	0	220/700	460 <sup>9</sup>	46 <sup>8</sup>	4.2K	630
250TL	250	4000	350	35 <sup>13</sup>	40	14	5.0	10.5	3.7	3.0	0.7	2N	C-T-O	2000	-200	350	45	22	—	455
													C-P	3000	-350	335	45	29	—	750
													AB <sub>2</sub> <sup>7</sup>	1500	-40	200/700	780 <sup>9</sup>	38 <sup>8</sup>	3.8K	580
PL-8569	250	4000	300	120	30	45	5.0	14.5	7.6	3.7	0.1	Fig. 3	G-G-A	2000	-200	300	85	75 <sup>11</sup>	—	555
													C-T-O	3000	-350	335	45	29	—	750
													C-P	3500	-110	285	90	85 <sup>11</sup>	—	805
8875	300	2200	250	—	500	160	6.3	3.2	19.5	7.0	0.03	—	AB <sub>2</sub>	4000	-120	250	50	70 <sup>11</sup>	—	820
													C-T-O	2000	—	22/500	98 <sup>8</sup>	27 <sup>8</sup>	—	505
													C-P	1500	-125	665	115	25	—	700
304TH	300	3000	900	60 <sup>13</sup>	40	20	5.0	25	13.5	10.2	0.7	4BC	C-T-O	2000	-200	600	125	39	—	900
													C-P	1500	-200	420	55	18	—	500
													AB <sub>2</sub> <sup>7</sup>	1500	-65	1065 <sup>6</sup>	330 <sup>9</sup>	25 <sup>8</sup>	2.84K	1000

Continued on next page.

# Table 14—Triode Transmitting Tubes

continued from [previous page](#).

Type	Maximum Ratings						Cathode			Capacitances			Base	Typical Operation							
	Plate Dissipation Watts	Plate Voltage	Plate Current mA	DC Grid Current mA	Freq. MHz Full Ratings	Amplification Factor	Volts	Ampères	C <sub>IN</sub> pF	C <sub>GP</sub> pF	C <sub>OUT</sub> pF	Class of Service		Plate Voltage	Grid Voltage	Plate Current mA	DC Grid Current mA	Approx. Driving Power Watts	P-to-P Load Ohms	Approx. Output Power Watts	
304TL	300	3000	900	50 <sup>13</sup>	40	12	5.0	25	12.1	8.6	0.8	4BC	C-T-O	1500	-250	665	90	33	—	700	
							C-P	2000					-300	600	85	36	—	900			
							C-P	2000					-500	250	30	18	—	410			
							C-P	2000					-500	500	75	52	—	810			
							C-P	2500					-525	200	18	11	—	425			
							C-P	2500					-550	400	50	36	—	830			
833A	350	3300	500	100	30	35	10	10	12.3	6.3	8.5	Fig. 41	C-T-O	1500	-118	270/572	236 <sup>8</sup>	0	2.54K	256	
													C-P	2500	-230	160/483	460 <sup>9</sup>	0	8.5K	610	
													C-P	1500	-118	1140 <sup>8</sup>	490 <sup>9</sup>	39 <sup>9</sup>	—	2.75K	1100
													C-P	2250	-125	445	85	23	—	780	
													C-P	3000	-160	335	70	20	—	800	
													C-P	2500	-300	335	75	30	—	635	
8874	400	2200	350	—	500	160	6.3	3.2	19.5	7.0	0.03	—	AB <sub>2</sub>	2000	—	22/500	98 <sup>8</sup>	27 <sup>8</sup>	—	505	
3-400Z	400	3000	400	—	110	200	5	14.5	7.4	4.1	0.07	Fig. 3	G-G-B	3000	0	100/333	120	32	—	655	
PL-6580	400	4000 <sup>15</sup>	350	120	—	45	5.0	14.5	7.6	3.9	0.1	5BK	G-G-A	4000	-110	350	92	105 <sup>11</sup>	—	1080	
8163	400	3000	400	20 <sup>13</sup>	30	350	5.0	14.1	8.0	5.0	0.3	Fig. 3	G-G-B	2500	0	72/400	140	35	—	640	
3-500Z	500	4000	400	—	110	160	5	14.5	7.4	4.1	0.07	Fig. 3	G-G-B	3000	—	370	115	30	5K	750	
3CX800A7	800	2250	600	60	350	200	13.5	1.5	26	—	6.1	Fig. 87	C-T	3500	75	300	115	22	—	850	
													AB <sub>2</sub> <sup>13</sup> GG	2200	-8.2	500	36	16	—	750	
3-1000Z	1000	3000	800	—	110	200	7.5	21.3	17	6.9	0.12	Fig. 3	G-G-B	3000	0	180/670	300	65	—	1360	
3CX1200A7	1200	5000	800	—	110	200	7.5	21.0	20	12	0.2	Fig. 3	AB <sub>2</sub> GG	3600	-10	700	230	85	—	1500	
8877	1500	4000	1000	—	250	200	5.0	10	42	10	0.1	—	AB <sub>2</sub>	2500	-8.2	1000	—	57	—	1520	

- \* Cathode resistor in ohms.
- 1 KEY TO CLASS-OF-SERVICE ABBREVIATIONS
- A<sub>1</sub> = Class-A<sub>1</sub> AF modulator.
- AB<sub>1</sub> = Class-AB<sub>1</sub> push-pull AF modulator.
- AB<sub>2</sub> = Class-AB<sub>2</sub> push-pull AF modulator.
- B = Class-B push-pull AF modulator.
- C-M = Frequency multiplier.
- C-P = Class-C plate-modulated telephone.
- C-T = Class-C telegraph.
- C-T-O = Class-C amplifier-osc.
- G-G-A = Grounded-grid class-C amp.
- G-G-B = Grounded-grid class-B amp. (Single Tone).

- G-G-O = Grounded-grid osc.
- G-I-C = Grid-isolation circuit.
- G-M-A = Grid-modulated amp.
- 2 Twin triode. Values, except interelectrode capacitances, are for both sections in push-pull.
- 3 Output at 112 MHz.
- 4 Grid leak resistor in ohms.
- 5 Peak values.
- 6 Per section.
- 7 Values are for two tubes in push-pull.
- 8 Max. signal value.
- 9 Peak AF grid-to-grid volts.

- 10 Plate-pulsed 1000-MHz osc.
- 11 Includes bias loss, grid dissipation, and feed-through power.
- 12 1000 MHz CW osc.
- 13 Max. grid dissipation in watts.
- 14 Max. cathode current in mA.
- 15 Forced-air cooling required.
- 16 Plate-pulsed 3300 MHz osc.
- 17 1900-MHz CW osc.
- 18 No class-B data available.
- 19 Key-down CW.
- 20 SSB; brief single-tone test values.

**Table 15—Tetrode and Pentode Transmitting Tubes**

Type	Maximum Ratings				Cathode			Capacitances			Base	Typical Operation										
	Plate Dissipation Watts	Plate Voltage	Screen Dissipation Watts	Screen Voltage	Freq. MHz, Full Ratings	Volts	Amps	$C_{p1}$ pF	$C_{p2}$ pF	$C_{out}$ pF		Class of Service <sup>1</sup>	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current mA	Screen Current mA	Grid Current mA	Approx. Driving Power Watts	P-P Load Ohms	Approx. Output Power Watts
8203	1.8	400	—	—	250	6.3	0.16	4.2	2.2	1.6	12AQ	C-P/C-T	155	—	—	14/2700 <sup>1</sup>	21	—	5	0.4	—	1.55
6939 <sup>1</sup>	7.5	275	3	200	500	6.3	0.75	6.6	0.15	1.55	Fig. 13	C-T	200	200	—	-20	60	13	2	1.0	—	7.5
						12.6	0.375					C-P	180	180	—	-20	55	11.5	1.7	1.0	—	6
						—	—					C-M	200	190	—	-68K <sup>1</sup>	46	10	2.2	0.9	—	—
7551 7558	12	300	2	250	175	12.6	0.38	10	0.15	5.5	9LK	C-T	300	250	—	-55	80	5.1	1.6	1.5	—	10
						6.3	0.8					C-P	250	250	—	-75	70	3.0	2.3	1.0	—	7.5
5763 6417	13.5	350	2	250	50	6.3	0.75	9.5	0.3	4.5	9K	C-T	350	250	—	-28.5	48.5	6.2	1.6	0.1	—	12
						12.6	0.375					C-P	300	250	—	-42.5	50	6	2.4	0.15	—	10
						—	—					C-M <sup>2</sup>	300	250	—	-75	40	4	1	0.6	—	2.1
2E26 6893	13.5	600	2.5	200	125	6.3	0.8	12.5	0.2	7	7CK	C-T	300	235	—	-100	35	5	1	0.5	—	1.3
						12.6	0.4					C-T	600	185	—	-45	66	10	3	0.17	—	27
						—	—					C-P	500	180	—	-50	54	9	2.5	0.15	—	18
6360 <sup>1</sup>	14	300	2	200	200	6.3	0.82	6.2	0.1	2.6	Fig. 13	AB <sub>1</sub>	500	200	—	-25	9/45	10 <sup>1</sup>	0	0	—	15
						12.6	0.41					C-T	300	200	—	-45	100	3	3	0.2	—	18.5
						—	—					C-P	200	100	—	-15K <sup>1</sup>	86	3.1	3.3	0.2	—	9.8
						—	—					C-M <sup>11</sup>	300	150	—	-100	65	3.5	3.8	0.45	—	4.8
2E25	15	450	4	250	125	6	0.8	8.5	0.15	6.7	5BJ	C-T-O	450	250	—	-45	75	15	3	0.4	—	24
						12.6	0.4					C-P	400	200	—	-45	60	12	3	0.4	—	16
						—	—					AB <sub>2</sub> <sup>6</sup>	450	250	—	-30	44/150	10/40	3	0.9 <sup>7</sup>	6K	40
832A <sup>3</sup>	15	750	5	250	200	6.3	1.6	8	0.07	3.8	7BP	C-T	750	200	—	-65	48	15	2.8	0.19	—	26
						12.6	0.8					C-P	600	200	—	-65	36	16	2.6	0.16	—	17
6252/ AX910 <sup>1</sup>	20	750	4	300	300	6.3	1.3	6.5	—	2.5	Fig. 7	C-T	600	250	—	-60	140	14	4	2.0	—	—
						12.6	0.65					C-P	500	250	—	-80	100	12	3	4.0	—	—
						—	—					B	500	250	—	-26	25/73	0.7/16	52 <sup>4</sup>	—	20K	23.5
1614	25	450	3.5	300	80	6.3	0.9	10	0.4	12.5	7AC	C-T	450	250	—	-45	100	8	2	0.15	—	31
						12.6	0.45					C-P	375	250	—	-50	93	7	2	0.15	—	24.5
815 <sup>1</sup>	25	500	4	200	125	6.3	1.6	13.3	0.2	8.5	8BY	AB <sub>2</sub> <sup>6</sup>	530	340	—	-36	60/160	20 <sup>7</sup>	—	—	7.2K	50
						12.6	0.8					C-T-O	500	200	—	-45	150	17	2.5	0.13	—	56
6146 6146A	25	750	3	250	60	6.3	1.25	13	0.24	8.5	7CK	AB <sub>2</sub>	500	125	—	-15	22/150	32 <sup>1</sup>	—	0.36 <sup>7</sup>	8K	54
						12.6	0.585					C-T	500	170	—	-66	135	9	2.5	0.2	—	48
						—	—					C-T <sup>12</sup>	750	160	—	-62	120	11	3.1	0.2	—	70
8032 6883	25	750	3	250	60	12.6	0.585	13	0.24	8.5	7CK	C-T <sup>12</sup>	400	190	—	-54	150	10.4	2.2	3.0	—	35
						—	—					C-P	400	150	—	-87	112	7.8	3.4	0.4	—	32
						—	—					AB <sub>2</sub> <sup>6</sup>	600	150	—	-87	112	7.8	3.4	0.4	—	52
6159B	25	750	3	250	60	26.5	0.3	13	0.24	8.5	7CK	AB <sub>2</sub> <sup>6</sup>	600	190	—	-48	28/270	1.2/20	2 <sup>7</sup>	0.3	5K	113
						—	—					AB <sub>2</sub> <sup>6</sup>	750	165	—	-46	22/240	0.3/20	2.6 <sup>7</sup>	0.4	7.4K	131
						—	—					AB <sub>2</sub> <sup>6</sup>	750	195	—	-50	23/220	1/26	100 <sup>8</sup>	0	8K	120
6584 <sup>1</sup> 6850	25	600	—	300	100	6.3	1.25	7	0.11	3.4	Fig. 76	C-T	600	200	—	-44	120	8	3.7	0.2	—	56
						12.6	0.625					C-P	500	200	—	-61	100	7	2.5	0.2	—	40
						—	—					AB <sub>2</sub>	500	200	—	-26	20/116	0.1/10	2.6	0.1	11.1K	40
807 807W 5933	30	750	3.5	300	60	6.3	0.9	12	0.2	7	5AW	C-T	750	250	—	-45	100	6	3.5	0.22	—	50
						12.6	0.45					C-P	600	275	—	-90	100	6.5	4	0.4	—	42.5
						—	—					AB <sub>1</sub>	750	300	—	-35	15/70	3/8	75 <sup>8</sup>	0	—	72
1625	30	750	10	250	—	12.6	0.45	13	0.2	8	5AZ	B <sup>10</sup>	750	—	—	0	15/240	—	555 <sup>8</sup>	5.3 <sup>7</sup>	6.65K	120
—						—	C-T-O					750	250	22.5	-60	100	16	6	0.55	—	53	
6146B/ 6296A	35	750	3	250	60	6.3	1.125	13	0.22	8.5	7CK	C-T	750	200	—	-77	160	10	2.7	0.3	—	85
						12.6	0.45					C-P	600	175	—	-92	140	9.5	3.4	0.5	—	62
						—	—					AB <sub>1</sub>	750	200	—	-48	25/125	6.3	—	—	3.6K	61
AX- 9903 <sup>1</sup> 5894A	40	600	7	250	250	6.3	1.8	6.7	0.08	2.1	Fig. 7	C-T	600	250	—	-80	200	16	2	0.2	—	80
						12.6	0.9					C-T	500	200	—	-45	240	32	12	0.7	—	83
829B <sup>1</sup> 3E29 <sup>1</sup>	40	750	7	240	200	6.3	2.25	14.5	0.12	7	7BP	C-P	425	200	—	-60	212	35	11	0.8	—	63
						12.6	1.125					B	500	200	—	-18	27/230	—	56 <sup>8</sup>	0.39	4.8K	76
						—	—					C-T-O	2000	375	—	-300	90	20	10	4.0	—	140
3D24	45	2000	10	400	125	6.3	3	6.5	0.2	2.4	Fig. 75	C-T-O	1500	375	—	-300	90	22	10	4.0	—	105
						12.6	1.6					C-T	750	300	—	-100	240	26	12	1.5	—	135
4D22	50	750	14	350	60	12.6	0.8	28	0.27	13	Fig. 26	C-T	600	300	—	-100	215	30	10	1.25	—	100
25.2						0.8	C-P					600	—	—	-100	220	28	10	1.25	—	100	
6.3						3.75	AB <sub>2</sub> <sup>6</sup>					550	—	—	-100	175	17	6	0.6	—	70	
4D32	50	750	14	350	60	6.3	3.75	28	0.27	13	Fig. 27	AB <sub>2</sub> <sup>6</sup>	600	250	—	-25	100/365	26 <sup>7</sup>	70 <sup>8</sup>	0.45 <sup>7</sup>	3K	125
12.6						0.45	—					—	—	—	—	—	—	—	—	—		
8117 <sup>1</sup>	60	750	7	300	175	6.3	1.8	11.8	3.7	0.09	Fig. 7	AB <sub>1</sub>	600	250	—	-32.5	60/212	1.9/25	—	—	1410	76
814	65	1500	10	300	30	12.6	0.9	13.5	0.1	13.5	Fig. 64	C-T	1500	300	—	-90	150	24	10	1.5	—	160
						—	—					C-P	1250	300	—	-150	145	20	10	3.2	—	130
						—	—					C-T-O	1500	250	—	-85	150	40	18	3.2	—	165
4-65A	65	3000	10	600	150	6	3.5	8	0.08	2.1	Fig. 25	C-P	3000	250	—	-100	115	22	10	1.7	—	280
						1500	250					—	-125	120	40	16	3.5	—	140			
						2500	250					—	-135	110	25	12	2.6	—	230			
						AB <sub>1</sub>	2500					400	—	-85	15/66	3 <sup>7</sup>	—	—	—	100		
7854 <sup>1</sup>	68	1000	8	300	175	6.3	1.8	6.7	2.1	0.09	Fig. 7	C-T	750	260	—	-75	240	12.7	5.5	3.5	—	123
						12.6	0.9					C-P	600	225	—	-75	200	7.8	5.5	3.5	—	85
4E27/ 8001	75	4000	30	750	75	5	7.5	12	0.06	6.5	7BM	C-T	2000	500	60	-200	150	11	6	1.4	—	230
						12.6	0.45					C-P	1800	400	60	-130	135	11	8	1.7	—	178
						—	—					C-T-C-P	2000	40								

**Table 15—Tetrode and Pentode Transmitting Tubes**

Continued from [previous page](#).

Type	Maximum Ratings				Cathode			Capacitances			Base	Typical Operation										
	Plate Dissipation Watts	Plate Voltage	Screen Dissipation Watts	Screen Voltage	Freq. MHz, Full Ratings	Volts	Amperes	C <sub>in</sub> pF	C <sub>pp</sub> pF	C <sub>out</sub> pF		Class of Service <sup>1</sup>	Plate Voltage	Screen Voltage	Suppressor Voltage	Grid Voltage	Plate Current mA	Screen Current mA	Grid Current mA	Approx. Driving Power Watts	P-P Load Ohms	Approx. Output Power Watts
6816 <sup>6</sup> 4D21 6884	115	1000	4.5	300	400	6.3	2.1	14	0.085	0.015	Fig. 77	C-T-O	900	300	—	-30	170	1	10	3	—	80
						C-P	700					250	—	-50	130	10	10	3	—	45		
						AB <sub>1</sub> <sup>6</sup>	850					300	—	-15	80/200	0/20	30 <sup>7</sup>	0	7K	80		
8131 <sup>13</sup>	125	2500	20	800	30	10	5	16.3	0.25	14	5B4	AB <sub>2</sub> <sup>6</sup>	850	300	—	-15	80/335	0/25	46 <sup>8</sup>	0.3	3.96K	140
												C-T-O	1250	300	0	-75	180	35	12	1.7	—	170
												C-T-O	2250	400	0	-155	220	40	15	4	—	375
												AB <sub>1</sub>	2500	750	0	-95	25/145	27 <sup>7</sup>	0	0	—	245
												AB <sub>2</sub> <sup>6</sup>	2000	750	0	-90	40/315	1.5/58	230 <sup>9</sup>	0.17	16K	455
												AB <sub>2</sub> <sup>6</sup>	2500	750	0	-95	35/360	1.2/55	235 <sup>9</sup>	0.35 <sup>7</sup>	17K	650
4-125A 4D21 6155	125	3000	20	600	120	5	6.5	10.8	0.07	3.1	5B6	C-T-O	2000	350	—	-100	200	50	12	2.8	—	275
												C-T-O	3000	350	—	-150	167	30	9	2.5	—	375
												AB <sub>2</sub> <sup>6</sup>	2500	350	—	-43	93/260	0/6	178 <sup>8</sup>	1.07	22K	400
												AB <sub>1</sub> <sup>6</sup>	2500	600	—	-96	50/232	0.3/8.5	192 <sup>8</sup>	0	20.3K	330
4E27A/ 5-125B	125	4000	20	750	75	5	7.5	10.5	0.08	4.7	7B6	GG	2000	0	—	0	10/165 <sup>17</sup>	30 <sup>17</sup>	55 <sup>17</sup>	16 <sup>17</sup>	10.5K	145
803	125	2000	30	600	20	10	5	17.5	0.15	29	5J	C-	3000	500	60	-200	167	5	6	1.6	—	375
												C-P	1000	750	0	-170	160	21	3	0.6	—	115
7094	125	2000	20	400	60	6.3	3.2	9.0	0.5	1.8	Fig. 82	C-T	2000	500	40	-90	160	45	12	2	—	210
												C-P	1800	400	100	-80	150	45	25	5	—	155
												C-T	1500	400	—	-100	330	20	5	4	—	340
4X150A 4X150G <sup>15</sup>	150 <sup>9</sup>	2000	12	400	500	6	2.6	15.5	0.03	4.5	Fig. 75	C-P	1200	400	—	-130	275	20	5	5	—	240
												AB <sub>1</sub>	2000	400	—	-65	30/200	35 <sup>7</sup>	60 <sup>8</sup>	0	12K	250
												C-T-O	1250	250	—	-90	200	20	10	0.8	—	195
												C-P	1600	250	—	-105	200	20	15	2	—	140
8121	150	2200	8	400	500	13.5	1.3	16	0.13	0.011	Fig. 5	AB <sub>2</sub> <sup>6</sup>	1250	300	—	-44	475 <sup>7</sup>	0/65	100 <sup>8</sup>	0.15 <sup>7</sup>	5.6K	425
												C-T-O	1000	200	—	-30	300	10	30	5	—	165
4-250A 5D22 6156	250 <sup>9</sup>	4000	35	600	110	5	14.5	12.7	0.12	4.5	5B6	C-T-O	2500	500	—	-150	300	60	9	1.7	—	575
												C-T-O	3000	500	—	-180	345	60	10	2.6	—	800
												C-P	2500	400	—	-200	200	30	9	2.2	—	375
												C-P	3000	400	—	-310	225	30	9	3.2	—	510
												AB <sub>1</sub> <sup>6</sup>	2000	300	—	-48	510 <sup>7</sup>	0/26	198 <sup>8</sup>	5.5 <sup>7</sup>	8K	650
												AB <sub>1</sub> <sup>6</sup>	2500	600	—	-110	430 <sup>7</sup>	0.3/13	180 <sup>8</sup>	0	11.4K	625
4X250B	250 <sup>9</sup>	2000	12	400	175	6	2.1	18.5	0.04	4.7	Fig. 75	C-T-O	2000	250	—	-90	250	25	27	2.8	—	410
												C-P	1500	250	—	-100	200	25	17	2.1	—	250
												AB <sub>1</sub> <sup>6</sup>	2000	350	—	-50	500 <sup>7</sup>	30 <sup>7</sup>	100 <sup>8</sup>	0	8.25K	650
												C-T-O	2000	250	—	-88	250	24	8	2.5	—	370
7634/ <sup>9</sup> 4X150A 7635/ 4X150D	250	2000	12	300	150	6	2.6	16	0.03	4.4	Fig. 75	C-P	1600	250	—	-118	200	23	5	3	—	230
												AB <sub>2</sub> <sup>6</sup>	2000	300	—	-50	100/500	0/36	106 <sup>8</sup>	0.2	8.1K	630
												AB <sub>1</sub> <sup>6</sup>	2000	300	—	-50	100/470	0/36	100 <sup>8</sup>	0	8.75K	580
												C-T	2000	250	—	-90	250	25	27	2.8	—	410
4CX- 300A	300 <sup>9</sup>	2000	12	400	500	6	2.75	29.5	0.04	4.8	—	C-P	1500	250	—	-100	200	25	17	2.1	—	250
												AB <sub>1</sub> <sup>6</sup>	2000	350	—	-50	500 <sup>7</sup>	30 <sup>7</sup>	100 <sup>8</sup>	0	8.25K	650
175A	400	4000	25	600	—	5	14.5	15.1	0.06	9.8	Fig. 86	C-T-C-P	4000	600	0	-200	350	29	6	1.4	—	960
												C-T-C-P	2500	600	0	-180	350	40	7	1.6	—	600
												AB <sub>1</sub>	2500	750	—	-143	100/350	1/35	0	0	—	570
4-400A	400 <sup>9</sup>	4000	35	600	110	5	14.5	12.5	0.12	4.7	5B6	C-T-C-P	4000	300	—	-170	270	22.5	10	10	—	720
												GG	2500	0	—	0	80/270 <sup>17</sup>	55 <sup>17</sup>	100 <sup>17</sup>	38 <sup>17</sup>	4.0K	325
												AB <sub>1</sub>	2500	750	—	-130	95/317	0/14	0	0	—	425
8122	400	2200	8	400	500	13.5	1.3	16	0.13	0.011	Fig. 86	C-T-O	2000	200	—	-30	300	5	30	5	—	300
												C-T	3000	500	0	-220	432	65	35	12	—	805
5-500A	500	4000	35	600	30	10	10.2	19	0.10	12	—	C-T	3100	470	0	-310	260	50	15	6	—	580
												AB <sub>1</sub>	3000	750	0	-112	320	26	—	—	612	
												C-T	3000	500	—	-150	700	146	38	11	—	1430
8166/ 4-1000A	1000	6000	75	1000	—	7.5	21	27.2	.24	7.6	—	C-P	3000	500	—	-200	600	145	36	12	—	1390
												AB <sub>2</sub>	4000	500	—	-60	300/1200	0/95	—	11	7K	3000
												GG	3000	0	—	0	100/700 <sup>17</sup>	105 <sup>17</sup>	170 <sup>17</sup>	130 <sup>17</sup>	2.5K	1475
												AB <sub>1</sub> <sup>6</sup>	2000	325	—	-55	500/2000	-4/60	—	—	2.8K	2160
4CX1000A	1000	3000	12	400	400	6	12.5	35	.005	12	—	AB <sub>1</sub> <sup>6</sup>	2500	325	—	-55	500/2000	-4/60	—	—	3.1K	2920
												AB <sub>1</sub> <sup>6</sup>	3000	325	—	-55	500/1800	-4/60	—	—	3.85K	3360
												C-T	2000	500	35	-175	850	42	10	1.9	—	1155
												C-T	2500	500	35	-200	840	40	10	2.1	—	1440
												C-T	3000	500	35	-200	820	42	10	2.1	—	1770
												AB <sub>1</sub>	2000	500	35	-110	200/800	12/43	110 <sup>8</sup>	—	2.65K	1040
8295/ 172	1000	3000	30	600	—	6	8.2	38	.09	18	—	AB <sub>1</sub>	2500	500	35	-110	200/800	11/40	115 <sup>8</sup>	—	3.5K	1260
												AB <sub>1</sub>	3000	500	35	-115	220/800	11/39	115 <sup>8</sup>	—	4.6K	1590

<sup>1</sup> Grid-resistor.

<sup>2</sup> Doubler to 175 MHz.

<sup>3</sup> Dual tube. Values for both sections, in push-pull. Interelectrode capacitances, however, are for each section.

<sup>4</sup> Tripler to 175 MHz.

<sup>5</sup> Filament limited to intermittent operation.

<sup>6</sup> Values are for two tubes.

<sup>7</sup> Max.-signal value.

<sup>8</sup> Peak grid-to-grid volts.

<sup>9</sup> Forced-air cooling required.

<sup>10</sup> Two tubes triode connected, G<sub>2</sub> to G<sub>1</sub> through 20 kΩ. Input to G<sub>2</sub>.

<sup>11</sup> Tripler to 200 MHz.

<sup>12</sup> Typical operation at 175 MHz.

<sup>13</sup> ± 1.5 volts.

**KEY TO CLASS-OF-SERVICE ABBREVIATIONS**

AB<sub>1</sub> = Class AB<sub>1</sub>.

AB<sub>2</sub> = Class AB<sub>2</sub>.

B = Class-B push-pull AF modulator.

C-M = Frequency multiplier.

C-P = Class-C plate-modulated telephone.

C-T = Class-C telegraph.

C-T-O = Class-C amplifier-osc.

GG = Grounded-grid (grid and screen connected together).

<sup>15</sup>No class-B data available.

<sup>16</sup>HK257B 120 MHz full rating.

<sup>17</sup>Single tone.