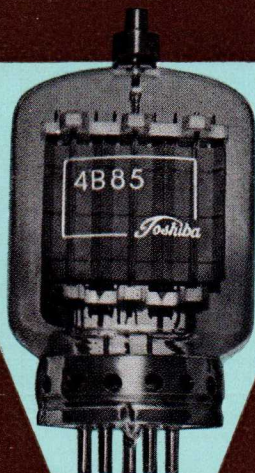
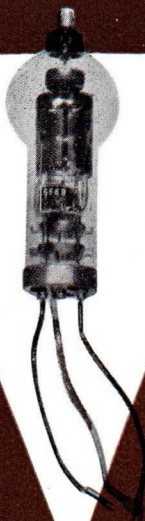
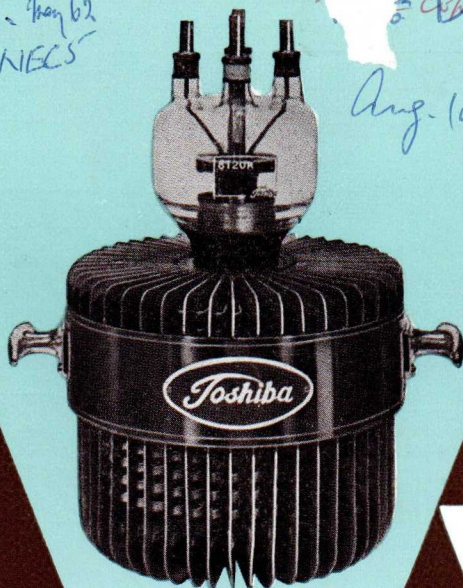


TRANSMITTING TUBES

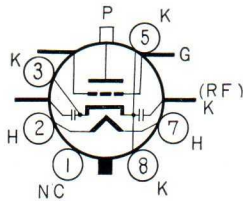
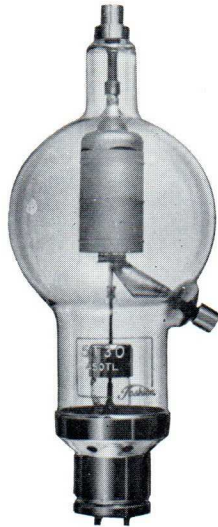
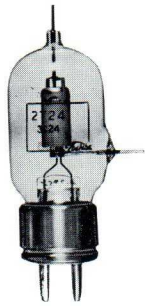
*Repair - Aug 62
see NEC5*

Aug. 1960



Toshiba

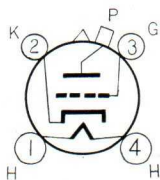
TOKYO SHIBAURA ELECTRIC CO., LTD.



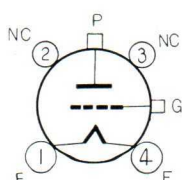
2C43

Type	Cathode			Dimensions		Base number		Transconductance (m ²) (Plate current (A))
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)	Top	Base	
2C43	HO	6.3	0.9	63.8 Max.	33.3 Max.		H17Y (H17S)	8.1 (0.025)
2T11	HO	10.0	1.5	155	40	A14S	D16P	5.0 (0.03)
2T24	FT	6.3	3.0	106	35	—	D16S	2.0 (0.025)
2T27	FT	6.3	3.0	106	35	Top, Side A 9 S	D16S	2.0 (0.025)
2T27A	FT	6.3	3.0	120	40	Top, Side A 9 S	D16S	2.0 (0.025)
3T35	FT	5.0	4.0	140	45	—	D16P	2.85 (0.1)
3T35A	FT	5.0	4.0	140	45	Side A 9 S	D16P	2.85 (0.1)
3T35C	FT	5.0	4.25	140	45	Side A 9 S	D16P	2.0 (0.035)
UV-203A	FT	10.0	3.35	170	52	—	D25L	3.5 (0.075)
UV-211A	FT	10.0	3.25	170	52	—	D25L	3.8 (0.075)
UV-845	FT	10.0	3.25	170	52	—	D25L	3.0 (0.075)
3T12	FT	10.0	4.25	190	65	Side A 9 S	D16S	3.0 (0.08)
4T16	FT	5.0	6.3	190	80	A 9 S	D16P	2.9 (0.2)
4T17	FT	5.0	6.3	190	80	A 9 S	D16P	4.5 (0.2)
5T20	FT	5.0	10.5	250	96	A 9 S	D25L	1.7 (0.1)
5T21	FT	5.0	10.5	250	96	A 9 S	D25L	3.5 (0.1)
5T25	FT	5.0	10.5	250	96	A 9 S	D25L	1.7 (0.1)
5T30	FT	7.5	12.0	310	127	Top, Side A14S	D25L	3.5 (0.15)
5T31	FT	7.5	12.0	310	127	Top, Side A14S	D25L	4.4 (0.15)
5T34	FT	5.0 10.0	25.0 12.5	190	89	A 9 S	D27S	16.7 (1.0)
5T35	FT	5.0 10.0	25.0 12.5	190	89	A 9 S	D27S	16.7 (1.0)
6T13	FT	12.0	10.0	325	150	Side A30S	B35S	5.0 (0.17)
6T35	FT	7.5	21.0	420	175	Top, Side A14S	D53S	3.5 (0.2)
7T40	FT	7.5	16.0	310	127	Top, Side A14S	D25L	7.0 (0.3)
SN-157E	FT	17.0	15.0	420	195 Max.	Side A20S	—	3.6 (0.18)
7T45	FT	7.5	24.0	420	175	Top, Side A14S	D53S	4.0 (0.3)

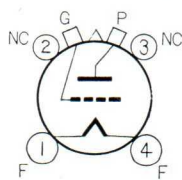
• The typical operation is given for the impulse wave oscillator. However, the output is given in the peak value while others are the average values (with impulse ratio 1/100).



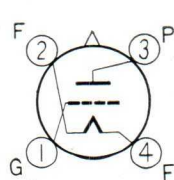
2T11



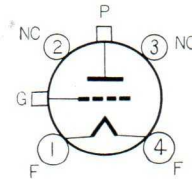
2T24, 2T27, 2T27A



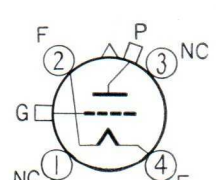
3T35, 3T35A, 3T35C, 4T16, 4T17



UV-203A, UV-211A, UV-845



3T12



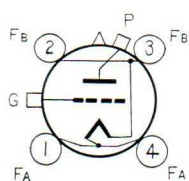
5T20, 5T21, 5T25

TRANSMITTING TUBES

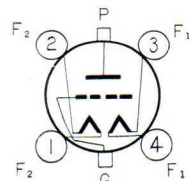
(Air-Cooled)

Amplification factor	Interelectrode capacitance plate-grid (pF)	Class of service	Max. frequency for full input (Mc)	Max. plate rating			Typical operation						Equivalent U.S. tubes	Type
				Voltage (kV)	Input (W)	Loss (W)	Plate voltage (kV)	Grid voltage (V)	Plate current (A)	Grid current (mA)	Exciting power (W)	Output power (W)		
50	1.7	○ CT	3 370	0.5	12	0.47	$R_g=1 k\Omega$	0.038				9	2C43	2C43 ✓
28	7.0	● CT	30	1.5	70	20	1.0	-100	0.012	3	—	800		2T11
23	1.5	CT	60	2.0	100	25	1.5	-170	0.065	20	6	75	3C24 ✓	2T24 ✓
		CT	60	1.6	70	17	1.2	-180	0.05	17	5	46		
		B	—	2.0	80	25	1.2	-40	0.02/0.1	18	2	75		
23	1.5	CT	100	2.0	125	40	1.5	-150	0.08	20	5	85		2T27 ✓
23	1.5	CT	100	2.0	125	40	1.5	-150	0.08	20	5	85		2T27A ✓
39	1.8	CP	100	2.0	200	50	1.5	-120	0.12	40	9	135	35TG ✓	3T35
		CT	100	1.6	140	34	1.2	-120	0.1	40	7	90		
		B	—	2.0	160	50	1.5	-30	0.04/0.16	30	3	150		
39	1.8	CT	100	2.0	200	50	1.5	-120	0.12	40	9	135	35TG ✓	3T35A
		CP	100	1.6	140	34	1.2	-120	0.1	40	7	90		
		B	—	2.0	160	50	1.5	-30	0.04/0.16	30	3	150		
39	1.8	CT	100	2.0	200	50	1.5	-120	0.13	40	9	150		3T35C
23	16.0	B, CP, CT	10	1.25	180	75	1.0	-100	0.13	25	5	90	203-A	UV-203A ✓
12	15.0	CT	10	1.25	180	75	1.0	-150	0.13	20	5	90	211	UV-211A ✓
		B	—	1.25	150	75	1.0	-77	0.02/0.28	20	3	180		
5	14.5	AB ₁	—	1.25	150	75	1.0	-170	0.07/0.23	$E_{gm}=330V$		220	845	UV-845 ✓
20	2.8	CT	75	2.25	350	90	2.0	-250	0.15	25	10	220	3T12	
		CP	75	1.8	230	60	1.5	-300	0.125	30	13	110		
14	2.0	CT	40	3.5	400	100	3.0	-400	0.13	25	15	300	100TL ✓	4T16
		CP	40	2.5	260	65	2.0	-500	0.13	30	21	200		
		B	—	3.0	350	100	2.5	-150	0.05/0.2	8	1.5	300		
38	2.0	CT	40	3.5	400	100	3.0	-200	0.13	35	11	300	100TH ✓	4T17
		CP	40	2.5	260	65	2.0	-250	0.13	45	17	200		
		B	—	3.0	350	100	2.5	-50	0.06/0.2	20	1.5	300		
14	3.0	CT	40	4.0	1 000	250	3.5	-450	0.26	35	26	700	250TL ✓	5T20
		CP	40	3.2	660	165	3.0	-550	0.2	30	25	460		
		B	—	4.0	850	250	3.0	-200	0.06/0.35	6	2.0	620		
36	2.6	CT	40	4.0	1 000	250	3.5	-250	0.26	55	25	700	250TH ✓	5T21
		CP	40	3.2	660	165	3.0	-250	0.2	55	23	460		
		B	—	4.0	850	250	3.0	-70	0.06/0.36	25	3.8	630		
14	3.0	CT	40	4.0	1 200	350	3.5	-400	0.28	55	35	700		5T25
18	4.5	CT	40	6.0	1 800	450	5.0	-500	0.35	45	30	1 350	450TL ✓	5T30
		CP	40	4.5	1 200	300	4.0	-550	0.27	50	37	920		
38	5.0	CT	40	6.0	1 800	450	5.0	-350	0.35	60	32	1 350	450TH ✓	5T31
		CP	40	4.5	1 200	300	4.0	-450	0.27	75	47	920		
		B	—	5.0	1 500	450	4.0	-120	0.08/0.5	80	7	1 200		
12	8.6	CT	40	3.0	1 200	300	3.0	-400	0.37	80	40	850	304TL ✓	5T34
		CP	40	2.5	800	200	2.0	-500	0.37	90	60	570		
		B	—	3.0	1 000	300	2.5	-230	0.16/0.6	25	6.5	900		
20	10.2	CT	40	3.0	1 200	300	3.0	-300	0.37	120	45	850	304TH ✓	5T35
		CP	40	2.5	800	200	2.0	-350	0.37	130	55	570		
		B	—	3.0	1 000	300	2.5	-120	0.16/0.6	30	4.8	900		
29	6.3	CP, CT	40	3.5	1 000	500	3.0	-250	0.3	36	13	550		6T13
15	6.0	CT	40	7.5	3 500	750	6.0	-750	0.53	82	88	2 500	750TL ✓	6T35
		CP	40	5.5	2 000	450	5.0	-850	0.3	90	100	1 200		
35	5.0	CT	50	7.5	4 000	1 000	6.0	-400	0.6	80	55	2 700	1000T ✓	7T40
		CP	50	5.5	2 400	600	5.0	-450	0.45	110	75	1 800		
		B	—	7.5	3 000	1 000	6.0	-160	0.15/0.83	40	12	3 100		
200	11.0	CP, CT	10	7.0	3 500	1 100	6.0	-400	0.5	75	55	2 100		SN-157E
15	6.0	CT	40	7.5	6 000	1 500	6.0	-700	0.85	90	105	3 800	1500T ✓	7T45
		CP	40	6.0	4 000	1 000	5.0	-1 100	0.6	100	150	2 350		

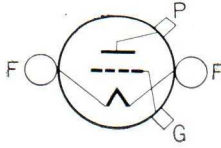
○ The typical operation is for oscillation at 350 Mc, two tubes
 Egm.....Audio frequency input peak voltage (grid-to-grid) Zp.....Effective load impedance(plate-to-plate)



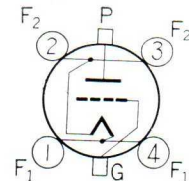
5T30



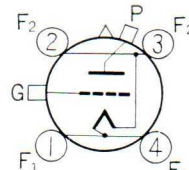
5T34, 5T35



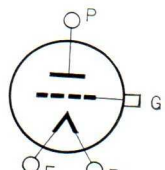
6T13



6T35, 7T45

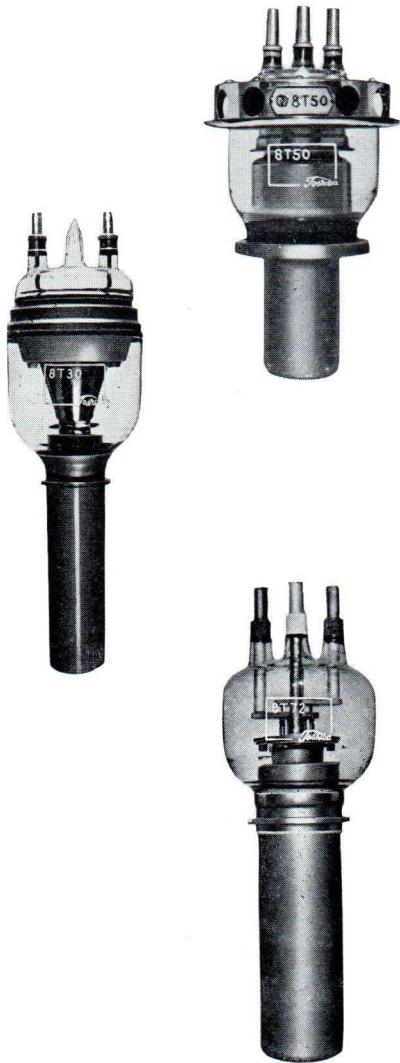


7T40

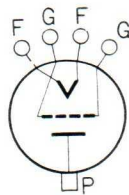


SN-157E

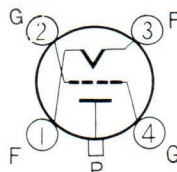
HBV ✓



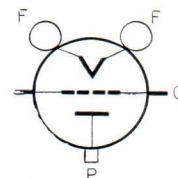
Type	Cathode			Dimensions		Transconductance (m μ) (Plate current (A))	Amplification factor	Interelectrode capacitance plate-grid (pF)
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)			
7T54	FT	12.0	25.0	240	80	5.0 (0.4)	25	12
8T58	FT	5.0	80.0	235	90	7.5 (0.5)	20	14
8T10	FW	22.0	60.0	385	100	6.5 (0.6)	25	18
8T20A	FT	12.0	40.0	325	120 Max.	11.0 (1.0)	21	17
8T30	FT	12.0	40.0	380	115	9.0 (1.0)	50	18
8T67	FW	24.0	75.0	480	120	7.2 (1.5)	20	17
8T50	FT	8.0	225	380	210	16.0 (2.0)	20	35
8T72A	FT	8.0	180	460	150	16.0 (2.0)	20	32
8T54	FT	9.0	240	443	175	42 (4.0)	33	35
9T71	FT	11.0	285	610	234	30.0 (2.0)	39	53



7T54



8T10
8T58



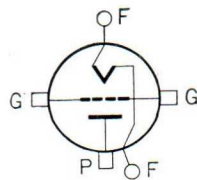
8T20A, 8T30
8T72A, 9T71

TRANSMITTING TUBES

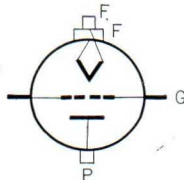
(Water-Cooled)

Class of service	Max. frequency for full input (Mc)	Max. plate rating			Typical operation						Cooling		Equivalent U.S. tubes	Type
		Voltage (kV)	Input (kW)	Loss (kW)	Plate voltage (kV)	Grid voltage (V)	Plate current (A)	Grid current (A)	Exciting power (W)	Output power (kW)	Min. water (l/min)	Max. outlet water temp. (°C)		
CT CP B	40 40 —	8.0 6.0 8.0	7.0 4.0 7.0	3.0 2.0 3.0	7.0 6.0 7.0	— 800 — 850 — 230	0.85 0.6 0.3/1.4	0.11 0.1 0.09	140 130 45	4.3 2.7 6.0 $Z_p=10\,000\Omega$	5	60		7T54
CT CP B	30 30 —	8.0 6.0 8.0	16.0 8.4 12.0	5.0 3.3 5.0	7.0 6.0 7.0	— 800 — 900 — 340	1.8 1.2 0.2/2.4	0.22 0.2 0.13	280 260 30	9.0 5.5 10.0 $Z_p=5\,600\Omega$	10	60		8T58
CT CP B	30 30 —	12.0 10.0 12.0	22.0 10.0 20.0	10.0 6.6 10.0	11.0 9.0 11.0	—1200 —1200 — 370	1.8 1.0 0.5/3.4	0.2 0.14 0.065	400 230 55	14.5 7.0 23.0 $Z_p=6\,600\Omega$	20	60		8T10
CT CP B	30 30 —	12.0 10.0 12.0	27.0 18.0 25.0	10.0 6.6 10.0	11.0 9.0 11.0	—1100 —1200 — 480	2.2 1.3 0.5/4.0	0.2 0.2 0.065	310 300 48	18.0 9.0 27.0 $Z_p=5\,600\Omega$	20	60		8T20A
CT CP B	30 30 —	14.0 10.0 12.0	22.0 10.0 20.0	10.0 6.5 10.0	12.0 9.0 11.0	—1000 —1000 — 145	1.7 0.85 0.5/3.0	0.25 0.22 0.15	400 310 85	14.0 5.5 20.0 $Z_p=7\,200\Omega$	20	60		8T30
CT CP	30 30	14.0 11.0	35.0 17.0	15.0 8.0	12.0 10.0	—1400 —1400	2.7 1.4	0.27 0.23	670 520	21.0 10.0	30	60		8T67
CT CP B	25 25 —	14.0 11.0 14.0	70.0 42.0 55.0	25.0 17.0 25.0	12.0 10.0 12.0	—1000 —1200 — 550	5.0 3.6 1.2/8.0	0.55 0.6 0.36	900 1050 320	42.0 28.0 60.0 $Z_p=3\,000\Omega$	45	60		8T50
CT CP B	25 25 —	14.0 11.0 14.0	60.0 36.0 50.0	25.0 17.0 25.0	12.5 10.0 12.0	—1200 —1200 — 570	4.5 3.0 0.7/8.0	0.5 0.5 0.3	800 850 270	40.0 23.0 60.0 $Z_p=3\,000\Omega$	45	60		8T72A
●CT	130	10.0	60.0	45.0	9.0	— 600	6.0	0.8	5700	41.0	90	60		8T54
CT CP B	20 20 —	17.0 12.5 15.0	150.0 60.0 90.0	50.0 33.0 50.0	15.0 12.0 12.0	—1200 —1200 — 300	8.0 4.5 0.6/10.0	0.8 0.9 0.4	1450 1500 235	88.0 43.0 75.0	75	60	5770 ✓	9T71

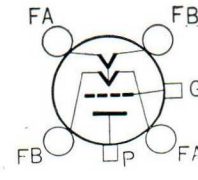
● The typical operation is for the grounded-grid Zp.....Effective load impedance (plate-to-plate)



8T67



8T54

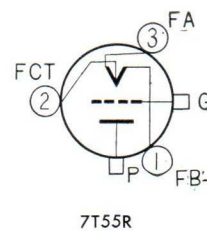
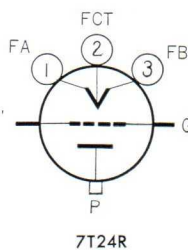
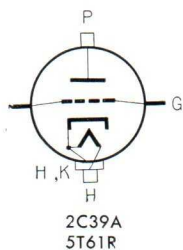


8T50



Type	Cathode			Dimensions		Transconductance (m) (Plate current (A))	Amplification factor	Interelectrode capacitance plate-grid (pF)
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)			
2C39A	HO	6.3	1.0	66	32	22 (0.07)	100	1.95
5T16R	HO	6.3	3.4	84	44.5		27	6
7T59R P	FT	5.0	80.0	240	126	5.5 (0.25)	20	14
7T24R	FT	12.6(N)*	29.0	160	117.5	11.0 (0.5)	30	13.5
7T54R	FT	12.0	25.0	245	126	5.0 (0.4)	25	12.5
7T54R A	FT	12.0	25.0	240	126	5.0 (0.4)	25	12.5
7T55R	FW	16.0(N)*	50.0	305	126	6.0 (0.6)	50	12
7T56R	FW	16.0	50.0	225	126	5.0 (0.4)	25	14
7T58R	FW	5.0	80.0	240	204	7.5 (0.5)	20	14
8T10R	FW	22.0	60.0	395	204	6.5 (0.6)	25	19
8T20R A	FT	12.0	40.0	330	204	11.0 (1.0)	21	18
8T30R	FT	12.0	40.0	390	204	9.0 (1.0)	50	19
8T71R	FT	11.0	285.0	625	349	30.0 (2.0)	39	52

- * With the neutral point terminal
- ⊙ The typical operation is for the pulse oscillation, but the output is a peak value while others are the mean values (at an impulse ratio 1/100)
- ▲ Effective output
- △ Outputs of exciting stage



TRANSMITTING TUBES

(Forced Air-Cooled)

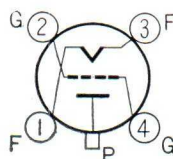
Class of service	Max. frequency for full input (Mc)	Max. plate rating			Typical operation							Cooling air (m ³ /min)	Equivalent U.S. tubes	Type
		Voltage (kV)	Input (kW)	Loss (kW)	Plate voltage (kV)	Grid voltage (V)	Plate current (A)	Grid current (A)	Exciting power (W)	Output power (kW)				
○ CT	2500	1.0	0.125	0.1	0.8	-20	0.08	0.032	6	0.027▲	0.4	2C39A ✓	2C39A	
● CP CT BTV	900	1.6	0.4	0.25	1.5	-150	0.25	0.05	75△	0.27▲	0.46	6161 ✓	5T61R	
⊙ CT	60	11.0	2.5	1.0	10.0	-900	0.035	0.005	—	25	4		7T59RP	
● CT CP	120 120	5.0 4.0	5.0 3.5	2.0 1.3	4.0 3.5	-250 -300	1.0 0.8	0.15 0.2	550 110	3.2 2.0	10	7C24 ✓	7T24R ✓	
CT CP B	40 40 —	8.0 6.0 8.0	6.0 4.0 6.0	2.5 1.5 2.5	7.0 6.0 7.0	-800 -850 -230	0.85 0.6 0.3/1.4	0.15 0.1 0.09	140 130 45	4.3 2.7 Z _p =10 000Ω 6.0	8		7T54RA	
CT CP B	40 40 —	8.0 6.0 8.0	6.0 4.0 6.0	2.5 1.5 2.5	7.0 6.0 7.0	-800 -850 -230	0.85 0.6 0.3/1.4	0.11 0.1 0.08	140 130 45	4.3 2.7 Z _p =10 000Ω 6.0	8		7T54R	
CT CP B	5 5 —	8.0 6.0 8.0	6.0 3.6 6.0	2.5 1.5 2.5	7.0 6.0 7.0	-500 -550 -90	0.83 0.59 0.25/1.4	0.14 0.12 0.05	130 110 20	4.0 2.5 Z _p =10 000Ω 6.0	8		7T55R	
B, CP, CT	40	8.0	6.0	2.5	7.0	-800	0.85	0.09	170	4.0	12		7T56R	
CT CP B	30 30 —	8.0 6.0 8.0	15.0 8.4 12.0	4.0 2.6 4.0	7.0 6.0 7.0	-800 -900 -340	1.6 1.2 0.2/2.4	0.2 0.2 0.13	250 260 80	8.0 5.5 Z _p =5 600Ω 10.0	13		7T58R	
CT CP B	30 30 —	12.0 10.0 12.0	17.0 10.0 12.0	6.0 4.0 6.0	10.0 9.0 9.0	-1 100 -1 200 -300	1.6 1.0 0.5/2.4	0.16 0.14 0.055	300 230 35	11.5 7.0 Z _p =7 200Ω 12.5	20		8T10R	
CT CP B	30 30 —	12.0 10.0 12.0	22.0 16.0 20.0	6.0 4.0 6.0	10.0 9.0 10.0	-1 100 -1 200 -430	2.0 1.3 0.5/2.6	0.19 0.2 0.055	290 300 35	15.5 9.0 Z _p =8 000Ω 16.0	16		8T20RA	
CT CP B	30 30 —	12.0 10.0 12.0	15.0 10.0 10.0	6.0 4.0 6.0	10.0 9.0 9.0	-800 -1 000 -110	1.45 0.85 0.4/1.8	0.23 0.22 0.12	300 310 50	10.0 5.5 Z _p =9 000Ω 9.0	20		8T30R	
CT CP B	10 10 —	15.0 12.5 15.0	100.0 55.0 75.0	25.0 17.0 25.0	13.0 12.0 12.0	-1 200 -1 200 -300	6.0 4.5 0.6/9.0	0.8 0.8 0.3	1 400 1 800 200	58.0 38.0 Z _p =2 700Ω 68.0	65	5671 ✓	8T71R	

○ The typical operation is for the grounded-grid circuit at 500 Mc

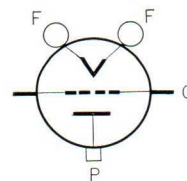
● The typical operation is for the grounded-grid circuit Z_p.....Effective load impedance (plate-to-plate)



7T54R
7T56R



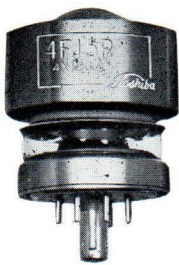
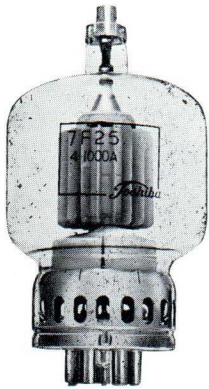
7T58R, 7T59RP
7T54RA, 8T10R



8T20RA, 8T30R
8T76R

✓

Tetrode

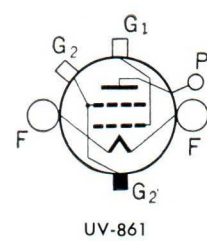
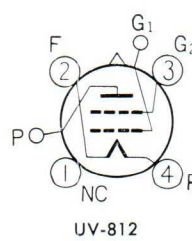
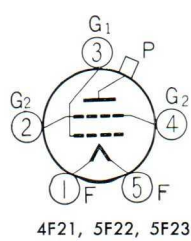
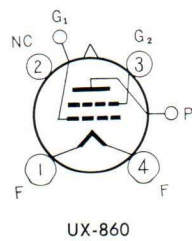
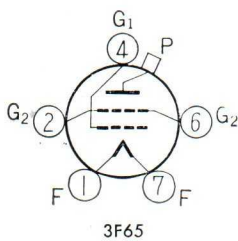


Type	Cathode			Dimensions		Cap number		Transconductance (m μ) (Plate current (mA))	No. 2 grid amplification factor	Interelectrode capacitance		
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)	Top	Base			No. 1 grid-plate (pF)	Input (pF)	Output (pF)
3F65	FT	6.0	3.5	106	60 Max.	A9S	G25Y	4.0 (125)	6	0.08	7.2	2.3
UX-860	FT	10.0	3.25	210	95	—	D16P	1.35 (50)	8.0	0.3	8	7
4F21	FT	5.0	6.5	138	78 Max.	A9S	E32S	2.45 (50)	6.2	0.05	10.8	3.1
UV-812	FT	10.0	6.0	310	140	—	D25L	1.5 (80)	7.0	0.3	12	10
5F22	FT	5.0	14.0	156	89	A9S	E32S	4.0 (100)	5.3	0.12	12.7	4.5
5F23	FT	5.0	14.0	156	89	A9S	E32S	4.0 (100)	5.3	0.12	12.5	4.7
UV-861	FT	11.0	10.0	435	175	A20S	B35K	2.4 (140)	10.0	0.3	15	11
7F25	FT	7.5	21.0	235	127	A14S	E38S A	10.0 (300)	7.0	0.24	27.2	7.6

Tetrode

Type	Cathode			Dimensions		Transconductance (m μ) (Plate current (A))	No. 2 grid amplification factor	Interelectrode capacitance		
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)			No. 1 grid-plate (pF)	Input (pF)	Output (pF)
4F15R	HO	6.0	2.6	59	41.3	12 (0.25)	5	0.06 (Max.)	15.0	4.6
4F20R	HO	26.5	0.57	59	41.3	12 (0.25)	5	0.06 (Max.)	15.0	4.6
5E35R	HO	6.0	3.75	76	50	15.0(0.3)	6	0.2 (Max.)	28	8.5
6F50R	FT	5.0	13.5	115	65	5.2(0.2)	6.2	0.05	12.8	5.6
7F31R	FT	6.0	48.0	215	105	22.0(2.0)	10.0	0.3	72.0	16.5
8F66R	FT	5.0	177	285	162	20 (1.0)	10.0	0.6 (Max.)	105.0	24.0

△ Includes the circuit loss △△ Useful power output
 □ The typical operation is at 125 Mc



TRANSMITTING TUBES

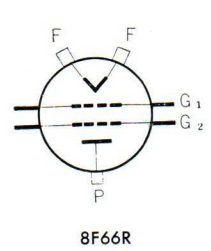
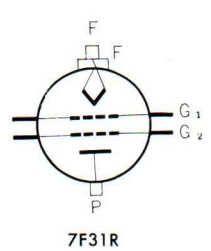
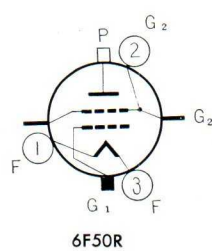
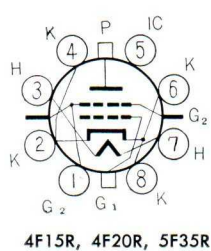
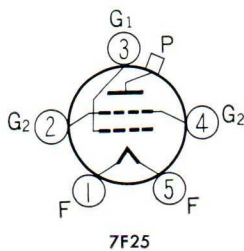
(Air-Cooled)

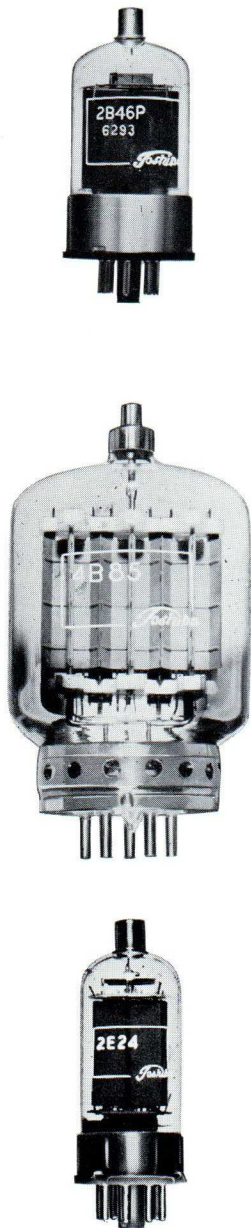
Class of service	Max. frequency for full input (Mc)	Max. rating					Typical operation							Equivalent U.S. tubes	Type
		Plate voltage (V)	No. 2 grid voltage (V)	Plate input (W)	Plate loss (W)	No. 2 grid loss (W)	Plate voltage (V)	No. 2 grid voltage (V)	No. 1 grid voltage (V)	Plate current (mA)	No. 2 grid current (mA)	Exciting power (W)	Output power (W)		
CT CP B	150 150 —	3 000 2 500 3 000	400 400 400	260 180 200	65 45 65	10 10 10	2 500 2 000 1 500	250 200 250	-100 -100 -30	90 80 60/200	35 20 15	3 3 0.4	170 120 Z _p =15 200Ω 180	4-65A	3F65
CP, CT	18	2 250	500	200	100	20	2 000	300	-150	95	23	6	110	860	UX-860 ✓
CT CP B	120 120 —	3 500 2 500 3 000	400 400 600	450 300 400	125 85 125	20 20 20	3 000 2 000 3 000	350 350 350	-180 -250 -85	150 140 40/220	30 30 7	3.3 4.2 0.6	350 220 Z _p =24 000Ω 320	4-125A/4D21	4F21 ✓
CP, CT	18	2 250	500	500	250	30	2 000	400	-250	235	35	13	270		UV-812 ✓
CT CP B	75 75 —	4 000 3 200 4 000	600 500 600	1 000 660 800	250 165 250	35 30 35	3 500 2 500 3 000	500 400 500	-200 -200 -105	260 210 60/420	50 50 18	3.5 3.5 1	700 400 Z _p =14 600Ω 780	4-250A/5D22	5F22 ✓
CT CP B	75 75 —	4 500 3 200 4 000	600 600 600	1 400 850 1 000	400 270 400	35 30 35	4 000 3 000 3 500	500 500 500	-230 -230 -90	310 270 120/520	55 50 22	5 4.5 1.2	950 610 Z _p =13 600Ω 1 100	4-400A	5F23
CP, CT	18	3 500	750	1 000	500	60	3 000	600	-300	345	55	25	650	861	UV-861 ✓
CT CP B	110 110 —	6 000 5 000 6 000	1 000 1 000 1 000	4 000 2 700 3 200	1 000 670 400	75 75 75	5 500 4 500 5 000	500 500 500	-200 -200 -65	600 550 180/1000	90 120 100	14 15 6	2 500 1 950 Z _p =10 400Ω 3 100	4-1000A	7F25

(Forced Air-Cooled)

Class of service	Max. frequency for full input (Mc)	Max. rating					Typical operation							Cooling air (m ³ /min)	Equivalent U.S. tubes	Type
		Plate voltage (kV)	No. 2 grid voltage (V)	Plate input (W)	Plate loss (W)	No. 2 grid loss (W)	Plate voltage (kV)	No. 2 grid voltage (V)	No. 1 grid voltage (V)	Plate current (mA)	No. 2 grid current (mA)	Exciting power (W)	Output power (W)			
CT CP□	500 500	1.25 1.0	300 300	250 250	150 100	12 12	1.0 0.8	250 250	-90 -100	200 200	10 25	25 △ 1.5	120△△ 100	0.2	4X150A	4F15R
CT CP□	500 500	1.25 1.0	300 300	250 250	150 100	12 12	1.0 0.8	250 250	-90 -100	200 200	10 25	25 △ 1.5	120△△ 100	0.2	4X150D	4F20R
CP CT BTV	250	1.5	300	700	350	15	1.25	250	-60	450	35	40 △	350	0.2		5F35R
CT	120	4.0	500	1 200	500	30	3.0	500	-150	300	35	3.3	600	1	4X500A	6F50R
CT CP	220 220	4.0 3.2	1 000 800	5 000 3 300	2 500 1 650	120 120	4.0 3.0	800 500	-200 -200	1 200 1 000	85 70	150 △ 70	3 200 2 050	4		7F31R
CT CP	220 220	6.0 4.8	1 800 1 800	16 000 9 400	10 000 6 600	400 270	5.8 4.7	1 200 800	200 280	2 600 1 560	200 217	750 △ 70	9 000 5 500	10	6166 ✓	8F66R ✓

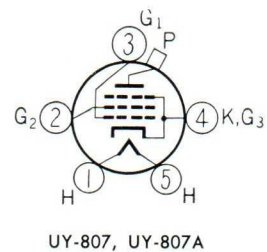
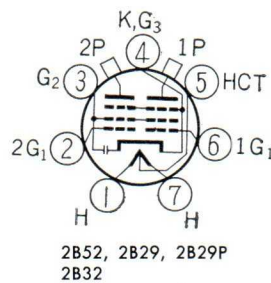
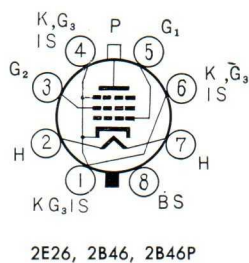
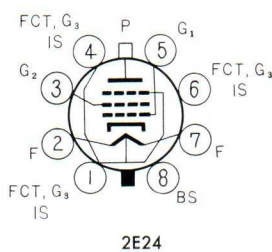
Z_p.....Effective load impedance (plate-to-plate)





Type	Cathode			Dimensions		Base number		Transconductance (m ²) (Plate current (mA))	No. 2 grid amplification factor	Interelectrode capacitance		
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)	Top	Base			No. 1 grid-plate (pF)	Input (pF)	Output (pF)
2E24	FO	6.3	0.65	89	33	A 9 S	H17S	3.5 (16)	7.5	0.11 Max.	8.5	6.5
2E26	HO	6.3	0.8	89	33	A 9 S	H17S	3.5 (20)	6.5	0.2 Max.	13	7
2B32	HO	6.3 12.6	1.6 0.8	81	60 Max.	—	G25S	3.5 (30) [†]	6.5	0.07 [†] Max.	8 [†]	3.8 [†]
2B46	HO	6.3	1.25	94	43	A 9 S	H17S	7.0 (100)	4.5	0.22 Max.	13.5	8.5
2B46P	HO	6.3	1.25	94	43	A 9 S	H17S	7.0 (100)	4.5	0.22 Max.	13.5	8.5
2B52	HO	6.3 12.6	1.3 0.65	80	47	—	G25S	2.5 (20) [†]	8.0	0.05 [†]	6.5 [†]	2.6 [†]
UY-807	HO	6.3	0.9	142	50	A 9 S	E19S	6.0	8	0.2 Max.	12	7
1625	HO	12.6	0.45	142	50	A 9 S	G22S	6.0	8.0	0.2 Max.	12	7
UY-807A	HO	6.3	0.9	115	39	A 9 S	E19S	6.0	7.5	0.2 Max.	12	7
2B29	HO	6.3 12.6	2.25 1.125	105	60 Max.	—	G25S	8.5 (60)	9.0	0.12 [†] Max.	14.5 [†]	7 [†]
2B29P	HO	6.3 12.6	2.25 1.125	105	60 Max.	—	G25S	8.5 (60) [†]	9.0	0.12 [†] Max.	14.5 [†]	7 [†]
2B94	HO	6.3 12.6	1.8 0.9	105	47	—	G25S	6.0 (40) [†]	8.2	0.09 [†] Max.	10.5 [†]	3.2 [†]
4B13	FT	10.0	5.0	185	65	A14S	G25PA	3.75 (50)	8.5	0.16	16	13
4B85	HO	6.3	4.8	175	90	A 9 S	E32S	20.0 (300)	4.8	1.5	45	20

▲ Supply voltage ▲▲ Peak current
 △ Incl. the circuit loss † Values are for each unit.

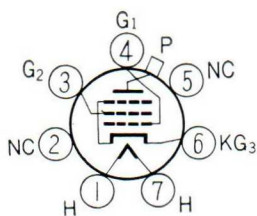


TRANSMITTING TUBES

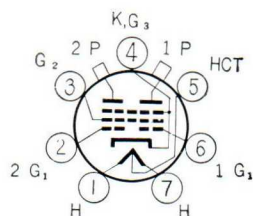
Tubes (Air-Cooled)

Class of service	Max. frequency for full input (Mc)	Max. rating					Typical operation							Equivalent U.S. tubes	Type
		Plate voltage (V)	No. 2 grid voltage (V)	Plate input (W)	Plate loss (W)	No. 2 grid loss (W)	Plate voltage (V)	No. 2 grid voltage (V)	No. 1 grid voltage (V)	Plate current (mA)	No. 2 grid current (mA)	Exciting power (W)	Output power (W)		
CT CP AB ₂	125 125 —	500 400 400	200 200 200	30 20 30	10 6.7 10	2.5 1.7 2.5	500 400 400	190 180 125	-45 -45 -15	65 50 18/150	10 8 26	0.2 0.15 0.43	20 13.5 Z _p =7200Ω 42	2E24	2E24 ✓
CT CP AB ₂	125 125 —	500 400 400	250 200 200	30 20 30	10 6.7 10	2.5 1.7 2.5	500 400 400	200 160 125	-40 -50 -15	60 50 20/150	7 7.5 32	0.1 0.15 0.3	20 13.5 Z _p =6200Ω 42	2E26	2E26 ✓
CT CP	200 200	750 600	250 250	36 22	15 10	5.0 3.4	500 450	200 200	-65 -60	70 50	10 10	0.15 0.15	27 17	832A	2B32 ✓ ✓
CT CP AB ₂	60 60 —	600 480 600	250 250 250	67.5 45 62.5	20 13.3 20	3.0 2.0 3.0	600 475 600	150 130 165	-58 -77 -44	112 94 22/207	9 6.4 17	0.2 0.3 0.2	52 34 Z _p =6800Ω 90	6146 ✓	2B46 ✓
Pulse modulator	—	▲3500	▲500	80	10	1.75				▲▲3000				6293 ✓	2B46P ✓
CT, CP	300	600	250	60	20	3	600	180	-60	100	5	0.5	43	6252 ✓	2B52 ✓
CT CP AB ₂	60 60 —	600 475 600	300 300 300	60 40 60	25 16.5 25	3.5 2.5 3.5	600 475 600	250 225 300	-45 -85 -32	100 83 48/200	8 8 0.7/18	0.3 0.4 0.1	40 28 Z _p =6900Ω 80	807	UY-807 ✓
CT CP AB ₂	60 60 —	600 475 600	300 300 300	60 40 60	25 16.5 25	3.5 2.5 3.5	600 475 600	250 225 300	-45 -85 -32	100 83 48/200	8 8 0.7/18	0.3 0.4 0.1	40 28 Z _p =6900Ω 80	1625	1625 ✓
AB ₂ , CP, CT	60	600	300	60	25	3.5	600	250	-45	100	7	0.2	40		UY-807A ✓
CT CP	200 200	750 600	225 225	120 90	40 28	7.0 4.7	600 500	200 200	-55 -70	190 160	18 20	0.65 0.75	82 60	829-B ✓	2B29 ✓
Pulse modulator	—	▲5000	▲850	85	15	3				▲▲10000				3E29 ✓	2B29P ✓
CT CP AB ₂	250 250 —	600 450 600	250 250 250	120 72 120	40 27 40	7.0 4.5 7	600 450 600	250 250 250	-80 -100 -25	200 150 50/200	16 16 26	4.0△ 0.6 0.2	85 50 Z _p =8000Ω 86	5894 ✓	2B94 ✓
CT CP AB ₁	30 30 —	2250 1600 2500	450 350 800	400 240 360	100 65 100	20.0 20.0 20.0	2000 1500 2250	400 300 750	-120 -160 -95	190 135 45/288	35 25 40	2.0 1.8 1.8	290 155 Z _p =16000Ω 450	813 ✓	4B13 ✓
AB ₁	—	1250	300	450	150	15.0	1000	200	-50	200/800	50		Z _p =3120Ω 560		4B85 ✓

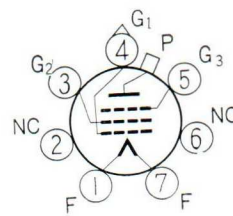
Z_p.....Effective load impedance (plate-to-plate)



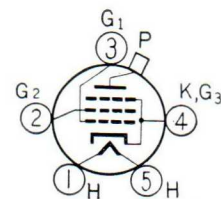
1625



2B94



4B13



4B85



Type	Cathode			Dimensions		Base number		Transconductance (m μ) (Plate current (mA))	No. 2 grid amplification factor	Interelectrode capacitance		
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)	Top	Base			No. 1 grid-plate (pF)	Input (pF)	Output (pF)
2P22	FO	6.3	1.5	152	50	A14S	E19S	5.5 (60)	9.0	0.2 Max.	13	8
✓ P-535	FT	10.0 (N)*	2.0	130	45	A9S	F25P	2.8 (45)	5.0	0.05	18	11.5
✓ P-535A	FT	12.0	2.5	140	45	A9S	E19S	2.8 (45)	4.5	0.20	14	11
3P50	HO	12.0	1.25	135	50	A9S	D25QB	4.0 (50)	5.0	0.06	20	10
3P50A	HO	10.0	1.5	135	50	A9S	F25P	4.0 (50)	5.0	0.06	20	10
✓ P-560A	FT	6.0**	3.85**	160	75	A14S	F47S	2.8 (70)	6.0	0.13	17	13
4P55	HO	6.3	3.2	160	75	A14S	E32S	6.5 (100)	5.5	0.4	25	21
4P60	FT	10.0	3.25	160	65	A14S	E38K	2.6 (60)	6.0	0.07	11	13
4P83	FT	10.0	5.0	230	64	A14S	E32P	4.0 (62.5)	15	0.1	17	29
✓ P213	FT	12.0	2.75	160	60	A14S	D25QB	3.0 (80)	6.0	0.09	12	15
✓ P-560	FT	10.0	5.0	170	65	A9S	E38K	4.0 (60)	6.0	0.12	26	22
✓ P220	FT	12.0	4.25	205	90	A20S	F47S	4.5 (110)	6.5	0.1	17	20
✓ P-520A	FT	6.0**	4.25**	205	90	A20S	F47S	4.5 (110)	6.5	0.1	17	20
5P70	FT	12.0	10.0	225	120	A20S	F65S	6.0 (200)	4.5	0.1	26	21
6P80	FT	12.0	20.0	310	160	A30S	F84S	6.0 (200)	7.0	0.12	31	23
6P80A	FT	12.0	20.0	310	160	A30S	F84S	6.0 (200)	7.0	0.12	31	23

* With the neutral point terminal, two-phase heating possible
 ** Values per section (two-phase heating)

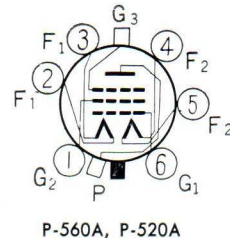
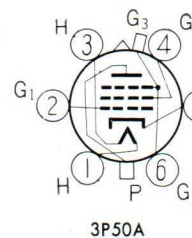
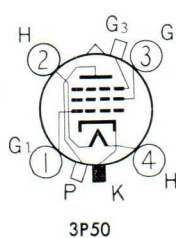
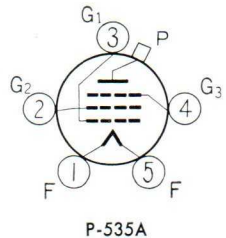
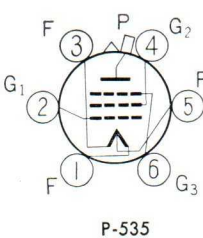
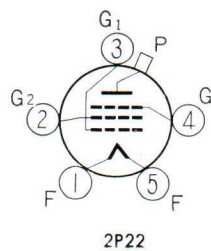
Classification of cathode

FW.....pure tungsten-filament

FT.....thoriated-tungsten-filament

FO.....coated filament

HO.....coated heater-cathode



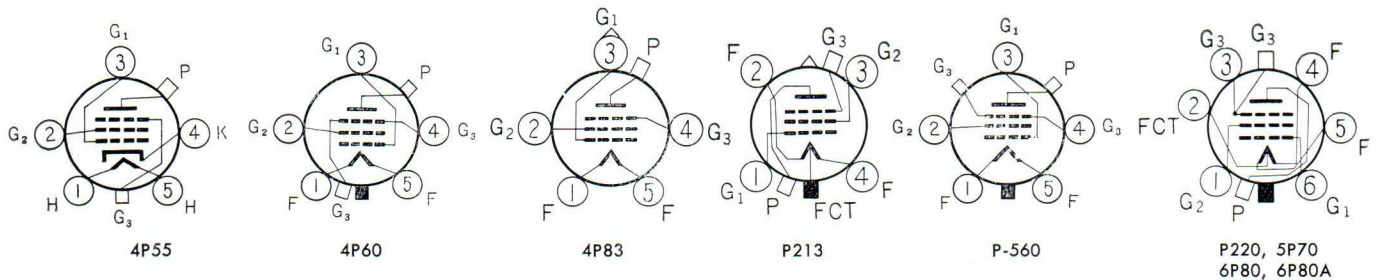
TRANSMITTING TUBES

Class of service	Max. frequency for full input (Mc)	Max. rating					Typical operation								Equivalent U.S. tubes	Type
		Plate voltage (kV)	No. 2 grid voltage (V)	Plate input (W)	Plate loss (W)	No. 2 grid loss (W)	Plate voltage (kV)	No. 3 grid voltage (V)	No. 2 grid voltage (V)	No. 1 grid voltage (V)	Plate current (mA)	No. 2 grid current (mA)	Exciting power (W)	Output power (W)		
CT	30	0.75	300	90	30	10	0.7	0	Plate voltage to 20 kΩ	-50	100	25	0.4	47	2E22 ✓	2P22
CS	30	0.75	300	45	30	10	0.6	-68		-100	57	22	0.7	12		
AB ₂	—	0.75	300	75	30	10	0.6	0		250	-28	30/160	15	0.1		
B, CS, CT	30	1.25	300	130	45	10	1.0	0	300	-100	100	21	0.45	65		P-535 ✓
B, CS, CT	30	1.25	250	120	45	10	1.0	40	250	-100	110	22	0.3	85		P-535A ✓
CT	30	1.20	400	160	60	8	1.0	0	600V to 20 kΩ	-120	150	20	0.7	105	3P50	
CS	30	1.20	400	85	60	8	1.0	-75		-120	80	23	1.1	28		
AB ₁	—	1.20	400	160	60	8	1.0	0		300	-50	40/190	6	75		
CT	30	1.20	400	160	60	8	1.0	0	600V to 15 kΩ	-120	150	20	0.7	105	3P50A	
CS	30	1.20	400	85	60	8	1.0	-75		-120	80	23	1.1	28		
AB ₁	—	1.20	400	160	60	8	1.0	0		300	-50	40/190	6	75		
B, CS, CT	30	1.50	400	300	100	20	1.5	50	400	-150	170	25	1.0	180		P-560A ✓
CP, CS, CT	25	1.5	400	300	120	15	1.25	50	300	-120	200	20	0.3	180	4P55	
AB ₁	—	1.5	400	300	120	15	1.25	0	300	-60	20/280	20	—	220		
CT	40	2.0	500	350	125	25	2.0	0	1000V to 20 kΩ	-200	160	25	1.1	230	4P60	
CS	40	2.0	500	200	125	25	2.0	-145		-200	85	34	2	60		
AB ₁	—	2.0	900	350	125	25	2.0	0		500	-80	40/150	3	115		
B, CS, CT	20	2.0	600	350	125	30	2.0	40	500	-90	160	45	2	210	803 ✓	4P83
B, CS, CT	30	2.0	500	350	125	25	1.5	0	500	-120	200	25	1.3	200		P213 ✓
B, CS, CT	30	2.0	500	400	125	30	2.0	60	400	-200	160	25	0.7	220		P-560 ✓
CT	30	2.0	500	600	230	30	2.0	0	Plate voltage to 50 kΩ	-180	240	30	1.6	330	P220 ✓	
CS	30	2.0	500	350	230	30	2.0	-120		-180	115	33	2	85		
AB ₁	—	2.0	900	550	230	30	2.0	0		500	-75	70/216	24	—		170
B, CS, CT	25	2.0	500	600	230	30	2.0	50	500	-180	250	40	1.6	350		P-520A ✓
CT	30	3.5	600	1500	420	80	3.0	0	1000V to 5.3 kΩ	-220	450	80	6	1000	5P70	
CS	30	3.5	600	750	420	80	3.0	-300		-230	220	95	7.5	250		
AB ₁	—	3.5	800	1100	420	80	3.0	0		500	-100	60/420	3	—		500
CT	30	4.0	800	2000	600	100	3.5	0	600	-200	515	70	6.5	1350		6P80
CS, CT	30	4.0	800	2000	600	100	3.5	0	600	-200	515	90	6.5	1350		6P80A

Explanations for class of service

CT.....class C amplifier telegraph (also suitable for oscillator) CP.....class C plate-modulation telephone CS.....class C No. 3 grid modulation telephone. AB₁.....class AB₁ push-pull audio amplifier AB₂.....class AB₂ push-pull audio amplifier B.....class B push-pull audio amplifier

Note: In the class of service AB₁, AB₂, and B, the values shown under typical operation are for two tubes.



TOSHIBA

RECTIFIER

High

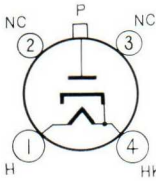


Type	Cathode			Dimensions		Base number	
	Classif.	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)	Top	Base
1K22	HO	2.5	1.75	112	38	A 9 S	D16S
1K24	FT	5.0(N)	3.0	118	38	A 9 S	D16P
K-252	FT	5.0	3.25	170	60	A 9 S	D16P
1K29	HO	2.5	4.75	130	38	A 9 S	D16P
3K76	FT	5	14	190	57		D25 S C

Gas or Mercury



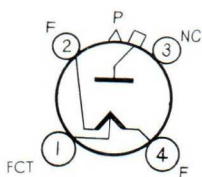
Type	Construc-tion	Filled gas	Cathode				Dimensions	
			Classif.	Voltage (V)	Current (A)	Heating-up time (Min/sec*)	Length (mm)	Dia. (mm)
✓ 1007	Full wave	Xe	FO	{ 0 1	— 1.2	— 5	66.8 Max.	34 Max.
1H16	Half wave	Hg	FO	2.5	2.0	30	116	38
✓ HX-968D	Half wave	Hg	FO	2.5	3.0	30	135	40
2H66	Half wave	Hg	FO	2.5	5.0	30	165	60
2H28	Half wave	Xe	FO	2.5	5.0	5	153	51
✓ HV-372A	Half wave	Hg	FO	5.0	10.0	30	265	100
✓ HV-967C	Half wave	Hg	FO	5.0	4.75	30	260	100
4H22	Full wave	Xe	FO	2.5	6.25	20	152 Max.	42 Max.
4H72	Half wave	Hg	FO	5.0	7.5	30	220	60
4H32	Half wave	Xe	FO	5.0	7.5	30	205	57
4H74	Half wave	Hg	FO	5.0	7.5	30	230	60
4H74A	Half wave	Hg	FO	5.0	7.5	30	220	60
4H88A	Half wave	Hg	FO	5.0	7.5	30	220	60
4H73	Half wave	Hg	FO	5.0	10.0	30	280	76
5H69	Half wave	Hg	FO	5.0	19.0	60	330	127
5H69A	Half wave	Hg	FO	5.0	19.0	60	370	127
6H51	Half wave	Hg	FO	5.0	25.0	60	420	150
7H57	Half wave	Hg	FO	5.0	30.0	60	500	180



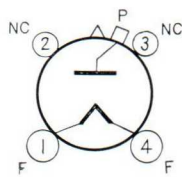
1K22

* Conditions assumed: (1) Sine wave supply (2) Zero tubes drop (3) Pure resistance load

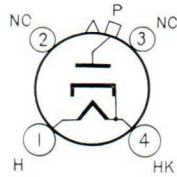
** Output current



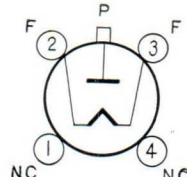
1K24



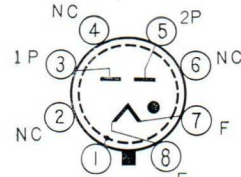
K-252



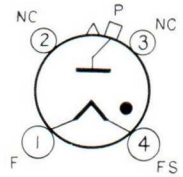
1K29



3K76



1070



1H16, HX-968D, 2H66, 2H28

TRANSMITTING TUBES

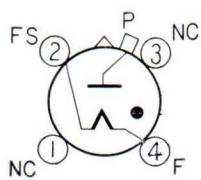
Vacuum Types

Tube voltage drop (V) (Max. plate current (mA))	Max. plate rating			Typical operation					Equivalent U.S. tubes	Type
	Peak inverse voltage (kV)	Peak current (A)	Average current (A)	Plate peak inverse voltage (kV)	Max. AC phase voltage (kV)	DC output voltage to filter (kV)	Max. DC output current (A)	Rectifier system		
200 (45)	12.5 7.5	0.06 0.1	0.0075 0.0075						2X2A ✓	1K22
250 (160)	20.0	0.3	0.06						3B24W ✓	1K24 ✓
130 (60)	30.0	0.2	0.06							K-252
130 (110)	16.0	0.25	0.065						3B29 ✓	1K29
200 (450)	25.0	2.5	0.5						576 ↓	3K76

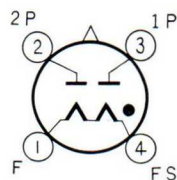
Vapor Types

Base number		Tube voltage drop approx. (V)	Max. plate rating					Typical operation					Equivalent U.S. tubes	Type
Top	Base		Ambient temp. (°C)	Condensed mercury temp. (°C)	Peak inverse voltage (kV)	Peak current (A)	Average current (A)	Plate peak inverse voltage (kV)	AC phase voltage (kV)	DC output voltage to filter (kV)	Max. DC output current (A)	Rectifier system		
—	H17S	20 15	-55~+70 -55~+70	—	1.08 1.08	0.36 0.36	0.03~0.12 0~0.12	1.08	0.382	0.35	0.12	Single-phase full wave	1007	1007 ✓
A 9 S	D16S	15	—	20~60	7.5	0.5	0.125	7.5	2.65	2.38	0.25	Single-phase full wave two tubes	816 ✓	1H16
A 9 S	D16P	15	—	20~50	5	0.6	0.15	5	1.77	1.59	0.3	"	—	HX-968D ✓
A14S	D16P	15	—	25~50 25~60	10 2	1.0 2.0	0.25 0.5	10 2	3.53 0.71	3.18 0.64	0.5 1.0	"	866-A ↓	2H66
A14S	D16P	10	-55~+75	—	10 5	1.0 2.0	0.25 0.5	5 10	3.53 1.77	3.18 1.59	0.5 1.0	"	3B28 ✓	2H28 ✓
A14S	D25P	15	—	30~40	18	3.2	0.8	18	6.37	5.73	1.6	"	—	HV-972A ✓
A14S	D25L	15	—	30~40	20	3.2	0.8	18	6.37	5.73	1.6	"	—	HV-967C ✓
—	D16P	10	-55~+70	—	0.725	4.0	1.0**	0.725	0.256	0.23	1.0	Single-phase full wave	3B22 ↓	4H22 ✓
A14S	D25P	15	—	25~55	10	5.0	1.25	10	3.53	3.18	2.5	Single-phase full wave two tubes	872-A ✓	4H72 ✓
A14S	D25P	10	—	—	10	5.0	1.25	10	3.53	3.18	2.5	"	4B32 ↓	4H32 ✓
A14S	D25P	15	—	25~55	15	5.0	1.25	15	6.22	14.3	3.75	Three-phase full wave six tubes	—	4H74
A14S	D25 P A	15	—	25~55	10	5.0	1.25	15	6.22	14.3	3.75	"	—	4H74A
A14S	D25 P A	15	—	25~50	15	5.0	1.25	15	6.22	14.3	3.75	"	8008 ✓	4H88A
A14S	D25 P A	15	—	25~50	15	6.0	1.5	15	6.22	14.3	4.5	"	673 ✓	4H73
A20S	—	15	—	30~40 30~50	20 15	10.0 10.0	2.5 2.5	18	7.32	17.1	7.5	"	(869 B)	5H69 ✓
A20S	B35K	15	—	30~40 30~50	20 15	10.0 10.0	2.5 2.5	18	7.32	17.1	7.5	"	869 B ↓	5H69A ✓
A20S	—	15	—	30~40	16	20.0	5.0	16	6.52	15.2	15.0	"	—	6H51
A20S	—	15	—	30~40 25~60	20 10	40.0 40.0	10.0 10.0	18	7.32	17.1	30.0	"	857-B ✓	7H57 ✓

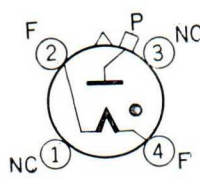
FO.....Coated filament HO.....Coated heater cathode



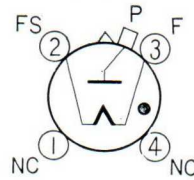
HV-972A, 4H72,
HV-967C, 4H74



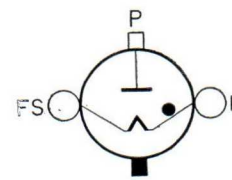
4H22



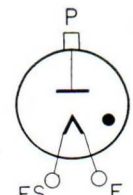
4H32



4H88A, 4H73
4H74A



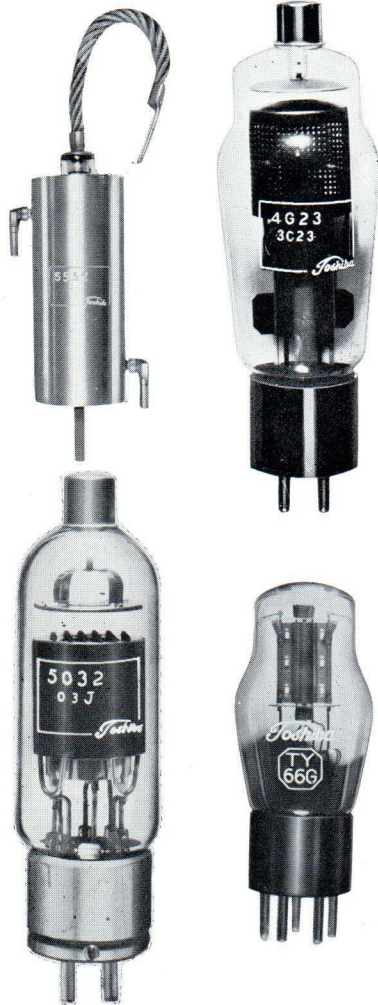
5H69A



5H69, 6H51, 7H57

IGNITRON

As AC Control Tube



Type	Dimensions		Envelope	Type of cooling	Supply voltage (V rms)
	Length (mm)	Dia. (mm)			
✓ 5550	254*	54	Metal	Forced Air***** or water	250~600
✓ 5551	343*	65	Metal	Water****	250~600
✓ 5552	368*	102	Metal	Water**	250~600
✓ 5553	508*	140	Metal	Water***	250~600

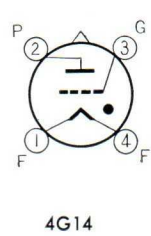
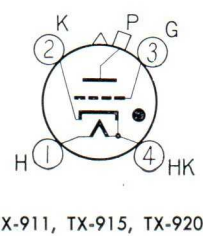
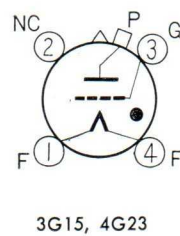
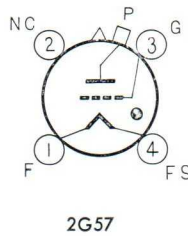
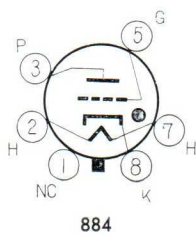
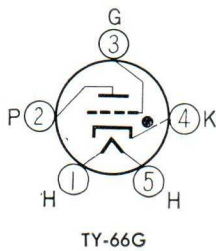
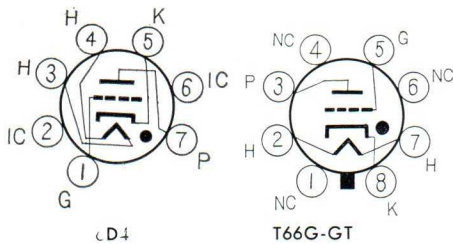
Type	Dimensions		Envelope	Type of cooling	Max. anode ratings	
	Length (mm)	Dia. (mm)			Peak inverse voltage (V)	
✓ 5822	368*	102	Metal	Water**	1200	1500

* Rigid length
 ** Water flow 6l/min min. inlet water temperature 10°C min. outlet water temperature 40°C max. water temperature rise 6°C max

GRID CONTROLLED

Type	Filled gas	Cathode				Dimensions		Base number	
		Classif.	Voltage (V)	Current (A)	Heating-up time (sec Min.)	Length (mm)	Dia. (mm)	Top	Base
6D4	Ar	HO	6.3	0.25	30	54 Max.	19 Max.	—	E7-1
T66G-GT	Ar	HO	6.3	0.4	60	90 Max.	34 Max.	—	H17S
TY-66G	Ar	HO	6.3	0.4	60	108 Max.	39 Max.	—	E19S
✓ 884	Ar	HO	6.3	0.6	30	105 Max.	40 Max.	—	H17Y
2G57	Hg	FO	2.5	5.0	30	165	60	A14S	D16P
✓ TX-911	Hg	HO	5.0	3.5	300	165	75	A 9 S	D16P
3G15	Xe	FO	2.5	6.0	40	165	40	A14S	D16P
4G14	Xe	FO	2.5	6.3	20	108 Max.	40 Max.	—	D16P
4G23	Ar+Hg	FO	2.5	7.0	15	149	50	A14S	D16P
4G63	Hg	FO	5.0	10.0	60	280	76	A14S	D25P
4G63A	Hg	FO	5.0	10.0	60	261	63	A14S	D25P
✓ TX-915	Hg	HO	5.0	4.5	300	180	75	A14S	D16P
✓ TX-920	Hg	HO	5.0	4.5	300	180	75	A14S	D16P
5G32	Xe	FO	2.5	9.0	30	150	40	A14S	D16P
5G69	Hg	FO	5.0	19.0	60	350	130	A20S	—
6G21	Xe	FO	2.5	20.0	60	222	50	A14S	D25S C
6G60	Xe	FO	2.5	20.0	40	292	62 Max.	2.8 × 19* 2.8 × 17**	E39-12
6G45	Xe	FO	2.5	21.0	60	203	64	A14S	D25PA
7G57	Hg	FO	5.0	30.0	180	550	180	A20S	—

* Anode ** Grid



TRANSMITTING TUBES

(Two tubes in inverse Parallel)

Demand (kVA)	Max. anode ratings				Max. ignitor ratings						Equivalent U.S. tubes	Type
	Average current per tubes (Adc)	Averaging time (sec)			Peak positive voltage (V)	Peak negative voltage (V)	Peak current (A)	Average current (Adc)	Max. current (A. rms)	Averaging time (sec)		
		250V rms	450V rms	600V rms								
{ 300 100 150 50	{ 12.1 22.4 4.86 9.0	22	11	9.2	200~900	5	30~100	1	10	5	5550	5550 ✓
{ 600 200	{ 30.2 56.0	18	9	7.5	200~900	5	30~100	1	10	5	5551	5551 ✓
{ 1200 400	{ 75.6 140	14	7.1	5.8	200~900	5	30~100	1	10	5	5552	5552 ✓
{ 2400 800	{ 192 355	11	5.6	4.6	200~900	5	30~100	1	10	5	5553	5553 ✓

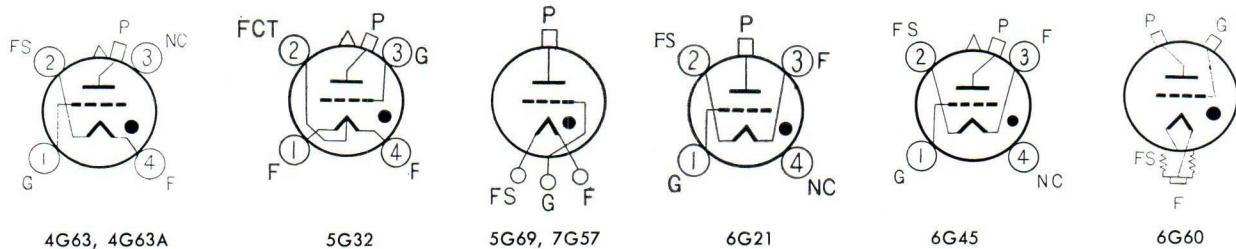
Peak forward voltage (V)	Max. anode ratings				Max. ignitor ratings						Equivalent U.S. tubes	Type
	Peak current (A)	Average current (A)	Surge current (A)	Averaging time (sec)	Peak positive voltage (V)	Peak negative voltage (V)	Peak current (A)	Average current (Adc)	Max. current (A. rms)	Averaging time (sec)		
1200	{ 1500 420	20	18750	6.25	Anode voltage	5	30~100	1	10	5	5822	5822 ✓
1500	{ 1200 336	16	15000	6.25								

*** Water flow 12l/min min, inlet water temperature 10°C min, outlet water temperature 40°C max, water temperature rise 9°C max.
 **** Water flow 3l/min min, inlet water temperature 10°C min, outlet water temperature 40°C max, water temperature rise 4°C max.
 ***** Clamp-cooled.

DISCHARGE TUBES Triode

Tube voltage drop approx. (V)	Max. plate ratings							Control characteristics		Use	Equivalent U.S. tubes	Type
	Ambient temp. (°C)	Condensed mercury temp. (°C)	Peak inverse voltage (kV)	Peak forward voltage (kV)	Peak current (A)	Average current (A)	Averaging time (sec)	Plate voltage (kV)	Grid voltage (V)			
10	-55~+90	—	0.35	0.35	0.11	0.025	—	0.125	-12.5	Noise generator	6D4	6D4 ✓
18	-60~+85	—	0.25	0.25	0.3	0.075	30	0.1, 0.2	-11, -21	Sweep-circuit Oscillator	(884)	T66G-GT
18	-60~+85	—	0.25	0.25	0.3	0.075	30	0.1, 0.2	-11, -21	"	(884)	TY-66G
16	-60~+85	—	0.3	0.3	0.3	0.075	30	0.11, 0.25	-12.5, -26	"	884	884 ✓
15	—	30~60	2.5	2.5	1.2	0.3	5	0.1, 1.0	-3, -10	Motor-control	(5557) (FG-17)	2G57
15	—	30~55	5.0	5.0	3.6	0.6	10	0.1, 1.0	-3, -10	Grid-controlled Rectifier	—	TX-911 ✓
10	-55~+70	—	0.34	0.17	7.7	0.64	4.5	0.12 rms	-5.3 Max.	Motor-control	C1A	3G15
10	-60~+75	—	1.25	1	8	1	4.5	1	-4.5	"	6014/C1K	4G14 ✓
10	—	-55~+80	1.25	1.25	6.0	1.5	5	0.5	-3.8	"	3C23	4G23 ✓
15	—	{ 25~45 40~80	15.0 1.0	15.0 1.0	6.4 30	1.6 2.5	15 3	1.12	-6, -47	Grid-controlled Rectifier	5563	4G63 ✓
15	—	{ 25~30 25~35	20.0 15.0	20.0 15.0	6.4 10	1.6 1.8	20 20	3.20	-13, -80	"	5563A	4G63A ✓
15	—	30~70	1.0	1.0	15	2.5	10	0.1, 1	+5, -3.5	"	(FG-67)	TX-915 ✓
15	—	30~70	1.0	1.0	15	2.5	10	0.1, 1	-3, -12	"	(FG-57)	TX-920 ✓
10	-55~+75	—	1.25	0.75	30	2.5	4.5	0.75	-4.5	Welder-control Motor-control	5632 C3J	5G32 ✓
15	—	30~40	20	20	15	2.5	30	3.15	-15, -37	Grid-controlled Rectifier	—	5G69
10	-55~+75	—	1.25	0.75	77	6.4	6	0.75	-3.5	Welder-control Motor-control	C6J 5C21	6G21 ✓
10	-55~+75	—	0.6	0.3	77	6.4	6	0.11 rms	-0.7	Motor-control	C6A	6G60
16	-55~+70	—	1.5	1.5	80	6.4	15	0.1, 1	0, -7	"	5545	6G45 ✓
15	—	30~40	18	18	40	10	60	3.15	-4, -18	Grid-controlled Rectifier	—	7G57

*** This is for starting conditions only. Equilibrium operation is limited to +20~+80°C.



THYRATRONS Tetrode



Type	Filled gas	Cathode				Dimensions		Base number	
		Classif.	Voltage (V)	Current (A)	Heating-up time (Min/sec)	Length (mm)	Dia. (mm)	Top	Base
2D21	Xe	HO	6.3	0.6	20	54 Max.	19 Max.	—	E7-1
1G50	Xe	HO	6.3	0.6	10	105 Max.	40 Max.	—	E17 S
3G22	Xe	HO	6.3	2.6	30	117 Max.	60 Max.	—	G25 P A

THYRATRONS Triode

Type	Cathode				Dimensions		Base number	
	Classif.	Voltage (V)	Current (A)	Heating-up time (Min/sec)	Length (mm)	Dia. (mm)	Top	Base
✓ 6130	HO	6.3	2.25	120	127	38	A 9 S	D16 S
1G45P	HO	6.3	2.25	120	122	38	A 9 S	D16 S
1G35P	HO	6.3	6.1	180	170	63	A14 S	D25 P A
2G22P	HO	6.3	10.6	300	216	63	A14 S	D25 P A
3G49P	HO	6.3	18.5	900	305	82	A14 S	E32 S-1

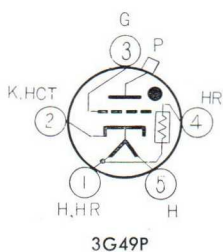
Classification of cathode FO.....Coated filament HO.....Coated heater cathode

VACUUM

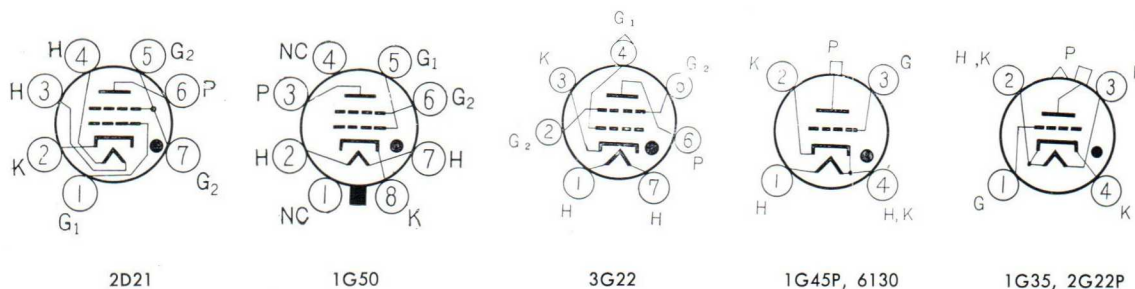


Type	Max. dimensions		Capacity (pF)
	Length (mm)	Dia. (mm)	
4008A	170	65	6
4008B	170	65	12
4008C	170	65	25
4008D	170	65	50

VACUUM



Type	Max. dimensions (mm)			Capacity (pF)	
	Length	Diameter	Depth	Parallel	Series
VVC60-AH	145	78		10~60	
VVC60-AL	"	"		10~60	
VVC60-AP	"	"		10~60	
VVC2-60-AH	160	80	206	20-120	5-30
VVC2-60-AL	"	"	"	20-120	5-30
VVC4-60-AH	160	200	200	Parallel 40-240	Series-parallel 10-60
VVC4-60-AL	"	"	"	40-240	10-60



TRANSMITTING TUBES

Tube voltage drop approx. (V)	Max. plate ratings							Control characteristics		Use	Equivalent U.S. tubes	Type
	Ambient temp. (°C)	Condensed mercury temp. (°C)	Peak inverse voltage (kV)	Peak forward voltage (kV)	Peak current (A)	Average current (A)	Average time (sec)	Plate voltage (V rms)	Grid voltage (V)			
10	-75~+90	—	1.3	0.65	0.5	0.1	30	460	-3.7*	Pulse generator timer, relay	2D21	2D21 ✓
10	-75~+90	—	1.3	0.65	1.0	0.1	30	460	-5.2**		2050 ↓	1G50
10	-75~+90	—	1.3	0.65	6	0.75	30	500	-6.8***	Grid controlled rectifier, motor control	3D22A ✓	3G22 ✓

* 1st grid resistor=100 kΩ; 2nd grid voltage=0 ** 1st grid resistor=100 MΩ; 2nd grid voltage=0 *** 1st grid resistor=2 MΩ; 2nd grid voltage=0

(Hydrogen gas filled)

Ambient temp. (°C)	Max. plate ratings					Rate of rise of cathode current (A/μS)	Pulse		Max. DC anode supply voltage (kV)	Grid pulse voltage (V)**	Equivalent U.S. tubes	Type
	Peak inverse voltage (kV)	Peak forward voltage (kV)	Peak current (A)	Average current (A)	Duration (S)		Operation* factor					
-50~+90	3.0	3.0	35	0.045	750	6	0.3 × 10 ⁹	0.8	175 Min.	6130	6130 ✓	
-50~+90	3.0	3.0	35	0.045	750	6	0.3 × 10 ⁹	0.8	175 Min.	3C45 ✓	1G45 P ✓	
-50~+90	8.0	8.0	90	0.1	1000	6	2.0 × 10 ⁹	2.5	175 Min.	4C35 ✓	1G35 P ✓	
-50~+90	16.0	16.0	325	0.2	1500	6	3.2 × 10 ⁹	4.5	200 Min.	5C22 ✓	2G22 P ✓	
-55~+75	25.0	25.0	500	0.5	2500	6	6.25 × 10 ⁹	5	500~1000	5949 ✓	3G49 P ✓	

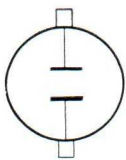
* The plate peak forward voltage (V) × Plate repetition rate (PPS) × Peak plate current (A)

CONDENSER

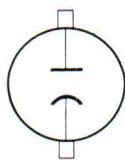
Max. peak high frequency voltage (kV)	Max. current (rms) (A)	Equivalent U.S. tubes	Type
32	22 (f=25 Mc)		4008A
32	25 (f=15 Mc)		4008B
32	25 (f=15 Mc)		4008C
32	25 (f=15 Mc)		4008D

VARIABLE CONDENSER

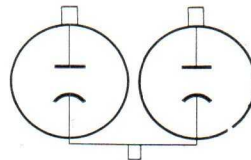
Max. peak high frequency voltage (kV)	Max. current (rms) (A)	Equivalent U.S. tubes	Type
20	40 (f=17 Mc)	VVC60-20	VVC60-AH
10	30 (f=17 Mc)		VVC60-AL
10	25 (f=110 Mc)		VVC60-AP
Parallel 20 / Series 40	Parallel 80 / Series 40 (f=17 Mc)	VVC2-60-20	VVC2-60-AH
10 / 20	60 / 30 (f=17 Mc)		VVC2-60-AL
Parallel 20 / Series-parallel 40	Parallel 160 / Series-parallel 80 (f=17 Mc)	VVC4-60-20	VVC4-60-AH
10 / 20	120 / 60		VVC4-60-AL



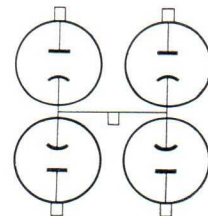
4008A~D



VVC60-AH, VVC60-AL, VVC60-AP

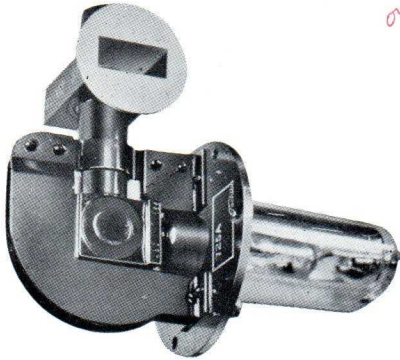
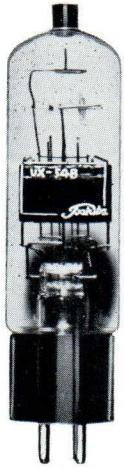


VVC2-60-AL VVC2-60-AH



VVC4-60-AH, VVC4-60-AL

TOSHIBA
SPECIAL



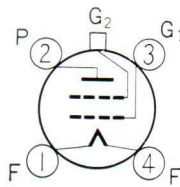
Type	Description	Cathode			
		Classif.	Voltage (V)	Current (A)	Power consumption (W)
<i>or 1K14</i> 1K14	Diode for measuring high frequency voltage, no base.	FW	2.0	4.0	—
UX-54B	Coated-filament type tetrode to measure minute current. Medium 4-pin base, small cap.	FO	2.0	0.05	—
1Q18	High resistance vacuum tube suitable for grid leak resistance of UX-54B. Medium 4-pin base, small cap.	—	—	—	—
1Q19	Same construction as 1Q18 but with $10^{10}\Omega$ resistance.	—	—	—	—
1Q20	Same construction as 1Q18 but with $10^{10}\Omega$ resistance.	—	—	—	—
1Q21	Same construction as 1Q18 but with $10^{11}\Omega$ resistance.	—	—	—	—
LL-10	Argon filled load lamp.	FW	30	—	10
LL-20	Argon filled load lamp.	FW	45	—	20
LL-50	Argon filled load lamp.	FW	70	—	50
LL-100	Argon filled load lamp.	FW	100	—	100
LL-200	Argon filled load lamp.	FW	70	—	200
LL-500	Argon filled load lamp.	FW	53	—	500

SUPER HIGH
Magnetrons

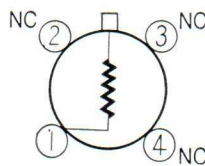
Type	Cathode		Class of service
	Voltage (V)	Current (A)	
<i>or 5J26A?</i> 5J26	23.5	2.2	Tunable pulsed
5M36A	6.3	3.25	Fixed frequency pulsed
2J49	6.3	1.0	Fixed frequency pulsed
2J42	6.3	0.52	Fixed frequency pulsed
2J42H	6.3	0.52	Fixed frequency pulsed
✓ 6027/2J42A	6.3	0.52	Fixed frequency pulsed
✓ 725A	6.3	1.0	Fixed frequency pulsed
2J50	6.3	1.0	Fixed frequency pulsed
2J55	6.3	1.0	Fixed frequency pulsed
↓ 6406	8.3	85.0	Fixed frequency pulsed
✓ 6410	8.3	85.0	Fixed frequency pulsed



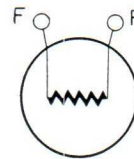
1K14



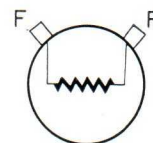
UX-54B



1Q18~21



LL-10



LL-20, LL-50, LL-100
LL-200, LL-500

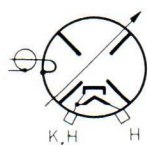
TRANSMITTING TUBES

TUBES

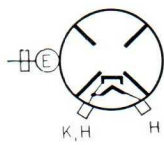
Dimensions		Base number		Remarks	Equivalent U.S. tubes	Type
Length (mm)	Dia. (mm)	Top	Base			
100	30	—	—	{ Maximum frequency=50MC, Electrode capacitance filament to plate=0.2pF, Peak plate inverse voltage=30V max.		1K44 <i>51K14</i>
150	38	A 9 S	D16 S	{ Eb=6V, Ec ₁ =4V, Ec ₂ =-4V { Ib=60A, Ic ₁ =0.35 mA, Ic ₂ =10 ⁻¹⁵ A	FP-54 ✓	UX-54B ✓
145	30	A 9 S	D16 S	Resistance=1.0×10 ⁸ ~9.9×10 ⁸ Ω (at room temperature)		1Q18
145	30	A 9 S	D16 S	Resistance=1.0×10 ⁹ ~9.9×10 ⁹ Ω (at room temperature)		1Q19
145	30	A 9 S	D16 S	Resistance=1.0×10 ¹⁰ ~9.9×10 ¹⁰ Ω (at room temperature)		1Q20
145	30	A 9 S	D16 S	Resistance=1.0×10 ¹¹ ~9.9×10 ¹¹ Ω (at room temperature)		1Q21
45	30	—	—			LL-10
60	30	A 9 S	—			LL-20
60	35	A 9 S	—			LL-50
90	45	A 9 S	—			LL-100
130	80	A14 S	—			LL-200
160	80	A40 S	—			LL-500

FREQUENCY TUBES

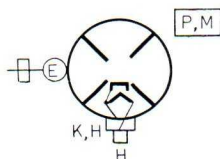
Frequency range (Mc/sec)	Anode		Duty cycle	Pulse width (sec)	Magnetic field (gauss)	Min. power output (kW)	Output coupling	Type
	Voltage (kV)	Current (A)						
1 220~1 350	28 (Peak)	46 (Peak)	0.001	1.0	1 400	550 (Peak)	Coaxial 5/8"	5 J 26A ✓ <i>2.5526</i>
5 300±40	23 (Peak)	40 (Peak)	0.0007	1.0	3 100	320 (Peak)	Wave guide WR187	5M36A ✓ <i>up to here</i>
9 080±80	16 (Peak)	16 (Peak)	0.0012	1.0	5 400	40 (Peak)	Wave guide WR90	2 J 49 ✓
9 375±30	6.0 (Peak)	5.5 (Peak)	0.0025	1.0	Packaged	7 (Peak)	Wave guide WR112	2 J 42 ✓
9 375±30	6 (Peak)	5.5 (Peak)	0.0025	0.4 1.0	Packaged	7 (Peak)	Wave guide WR112	2 J 42H ✓
9 375±30	8 (Peak)	8 (Peak)	0.0025	1.0	Packaged	18 (Peak)	Wave guide WR112	6027/2 J 42A ✓
9 375±30	16 (Peak)	16 (Peak)	0.001	1.0	5 400	40 (Peak)	Wave guide WR90	725A ✓
8 825±75	16 (Peak)	16 (Peak)	0.0012	1.0	5 400	40 (Peak)	Wave guide WR90	2 J 50 ✓
9 375±30	16 (Peak)	16 (Peak)	0.001	1.0	Packaged	40 (Peak)	Wave guide WR90	2 J 55 ✓
2 880±50	59 (Peak)	95 (Peak)	0.0006	2.0	Packaged	1 750 (Peak)	Wave guide WR284	6406 ✓
2 805±55	76 (Peak)	135 (Peak)	0.001	2.0	Packaged	4 500 (Peak)	Wave guide WR284	6410 ✓



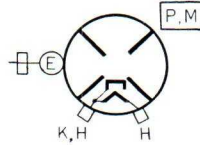
5J26



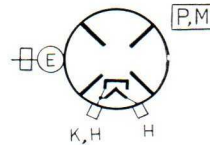
5M36A
2J50
725A
2J49



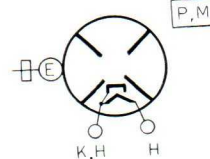
2J42
6027/2J42A



2J42H



2J55



6406
6410



TOSHIBA

Reflex



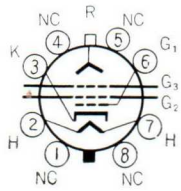
Type	Heater		Max. dimensions		Class of service	Max. frequency range (Mc)
	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)		
✓ 7815	6.3	0.6	130	31	CW oscillator	1300 to 3800
✓ 726C	6.3	0.44	90	41	CW oscillator	2700 to 2960
2K26	6.3	0.44	90	41	CW oscillator	6250 to 7060
7V40	6.3	0.44	86	40	CW oscillator	7100 to 7800
8V43	6.3	0.8	115	84	CW oscillator	7425 to 7725
2K25	6.3	0.44	86	40	CW oscillator	8500 to 9660
6V431	6.3	0.8	100	80	CW oscillator	5925 to 6225
6V432	6.3	0.8	100	80	CW oscillator	6125 to 6425
6V433	6.3	0.8	100	80	CW oscillator	6350 to 6650
7V434	6.3	0.8	100	80	CW oscillator	6575 to 6875
7V435	6.3	0.8	100	80	CW oscillator	6850 to 7150
7V436	6.3	0.8	100	80	CW oscillator	7125 to 7425
8V437	6.3	0.8	100	80	CW oscillator	7425 to 7725

Travelling

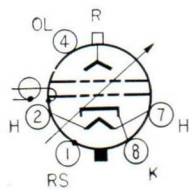
Type	Heater		Max. dimensions		Class of service	Max. frequency range (Mc)
	Voltage (V)	Current (A)	Length (mm)	Dia. (mm)		
7W25	6.3	0.6	350	79	Power amplifier	6400 to 7700
8W20	6.3	0.45	350	32.5	Low noise amplifier	7300 to 7800
8W22A	6.3	0.6	355	34	Power amplifier	7300 to 7800
8W23	6.3	0.6	350	79	Power amplifier	7300 to 7800
8W24	6.3	0.6	355	34	Power amplifier	7300 to 7800

M7855pa Toshiba Rev. 7-60 -48 & 49 low noise amp " TR,

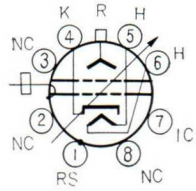
Type	Class of service	Frequency range (Mc)	Max. peak power (kW Max.)
1 B24A	TR-Tunable	8490-9600	100
✓ 6378	TR-Tunable	8490-9600	100
1 B35A	ATR-Fixed frequency	9000-9600	250
✓ 6117/1 B58A	TR-Band pass	2600-3000	750
✓ 721 B	TR-Ext. cavity	2700-3300	350
1 B63A	TR-Band pass	8490-9600	200
✓ 6396	ATR-Fixed frequency	9000-9600	250



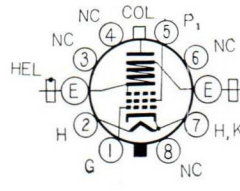
7815



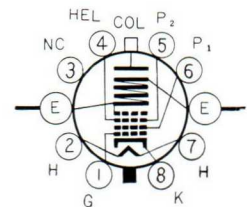
726C, 7V40
2K25, 2K26



6V431, 6V432, 6V433
7V434, 7V435, 7V436
8V43, 8V437



7W25
8W23



8W20

TRANSMITTING TUBES

Klystrons

Reflector voltage range (V)	Typical operation						Type of cavity	Type of output coupling	Cooling method	Equivalent U. S. tubes	Type
	Frequency (MC)	Resonator		Reflector voltage (V)	Power output (mW)	Half-power electronic tuning range (Mc)					
		Voltage (V)	Current (mA)								
-30 to 350	2 400 to 3 000	300	30	-60 to -300	150	30	External	Coaxial cable	Natural convection	2K28 Nearly equivalent	7815 ✓
-30 to -400	2 800	300	30	-75 to -135	100	30	Integral	Wave-guide WR-284	Natural convection	726C	726C
-35 to -165	6 660	300	25	-70 to -115	100	50	Integral	Wave-guide WR-137	Natural convection	2K26	2K26 ✓
-55 to -160	7 500	300	25	-75 to -145	80	50	Integral	Wave-guide WR-137	Natural convection	—	7V40
-250 to -400	7 575	750	72	-280 to -370	1 200	45	Integral	Wave-guide UG-344/U	Forced air	SRC-43G	8V43
-85 to -200	9 370	300	25	-130 to -180	30	50	Integral	Wave-guide WR-90	Natural convection	2K25	2K25 ✓
-150 to -400	6 075	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43A VA-220E	6V431 ✓
-150 to -400	6 275	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43B VA-220E	6V432 ✓
-150 to -400	6 500	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43C	6V433 ✓
-150 to -400	6 725	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43D VA-220D	7V434 ✓
-150 to -400	7 000	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43E VA-220C	7V435 ✓
-150 to -400	7 275	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-43F VA-220B	7V436 ✓
-150 to -400	7 575	750	72	-280 to -376	1 200	45	Integral	Wave-guide WR-137	Forced air	SRC-33G VA-220A	8V437 ✓

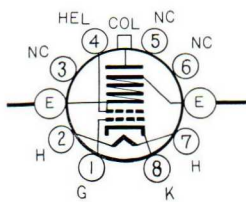
Wave Tubes

Frequency (Mc)	Typical operation										Type of input & output coupling	Cooling	Type	
	Focusing electrode voltage (V)	First anode voltage (V)	Second anode voltage (V)	Helix		Collector		Power output (W)	Power gain (db)	Noise figure (db)				Focusing magnetic field (G)
				Voltage (V)	Current (mA)	Voltage (V)	Current (mA)							
6 800	0 to -15	1 700 to 2 100	—	2 400 to 2 700	0.2	2 400 to 2 700	25	5	30	—	Packaged	Wave guide	Forced air	7W25
7 500	0	50 to 150	0 to 100	900 to 1 100	0.005	1 000 to 1 200	0.5	—	23	10	700	Wave guide	Natural convection	8W20
7 650	0 to -30	—	—	2 200 to 2 600	0.1	2 200 to 2 600	30	2	33	—	700	Wave guide	Forced air	8W22A
7 650	0 to -15	1 700 to 2 100	—	2 300 to 2 600	0.2	2 300 to 2 600	25	3	32	—	Packaged	Wave guide	Forced air	8W23
7 650	0 to -30	—	—	2 400 to 2 800	0.2	2 400 to 2 800	30	4	32	—	700	Wave guide	Forced air	8W24

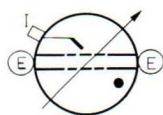
725 10 Periodic WG

ATR Tubes

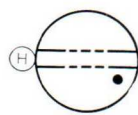
Insertion loss (db)	High power VSWR	Leakage power (mW peak)	Recovery time (-3db, μS Max.)	Loaded Q (Max.)	Ignitor voltage drop (V)	Type
2.0	—	30	4	350	325~450	1B24A ✓
2.0	—	30	4	350	200~400	6378 ✓
0.8	1.1	—	8	6.5	—	1B35A ✓
0.5	1.1	40	15	—	-250~-400	6117 ✓
—	—	—	7	2 500	-750	721B ✓
0.7	—	40	10	—	-200~-375	1B63A ✓
—	1.1	—	8	6.5	—	6396 ✓



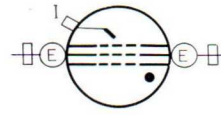
8W22A
8W24



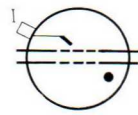
1B24A
637B



1B35A
6396



6117/1B58A
1C63A



721B

Toshiba

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