

ETP1

# ABRIDGED VALVE DATA

# 1966



CSF. COMPAGNIE GÉNÉRALE  
DE TÉLÉGRAPHIE SANS FIL

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# KLYSTRONS

TYPE	Heater		Frequency range	TYPICAL OPERATION					NT		
	V <sub>f</sub>	I <sub>f</sub>		Cavity voltage	Cavity current	Frequency	Reflector voltage	Grid voltage	Output power	Electron tuning range	
	V	A		V	mA	GHz	V	V	W	MHz	
« F »	« CSF »										

### EXTERNAL CAVITY

6 BL6	—	6.3	0.68	1.6-6.5	325 325	28 25	2.0 4.0	- 140 - 300	0 0	0.200 0.150	6 6
5836*	—	6.3	0.68	1.6-6.5	325 325	25 25	2.0 4.0	- 140 - 300	+ 10 + 10	0.200 0.120	6 6
6 BM6	—	6.3	0.68	0.55-3.0	300 325	18 22	1.15 2.2	- 40 - 500	0 0	0.020 0.100	6 4
5837*	—	6.3	0.68	0.55-3.0	325	22	0.8	- 50	+ 10	0.100	6

### INTERNAL CAVITY

F2021	KR.740**	6.3	1	2.90-3.50	1000	85	2.90	- 230	—	1.3	25
					1000	85	3.20	- 375	—	2.8	22
					1000	85	3.50	- 570	—	3.0	17
					500	30	2.90	- 375	—	0.4	10
					500	30	3.20	- 520	—	0.45	8
F2022	KR.741***	6.3	1	3.45-3.75	850	67	3.50	- 250	—	1.5	28
					850	67	3.70	- 325	—	1.7	22
					850	67	3.90	- 435	—	1.6	15
F2023	KR.742***	6.3	1	3.75-4.0	850	67	3.70	- 250	—	1.5	25
					850	67	3.90	- 330	—	1.7	21
					850	67	4.10	- 450	—	1.5	16
F2024	KR.743***	6.3	1	4.0-4.25	850	67	3.90	- 230	—	1.5	26
					850	67	4.10	- 310	—	1.65	23
					850	67	4.30	- 400	—	1.3	17
F2025	KR.740 SC										
F2026	KR.741 SC										
F2027	KR.742 SC										
F2028	KR.743 SC										

Same characteristics as F2021, F2022, F2023 and F2024 but with output on coaxial line Impedance 75 Ω and frequency adjustable by worm wheel and screw.

\* Pulse operation or CW

\*\* Output on CNET λ 7 waveguide

\*\*\* Output on CNET λ 6 waveguide.

# POWER KLYSTRONS

### TYPICAL OPERATION

TYPE	Operat. frequency	Peak power	Mean power	High voltage	Beam current	Gain	Pulse duration	Focusing
« F »	« CSF »	GHz	MW	kW	kV	A	μs	
CW operation								
F2047	—	1.428		10	13	2.8	40	electromagnetic
F2008	—	0.47-0.65		30	18	4.8	30	electromagnetic
F2048*	—	0.47-0.64		50	23	6.0	40	electromagnetic
F2009	—	0.59-0.83		30	17	3.8	40	electromagnetic
Pulse operation								
F2011□	—	3.0	0.05	0.05	40	15 pk	10	electromagnetic
F2052□*	—	3.0	0.06	0.2	40	15 pk	10	electromagnetic
F2015	KA435	3.0	5	5	125	105 pk	39	electromagnetic
F2043	KA436	3.0	20	2.5	250	230 pk	43	electromagnetic
F2040	KA438	3.0	25	12	285	265 pk	50	electromagnetic
F2042	KA437	3.0	30	25	310	280 pk	50	electromagnetic
F2049	—	2.856	30	25	300	280 pk	50	electromagnetic

□ Pilot klystron.

\* Under development.

## KLYSTRONS - TUBES FOR MAINTENANCE

TYPE						Frequency range	Output power
« F »	« CSF »	« F »	« CSF »	« F »	« CSF »	GHz	W
				F2013	KR.117	2.75-3.65	0.380
	KR.740SCA	F2030	KR.760			2.90-3.50	2.8
	KR.741SCA	F2031	KR.761	F2037	KR.781	3.45-3.75	1.7
F2029	KR.742SCA	F2032	KR.762	F2038	KR.782	3.75-4.0	1.7
	KR.743SCA	F2033	KR.763	F2039	KR.783	4.0 -4.25	1.65

## TRAVELLING-WAVE TUBES

TYPE		Frequency range	Useful power		Gain	Noise factor	High voltage	Current	Weight	Remarks
« F »	« CSF »	GHz	mW	W	dB	dB	V max	mA	kg	

### LOW NOISE T.W.T.

F4064A	TPO.251A	1.2 - 1.4	0.15		>20	<4.5	300	1.0	8.5	permanent magnet
F4129	—	2.9 - 3.1	1.5		>25	<5.0	450	0.5	7.3	permanent magnet
F4065	TPO.301	9.0 - 9.5	5		>25	<8	660	0.6	6.5	permanent magnet
F4115*	—	28 - 34	<50		>20	<12	2 500	1.0	8.0	permanent magnet
F4104*	—	85 - 95	<50		>20	<15	5 000	1.5	15.0	permanent magnet

### WIDE-BAND, MEDIUM NOISE T.W.T.

F4123A	—	1.0 - 2.0	10		>35	<12	250	<1	1	periodic magnets
F4100A	—	2.0 - 4.0	40		>35	<12	600	<2	1	periodic magnets
F4024	—	2.15- 4.3	40		>35	<12	600	<2	1	periodic magnets
F4025	—	4.0 - 7.0	30		>35	<13	850	<1	1	periodic magnets
F4101A	—	4.0 - 8.0	30		>35	<13	850	<1	1	periodic magnets
F4026	—	6.9 -11.1	10		>35	<14	1 000	<1	1	periodic magnets
F4102A	—	8.0 -10.5	10		>35	<13.5	1 000	<1	1	periodic magnets

### MEDIUM POWER T.W.T.

F4087*	—	1.0 - 2.0		>1	30	25	1 200	<35	1.3	periodic magnets
F4134*	—	1.0 - 2.0		10	30	25	1 600	<50	1.3	periodic magnets
F4017B	TPO.153B	1.7 - 2.7		>7	30	25	2 000	<55	1.3	periodic magnets
F4130*	—	1.7 - 2.7		20	30	25	2 700	<60	1.3	periodic magnets
F4088*	—	2.0 - 4.0		>1	30	25	1 500	<35	1.3	periodic magnets
F4135*	—	2.0 - 4.0		10	30	25	2 000	<75	1.3	periodic magnets
F4059	—	5.9 - 6.5		15	33	23	4 000	<60	0.5 + foc. 5.0	periodic magnets
F4056B	TPO.410	6.0 - 7.5		>8	23	25	2 600	<45	0.5 + foc. 11.0	permanent magnet

### PULSE OPERATION T.W.T.

F4061	TPO.025	1.2 - 1.4		7.5	20	—	1 kV pk	100 mApk	2.6	permanent magnet
F4063	TPO.125	1.2 - 1.4		>3.5 kW	28	—	12 kV pk	4.5 A pk	5	periodic magnets

\* Types under development.

### TUBES FOR MAINTENANCE

TYPE	« F »	F4017A	F4107C	F4107D	F4069	F4071	F4066	F4056D
	« CSF »	—	—	—	TPO.851	TPO.921	TPO.430	—
Frequency range	GHz	1.7 - 2.0	2.9 - 3.2	2.9 - 3.5	3.6 - 4.1	3.8 - 4.2	3.8 - 4.2	6.5 - 7.5

# “ O ” CARCINOTRON TUBES

TYPE		Frequency range	Mean useful power min.-max.	Anode 1 voltage	Max. Anode 2 voltage	Anode 2 current	Modulation sensitivity	Weight with permanent magnet	Remarks
« F »	« CSF »	GHz	mW	V	kV	mA	MHz V	kg	
F4028E	CO.515E	0.98- 2.1	220 - 1 100	200	1.5	70	2.7 to 0.5	6	coax. output
F4005C	CO.210C	1.6 - 3.2	240 - 1 200	200	1.7	70	5.0 to 0.5	4.6	coax. output
F4029D	CO.127D	2.0 - 4.0	120 - 750	200	1.7	55	5.0 to 0.6	4.6	coax. output
F4003C	CO.119C	2.4 - 4.7	100 - 600	200	1.5	40	7.0 to 0.7	4.6	coax. output
F4006C	CO.94C	3.6 - 7.2	30 - 300	200	1.5	40	8.0 to 1.0	3.5	coax. output
F4084	—	4.0 - 8.0	30 - 240	200	1.5	35	7.5 to 1.9	3.5	coax. output
F4007C	CO.63C	4.8 - 9.6	20 - 280	200	1.7	40	12.0 to 1.2	3.5	coax. output
F4008C	CO.43C	7.0 - 11.0	45 - 200	150	1.46	35	7.1 to 2.1	3.5	coax. output
F4053	—	7.0 - 12.4	35 - 140	250	1.5	25	13.0 to 1.0	2.5	coax. output
F4032B	CO.521B	8.0 - 16.0	15 - 85	200	1.9	20	16.0 to 2.0	2.5	coax. output
F4171A*	—	12.4 - 18.0	25 - 60	300	1.5	35	12.0 to 3.0	2.5	waveguide output RG91/U
F4033B	CO.2012B	15.5 - 24.0	35 - 115	400	2.4	40	9.5 to 2.5	7.5	waveguide output RG53/U
F4034B	CO.1308B	23.5 - 37.5	22 - 110	400	3.1	40	10.7 to 3.7	15	waveguide output RG96/U
F4143	CO.80	39 - 41	10 W - 20 W	2 000	6.0	85	1.5 to 0.7	16	waveguide output RG97/U
F4110	CO.70	37 - 50	20 - 100	800	3.0	35	12.0 to 4.0	12	waveguide output RG97/U
F4076	CO.40B	68 - 72	2 W - 10 W	1 800	6.0	70	2.0 to 1.2	16	waveguide output RG98/U
F4150	CO.40A	73 - 77	2 W - 10 W	1 800	6.0	70	2.0 to 1.2	16	waveguide output RG99/U
F4157*	CO.40-30	$\Delta f$ 1 GHz** from 68 to 77	10 W - 30 W	1 800	6.0	70	2.0 to 1.2	16	waveguide output RG99/U
F4109	CO.35	80 - 90	100 - 1 000	1 500	4.0	35	13.0 to 3.0	16	waveguide output RG99/U
F4108	CO.30	90 - 100	100 - 1 000	1 500	4.0	35	13.0 to 3.0	16	waveguide output RG138/U
F4075	CO.20B	130 - 140	100 - 1 000	2 000	6.0	60	12.0 to 10.0	16	waveguide output RG138/U
F4146	CO.20A	142 - 158	100 - 1 000	2 000	6.0	60	12.0 to 10.0	16	waveguide output RG138/U
F4158*	CO.20-5	$\Delta f$ 2 GHz** from 130 to 155	1 W - 5 W	2 000	6.0	60	12.0 to 10.0	16	waveguide output RG138/U
F4074	CO.10	290 - 320	5 - 50	1 600	6.0	50	20.0 to 8.0	16	waveguide output RG138/U
F4159*	CO.10-400	$\Delta f$ 5 GHz** from 290 to 320	50 - 400	1 600	12.0	50	10.0 to 6.0	16	waveguide output RG138/U
F4178*	CO.10-1	$\Delta f$ 5 GHz** from 290 to 320	150 - 1 000	1 600	12.0	50	10.0 to 6.0	37	waveguide output RG138/U
F4114	CO.09	310 - 350	1 - 15	1 600	6.0	50	20.0 to 10.0	16	waveguide output RG138/U
F4160*	CO.09.EA	310 - 350	3 - 50	1 600	6.0	50	20.0 to 10.0	▲	waveguide output RG138/U
F4112	CO.06	480 - 520	1 - 10	1 100	6.0	40	30.0 to 20.0	16	waveguide output RG138/U
F4161*	CO.06.EA	480 - 520	3 - 30	1 100	6.0	40	30.0 to 20.0	▲	waveguide output RG138/U
F4151*	CO.05	570 - 630	1 - 5	1 400	10.0	50	35.0 to 25.0	▲	waveguide output RG138/U

\* Types under development.

▲ Provided with electromagnet.

\*\* Electronic tuning band over which the minimum power output can be provided, the mid-band frequency being adjusted at any value included between the 2 mentioned limits.

“O” CARCINOTRON TUBES - TUBES FOR MAINTENANCE

TYPE	« F »	F4028A	F4028F	F4028H	F4005A	F4029C	4003A	F4006A	F4007A	F4008B
	« CSF »	CO.515A	CO.515F	CO.515H	CO.210A	CO.127C	CO.119A	CO.94A	CO.63A	CO.43B
Frequency range	GHz	0.98-2.1	1.040-1.250	1.215-1.385	1.6-3.2	2.0-4.0	2.4-4.7	3.6-7.2	4.8-9.6	7.0-11.0

# MAGNETRONS

TYPE	Cooling ▲	Frequency range	Heating voltage	Heating current	Anode-cathode capacity	TYPICAL OPERATION				
						Anode peak voltage	Anode peak current	Filling percent	Pulse duration	Rated useful peak power
« F »	« CSF »	MHz	V	A	pF	V	A		μs	kW

**X BAND**

a) Fixed frequency

4J52A	—	2	9 345 - 9 405	12.6	2.2	13	15 000	15	0.001	1	75
4J50A	—	2	9 345 - 9 405	13.75	3.3	16	21 500	27.5	0.001	0.5	240

b) Tunable frequency

F1002	4J52T	2	8 500 - 9 600	12.6	2.2	12	15 000	15	0.001	1	70
F1097	MCV602	3	8 500 - 9 600	12.6	2.2	12	15 000	15	0.001	1	70
F1005	4J50TO	1	8 500 - 9 600	9	2.6	15	22 000	27.5	0.001	1	220
F1103	4J50TR	2	8 500 - 9 600	9	2.6	15	22 000	27.5	0.001	1	220
F1103A	(# 7008)	2	8 500 - 9 600	13.75	3.2	15	22 000	27.5	0.001	1	220
F1110A	(# 7006)	2	9 000 - 9 600	13.75	3.2	15	22 000	27.5	0.001	1	220

**S BAND**

a) Fixed frequency

F1030 to F1044 □	MC1055A to MC1055O	2	2 897 - 3 228	14	5.2	25	31 000	65	0.001	4.4 max	1200
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b) Tunable frequency

F1054	MCV1055E	2	2 900 - 3 015	14	5.2	—	30 000	65	0.001	4	1.1 MW
F1055	MCV1055F	2	2 985 - 3 115	14	5.2	—	30 000	65	0.001	4	1.1 MW
F1056	MCV1055G	2	3 085 - 3 200	14	5.2	—	30 000	65	0.001	4	1.1 MW

**L BAND**

a) Fixed frequency

F1088 to F1096	MC567A to j	1	1 270 - 1 370	20	13	—	40 000	152	0.00125	5	2 500
F1113	—	—	1 200 - 1 400	15	15	—	30 000	30	0.002	8	500

b) Tunable frequency

F1105	—	1	1 200 à 1 400	15	15	—	35 000	60	0.002	10	500
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**MAGNETRONS FOR INDUSTRIAL PURPOSES-CW.**

F1116	—	2	2 425 - 2 475	12	3	—	3 500	0.4	—	—	0.75
F1115	—	2	2 425 - 2 475	12	3	—	3 500	0.55	—	—	1.0
F1112	—	1	2 425 - 2 475	12	3	—	3 500	0.8	—	—	1.5
F1122	—	2	2 425 - 2 475	12	3	—	3 500	0.8	—	—	1.5
F1117*	—	1	2 425 - 2 475	15	5	—	4 600	1	—	—	2.5

▲ 1 Water-cooled. — 2 Air cooled. — 3 Cooled by inertia.

□ 15 Sub-ranges of 25 MHz

\* Types under development

# MAGNÉTRONS - TUBES FOR MAINTENANCE

TYPE	Fixed frequency		Tunable frequency						
	« F »	F1057 to F1077	—	—	F1098	F1099	F1100	F1101	F1118
	« CSF »	MC83 to MC103	MCV101A1	MCV101B1	MCV101C1	MCV101D1	MCV1053C	MCV1053D	MCV1055H
Frequency range MHz	2 925 to 3 525 21 Sub-ranges of 30 MHz		2 900 to 3 000	3 100 to 3 200	3 300 to 3 400	3 500 to 3 600	2 900 to 3 025	3 025 to 3 150	2 975 to 3 025

## TRIODES

TYPE		Heater		Maximum ratings				Mean values		COOLING			
« F »	« CSF »	Vf V	If A	Freq. MHz	Va kV	Ik A	Pa kW	s mA/V	k	NATURAL	FORCED AIR	WATER	VAPOR
<b>TELECOMMUNICATIONS</b>													
F6059	E1200	12	9.5	60	3.5	0.7	0.5	8	35	●			
F6005	E1300	7.5	39	60	5	1.2	1.5	12	18	●			
F6073	—	7.5	100	30	4	3.2	5	26	30		●		
F6052	E1566R	7.5	95	30	10	3.2	6	33	44		●		
F6043	ETR533	11	275	30	15	10	25	44	42		●		
F6044	ETV533	11	275	30	15	10	50	44	42				●
F6051	E1966R	11	275	30	15	10	25	44	42		●		
F6047	ETV561	12	480	30	18	30	150	135	50				●
F6083**	—	12	1300	—	15	—	—	(under development)		—	—	—	—

### Hard tubes

F6057	E1555HT MP37T	18.5	50	—	35	40	0.3	24	16				●
F6046	—	12	480	—	40	300	150	135	50				●▲
F6084**	—	12	1300	—	40	—	—	(under development)		—	—	—	—

### VOLTAGE REGULATION

6080WA*	—	6.3	2.5	—	0.25	0.15	0.013	7	2	●			
6336A*	—	6.3	4.75	—	0.4	0.4	0.03	11	3	●			
F6025	—	10	10	—	4	0.6	0.5	>7.5	11.5	●			
F6075	—	7.5	39	—	5	1.2	1.5	12	21	●			

\* Double triode, values per section.

\*\* Types under development.

▲ Limited to 40 kW when oil-cooled.

## TUBES FOR MAINTENANCE

TYPE		Characteristics		
« F »	« CSF »	Pa kW	Vf V	Va kV

### TELECOMMUNICATIONS

F6012	TAM10	0.012	12.6	0.3
F6063	E200M	0.250	11	2.0
F6058	E600	0.375	7.5	2.5
F6009	ET412	0.4	7.5	4.0
F6006	E1556R	6.0	17.5	5.5
F6027	E1651M	10	20	12
F6028	E16510C	10	16.5	10
F6029	E1751A	11	17	11
F6055	GT20SD	12	20.4	17
F6056	GT30ST	12	18.2	17
F6030	E1801	16	30	12
F6031	E1856B	16	30	18
F6048	ETO578	16	8.5	15
F6050	E1871R	17.5	7	12
F6081	E1866/ 880	20	12.6	10
F6035	E1986R	25	11	15
F6032	E1876P	25	17.5	18
F6034	E1986	50	11	17
F6037	E2006B	50	30	18
F6038	E2051B	75	30	20
F6039	E2056P	100	35	18
F6040	E3056B	180	35	20
F6041	E3056T	180	17	16

### VOLTAGE REGULATION

6080S	—	0.013	6.3	0.25
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## CERAMIC THYRATRONS

TYPE		Limit operating conditions				
« F »	« CSF »	pk Va (kV)	inv. pk Va (kV)	pk Ia (A)	mean Ia (mA)	min. pk Vg (V)
F5008A	—	16	16	150	450	200
F5023	—	8	8	90	100	175

# TETRODES

TYPE		HEATER		Maximum ratings					Mean values		COOLING			
« F »	« CSF »	Vf	If	Fréq.	Va	Vg2	Ia	Pa	s	k'	NATURAL	FORCED AIR	WATER	VAPOR
		V	A	MHz	kV	V	mA	W	mA/V					

## TELECOMMUNICATIONS

F6078	—	12	320	30	15	2 000	2 000	30 000	55	3.3		●		
F6080	—	12	320	30	15	2 000	2 000	100 000	55	3.3				●
F6053	EG1566R	7.5	100	100	8	1 000	3 000	5 000	20	4		●		
F6054	EGR664	7.5	105	100	10	1 000	3 500	5 000	20	4		●		
F6065	EGV1566	7.5	100	100	8	1 000	3 000	10 000	20	4				●
F6074	—	7.5	100	120	4	800	3 000	4 000	18	4		●		
5933S	—	6.3	0.9	125	0.6	300	120	25	5.5	7.5	●			
829B	—	6.3 12.6	2.25 1.125	200	0.75	225	240	40	7	11	●			
F6022	P2.40B	6.3 12.6	2.25 1.125	200	0.75	225	240	40	7	11	●			
8501	—	4.5	125	900	7	1 500	4 000	10 000		16		●		
F6071*	—	12.6	12.5	1 000	4.5	1 000	1 600	2 500	70	32		●		
7650	—	6.3	7	1 200	3	1 200	600	600	25	13		●		

## Hard tube

F6082	—	12	320	—	25	2 000	150 A	50 000	55	3.3				●
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\* Types under development.

# PENTODES

F6010	P.1300	10	20	30	4	950	1 000	1 000	15	6.5	●
F6003	P.600A	10	10	60	3	800	600	400	6.5	6.5	●

## TUBES FOR MAINTENANCE

TYPE		Characteristics		
« F »	« CSF »	Pa	Vf	Va
		kW	V	kV
F6015	P.40		6.3	
—	P.75B	0.075	10	1.5
—	P.77	0.085	10	1.5
F6060	P.200A	0.150	10	2.2
F6070	P.2.200A	0.300	10	4.4
—	P.453	0.450	12.6	3.0
F6061	P.1200A	0.6	12.6	3.5
F6062	P.1200M	0.7	12.6	3.5
F6049	P.1806	20	22	18

# DISPLAY TUBES

TYPE		Figures	Height of figures mm	Voltage V	Current mA
« F »	« CSF »				
F9020	TA543	Figures (0 to 9)	58	250 to 300	10 to 14
F9090*	—	Figures (0 to 9)	45	250 to 300	5.8 to 8.2
F9004	TA542	Figures (0 to 9)	20.5	250 to 300	2 to 3
F9057	—	Figures (0 to 9)	15.5	250 to 300	1.5 to 3
F9082	—	Composite figures	15.5	250 to 300	1.5 to 3
F9080	—	Figures (0 to 9)	13	250 to 300	1.5 to 2.5
F9080A□	—				
F9092	—	Composite figures	13	250 to 300	1.5 to 2.5

**Remarks :** These tubes are direct-view digital display tubes. They consist of 10 cathodes appearing as superimposed figures and one anode. Figure display is obtained by applying a suitable voltage to the corresponding cathode.

\* Types under development.

□ Electrically identical with F 9080 - Reduced height.



# REPEATER TUBES

TYPE	SPECIFICATION	HEATER		CHARACTERIS. Absolute maximum values			TYPICAL OPERATION							Max. dim		CHARACTERISTIC FEATURES		
		V	A	V <sub>a</sub> V	P <sub>a</sub> W	P <sub>g2</sub> W	V <sub>a</sub> V	V <sub>g2</sub> V	I <sub>a</sub> mA	I <sub>g2</sub> mA or k	R <sub>k</sub> Ω	s mA/V	ρ kΩ	V <sub>g</sub>	length mm	Dia. mm	Noise Resist. at 1 Mc Ω	mA/V/pF

## TRIODE

<b>PTT.141</b>	Low-noise triode	6.3	0.3	180	4.5	—	150	—	23	—	60	25	2	—1.4	45	22.2	150	—	8 000
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## TETRODES AND PENTODES

<b>PTT.208 P</b>	Power amplifier pentode	18	0.140	225	3.6	0.7	200	200	18	3.6	200	6	140	—4.3	65	26.5	—	—	20 000
<b>PTT.212 P</b>	Voltage amplifier pentode	18	0.11	225	2.4	0.6	200	200	10.5	2	125	8.5	500	—1.6	60	26.5	675	0.76	16 000
<b>PTT.213 P</b>	Voltage amplifier pentode	6.3	0.31	225	2.4	0.6	200	200	10.5	2	125	8.5	500	—1.6	60	26.5	675	0.76	16 000
<b>PTT.216</b>	Noval pentode for IF wide-band amplifier	6.3	0.3	180	2.25	0.75	150	150	12.3	3.7	110	13.5	200	—1.75	45	22.2	185	1.2	16 000
<b>PTT.244 P</b>	Wide-band amplifier tetrode	18	0.14	180	5.2	1.3	150	150	24	5	45	27	30	—1.5	60	26.5	300	1.7	8 000

## TUBES FOR MAINTENANCE

TYPE	SPECIFICATION
<b>PTT.241P</b>	Power amplifier tetrode
<b>PTT.243P</b>	Wide-band amplifier tetrode

# THERMAL RELAYS

# ELECTROSTATIC RELAYS

## F9044 (RE 689) (CEA LICENCE)

To measure small electric charges ( $10^{-9}$  Coulomb) or very low currents ( $10^{-11}$  Amp) which are restored by the relay to the terminals of a high load impedance in the form of a voltage of a few volts.

### Electrical properties

Insulation resistance at 20 °C .....	> $10^{15}$ Ω
Minimum active capacitance .....	approx. 2 pF
Sensitivity for optimum set up, better than .....	$10^{-9}$ Coulomb
Circuit-making voltage .....	approx. 100 V
Repeatability at constant temperature .....	< 1 %
Temperature coefficient between — 10 and + 50 °C..	< 1 %
Limit operating temperature .....	70 °C

## F9044A (RE 689A) (CEA LICENCE)

Electrically identical with F 9044 type

- Reduced dimensions
- Copper body
- Polystyrene dome

Single-Pole switches		Heater		Delay time			Characteristics
TYPE	« F »	Voltage V	Current A	Opening of contact 1 s	Closing of contact 2 s	Return to contact 1 s	
<b>F9029A</b>	<b>XT20A</b>	6.3	0.33	10	20	80	Contact rating : DC 115 V ; 0.5 A ; AC 250 V ; 1 A Max. contact resist. : 0.05 Ω Pin test voltage : 1 000 V rms across contacts Inter-pin insulation : 100 MΩ Max. dimens. : dia. 19 mm - h. 67 mm
<b>F9030A</b>	<b>XT30A</b>	6.3	0.33	13	30	85	
<b>F9031A</b>	<b>XT45A</b>	6.3	0.33	20	45	120	
<b>F9032A</b>	<b>XT60A</b>	6.3	0.33	25	60	130	
<b>F9033A</b>	<b>XT75A</b>	6.3	0.33	33	75	180	
<b>F9034A</b>	<b>XT90A</b>	6.3	0.33	38	90	190	
<b>F9036A</b>	<b>YT15A</b>	26.5	0.075	7	15	70	
<b>F9037A</b>	<b>YT20A</b>	26.5	0.075	10	20	80	
<b>F9038A</b>	<b>YT30A</b>	26.5	0.075	13	30	85	
<b>F9039A</b>	<b>YT45A</b>	26.5	0.075	20	45	120	
<b>F9040A</b>	<b>YT60A</b>	26.5	0.075	25	60	130	
<b>F9041A</b>	<b>YT75A</b>	26.5	0.075	33	75	180	
<b>F9042A</b>	<b>YT90A</b>	26.5	0.075	33	90	190	

# CATHODE-RAY TUBES

**N.B.** — In the denomination of the CRT listed hereunder, (first column), the suffix (P31, P2, P7...) is expressive of the standard phosphor used for each type of tube.

The diverse phosphors which may be supplied on request are registered in the last columns on right hand.

## ELECTROSTATIC FOCUSING AND DEFLECTION

TYPE		Maximum operational frequency	Face dimensions cm	Useful screen cm	Mean sensitivity		Remarks	Typical operation				Phosphors which may be supplied on request						
					X <sub>1</sub> X <sub>2</sub> V/cm	Y <sub>1</sub> Y <sub>2</sub> V/cm		Acceleration voltage V	Geometry voltage V	Concentration voltage V	Grid cut-off voltage V	P1	P2	P4	P7	P11	P31	
F8045P31	—	5 MHz	DIA : 7	6.5 × 3.8	9	13.5	Erasing electrode for transistorized devices	4 000	680	0 to 270	—15 to —25	•	•		•	•		
5ADP2 5ADP7	— —	5 MHz	DIA : 13	DIA : 11	17.6	13.3		3 000	1 500	345 to 515	—34 to —56	•				•		
F8030P2	—	5 MHz	DIA : 13	DIA : 11	17.6	13.3	Improved geometry	3 000	1 500	345 to 515	—34 to —56	•			•	•		
F8065P11	—	5 MHz	DIA : 13	10 × 10	26	23 50	2 pairs of Y plates	4 000	2 000	345 to 515	—34 to —56							
F8042P7	OE1218PAR	5 MHz	DIA : 18	DIA : 15	18.5	16		4 000	2 000	460 to 690	—45 to —75	•				•		
5BGP2 5BGP31	— —	15 MHz	DIA : 13	10 × 6	30.6	12.4		10 000	1 670	180 to 590	—50 to —80	•				•		
F8072P2 F8072P31	— —	15 MHz	DIA : 13	10 × 6	30.6	12.4	Improved astigm. correction	10 000	1 670	180 to 590	—50 to —80				•	•		
F8059P2 F8059P31	— —	15 MHz	DIA : 13	10 × 6	30.6	12.4	Improved astigm. correction and geom.	10 000	1 670	180 to 590	—50 to —80				•	•		
5BHP2 5BHP31	— —	30 MHz	DIA : 13	10 × 4	30.5	6.5		10 000	1 670	180 to 590	—50 to —80	•				•		
F8058P2 F8058P31	— —	30 MHz	DIA : 13	10 × 4	30.5	6.5	Improved astigm. correction and geom.	10 000	1 670	180 to 590	—50 to —80				•	•		
F8074P31	—	30 MHz	DIA : 13	10 × 4 per gun	31	6.5	2 guns with × pl. in common, superimp. of traces	10 000	1 660	180 to 570	—50 to —80	•	•			•		
F8081P2 F8081P2A	— —	50 MHz	DIA : 13	10 × 6	20	7.5	Improved astig. corr. geom. + incr. useful surf. d° + graticulated screen	10 000	1 670	180 to 590	—50 to —80				•	•	•	
F8084P2*	—	50 MHz	DIA : 13	10 × 10	20	12.5	□	10 000	1 670	180 to 590	—50 to —80							•
F8076P2*	—	50 MHz	DIA : 13	10 × 10	11	7	□ Very high sensitivity	15 000	2 000	180 to 590	—45 to —85							
F8070P2* F8070P31	— —	50 MHz	12 × 9	10 × 6	11	3	Post-deflection grid. d° + graticulated screen	15 000	1 670	180 to 590	—50 to —90							
F8073P31 F8073P31A	— —	100 MHz	DIA : 13	10 × 4	20	5.5	For large range oscill. d° + graticulated screen	10 000	1 670	200 to 600	—40 to —70	•	•			•		

\* Types under development.

□ To be used when the same deflection is necessary on X and Y axis (Ex. : X-Y recorder).

# CATHODE-RAY TUBES (following)

## ELECTROMAGNETIC FOCUSING AND DEFLECTION

TYPE		Face dimensions cm	Useful screen cm	Remarks	Typical operation		
« F »	« CSF »				Acceleration voltage V	Concentration voltage V	Grid cut-off voltage V
10FP4-A	—				DIA : 27	DIA : 23	Semi-plane glass
F8048P19A	OM726R0	DIA : 27	DIA : 23	Semi-plane glass	10 000	250	—27 to —63

## ELECTROSTATIC FOCUSING AND ELECTROMAGNETIC DEFLECTION

TYPE		Face dimensions cm	Useful screen cm	Remarks	Typical operation				Phosphors which may be supplied on request				
« F »	« CSF »				Acceleration voltage V	Geometry voltage V	Concentration voltage V	Grid cut-off voltage V	P1	P2	P4	P7	P11
5AHP19A	—				DIA : 13	DIA : 11	Low concentration voltage	5 000	0 to 250	300	—55		
7ABP19A	—	DIA : 19	DIA : 15	Low concentration voltage	7 000	0 to 250	300	—28 to —72				•	
10WP19A	—	DIA : 27	DIA : 23	Low concentration voltage	10 000	0 to 600	300	—33 to —77				•	
12ABP19A	—	DIA : 32	DIA : 28	Low concentration voltage	10 000	0 to 300	300	—28 to —71					•
F8031AP19A	OM1138 AROA	DIA : 38	DIA : 33	Semi-plane glass	15 000	0 to 600	300	—38 to —72		•	•		
F8038P7A F8038P19A	—	DIA : 41	DIA : 36.5	Metallic cone Semi-plane glass	12 000	135 to 400	300	—35 to —75		•	•		
F8064P4	—	15 × 12	12.5 × 9.5	Rectangular flat face (For view-finder, monitor).	9 000	0 to 300	500	—100					

## TUBES FOR MAINTENANCE

### ELECTROSTATIC FOCUSING AND DEFLECTION

TYPE		Maximum operational frequency	Face dim cm	Useful screen cm	Phosphors which may be supplied on request				
« F »	« CSF »				P1	P2	P4	P7	P11
F8008AP1	OE407AV				800 kHz	DIA : 7	DIA : 6		
F8009AP1 F8009AP11	OE407APAV OE407APAB	800 kHz	DIA : 7	DIA : 6				•	
F8013AP1	OE411AV	800 kHz	DIA : 11	DIA : 9.5				•	•
F8014AP1	OE411APAV	800 kHz	DIA : 11	DIA : 9.5				•	•
F8018AP1	OE418AV	800 kHz	DIA : 18	DIA : 15				•	•
F8021AP7	OE418APAR	800 kHz	DIA : 18	DIA : 15	•				•

### ELECTROMAGNETIC FOCUSING AND DEFLECTION

F8037AP19A	OM738ARO		DIA : 38	DIA : 33					
F8001AP19A	OM1038ARO		DIA : 38	DIA : 33					

## “ FLASH ” TUBES

TYPE		Characteristics	
« F »	« CSF »	Power J	Voltage kV
F9119	L1122.B1	500	2.5
F9121	L1259.A1	500	2.5
F9081	L1159.A1	1 000	5
F9115	L1082.B1	1 500	5
F9123	L1223.B1	1 600	8
F9124	L1240.B1	1 600	8
F9118	L1089.C1	2 000	5
F9122	L1218.B1	10 000	10
F9120	L1185.B1	20 000	10

# GAUGES

## VACUUM GAUGES

TYPE		Heater		Collector voltage	Grid voltage	Grid current	Limit vacuum
« F »	« CSF »	Voltage	Current	V	V	mA	mm of Hg
		V	A				
F9028	BA10	22.7	4.5	- 50	+ 150	10	10 <sup>-10</sup>
F9012	—	electrically identical with the F 9028 but with metal connecting flange. 100 mm DIA					
F9106	—	electrically identical with the F 9028 but with metal connecting flange. 105 mm DIA					

## TUBES FOR MAINTENANCE

### VACUUM GAUGES

TYPE		Limit vacuum
« F »	« CSF »	mm of Hg
F9078	E4J	10 <sup>-6</sup>
F9021	EJ1011	10 <sup>-10</sup>

# DIODES AND RECTIFIERS

TYPE		FILLING	Limit amb. temp.	Max. inv. volt.		Max. peak current		Max. mean rect. cur.		Heating	
« F »	« CSF »			a	b	a	b	a	b	Vf	If
				°C	kV	kV	A	A	A	A	V

### a) Hot cathode

F5004	V30*	vacuum	—	15	30	0.3	5	0.05	0.018	6.3	1.1
F5005	V35B*	vacuum	—	17	40	0.5	10	0.1	0.015	6.3	2
F5011	VH8600	merc.	25to55	20	18	10	5	—	—	5	18
F5011A	VH8600A			18		5		18			
F5020	—	vacuum	—	25	25	10	—	2	—	7.5	58
8020*	—	vacuum	—	40	40	0.75	2.5	0.1	—	5	6

### b) Cold cathode

F5019	AR64	merc.	5-45	16	—	33.6	—	5.6	—	—	liquid cathode
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a = rectifier operation (with 0.1 μF filter input capacitance for tubes marked\*).  
b = pulse operation.

# SPARK-GAPS

Type	Frequency range	Power supply				Max. incident peak power	Total leakage power	Deioniz. time at 3 dB	Max. ins. loss
		Voltage	Current	Resistance transmitter side	Resistance receiver side				
	GHz	kV	mA	MΩ	MΩ	W	W	μs	dB
F3018 *F3028	2 - 4.6	- 1.5	0.3	20	8.7	15	1	155	2.44
F3016 *F3029	4- 7.3	- 1.5	0.3	20	9.2	15	0.3	85	1
F3017 *F3030	6.7-10.7	- 1.5	0.3	20	6	15	0.2	85	1.2

\* RF connectors : type N

# NOISE TUBES

## TYPE

« F »	« CSF »	NOISE SOURCE FOR TEST EQUIPMENT
F9015	BG52-9	For noise measurement within 10 cm range
F9014	BG22-9	» » » » 9 cm »
F9016	BG65-9	» » » » 9 cm »
F9013	BG22-3	» » » » 3 cm »
F9093	—	» » » » 3 mm »

## NOISE GENERATORS

		Frequency	Power	Max. voltage	Current
		MHz	W	V	A
F9076	—	200 - 400	40	1 500	0.2
F9091	—	1 250 - 1 350	60	1 700	0.4

# DUPLEXER TUBES

TYPE		Specification	Frequency range	Max. useful power		Max. ins. loss	max. Deioniz. time attenuation 3 dB
« F »	« CSF »		GHz	MW	pk kW mean	dB	μS
F3024	AR434C	Spark gap	1.2-1.4	0.06	0.06	0.3	75
F3025	AR434E	Spark gap	1.2-1.4	0.06	0.06	0.3	75
F3027	AP433	Pre-TR window	1.2-1.4	3	3	0.6	50
F3023	AP623	Pre-TR window	1.2-1.4	8	6	0.6	75
F3004	AR414	Wide-band TR	2.9-3.23	0.03	0.03	0.9	40
F3003	AP413	Double Pre-TR	2.9-3.23	1.2	1.2	0.4	90
F3022	AP427	Pre-TR	2.9-3.26	4.5	4.5	0.4	60

## TUBES FOR MAINTENANCE

TYPE		Specification	Frequency range	Max. useful power
« F »	« CSF »		GHz	kW
F3031	ARL133	Wide-band TR	1.20 - 1.4	500
F3026	AR2L127	Double TR	2.90 - 3.26	1 100
F3010	AR227	Tunable TR	2.91 - 3.55	500
F3005	AE227.1	Anti-TR	3.36 - 3.55	500
F3006	AE227.2		3.20 - 3.36	500
F3007	AE227.3		3.13 - 3.23	500
F3008	AE227.4		3.06 - 3.20	500
F3009	AE227.5		2.91 - 3.06	500

## DIRECT VIEW STORAGE TUBES

TYPE		Useful dia	Writing guns	Min. writing speed	Screen	Remarks
« F »	« CSF »					
<b>F8006</b>	<b>TEI.565</b>	92 mm	1 gun Static focusing and deflection	100 mm/μs	P20	
<b>F8029</b>	—	92 mm	1 gun Static focusing and deflection	5 mm/μs	P20	Designed for airborne equipments
<b>F8036</b>	—	92 mm	2 guns Static focusing and deflection	5 mm/μs	P20	Designed for airborne equipments
<b>F8050</b>	<b>TEI.603</b>	92 mm	1 gun Static focusing and deflection	100 mm/μs	P20	Designed for oscilloscopy of transients. Allow to see traces at writing speed up to 500 mm/μs
<b>F8055</b>	—	100 mm	1 gun Static focusing Magnetic deflection	10 mm/μs	P20	Low weight and dimensions (l = 200 mm) Designed for airborne equipments.
<b>F8068</b>	—	100 mm	1 gun Static focusing and deflection — writing gun		P20	Selective erasure without magnetic shield
<b>F8069</b>	—		1 gun Static focusing and deflection — erasing gun			d° but with magnetic shield

## SCAN CONVERSION TUBES

TYPE		Writing gun	Reading gun	Min. definition at 50 % mod.	Fast erasing	Remarks
« F »	« CSF »					
<b>F8024</b>	<b>TMA403</b>	Stat. Focusing-Magn. Defl.	Stat. Focusing-Stat. Defl.	140 circles	no	
<b>F8041</b>	<b>TMA404</b>	Stat. Focusing-Magn. Defl.	Stat. Focusing-Stat. Defl.	160 circles	yes	
<b>F8080</b>	<b>TMA406</b>	Stat. Focusing-Magn. Defl.	Stat. Focusing-Magn. Defl.	180 circles	yes	
<b>F8060</b>	<b>TMA408</b>	Stat. Focusing-Magn. Defl.	Magn. Focusing-Magn. Defl.	140 circles	yes	Very light, and low overall dimensions.
<b>F8083</b>	<b>TMA409</b>	Stat. Focusing-Magn. Defl.	Magn. Focusing-Magn. Defl.	200 circles	yes	

## BARRIER-GRID STORAGE TUBE

TYPE		Characteristics
« F »	« CSF »	
<b>F8026</b>	<b>TCM13</b>	Simultaneous writing and reading. Definition : 400 TV lines. Elimination rate : 20 dB.
<b>F8085*</b>	—	Miniaturized barrier grid storage tube

\* Under development.

## NEON TUBES

TYPE		Characteristics
« F »	« CSF »	
<b>F9017</b>	<b>IN 10</b>	400 to 1 600 kW — S Band
<b>F9018</b>	<b>IN 524</b>	5 to 20 kW — X Band
<b>F9019</b>	<b>IN 663</b>	2.5 MW — L Band

## INFRA-RED TUBES

TYPE		Characteristics
« F »	« CSF »	
<b>F9049</b>	<b>D.16</b>	Designed for infra-red/visible image conversion ; monovoltage type.
<b>F9096*</b>	<b>DA-24-75</b>	High-current, fast photoelectric cell — Coaxial Structure 0.3 μ < λ < 1.2 μ — designed for analysis of light intensities supplied by high — power lasers — Typical impedance: 75 Ω.

\* The CA 2050 matched case, specially designed to be used with the F9096 cell may be supplied on request.

# “ MINIATRON ”

TYPE	SPECIFICATION	HEATER		CHARACTERIST. absol. limit. values			TYPICAL OPERATION						Max. dimens.		
		V	A	V <sub>a</sub> V	P <sub>a</sub> W	P <sub>g2</sub> W	V <sub>a</sub> V	V <sub>g2</sub> V	I <sub>a</sub> mA	I <sub>g2</sub> mA	R <sub>k</sub> Ω	s mA/V	ρ kΩ	Max. length mm	Dia. mm
<b>DIODES</b>															
1Z2	Half-wave rectifier	1.25	0.265	Anode maxim. inv. peak voltage : .....			15 000 V						68.6	19.0	
				Anode minimum resistance : .....			300 kΩ								
				Anode max. peak current : .....			8,5 mA								
				Max. mean rectif. cur. : .....			1,5 mA								
5726/6AL5W	RF twin-diode	6.3	0.3	Anode maxim. inv. peak voltage : .....			360 V						45.3	19.0	
				Anode minimum resistance : .....			11 kΩ								
				Max. peak current per anode : .....			60 mA								
				Max. rectified current per anode.....			9 mA								

<b>TRIODES</b>															
6J4S	UHF triode, grounded grid operation	6.3	0.4	165	2.2	—	100 150	—	10 15	—	100 100	11 12	5 4.5	54.8	19.0
6J4WA	UHF triode, grounded grid operation	6.3	0.4	150	2.25	—	150	—	13,5	—	100	11	5	54.8	19.0
6J6WA	Twin-triode	6.3	0.45	300	1.1	—	100	—	9	—	50	6	6.3	54.8	19.0
5687WA	Twin-triode	12.6 6.3	0.45 0.9	300	4.2	—	250	—	12.5	—	1 000	5.5	3	56.3	22.2
F7004/5842	Low-noise triode	6.3	0.3	180	4.5	—	150	—	22	—	60	25	2	45.0	22.2
12AT7WA	Twin-triode	6.3 12.6	0.3 0.15	330	2.8	—	250	—	10	—	200	5.5	10.9	56.3	22.2
12AX7S	Twin-triode	6.3 12.6	0.3 0.15	300	1.0	—	250	—	1.25	—		1.6	6	56.3	22.2
6189/12AU7WA	Twin-triode	6.3 12.6	0.3 0.15	300	2.7	—	250	—	10.5	—	1 000	2.2	7.7	56.3	22.2

<b>TETRODES AND PENTODES</b>															
6AH6WA	Sharp cut-off RF pentode	6.3	0.45	330	3.2	0.45	300	150	10	2.5	160	9	500	54.8	19.0
6AM6S/6064	Sharp cut-off RF pentode	6.3	0.3	550	3.0	0.9	250	250	9.8	2.6	160	7,6	1 000	54.8	19.0
6AN5WA	Video power pentode	6.3	0.45	135	4.6	1.5	120	120	34	11	125	8,5	—	54.8	19.0
6AU6WA	Sharp cut-off RF pentode	6.3	0.3	330	3.3	0.7	250	150	10.6	4.3	68	5,2	1 000	54.8	19.0
6AU6WB	Sharp cut-off RF pentode	6.3	0.3	330	3.3	0.7	250	150	10.6	4.3	68	5,2	1 000	54.8	19.0
6CL6S	Video power pentode	6.3	0.65	330	8.2	1.9	250	150	30	7	V <sub>g1</sub> = -3V	11	150	67.5	22.2
6CQ6S	Remote cut-off RF pentode	6.3	0.2	300	3.0	0.7	200	200	8	2.1	240	2,5	400	54.8	19.0
5654/6AK5W	Sharp cut-off RF pentode	6.3	0.175	200	1.65	0.55	120 180	120 120	7.5 7.7	2.5 2.4	180 180	5 5,1	300 500	45.3	19.0
5656	Power twin-tetrode	6.3	0.4	250	3.5	1.8	220	120	45	—	—	6	W <sub>u</sub> = 4.5W	54.8	22.2
5686	Beam tetrode RF ampl. frequency multiplier	6.3	0.35	275	8.25	3.3	250	250	27	3.1	V <sub>g1</sub> = -12.5V	3,1	45	56.3	22.2
5725/6AS6W	Twin control grid RF pentode	6.3	0.175	200	1.65	0.55	120 120	120 120	5.2 3.6	3.5 4.8	V <sub>g1</sub> = -2 V <sub>g3</sub> = 0 -3	S <sub>g1</sub> = 3.2 S <sub>g1</sub> = 1.8	S <sub>g3</sub> = 0.5 S <sub>g3</sub> = 0.8	45.3	19.0
5749/6BA6W	Variable-μ RF pentode	6.3	0.3	330	3.3	0.7	100 250	100 100	10.8 11	4.4 4.2	68 68	4,3 4,4	250 1000	54.8	19.0
6005/6AQ5W	AF power beam tetrode	6.3	0.45	275	11	2.2	180 250	180 250	29 45	3 4.5	V <sub>g1</sub> = -8.5 V <sub>g1</sub> = -12.5	3,7 4,1	W <sub>u</sub> 2W W <sub>u</sub> 4.5W	67.5	19.0

<b>VOLTAGE STABILISERS</b>															
0A2WA	Voltage stabiliser	Cold cathode		Min. supply voltage .....		185 V						67.5	19.0		
				Operating voltage .....		approx. 150 V									
				Regulation between 5 and 30 mA : .....		approx. 4 V									
				Cont. duty. current .....		min. 5 mA max. 30 mA									
0B2WA	Voltage stabiliser	Cold cathode		Min. supply voltage .....		130 V						67.5	19.0		
				Operating voltage : .....		approx. 108 V									
				Regulation between 5 and 30 mA : .....		approx. 3 V									
				Cont. duty. current .....		min. 5 mA max. 30 mA									

# “ SUBNITRON ”

TYPE	SPECIFICATION	HEATER		CHARACTERIST. Absolute max. values			TYPICAL OPERATION							Max. dimens.	
		V	A	V <sub>a</sub> V	P <sub>a</sub> W	P <sub>g2</sub> W	V <sub>a</sub> V	V <sub>g2</sub> V	I <sub>a</sub> mA	I <sub>g2</sub> mA	R <sub>k</sub> Ω	S mAV	ρ kΩ	length mm	Dia. mm

## DIODE

5896	RF twin diode	6.3	0.3	Anode max. inverse peak voltage . . . . . 460 V Max. peak current per anode : . . . . . 60 mA Max. rectified current per anode : . . . . . 10 mA							34.9	10.1
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## TRIODES

5703WB	UHF triode	6.3	0.2	200	1.35	—	120	—	9.4	k=25.5	220	5	5.1	38.1	10.1
5718	UHF triode	6.3	0.15	165	0.9	—	100	—	8.5	k=27	150	5.8	4.6	34.9	10.1
5719	AF triode	6.3	0.15	165	0.55	—	100	—	0.73	k=70	1500	1.7	41	34.9	10.1
6021*	RF twin triode	6.3	0.3	165	1.1	—	100	—	6.5	k=35	150	5.4	6.5	34.9	10.1
6111*	RF twin triode	6.3	0.3	165	1.1	—	100	—	8.5	k=20	220	5	4	34.9	10.1
6533	Antimicrophonic AF triode	6.3	0.2	150	0.5	—	120	—	0.92	k=54	1500	1.75	30	34.9	10.1

## TETRODE AND PENTODES

5636	Twin-grid RF pentode mixer	6.3	0.15	165	1.1	0.7	100	100	5.6	4	150	3.2	110	34.9	10.1
5639	Video pentode	6.3	0.45	165	3.5	1	150	100	20	4	100	9.0	50	44.4	10.1
5840	Sharp cut-off RF pentode	6.3	0.15	165	0.9	0.35	100	100	7.5	2.4	150	5.0	260	34.9	10.1
5899	RF variable-mu pentode	6.3	0.15	165	1.1	0.35	100	100	7.2	2	120	4.5	260	34.9	10.1
5902	AF beam power tetrode	6.3	0.45	165	3.7	0.4	110	110	30	2.2	270	4.2	15	44.4	10.1

## VOLTAGE STABILISER

5783WA	Voltage stabiliser			Cold cathode	Max. break down voltage : . . . . . 120 V Minimum current : . . . . . 1.5 mA Maximum current : . . . . . 3.5 mA Operating voltage : . . . . . 86 V approx. Input voltage : . . . . . 140 V min. Regulation between 1.5 and 3.5 mA : . . . . . 3 V approx.							38.1	10.1
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## THYRATRON

5643	Gas-filled tetrode thyratron	6.3	0.15	Anode max. peak voltage : . . . . . 500 V Anode max. inver. voltage : . . . . . 500 V Limit temperature . . . . . 55 to 125 °C Mean cathode current : . . . . . 16 mA max Maximum cathode peak current : . . . . . 100 mA							34.9	10.1
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Length of leads: 38 mm min.

\* Ratings per section.

