

## R.F. POWER TRIODE

QUICK REFERENCE DATA									
$\lambda$ (m)	Freq. (MHz)	C telegr.		C grounded grid		C <sub>a</sub> mod.		B mod. <sup>2)</sup>	
		V <sub>a</sub> (V)	W <sub>o</sub> (W)	V <sub>a</sub> (V)	W <sub>o</sub> <sup>1)</sup> (W)	V <sub>a</sub> (V)	W <sub>o</sub> (W)	V <sub>a</sub> (V)	W <sub>o</sub> (W)
3	100	4000	1690	4000	1950	3000	1050	4000	2290
		3500	1430	3500	1650			3500	2440
		3000	1175	3000	1375			3000	2310
		2500	950	2500	1120			2500	2000

**HEATING:** direct; filament thoriated tungsten

Filament voltage  $V_f = 10$  V

Filament current  $I_f = 9.9$  A

**CAPACITANCES**

Anode to all other elements except grid  $C_a = 0.17$  pF

Grid to all other elements except anode  $C_g = 8.0$  pF

Anode to grid  $C_{ag} = 7.0$  pF

**TYPICAL CHARACTERISTICS**

Amplification factor  $\mu = 28$

Mutual conductance  $S (I_a = 125 \text{ mA}) = 4.5$  mA/V

**TEMPERATURE LIMITS** (Absolute limits)

Temperature of anode seal = max. 220 °C

Temperature of bottom pin seals = max. 180 °C

Bulb temperature = max. 250 °C

<sup>1)</sup> Power transferred from driving stage included

<sup>2)</sup> Two tubes

**COOLING**

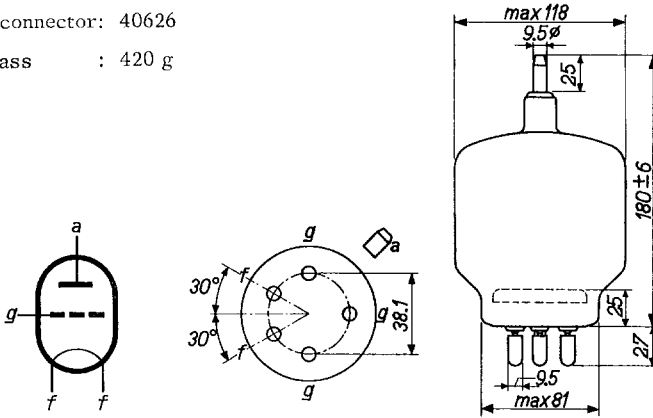
In general cooling of the tube is not necessary at normal ambient temperature at frequencies below 50 MHz.

When the tube is used at or near the limiting values at frequencies above 50 Mc/s, it will be necessary to direct a low-velocity air flow on the anode seal and the bottom of the envelope.

**MECHANICAL DATA**

Dimensions in mm

Socket : 2422 512 00001  
 Anode connector: 40626  
 Net mass : 420 g



Mounting position: vertical with base up or down

## R.F. CLASS C TELEGRAPHY

## LIMITING VALUES (Absolute limits)

Frequency	f	up to	100	MHz
Anode voltage	$V_a$	= max.	4000	V
Anode dissipation	$W_a$	= max.	450	W
Grid dissipation	$W_g$	= max.	50	W
Grid current	$I_g$	= max.	115	mA
Cathode current	$I_k$	= max.	650	mA

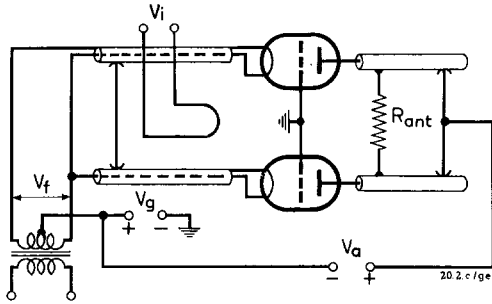
## OPERATING CONDITIONS (controlled)

Wavelength	$\lambda$	=	3	3	3	3	m
Anode voltage	$V_a$	=	4000	3500	3000	2500	V
Grid voltage	$V_g$	=	-350	-300	-250	-200	V
Anode current	$I_a$	=	535	535	535	535	mA
Grid current	$I_g$	=	115	115	115	115	mA
Peak grid A.C. voltage	$V_{gp}$	=	580	520	460	405	V
Grid input power	$W_{ig}$	=	60	54	48	42	W
Anode input power	$W_{ia}$	=	2140	1880	1600	1340	W
Anode dissipation	$W_a$	=	450	450	425	390	W
Output power	$W_o$	=	1690	1430	1175	950	W
Efficiency	$\eta$	=	79	76	73.5	71	%

## OPERATING CONDITIONS (self excited)

Wavelength	$\lambda$	=	3	3	3	3	m
Anode voltage	$V_a$	=	4000	3500	3000	2500	V
Grid resistor	$R_g$	=	3000	2600	2200	1800	$\Omega$
Anode current	$I_a$	=	535	535	535	535	mA
Grid current	$I_g$	=	115	115	115	115	mA
Peak grid A.C. voltage	$V_{gp}$	=	580	520	460	405	V
Grid input power	$W_{ig}$	=	60	54	48	42	W
Anode input power	$W_{ia}$	=	2140	1880	1600	1340	W
Anode dissipation	$W_a$	=	450	450	425	390	W
Output power	$W_o$	=	1630	1376	1127	908	W
Efficiency	$\eta$	=	76.5	73	70.5	67.5	%

OPERATING CONDITIONS R.F. CLASS C TELEGRAPHY (continued)  
 Grounded grid circuit, two tubes



Wavelength	$\lambda$	=	3	3	3	3	m
Anode voltage	$V_a$	=	4000	3500	3000	2500	V
Grid voltage	$V_g$	=	-350	-300	-250	-200	V
Anode current	$I_a$	=	2x535	2x535	2x535	2x535	mA
Grid current	$I_g$	=	2x115	2x115	2x115	2x115	mA
Peak grid voltage	$V_{gp}$	=	580	520	460	405	V
Grid input power	$W_{ig}$	=	2x320	2x274	2x248	2x212	W
Anode input power	$W_{ia}$	=	2x2140	2x1880	2x1600	2x1340	W
Anode dissipation	$W_a$	=	2x450	2x450	2x425	2x390	W
Output power	$W_o$	=	3380+520	2860+440	2350+400	1900+340	W <sup>1)</sup>
Efficiency	$\eta$	=	79	76	73.5	71	% <sup>2)</sup>

1) Power transferred from driving stage included

2) Pure tube efficiency

**R.F. CLASS C ANODE MODULATION****LIMITING VALUES** (Absolute limits)

Frequency	f	up to	100	MHz
Anode voltage	$V_a$	= max.	3000	V
Anode dissipation	$W_a$	= max.	300	W
Grid dissipation	$W_g$	= max.	50	W
Grid current	$I_g$	= max.	115	mA
Cathode current	$I_k$	= max.	550	mA

**OPERATING CONDITIONS**

Wavelength	$\lambda$	=	3	m
Anode voltage	$V_a$	=	3000	V
Grid voltage	$V_g$	=	-375	V
Anode current	$I_a$	=	450	mA
Grid current	$I_g$	=	85	mA
Peak grid A.C. voltage	$V_{gp}$	=	580	V
Grid input power	$W_{ig}$	=	42	W
Anode input power	$W_{ia}$	=	1350	W
Anode dissipation	$W_a$	=	300	W
Output power	$W_o$	=	1050	W
Efficiency	$\eta$	=	78	%
Modulation factor	m	=	100	%
Modulation power	$W_{mod}$	=	675	W

**A.F. CLASS B AMPLIFIER AND MODULATOR**

**LIMITING VALUES** (Absolute limits)

Anode voltage	$V_a$	=	max.	4000	V
Anode dissipation	$W_a$	=	max.	450	W
Grid dissipation	$W_g$	=	max.	50	W
Cathode current	$I_k$	=	max.	700	mA
Peak cathode current	$I_{kp}$	=	max.	5	A
Grid current	$I_g$	=	max.	130	mA
Grid circuit resistance	$R_g$	=	max.	50	k $\Omega$

**OPERATING CONDITIONS**, two tubes

Anode voltage	$V_a$	=	4000	3500	V
Grid voltage	$V_g$	=	-135	-114	V
Load resistance	$R_{aa\sim}$	=	14.5	10.2	k $\Omega$
Peak grid to grid voltage	$V_{ggp}$	=	0      566	0      563	V
Anode current	$I_a$	=	2x70    2x368	2x70    2x442	mA
Grid current	$I_g$	=	0      2x93	0      2x115	mA
Grid input power	$W_{ig}$	=	0      2x24	0      2x29	W
Anode input power	$W_{ia}$	=	2x280    2x1474	2x245    2x1550	W
Anode dissipation	$W_a$	=	2x280    2x329	2x245    2x330	W
Output power	$W_o$	=	0      2290	0      2440	W
Total distortion	$d_{tot}$	=	-      5	-      5	%
Efficiency	$\eta$	=	-      77.7	-      78.8	%
Anode voltage	$V_a$	=	3000	2500	V
Grid voltage	$V_g$	=	-94	-75	V
Load resistance	$R_{aa\sim}$	=	7.5	5.2	k $\Omega$
Peak grid to grid voltage	$V_{ggp}$	=	0      560	0      530	V
Anode current	$I_a$	=	2x70    2x500	2x70    2x555	mA
Grid current	$I_g$	=	0      2x130	0      2x126	mA
Grid input power	$W_{ig}$	=	0      2x33	0      2x30	W
Anode input power	$W_{ia}$	=	2x210    2x1500	2x175    2x1387	W
Anode dissipation	$W_a$	=	2x210    2x345	2x175    2x387	W
Output power	$W_o$	=	0      2310	0      2000	W
Total distortion	$d_{tot}$	=	-      5	-      3.5	%
Efficiency	$\eta$	=	-      77	-      72	%

**R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE** with anode voltage from two-phase half-wave rectifier without filter

**LIMITING VALUES** (Absolute limits)

Frequency	f	up to	100	MHz
Anode voltage	$V_a$	= max.	3600	V
Negative grid voltage	$-V_g$	= max.	320	V
Anode current	$I_a$	= max.	475	mA
Grid current	$I_g$	= max.	100	mA
Anode input power	$W_{ia}$	= max.	2200	W
Anode dissipation	$W_a$	= max.	450	W
Grid dissipation	$W_g$	= max.	50	W

**OPERATING CONDITIONS**

Transformer voltage	$V_{tr}$	= 4000 <sup>1)</sup>	3350 <sup>2)</sup>	$V_{RMS}$
Anode voltage	$V_a$	= 3600	3000	V <sup>3)</sup>
Anode current	$I_a$	= 450	400	mA
Grid current	$I_g$	= 100	85	mA
Grid resistor	$R_g$	= 3.0	3.0	k $\Omega$
Anode input power	$W_{ia}$	= 2000	1480	W
Anode dissipation	$W_a$	= 450	400	W
Output power	$W_o$	= 1500	1040	W
Efficiency	$\eta$	= 75	70	%

<sup>1)</sup> Care must be taken that under these operating conditions the absolute limiting values are not exceeded by variation of the supply voltage or the load or by tolerances in the circuit elements.

<sup>2)</sup> Under these conditions normal deviations of voltages and load are permissible. The absolute limiting values of the tube must, however, not be exceeded.

<sup>3)</sup> D.C. value

**R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE** with anode voltage from three-phase half-wave rectifier without filter

**LIMITING VALUES** (Absolute limits)

Frequency	f	up to	100	MHz
Anode voltage	$V_a$	= max.	4000	V
Negative grid voltage	$-V_g$	= max.	500	V
Anode current	$I_a$	= max.	535	mA
Grid current	$I_g$	= max.	115	mA
Anode input power	$W_{ia}$	= max.	2200	W
Anode dissipation	$W_a$	= max.	450	W
Grid dissipation	$W_g$	= max.	50	W

**OPERATING CONDITIONS**

Transformer voltage	$V_{tr}$	= 3400 <sup>1)</sup>	2900 <sup>2)</sup>	$V_{RMS}$
Anode voltage	$V_a$	= 4000	3400	V <sup>3)</sup>
Anode current	$I_a$	= 535	450	mA
Grid current	$I_g$	= 115	100	mA
Grid resistor	$R_g$	= 3.0	3.0	k $\Omega$
Anode input power	$W_{ia}$	= 2140	1530	W
Anode dissipation	$W_a$	= 450	390	W
Output power	$W_o$	= 1630	1090	W
Efficiency	$\eta$	= 76.5	71	%

1) Care must be taken that under these operating conditions the absolute limiting values are not exceeded by variation of the supply voltage or the load or by tolerances in the circuit elements.

2) Under these conditions normal deviations of voltages and load are permissible. The absolute limiting values of the tube must, however, not be exceeded.

3) D.C. value.



## R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE with self rectification

## LIMITING VALUES (Absolute limits)

Frequency	f	up to	100	MHz
Transformer voltage	$V_{tr}$	= max.	4500	$V_{RMS}$
Negative grid voltage	$-V_g$	= max.	500	V
Anode current	$I_a$	= max.	280	mA
Grid current	$I_g$	= max.	55	mA
Anode input power	$W_{ia}$	= max.	1450	W
Anode dissipation	$W_a$	= max.	450	W
Grid dissipation	$W_g$	= max.	50	W

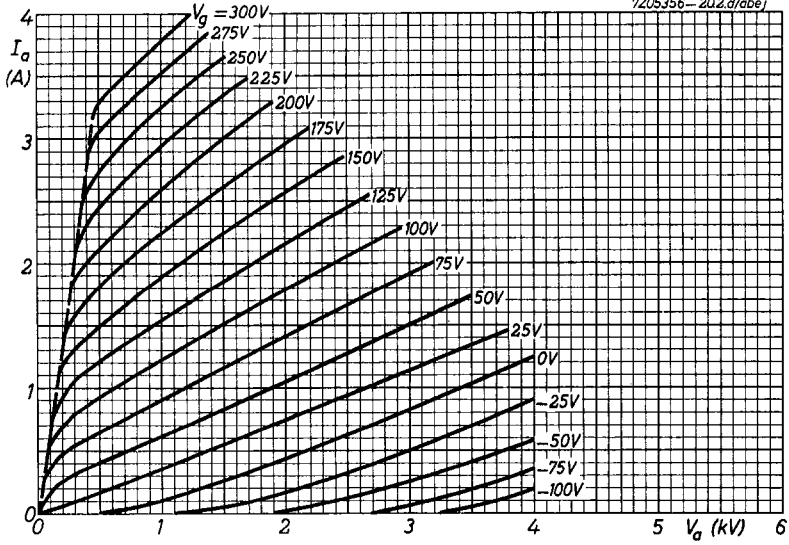
## OPERATING CONDITIONS

Transformer voltage	$V_{tr}$	= 4500 <sup>1)</sup>	3800 <sup>2)</sup>	$V_{RMS}$
Anode current	$I_a$	= 280	240	mA
Grid current	$I_g$	= 55	47	mA
Grid resistor	$R_g$	= 3.4	3.4	$k\Omega$
Anode input power	$W_{ia}$	= 1400	1010	W
Anode dissipation	$W_a$	= 350	295	W
Output power	$W_o$	= 1000	670	W
Efficiency	$\eta$	= 71.5	66	%

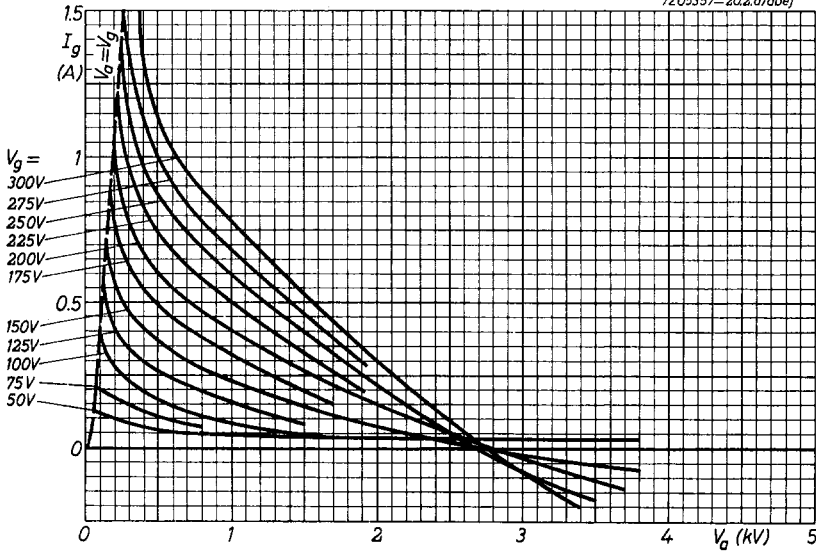
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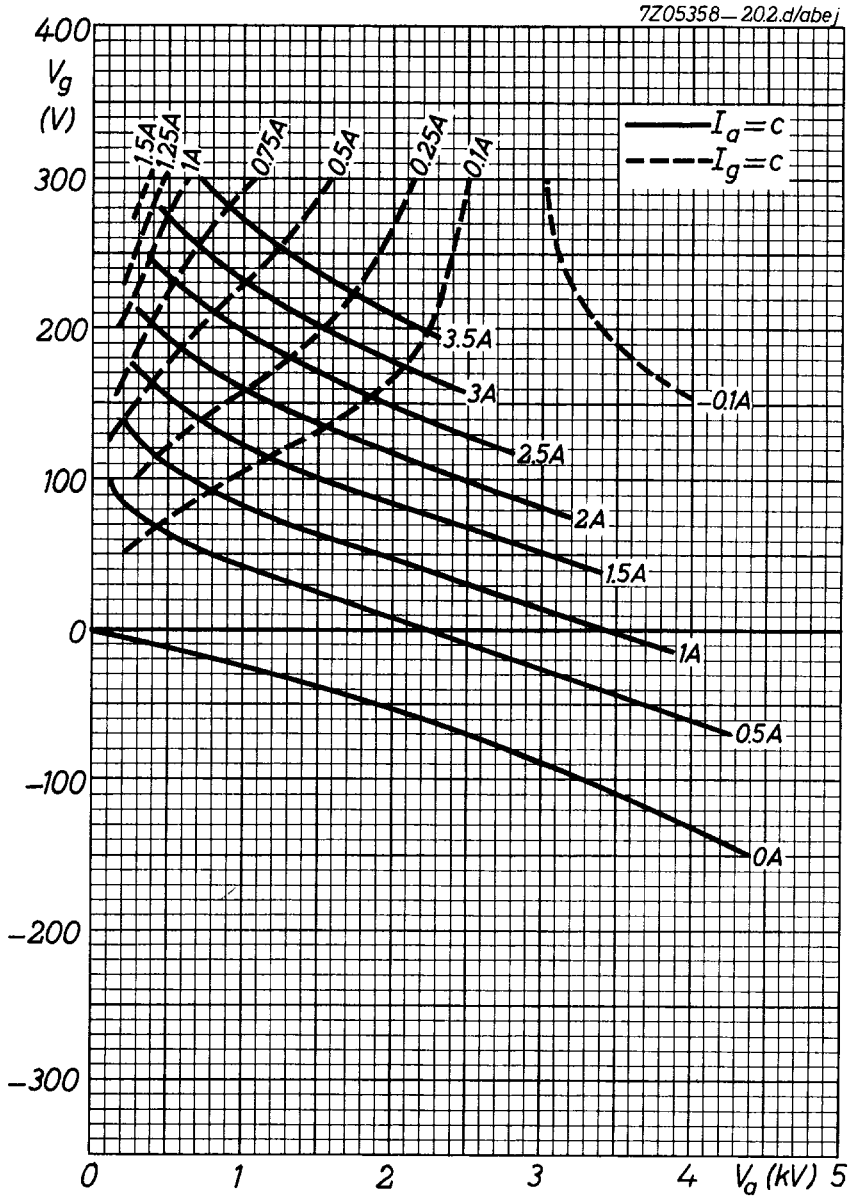
2) Under these conditions normal deviations of voltages and load are permissible. The absolute limiting values of the tube must, however, not be exceeded.

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