

RF POWER TRIODE

QUICK REFERENCE DATA							
λ (m)	Freq. (MHz)	C telegr.		C osc.		B mod. ¹⁾	
		V _a (kV)	W _o (kW)	V _a (kV)	W _o (kW)	V _a (kV)	W _o (kW)
10	30	6.5	9.5			7.0	20
		6.0	8.5			5.0	9.0
		5.0	7.1			4.0	7.1
6	50			6.0	6.0		

COOLING: water/low velocity air flow

HEATING: direct; filament thoriated tungsten

Filament voltage V_f 12.6 V

Filament current I_f 33 A

CAPACITANCES

Anode to all other elements except grid C_a 0.3 pF

Grid to all other elements except anode C_g 16 pF

Anode to grid C_{ag} 11 pF

TYPICAL CHARACTERISTICS

Anode voltage V_a 6 kV

Anode current I_a 1 A

Amplification factor μ 32

Mutual conductance S 15 mA/V

¹⁾ Two tubes

Table 1 Water cooling characteristics

W_a (kW)	T_i (°C)	$q_{min}^{1)}$ (l/min)	ΔP (kPa)*	max. outlet temperature T_o (°C)
1	20	2.5	8	30
	50	3	10	56
2	20	2.5	8	35
	50	5	30	57
4	20	4	18	36
	50	9	90	57
6	20	6	40	35
	50	14	250	57

TEMPERATURE LIMITS (Absolute limits)

Inlet temperature	T_i	max.	50 °C
Temperature of filament seals		max.	210 °C
Temperature of grid and anode seals		max.	180 °C

ACCESSORIES

Filament connectors	40634
Connector centre pin of filament	40649 ²⁾
Grid connector	40622
Water jacket	K713

In **general**, no air cooling will be required at frequencies up to 30 MHz and at ambient temperatures below 35 °C.

At higher frequencies or at higher ambient temperatures a low-velocity air flow to the grid and filament seals will be necessary.

¹⁾ At water inlet temperatures between 20 and 50 °C the required quantity of water can be found by proportional interpolation

²⁾ The centre tap f_c (diameter 10.5 mm; marked O) must not be used for filament current supply. The connector type 40649, however, must be used for the cooling of this pin

* 100 kPa $\approx$ 1 at

MECHANICAL DATA

Mounting position: vertical with anode down

Net mass: 0,45 kg

O-ring: 3322 026 82801

Dimensions in mm

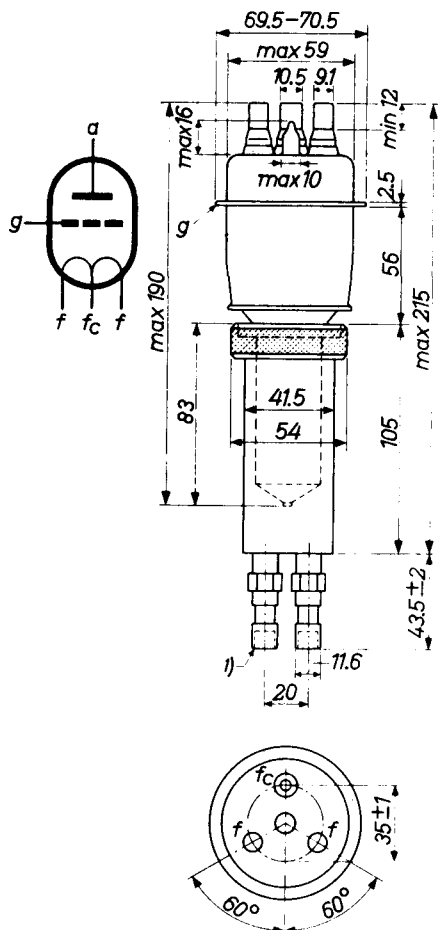


Fig. 1 Mechanical outline.

(1) 1/8-in pipe thread

RF CLASS C TELEGRAPHY

LIMITING VALUES (Absolute limits)

Frequency	f	up to	30	MHz
Anode voltage	V_a	max.	7.2	kV
Negative grid voltage	$-V_g$	max.	1250	V
Anode current	I_a	max.	2.2	A
Grid current	I_g	max.	0.6	A
Anode input power	W_{ia}	max.	14	kW
Anode dissipation	W_a	max.	6	kW

OPERATING CONDITIONS

Wavelength	λ	10	10	10	m
Frequency	f	30	30	30	MHz
Anode voltage	V_a	6.5	6.0	5.0	kV
Grid voltage	V_g	-450	-400	-300	V
Anode current	I_a	2.0	2.0	2.0	A
Grid current	I_g	0.5	0.5	0.5	A
Peak grid AC voltage	V_{gp}	820	780	660	V
Grid input power	W_{ig}	370	350	297	W
Anode input power	W_{ia}	13	12	10	kW
Anode dissipation	W_a	3.5	3.5	2.9	kW
Output power	W_o	9.5	8.5	7.1	kW
Efficiency	η	73	71	71	%

AF CLASS B AMPLIFIER AND MODULATOR

LIMITING VALUES (Absolute limits)

Anode voltage	V_a	max.	7.2	kV
Anode current	I_a	max.	2.2	A
Anode input power	W_{ia}	max.	14	kW
Anode dissipation	W_a	max.	6	kW
Grid circuit resistance	R_g	max.	15	k Ω

OPERATING CONDITIONS, two tubes

V_a	7		5		5		4		kV
V_g	-250		-165		-165		-135		V
$R_{aa\sim}$	4150		4800		5500		3800		Ω
V_{ggp}	0	1300	0	880	0	730	0	930	V
I_a	2x0.2	2x2.0	2x0.15	2x1.25	2x0.15	2x1.1	2x0.1	2x1.25	A
I_g	0	2x0.53	0	2x0.33	0	2x0.22	0	2x0.36	A
I_{gp}	-	2x2.8	-	2x1.75	-	2x1.2	-	2x1.8	A
W_{ig}	0	2x310	0	2x130	0	2x70	0	2x135	W
W_{ia}	2x1.4	2x14	2x0.75	2x6.2	2x0.75	2x5.5	2x0.4	2x5.0	kW
W_a	2x1.4	2x4.0	2x0.75	2x1.7	2x0.75	2x1.5	2x0.4	2x1.45	kW
W_o	0	20	0	9	0	8.0	0	7.1	kW
η	-	71.5	-	72.5	-	72.5	-	71	%

RF 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	55 MHz
Anode voltage	V_a	max.	7 kV
Negative grid voltage	$-V_g$	max.	1250 V
Anode current	I_a	max.	1.8 A
Grid current , off load	I_g	max.	0.5 A ¹⁾
Anode input power	W_{ia}	max.	11 kW
Anode dissipation	W_a	max.	6 kW
Grid circuit resistance	R_g	max.	10 k Ω

OPERATING CONDITIONS

Frequency	f	50 MHz
Transformer voltage	V_{tr}	5100 V _{RMS}
Anode voltage	V_a	6.0 kV
Anode current	I_a	1.5 A
Grid current , on load	I_g	0.4 A
Grid resistor	R_g	1000 Ω
Grid input power	W_{ig}	300 W
Anode input power	W_{ia}	9 kW
Anode dissipation	W_a	2.7 kW
Output power	W_o	6 kW ²⁾
Efficiency	η	67 %

¹⁾ Off load max. 0.7 A

²⁾ Available power (load + circuit losses)

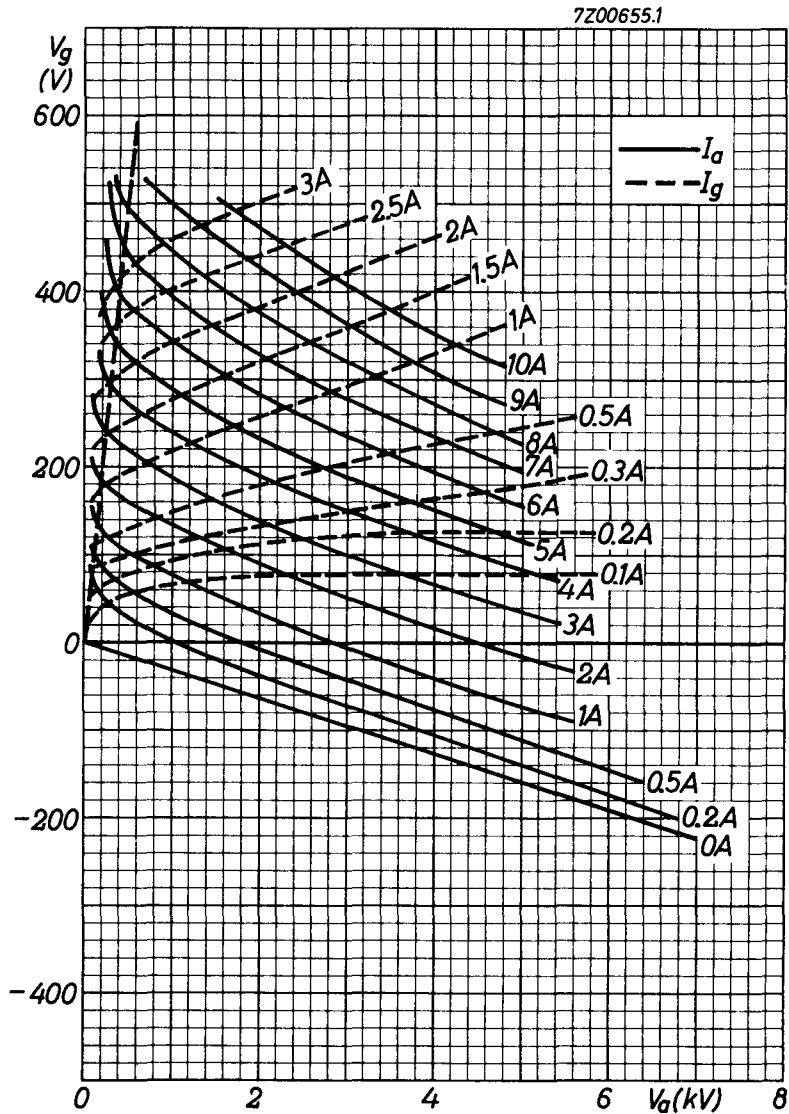


Fig. 2 Constant current characteristics.

PHILIPS

Data handbook



**Electronic
components
and materials**

TBW7/8000

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