

## RF POWER TRIODE

QUICK REFERENCE DATA							
$\lambda$ (m)	Freq. (MHz)	C teleg.		C osc.		B mod. <sup>1)</sup>	
		V <sub>a</sub> (kV)	W <sub>o</sub> (kW)	V <sub>a</sub> (kV)	W <sub>o</sub> (kW)	V <sub>a</sub> (kV)	W <sub>o</sub> (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 <sub>f</sub>	12.6 V
Filament current	I <sub>f</sub>	33 A

### CAPACITANCES

Anode to all other elements except grid	C <sub>a</sub>	0.3 pF
Grid to all other elements except anode	C <sub>g</sub>	16 pF
Anode to grid	C <sub>ag</sub>	11 pF

### TYPICAL CHARACTERISTICS

Anode voltage	V <sub>a</sub>	6 kV
Anode current	I <sub>a</sub>	1 A
Amplification factor	$\mu$	32
Mutual conductance	S	15 mA/V

<sup>1)</sup> Two tubes

**Table 1** Water cooling characteristics

$W_a$ (kW)	$T_i$ (°C)	$q_{min}^{1)}$ (l/min)	$\Delta P$ (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 <sup>2)</sup>
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.

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

<sup>2)</sup> 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

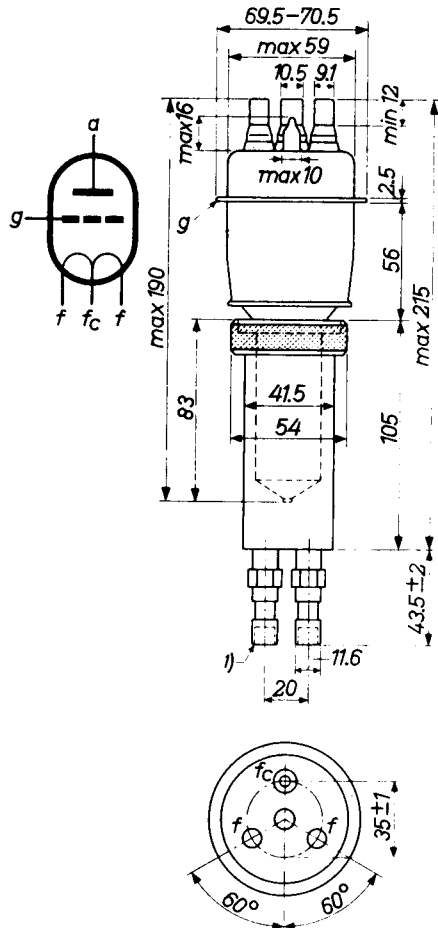


Fig. 1 Mechanical outline.

(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	$\lambda$	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	$\eta$	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	$k\Omega$

## 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		$\Omega$
$V_{ggp}$	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
$\eta$	-	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 <sup>1)</sup>
Anode input power	$W_{ia}$	max.	11 kW
Anode dissipation	$W_a$	max.	6 kW
Grid circuit resistance	$R_g$	max.	10 k $\Omega$

**OPERATING CONDITIONS**

Frequency	f	50 MHz
Transformer voltage	$V_{tr}$	5100 V <sub>RMS</sub>
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 $\Omega$
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 <sup>2)</sup>
Efficiency	$\eta$	67 %

<sup>1)</sup>Off load max. 0.7 A

<sup>2)</sup> Available power (load + circuit losses)

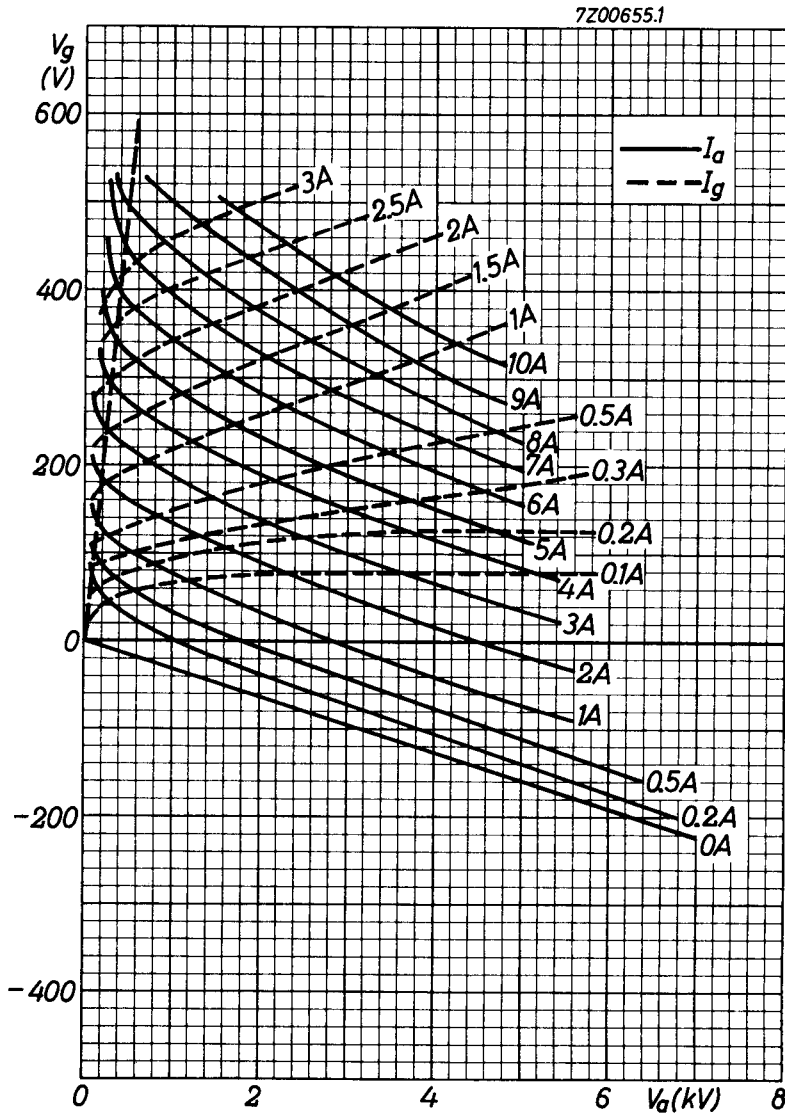


Fig. 2 Constant current characteristics.

# PHILIPS

Data handbook



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