AIR COOLED R.F. POWER TRIODE

Forced-air cooled coaxial power triode in metal-ceramic construction primarily intended for use as R.F. class AB linear broadband amplifier in TV sound and vision service at frequencies up to 1000 MHz.

QUICK REFERENCE DATA			
Frequency	f	470 to 860	MHz
Anode voltage	V_a	3500	V
Output power in the load (sync - CCIR-G)	W_ℓ	550	W
(peak white - CCIR - L)	W_ℓ	550	W
Power gain	G	15	dB

HEATING : indirect by a.c. (50 Hz to 400 Hz) or d.c.; oxide coated cathode.

Heater voltage	V_f	6,0 to 6,3	V ± 5%[1]
Heater current	I_f	4,8 to 5,8	A
Cathode heating time	T_h	min. 180	s

CAPACITANCES

Anode to grid	C_{ag}	6,8 to 8	pF
Grid to cathode and heater	$C_{g/kf}$	20 to 30	pF
Anode to cathode and heater	$C_{a/kf}$	90 to 180	fF

TYPICAL CHARACTERISTICS

Anode voltage	V_a	3	kV
Anode current	I_a	400	mA
Transconductance	S	70	mA/V
Amplification factor	μ	90	

TEMPERATURE LIMITS

Absolute max. temperature measured at reference points	t	max. 250	°C

To obtain optimum life this temperature should not exceed 200 °C.

[1]) For optimum performance as TV broadband amplifier (linearity) the voltage set must be maintained within ± 2 %.

Data based on pre-production tubes.

COOLING

Anode: forced air

W_a (W)	t_i (°C)	q_{min} (m^3/min)	p_i (mm H_2O)
1800	25	2,5	22

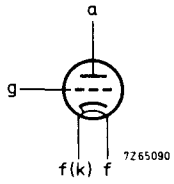
Other terminals: low velocity air flow.
When only the heater voltage is applied, the heater and heater/cathode terminals should also be cooled.
Cooling air and voltages may be switched off simultaneously.

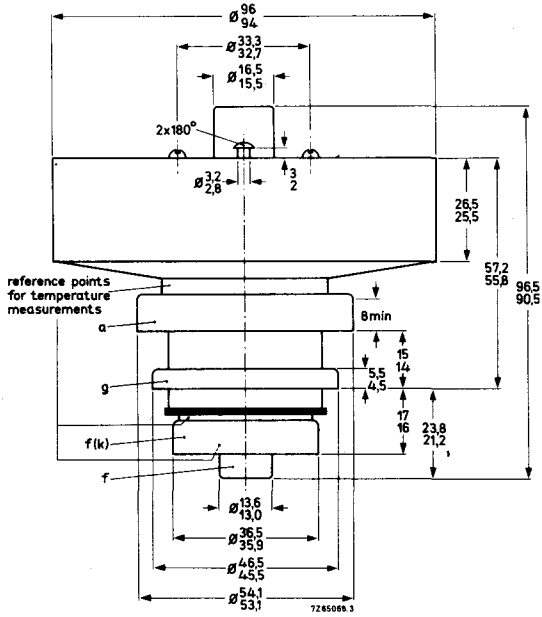
MECHANICAL DATA

Dimensions in mm

Net weight: approx. 1000 g

Mounting position: any





The radiator and the terminals are situated within concentric cylinders of the following dimensions:

Radiator	97,0 dia
Anode terminal	55,1 dia
Grid terminal	47,0 dia
Heater/cathode terminal	37,0 dia
Heater terminal	14,5 dia

R.F. CLASS AB AMPLIFIER FOR TELEVISION SERVICE , grounded grid

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	1000	MHz
Anode voltage	V_a	max.	3800	V
Grid voltage	$-V_g$	max.	200	V
Anode dissipation	W_a	max.	1900	W [1]
Grid current	I_g	max.	± 5	mA
Cathode current	I_k	max.	700	mA [1]

OPERATING CONDITIONS grounded grid [2]

Standard		CCIR-G	CCIR-L	
Frequency	f	470 to 860	470 to 860	MHz
Anode voltage	V_a	3500	3500	V
Grid voltage [3]	V_g	-38	-38	V
Anode current, no signal	I_a	250	250	mA
Anode current at average grey level	I_a	≈ 500	≈ 500	mA
Grid current	I_g	≈ 0	≈ 0	mA
Driver output power, sync	W_{dr}	21		W
peak white	W_{dr}		21	W
Output power in load, sync	W_ℓ	550		W
peak white	W_ℓ		550	W
Power gain	G	15	15	dB
Differential gain		95	95	% [4]

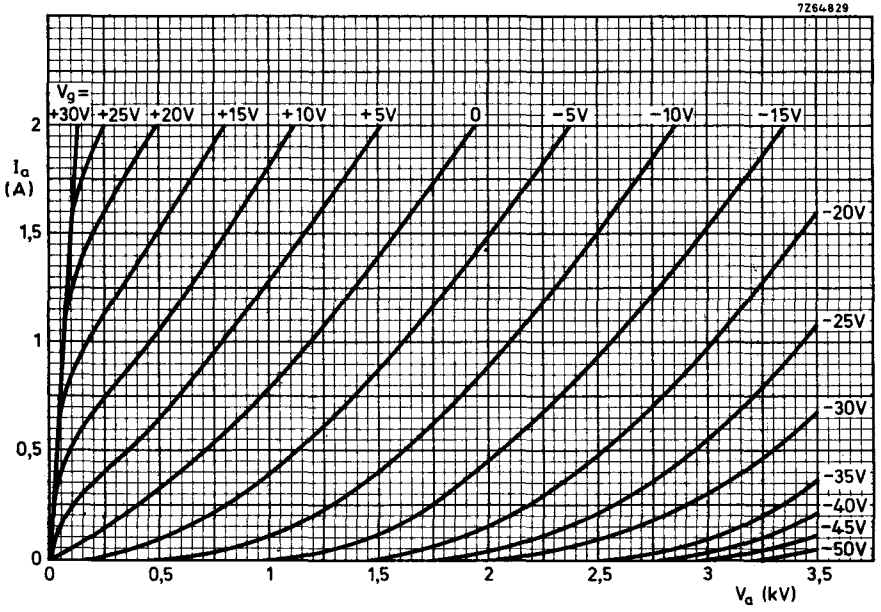
[1] During a short period, for adjustment of the transmitter, W_a = max. 2200 W, and I_k = max. 800 mA.

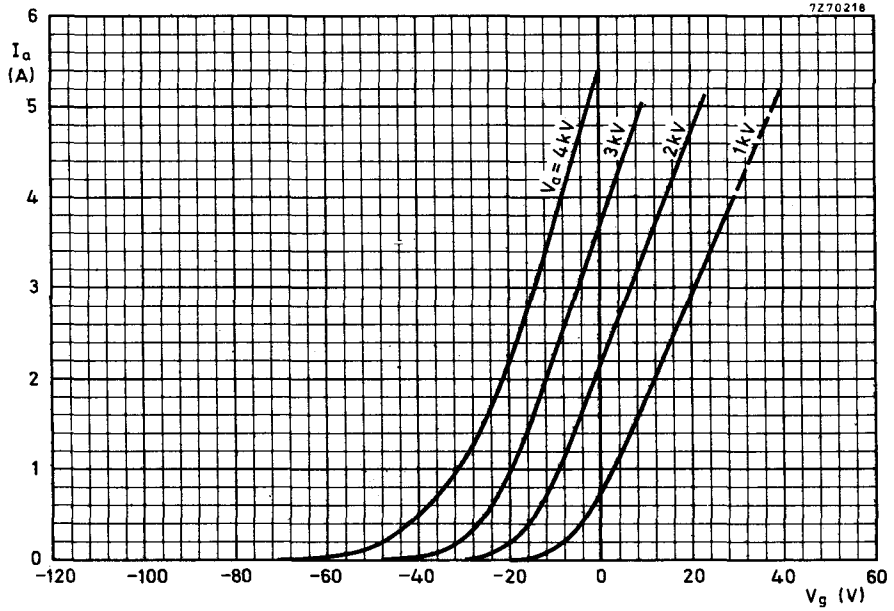
[2] R.F. driving power should be applied after the heater and electrode voltages.

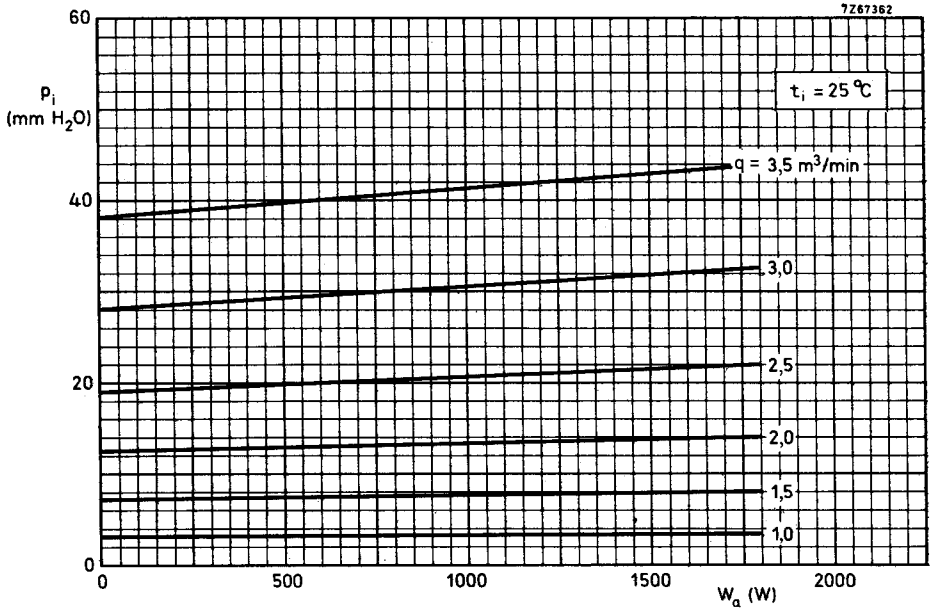
[3] To be adjusted for the stated no-signal anode current. Range values for equipment design -20 to -50 V.

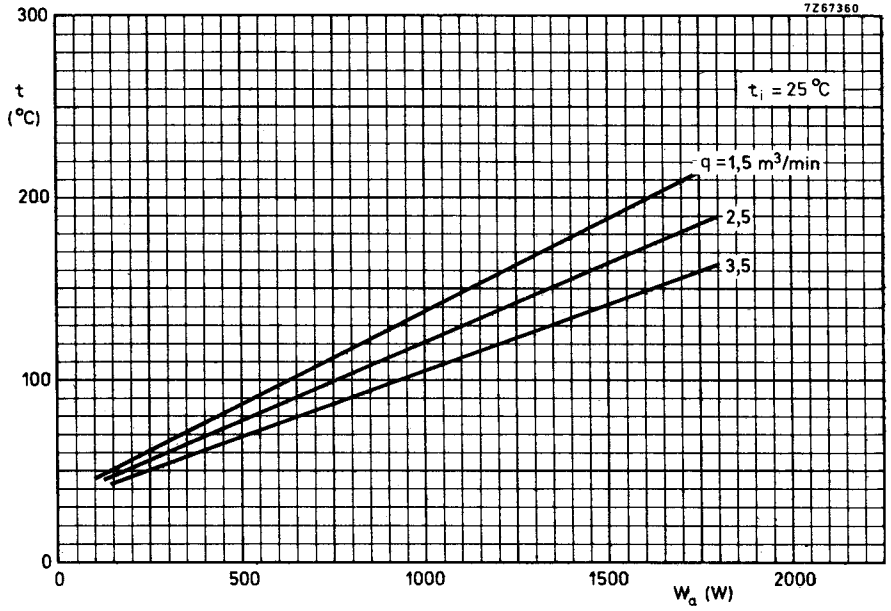
[4] Standard CCIR-G: Measured with a saw-tooth drive of 15% to 80% of peak sync amplitude with a superimposed 4,43 MHz signal with a peak-to-peak value of 10% of the peak sync amplitude adjusted at picture white level.

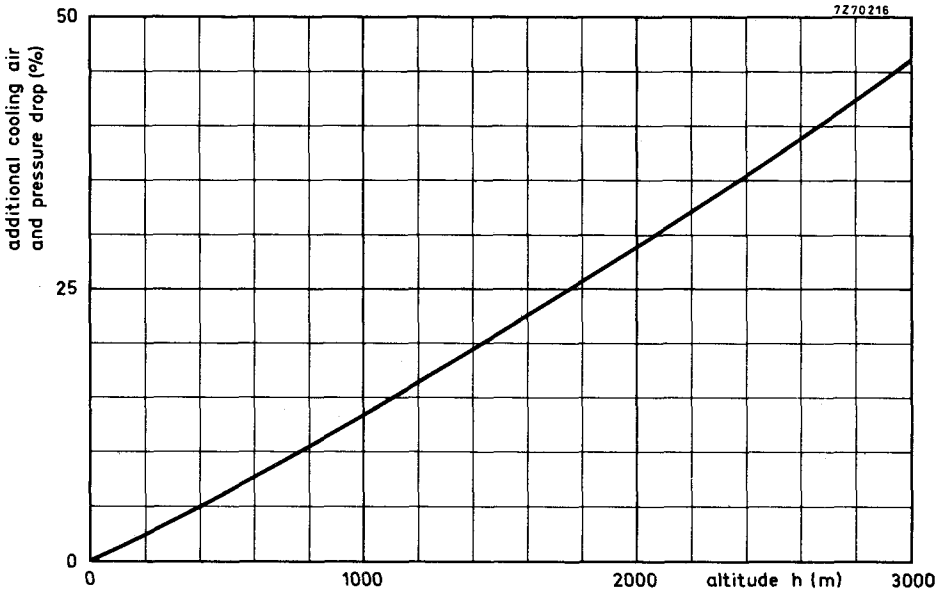
Standard CCIR-L: Measured on white level with a sawtooth drive of 30% to 100% of peak white amplitude with a superimposed 3 MHz signal with a peak-to-peak value of 30% of the picture white amplitude.

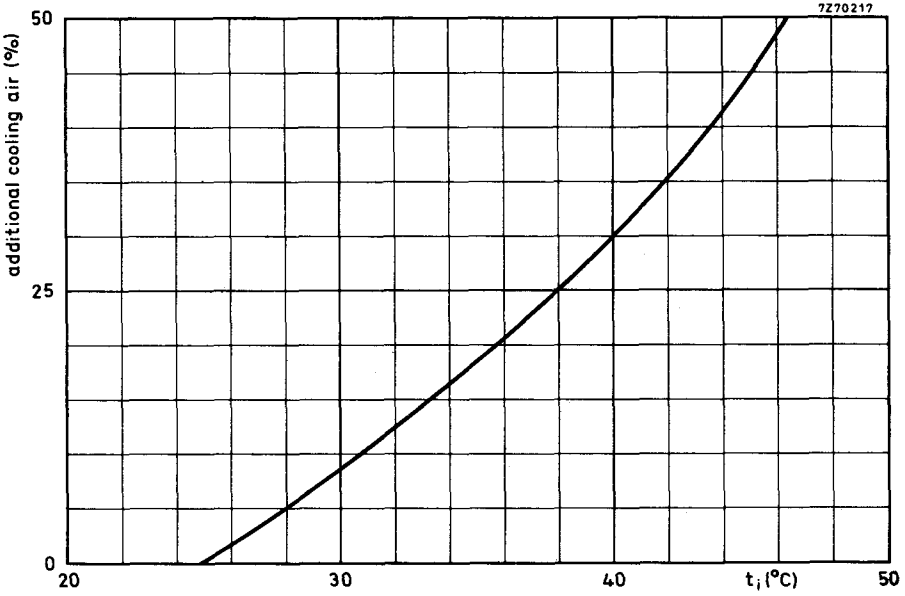

7Z64829
V_g =
+30V
+25V
+20V
+15V
+10V
+5V
0
-5V
-10V
-15V
-20V
-25V
-30V
-35V
-40V
-45V
-50V
I_a (A)
0
0,5
1
1,5
2
0
0,5
1
1,5
2
2,5
3
3,5
V_a (kV)


7Z70218
I_a (A)
0
1
2
3
4
5
6
V_a = 4kV
3kV
2kV
1kV
−120
−100
−80
−60
−40
−20
0
20
40
60
V_g (V)


7Z67362
60
40
20
0
p_i
(mm H_2O)
t_i = 25 °C
q = 3,5 m³/min
3,0
2,5
2,0
1,5
1,0
0
500
1000
1500
2000
W_a (W)


7Z67360
300
200
100
0
t
(°C)
t_i = 25 °C
q =1,5 m³/min
2,5
3,5
0
500
1000
1500
2000
W_a (W)


7Z70216
additional cooling air and pressure drop (%)
50
25
0
0
1000
2000
altitude h (m)
3000


7Z70217
additional cooling air (%)
50
25
0
20
30
40
t_i (°C)
50