

AIR COOLED V.H.F. POWER TETRODE

Forced air cooled coaxial power tetrode in metal-ceramic construction primarily intended for use as a linear broad-band amplifier in T V transmitters in the bands I and III. This type is also very suitable for A. M. and F. M. broadcast, A. F. modulator applications and in T V transposer service.

QUICK REFERENCE DATA			
Class AB linear amplifier (vision)			
Frequency	f	175, 25	MHz
Anode voltage	V_a	5	kV
Output power in load	W_l	8, 6	kW
Power gain	G	24	
Class B amplifier			
Frequency	f	260	MHz
Anode voltage	V_a	7	kV
Output power in load	W_l	10, 5	kW
Power gain	G	32	
R. F. Class C telegraphy or F. M. telephony			
Frequency	f	260	MHz
Anode voltage	V_a	7	kV
Output power in load	W_l	11	kW
Power gain	G	32	
TV transposer service			
Frequency	f	175 to 225	MHz
Anode voltage	V_a	4	kV
Output power in load	W	2, 5	kW
Power gain	G	30	

HEATING: direct; filament thoriated tungsten, mesh type

Filament voltage	V_f	6, 3	V \pm 5%
Filament current	I_f	120	A
Filament peak starting current	I_{fp}	max. 750	A
Cold filament resistance	R_{f0}	6	m Ω
Waiting time	T_w	min. 1	s

TYPICAL CHARACTERISTICS

Anode voltage	V_a	5	kV
Grid No. 2 voltage	V_{g2}	600	V
Anode current	I_a	1, 45	A
Transconductance	S	30	mA/V
Amplification factor	μ_{g2g1}	7, 5	

CAPACITANCES

	(grounded cathode)		(grounded grid)	
Input	$C_{g1(a)}$	90	$C_{f(a)}$	48 pF
Output	$C_{a(g1)}$	16	$C_{a(f)}$	16, 4 pF
Anode to grid No. 1	C_{ag1}	0, 55		pF
Anode to filament			C_{af}	0, 15 pF

TEMPERATURE LIMITS

Absolute max. envelope temperature	t_{env}	max.	240	$^{\circ}C$
Recommended max. seal temperature	t	max.	200	$^{\circ}C$

COOLING

See curves

Direction of air flow: see drawing.

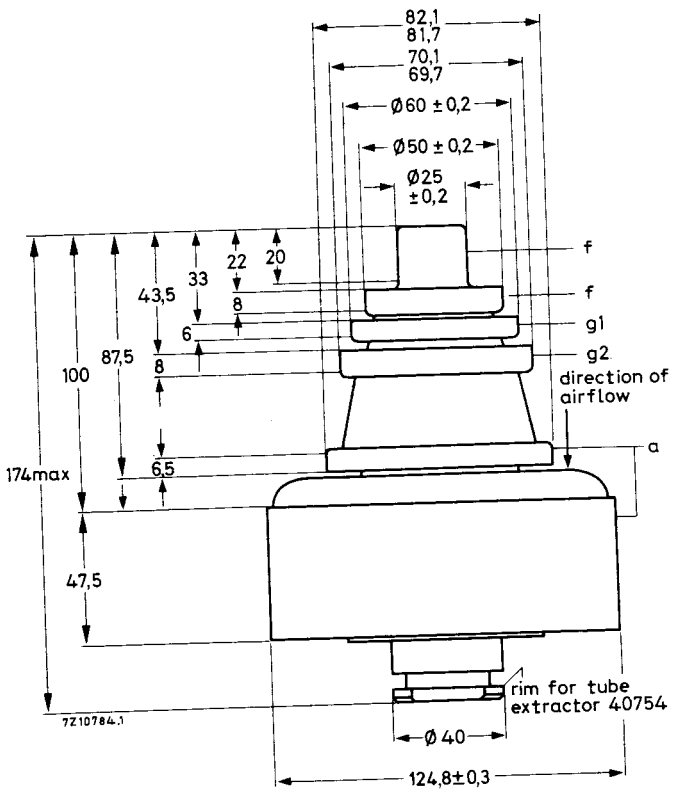
ACCESSORIES

Band I amplifier circuit assembly (vision)	type 40757
Band I amplifier circuit assembly (sound)	type 40758
Band III amplifier circuit assembly (vision)	type 40745
Band III amplifier circuit assembly (sound)	type 40746

MECHANICAL DATA

Dimensions in mm

Net weight: approx. 3.1 kg
 Mounting position: Vertical with anode up or down.



R.F. CLASS B SERVICE

Unless otherwise stated the voltages are specified with respect to cathode

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V_a	max.	8,5	kV
Grid no.2 voltage	V_{g2}	max.	1	kV
Grid no.1 voltage	$-V_{g1}$	max.	500	V
Anode current	I_a	max.	4	A
Anode input power	W_{ia}	max.	18,5	kW
Anode dissipation	W_a	max.	6	kW
Grid no.2 dissipation	W_{g2}	max.	80	W
Grid no.1 dissipation	W_{g1}	max.	40	W
Cathode current	I_k	max.	4,5	A

OPERATING CONDITIONS : grounded grid

Frequency	f	up to	260	MHz
Anode voltage	V_a		7	kV
Grid no.2 voltage	V_{g2}		600	V
Grid no.1 voltage	V_{g1}		-120	V ¹⁾
Anode current, no signal condition	I_a		0,2	A
Anode current	I_a		2,2	A
Grid no.2 current	I_{g2}		80	mA
Grid no.1 current	I_{g1}		125	mA
Anode input power	W_{ia}		15,4	kW
Anode dissipation	W_a		4,3	kW
Output power in load	W_l		10,5	kW
Efficiency, total	η		68	%
Driving power	W_{dr}		325	W
Power gain	$\frac{W_l}{W_{dr}}$		32	

Note see page 8

R.F. CLASS AB AMPLIFIER FOR TELEVISION SERVICE +

Negative modulation, positive synchronization (C.C.I.R. system)

Unless otherwise stated the voltages are specified with respect to the cathode.

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V _a	max.	6,5	kV
Grid no. 2 voltage	V _{g2}	max.	1	kV
Anode current, black	I _a black	max.	2,25	A
Anode input power, black	W _{ia} black	max.	12	kW
Anode dissipation	W _a	max.	6	kW
Grid no. 2 dissipation	W _{g2}	max.	80	W
Grid no. 1 dissipation	W _{g1}	max.	40	W
Cathode current	I _k	max.	4,5	A

OPERATING CONDITIONS , grounded grid

Frequency of vision carrier	f	175, 25	175, 25	MHz
Bandwidth (-1 dB)	B	7	7	MHz 2)
Anode voltage	V _a	5	4	kV
Grid no. 2 voltage	V _{g2}	600	600	V
Grid no. 1 voltage	V _{g1}	-75	-65	V 1)
Anode current, no signal condition	I _a	650	750	mA
Anode current, black	I _{abl}	2, 1	1, 9	A 3)
Grid no. 2 current, black	I _{g2bl}	20	30	mA 3)
Grid no. 1 current, black	I _{g1bl}	75	55	mA 3)
Output power in load, sync	W _l sync	8, 6	6, 25	kW
black	W _l black	5, 15	3, 75	kW
Driving power, sync	W _{dr} sync	350	260	W
black	W _{dr} black	200	140	W
Gain, sync	G _{sync}	24	24	2)
black	G _{black}	25, 8	26, 7	
Sync compression	sync in/out	27/25	29/25	4)
Differential phase		< 3	< 3	o 5)
Differential gain		≥ 85	≥ 85	% 5)
Anode resistance	R _a	1100	900	Ω 2)

Notes see page 8

+ Detailed information on definitions of terms and application suggestions are available on request.

OPERATING CONDITIONS (continued)

Frequency of vision carrier	f	83, 25	55, 25	MHz	
Bandwidth (-1 dB)	B	7	7	MHz	2)
Anode voltage	V _a	4	4	kV	
Grid no. 2 voltage	V _{g2}	600	600	V	
Grid no. 1 voltage	V _{g1}	-65	-65	V	1)
Anode current, no signal condition	I _a	750	750	mA	
Anode current, black	I _{ab1}	2, 1	2, 3	A	3)
Grid no. 2 current, black	I _{g2b1}	45	45	mA	3)
Grid no. 1 current, black	I _{g1b1}	75	85	mA	3)
Output power in load, sync	W _{l sync}	6, 25	6, 25	kW	
black	W _{l black}	3, 75	3, 75	kW	
Driving power, sync	W _{dr sync}	340	385	W	
black	W _{dr black}	180	210	W	
Gain, sync	G _{sync}	18, 5	16		2)
black	G _{black}	21, 5	18		2)
Sync compression	sync in/out	30/25	29/25		4)
Differential phase		< 3	< 3	°	5)
Differential gain		≥ 85	≥ 85	‰	5)
Anode resistance	R _{a~}	810	690	Ω	2)

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

LIMITING VALUES

see page 5

OPERATING CONDITIONS , grounded grid

Negative modulation, positive synchronization, combined sound and vision (CCIR standard G)

Frequency	f	175 to 225	MHz
Bandwidth (-1 dB)	B	8	MHz
Anode voltage	V _a	4	kV
Grid no. 2 voltage	V _{g2}	700	V
Grid no. 1 voltage 1)	V _{g1}	-65	V
Anode current, no signal condition	I _a	1	A
Anode current 6)	I _a	1, 65	A
Grid no. 2 current 6)	I _{g2}	25	mA
Grid no. 1 current 6)	I _{g1}	10	mA
Driving power, sync	W _{dr}	85	W
Output power in load, sync	W _l	2, 5	kW
Power gain	G	30	-
Intermodulation products 7)	d	-52	dB

Notes: see page 8

R.F. CLASS C TELEGRAPHY or F.M. TELEPHONY

LIMITING VALUES (Absolute max. rating system)

Frequency	f	up to	260	MHz
Anode voltage	V_a	max.	8,5	kV
Grid no.2 voltage	V_{g2}	max.	1	kV
Grid no.1 voltage	$-V_{g1}$	max.	500	V
Anode current	I_a	max.	4	A
Anode input power	W_{ia}	max.	18,5	kW
Anode dissipation	W_a	max.	6	kW
Grid no.2 dissipation	W_{g2}	max.	80	W
Grid no.1 dissipation	W_{g1}	max.	40	W
Cathode current	I_k	max.	4,5	A

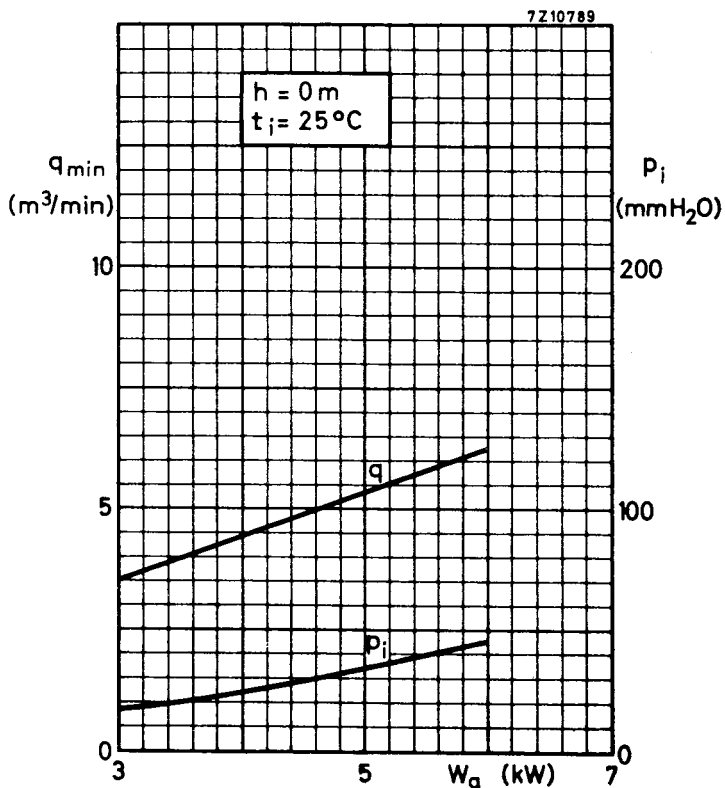
OPERATING CONDITIONS

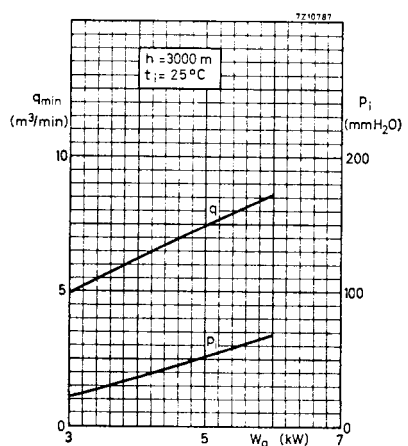
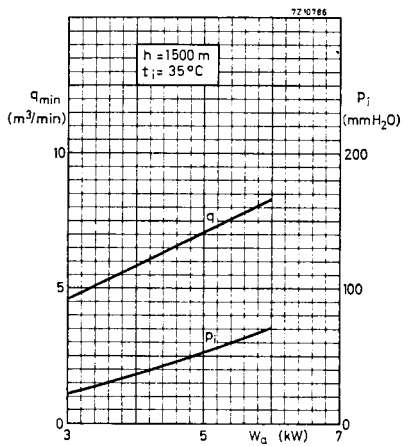
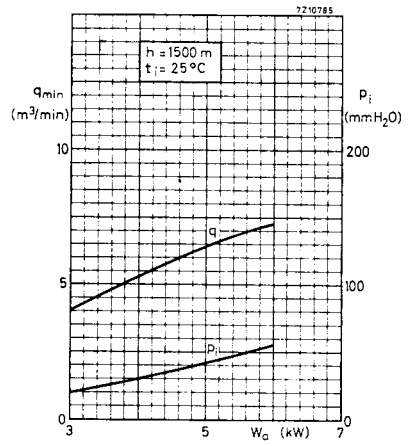
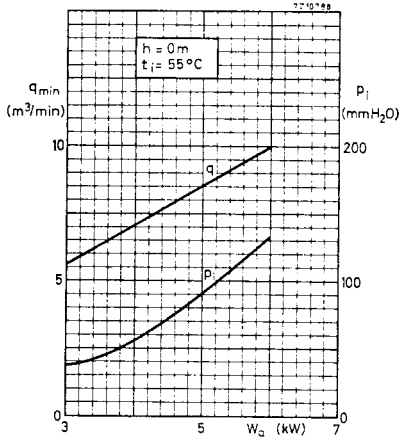
Frequency	f	260	MHz
Anode voltage	V_a	7	kV
Grid no.2 voltage	V_{g2}	600	V
Grid no.1 voltage	V_{g1}	-120	V ¹⁾
Anode current, no signal condition	I_a	200	mA
Anode current	I_a	2,3	A
Grid no.2 current	I_{g2}	80	mA
Grid no.1 current	I_{g1}	150	mA
Anode input power	W_{ia}	16,1	kW
Anode dissipation	W_a	5	kW
Output power in load	W_l	11	kW
Efficiency, total	η	68	%
Driving power	W_{dr}	325	W
Power gain	$\frac{W_l}{W_{dr}}$	32	

¹⁾ See page 8

NOTES

- 1) To be adjusted for the stated no signal anode current.
- 2) With double tuned circuit.
- 3) Black signal including line sync pulses
- 4) A picture/sync ratio of 75/25 for the outgoing signal requires a ratio of max. 70/30 for the incoming signal in which case the sync compression sync in/out = 30/25.
- 5) Measured with a saw tooth amplitude, running from 17 % to 75 % of the peak sync value, with superimposed a 4, 43 MHz sine wave with a 10 % peak to peak value.
- 6) At c.w. output power = 2, 5 kW
- 7) Three-tone test method (vision carrier -8 dB, sound carrier -7 dB, sideband signal -17 dB with respect to peak sync = 0 dB).





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