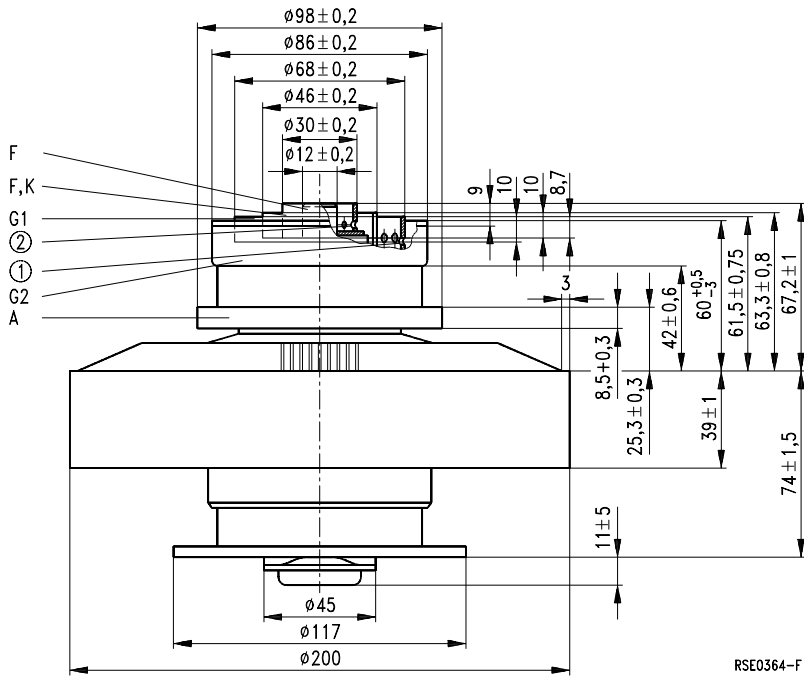


Ordering code Q51-X1036

Coaxial metal-ceramic tetrode with integrated resonance suppression for TV transmitters, band IV/V.



Dimensions in mm

- ① 18 tapholes $\phi 3$
- ② 8 tapholes $\phi 3$

Approx. weight 7,8 kg

Heating

Heater voltage	U_F	4,5	V
Heater current	I_F	≈ 200	A
Heating: direct			
Cathode: thoriated tungsten			

Characteristics

Emission current at $U_A = U_{G2} = U_{G1} = 300 \text{ V}$	I_{em}	45	A
Amplification factor of screen grid at $U_A = 2 \text{ kV}$, $U_{G2} = 500 \text{ to } 800 \text{ V}$, $I_A = 3 \text{ A}$	μ_{g2g1}	7,5	
Transconductance at $U_A = 2 \text{ kV}$, $U_{G2} = 800 \text{ V}$, $I_A = 2 \text{ to } 4 \text{ A}$	S	120	mA/V

Capacitances

Cathode/control grid	C_{kg1}	≈ 100	pF
Cathode/screen grid	C_{kg2}	$\approx 7,50$	pF
Cathode/anode	C_{ka}	$\approx 0,05$	pF ¹⁾
Control grid/screen grid	C_{g1g2}	≈ 195	pF
Control grid/anode	C_{g1a}	$\approx 0,55$	pF ¹⁾
Screen grid/anode	C_{g2a}	$\approx 20,0$	pF

1) Measured by a $\varnothing 50 \text{ cm}$ screening plate in the screen-grid terminal plane.

Amplifier for TV transmitters with common vision and sound carrier transmission, grounded control-grid screen-grid circuit, vision-to-sound ratio 10:1, standard G

Maximum ratings

Frequency	f	960	MHz
Anode voltage (dc)	U_A	7,0	kV
Screen grid voltage (dc)	U_{G2}	1000	V
Control grid voltage (dc)	U_{G1}	– 200	V
Cathode current (dc)	I_K	6,0	A
Peak cathode current	$I_{K M}$	30	A
Anode dissipation	P_A	20	kW
Screen grid dissipation	P_{G2}	180	W
Control grid dissipation	P_{G1}	80	W

Operating characteristics

Frequency	f	470 ... 800	MHz
Bandwidth	B	11	MHz
Output power, sync level	$P_{2 SY}$	11,5/1,15	kW ¹⁾
Gain	V_p	15	dB
3-tone intermodulation ratio	a_{IM3}	> 50	dB
Anode voltage (dc)	U_A	6,0	kV
Screen grid voltage (dc)	U_{G2}	800	V
Control grid voltage (dc)	U_{G1}	– 112	V
Peak control grid voltage (ac), sync level	$U_{g1 m SY}$	100	V
Zero-signal anode current (dc)	$I_{A 0}$	1,8	A
Anode current (dc), black level	$I_{A SW}$	3,7	A
Screen grid current (dc), black level	$I_{G2 SW}$	90	mA
Anode input power, black level	$P_{B A SW}$	22,2	kW
Drive power, sync level	$P_{1 SY}$	360	W
Drive power, sound	$P_{1 Ton}$	36	W
Anode dissipation, black level	$P_{A SW}$	14,6	kW
Anode load resistance	R_A	440	Ω

1) Without taking circuit losses into account.

**TV vision transmitter,
grounded control-grid screen-grid circuit, negative modulation, standard G**

Maximum ratings

Frequency	f	960	MHz
Anode voltage (dc)	U_A	7,0	kV
Screen grid voltage (dc)	U_{G2}	1000	V
Control grid voltage (dc)	U_{G1}	– 200	V
Cathode current (dc)	I_K	6,0	A
Peak cathode current	$I_{K M}$	30	A
Anode dissipation	P_A	20	kW
Screen grid dissipation	P_{G2}	180	W
Control grid dissipation	P_{G1}	80	W

Operating characteristics

Frequency	f	470 ... 800	MHz
Bandwidth (1 dB)	B	11	MHz
Output power, sync level	$P_{2 SY}$	23	kW ¹⁾
Output power, black level	$P_{2 SW}$	13	kW
Gain	V_p	15,5	dB
Anode voltage (dc)	U_A	6,4	kV
Screen grid voltage (dc)	U_{G2}	800	V
Control grid voltage (dc)	U_{G1}	– 112	V
Peak control grid voltage (ac), sync level	$U_{g1 m SY}$	104	V
Zero-signal anode current (dc)	$I_{A 0}$	2,2	A
Anode current (dc), black level	$I_{A SW}$	5,0	A
Screen grid current (dc), black level	$I_{G2 SW}$	140	mA
Anode input power, black level	$P_{B A SW}$	32	kW
Drive power, sync level	$P_{1 SY}$	650	W
Anode dissipation, black level	$P_{A SW}$	19	kW
Anode load resistance	R_A	480	Ω

1) Without taking circuit losses into account.

Tube mounting

Axis vertical, anode up or down.

Spring contact rings are suitable connectors for cathode, control grid, screen grid and anode. The spring tension must be dimensioned such that the required power for inserting and withdrawing the tube remains below 150 N. Recommended pull-off power per spring contact ring is approx. 20 N. For further details see "Explanations on Technical Data".

Maximum tube surface temperature

The temperature of the electrode terminals and ceramic insulators must not exceed 220 °C. For keeping below this maximum temperature an air flow is required to cool the terminal rings. For this purpose the terminal contacts must be designed for providing a uniform cooling effect.

Forced-air cooling

The minimum air flow rate required for maximum anode dissipation is given in the cooling air diagram, valid for 25 °C inlet temperature at 1 bar air pressure (sea level). The cooling air must be supplied from the electrode terminal side. For detailed information on forced-air cooling refer to "Explanations on Technical Data".

Automatic heating power regulation

Recommendations for automatic heating power stabilization are contained in the instruction "UHF TV Tetrodes, Heating Power Adjustment", which is supplied upon request.

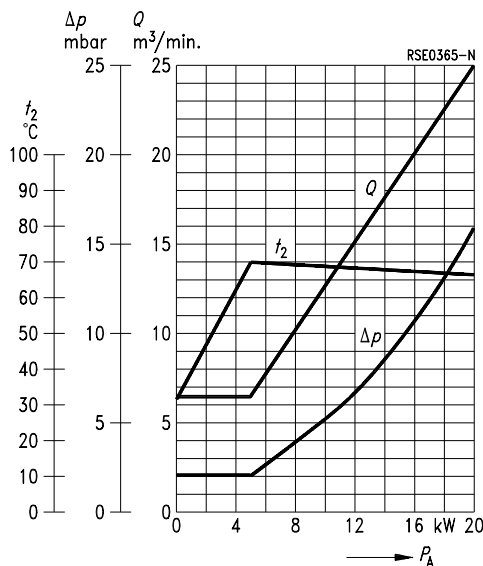
Safety precautions

The section "Safety precautions" under "Explanations on Technical Data" describes how the tube is to be protected against damage due to electric overload or insufficient cooling. A copper wire with Ø 0,12 mm should be used to test the anode overcurrent trip circuit.

Transmitter off-periods

Frequent switching of the heating reduces lifetime. So the heating (and cooling) should be left on during transmitter off-periods of up to two hours. Continuous heating with reduced power (black heating) should be provided for longer off-periods. Refer to "Explanations on Technical Data".

Cooling air diagram



The cooling air is supplied from the electrode terminal side.

Air pressure = 1 bar

$t_1 = 25\text{ °C}$

$U_{G1} = f(U_A)$
 $U_{G2} = 800 \text{ V}$

Parameter = I_A —————
Parameter = I_{G2} - - - - -

