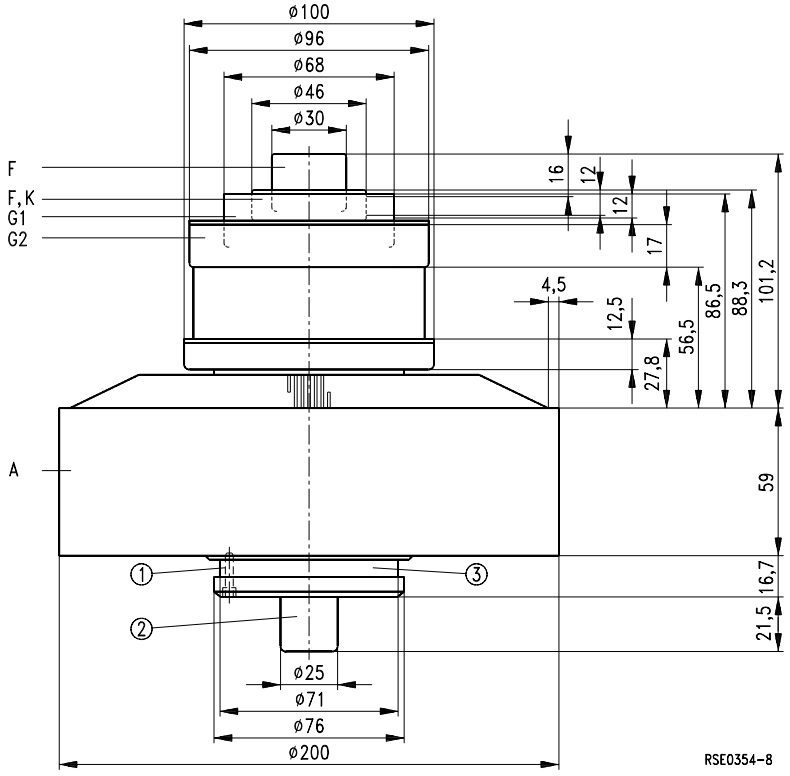
Ordering code Q51-X2068

Metal-ceramic tetrode with coaxial lead-throughs, especially suitable for FM transmitters in grounded control-grid screen-grid-circuits.



Dimensions in mm

① Taphole for tube fuse RöSich7
② Do not use as terminal
③ Fixture for tube extractor

Approx. weight 7 kg

The radiator and the terminals are of concentric design with the following diameters:

Radiator	∅ 203,5	Control grid terminal	∅ 69,0
Screen grid terminal	∅ 97,0	Heater, cathode terminal	∅ 46,6
		Heater terminal	∅ 30,6

Heating

Heater voltage	U_F	9,0	V
Heater current	I_F	≈ 112	A
Heating: direct			
Cathode: thoriated tungsten			

Characteristics

Emission current at $U_A = U_{G2} = U_{G1} = 300$ V	I_{em}	40	A
Amplification of screen grid at $U_A = 2$ kV, $U_{G2} = 600$ to 1000V, $I_A = 3$ A	μ_{g2g1}	7,0	
Transconductance at $U_A = 2$ kV, $U_{G2} = 800$ V, $I_A = 2$ to 4 A	s	80	mA/V

Capacitances

Cathode/control grid	c_{kg1}	≈ 82	pF
Cathode/screen grid	c_{kg2}	≈ 6	pF
Cathode/anode	c_{ka}	≈ 0,09	pF [1)]
Control grid/screen grid	c_{g1g2}	≈ 128	pF
Control grid/anode	c_{g1a}	≈ 0,78	pF [1)]
Screen grid/anode	c_{g2a}	≈ 21	pF

Accessories		**Ordering code**
Tube extractor	RöZub264	Q81-X2120
Cavities on request		

1) Measured by means of a 50 cm diameter screening plate in the screen grid terminal plane.

RF amplifier,
class B operation, grounded control-grid screen-grid circuit

Maximum ratings

Frequency	f	110	MHz
Anode voltage (dc)	U_A	12	kV
Screen grid voltage (dc)	U_{G2}	1000	V
Control grid voltage (dc)	U_{G1}	– 250	V
Cathode current (dc)	I_K	6,0	A
Peak cathode current	$I_{K\,M}$	35	A
Anode dissipation	P_A	16	kW
Screen grid dissipation	P_{G2}	270	W
Control grid dissipation	P_{G1}	70	W

Operating characteristics

Frequency	f	≤ 110	≤ 110	MHz
Output power	P_2	22,0	11,3	kW[1)][2)]
Power gain	V_p	17	18,5	dB
Anode voltage (dc)	U_A	9,0	9,0	kV
Screen grid voltage (dc)	U_{G2}	800	600	V
Control grid voltage (dc)	U_{G1}	– 180	– 165	V
Peak control grid voltage (ac)	$U_{g1\,m}$	170	130	V
Anode current (dc)	I_A	3,4	1,7	A
Screen grid current (dc)	I_{G2}	170	70	mA
Anode input power	$P_{B\,A}$	30,6	15,3	kW
Drive power	P_1	440	160	W
Anode dissipation	P_A	8,2	4,1	kW
Efficiency	η	71	73	%
Anode load resistance	R_A	1400	3000	Ω

1) Circuit losses are not included.
2) Drive power is included.

Tube mounting

Axis vertical, anode up or down.

Maximum tube surface temperature

The temperature of the tube's metal-ceramic seals must not exceed 220 °C at any point and the temperature of the internal cathode terminal must not exceed 250 °C. These requirements can be met without additional cooling of the terminals, if the cooling air is appropriately channeled and if the spacing of the contact springs allows sufficient air to pass.

Forced-air cooling

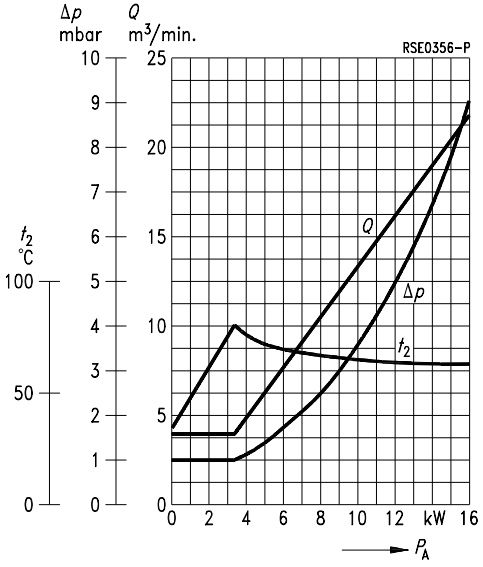
The minimum air flow rate required for maximum anode dissipation is given in the cooling air diagram, valid for 25 °C inlet temperature at a normal air pressure of 1 bar (sea level). The cooling air must be supplied from the side of the electrode terminals. For further information on forced-air cooling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

Safety precautions

The section "Safety precautions" describes how the tube is to be protected against damage due to electric overload or insufficient cooling. A copper wire with 0,20 mm diameter should be used to test the anode overcurrent trip circuit.

During operation the air flow and temperature have to be monitored, since in case of malfunction the voltages applied to the tube must be automatically disconnected.

Cooling air diagram



The cooling air is supplied from the electrode terminal side.

Air pressure = 1 bar
t_1 = 25 °C

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

Parameter = I_A ——————
Parameter = I_{G2} —·—·—·—·—·—·—
Parameter = I_{G1} — — — — — — —