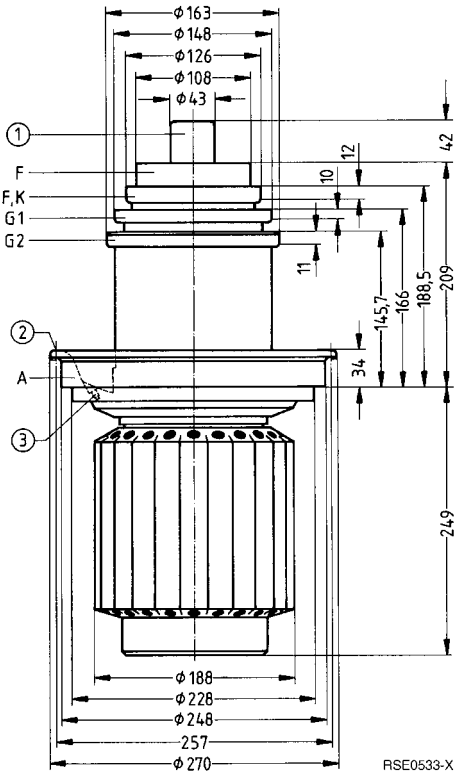


For frequencies up to 130 MHz

Ordering code Q53-X2052

Coaxial metal-ceramic tetrode, vapor-cooled, particularly suitable for 100 kW broadcast transmitters up to 30 MHz.



Dimensions in mm

- ① Do not use as terminal
- ② Taphole M6 for screw-in handle R6Zub201K
- ③ Taphole M5 for tube fuse R6Sich4

Approx. weight 30 kg

Heating

Heater voltage	U_F	16	V
Heater current	I_F	≈ 260	A
Heating: direct			
Cathode: thoriated tungsten			

Characteristics

Emission current at $U_A = U_{G2} = U_{G1} = 600\text{ V}$	I_{em}	150	A
Amplification factor of screen grid at $U_A = 4\text{ kV}$, $U_{G2} = 800\text{ to }1200\text{ V}$, $I_A = 5\text{ A}$	μ	5,0	
Transconductance at $U_A = 4\text{ kV}$, $U_{G2} = 1000\text{ V}$, $I_A = 5\text{ A}$	s	90	mA/V

Capacitances

Cathode/control grid	C_{kg1}	≈ 160	pF
Cathode/screen grid	C_{kg2}	≈ 20	pF
Cathode/anode	C_{ka}	≈ 0,7	pF ¹⁾
Control grid/screen grid	C_{g1g2}	≈ 240	pF
Control grid/anode	C_{g1a}	≈ 5,0	pF ¹⁾
Screen grid/anode	C_{g2a}	≈ 80	pF

Accessories

Ordering code

Mounting instruction	RöMo252	
Internal cathode terminal	RöKat3150	Q81-X1104
External cathode terminal	RöKat3151	Q81-X1105
Cathode connecting strip (2 for each tube)	RöKat363	Q81-X1174
Control grid terminal	RöGit252	Q81-X4
Screen grid terminal	RöGit253	Q81-X998
SW header socket	RöKpf254K	Q81-X1801
Socket wrench for tube fuse	RöZub10	Q81-X2110
Handle	RöZub201K	Q81-X2151
Tube fuse	RöSich4	Q81-X1404
Pull switch for tube fuse	RöKt11	Q81-X1311
Boiler	RöKüV201	Q81-X1671
Union at water inlet	RöKüV41Zub7	Q81-X1647
Insulating pipe at vapor outlet	RöKüV201Zub3	Q81-X1673
Insulating pipe at water inlet	RöKüV201Zub4	Q81-X1674
Insulator	RöKüV201Zub5K	Q81-X1675
Gasket at vapor outlet	RöKüV201Zub8	Q81-X1678
LL electrolytic target	RöEl23	C65055-A667-A23
Gasket for boiler	RöN9355	C65051-A201-C531

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

**Anode and screen-grid modulation,
class C operation, grounded cathode circuit**

Maximum ratings

Frequency	f	30	MHz
Anode voltage (dc)	U_A	12	kV
Screen grid voltage (dc)	U_{G2}	900	V
Control grid voltage (dc)	U_{G1}	- 800	V
Cathode current (dc)	I_K	25	A
Peak cathode current	I_{KM}	150	A
Anode dissipation	P_A	120	kW
Screen grid dissipation	P_{G2}	2500	W
Control grid dissipation	P_{G1}	800	W

Operating characteristics

Frequency	f	≤ 30	≤ 30	MHz
Carrier power	P_{trg}	110	110	kW ¹⁾
Anode voltage (dc)	U_A	11	10	kV
Screen grid voltage (dc)	U_{G2}	800	800	V
Control grid bias (dc), fixed	$U_{G1\ fix}$	- 250	- 250	V
Control grid resistance	R_{G1}	440	350	Ω
Peak control grid voltage (ac)	$U_{g1\ m}$	820	850	V
Anode current (dc)	I_A	12,4	14	A
Screen grid current (dc)	I_{G2}	1,6	2,0	A
Control grid current (dc)	I_{G1}	0,8	1,0	A
Anode input power	$P_{B\ A}$	136	140	kW
Drive power	P_1	590	760	W ¹⁾
Anode dissipation	P_A	26	30	kW ²⁾
Screen grid dissipation	P_{G2}	1280	1600	W
Control grid dissipation	P_{G1}	110	160	W
Efficiency	η	81	79	%
Anode load resistance	R_A	470	380	Ω
Modulation factor	m	100	100	%
Peak screen grid voltage (ac)	$U_{g2\ m}$	700	700	V ³⁾
Modulation power	P_{mod}	68	70	kW
Control grid current (dc)	I_{G1}	1,0	1,3	A ⁴⁾
Drive power	P_1	800	1000	W ¹⁾⁴⁾
Anode dissipation at modulation	$P_{A\ mod}$	45	50	kW ⁵⁾
Screen grid dissipation at modulation	$P_{G2\ mod}$	1600	2000	W ⁴⁾

1) Circuit losses are not included.
 2) Even during modulation the indicated maximum ratings must not be exceeded. It has to be observed that during 100 % modulation the anode dissipation increases to about 1,5 times the power dissipation stated for the carrier value.
 3) Modulation of screen grid via separate transformer winding or choke in the screen grid line.
 4) Maximum values at $U_A = 0\ V$.
 5) Average value at $m = 100\ \%$.

Tube mounting

Axis vertical, anode down.

Maximum tube surface temperature

The temperature of the metal-ceramic seals must not exceed 220 °C at any point. Sufficient cooling of the terminal side has to be provided by means of an air flow of approximately 2 to 3 m³/min.

Vapor cooling

Cooling specifications for maximum anode dissipation	$P_{A \max} = 120 \text{ kW}$
Total power to be dissipated by the cooling system ($P_A + P_G + 0,8 P_F$)	125,5 kW
Equivalent thermal output	7520 kJ/min (2700 kcal/min)
Flow rate of returning water	
at returning water temperature of 20 °C	approx. 2,8 l/min
at returning water temperature of 90 °C	approx. 3,3 l/min
Volume of generated vapor	
at returning water temperature of 20 °C	approx. 4,9 m ³ /min
at returning water temperature of 90 °C	approx. 5,6 m ³ /min

Detailed information on vapor cooling upon request. Please observe instructions on vapor cooling given under "Explanations on Technical Data".

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 0,30 mm diameter should be used to test the anode overcurrent trip circuit.

The tube fuse Rösich4 is recommended for protecting the vapor-cooled version RS 2052 CV against thermal anode overload. In conjunction with pull switch RökT11 it disconnects the voltages at the tube in case of overload.

$U_{G1} = f(U_A)$
 $U_{G2} = 1000 \text{ V}$
 Parameter = I_A —————
 Parameter = I_{G2} - - - - -
 Parameter = I_{G1} - - - - -

