

S.Q. TUBE

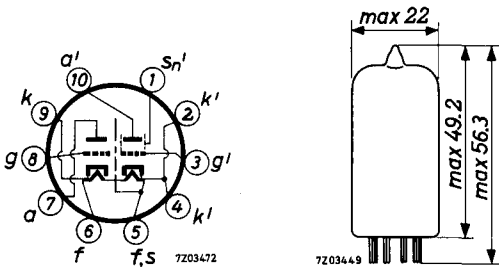
Special quality double triode with neutralisation screen, designed for use as V.H.F. amplifier (max. freq. 300 MHz) in a cascode circuit without external neutralisation, e.g. aerial amplifier for band III and frequency multiplier.

QUICK REFERENCE DATA				
Life test	10 000 hours			
Low interface resistance				
Mechanical quality	Shock and vibration resistant			
Base	10 pin miniature with gold plated pins			
Heating	Indirect A.C. or D.C.; parallel supply			
Heater voltage	V_f	6.3	V	
Heater current	I_f	335	mA	
	Input section		Output section	
Anode voltage	90	90	90	90 V
Anode current	15	27	15	27 mA
Mutual conductance	13	17.5	17	22 mA/V

DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: 10 pin miniature



CHARACTERISTICS

Heater voltage	V_f	6.3		V
Heater current	I_f	335		mA
<u>Input section (unit a', g', k')</u>				
Anode voltage	$V_{a'}$	90	90	V
Neutralization screen voltage	$V_{Sn'}$	0	0	V
Grid voltage	$-V_{g'}$	2.1	1.4	V
Anode current	$I_{a'}$	15	27	mA
Mutual conductance	S	13	17.5	mA/V
Amplification factor	μ	27	27	
Equivalent noise resistance	R_{eq}	250	200	Ω

Output section (unit a, g, k)

Anode voltage	V_a	90	90	V
Grid voltage	$-V_g$	2.0	1.4	V
Anode current	I_a	15	27	mA
Mutual conductance	S	17	22	mA/V
Amplification factor	μ	28	28	
Equivalent noise resistance	R_{eq}	200	150	Ω

<u>Insulation resistance between electrodes</u>	R_{ins}	Initial	min.	100	M Ω
		End of life	min.	20	M Ω

Leakage current between cathode and heater

Voltage between cathode and heater V = 150 V

Cathode positive	I_{kf}	Initial	max.	15	μA
		End of life	max.	20	μA

Voltage between cathode and heater V = 50 V

Cathode negative	I_{kf}	Initial	max.	15	μA
		End of life	max.	20	μA

CAPACITANCESInput system (unit a', g', k')Grid to cathode, filament and
neutralisation screen $C_{g' / k' f s n'}$ 5.1 pFAnode to cathode, filament and
neutralisation screen $C_{a' / k' f s n'}$ 5.0 pF

Grid to neutralisation screen

 $C_{g' s n'}$ 1.4 pF

Anode to grid

 $C_{a' g'}$ 0.45 pF

Anode to neutralisation screen

 $C_{a' s n'}$ 3.4 pFOutput system (unit a, g, k)

Cathode to grid and filament

 $C_{k / g f}$ 6.5 pF

Anode to grid and filament

 $C_{a / g f}$ 3.2 pF

Anode to cathode

 $C_{a k}$ 180 mpF

Anode to grid

 $C_{a g}$ 1.5 pF**SHOCK AND VIBRATION RESISTANCE**

The following test conditions are applied to assess the mechanical quality of the tube. These conditions are not intended to be used as normal operating conditions.

Shock

The tube is subjected 5 times in each of 4 positions to an acceleration of 500 g supplied by an NRL shock machine with the hammer lifted over an angle of 30°.

Vibration

The tube is subjected during 32 hours in each of 3 positions to a vibration frequency of 50 Hz with an acceleration of 2.5 g.

LIFE

Production samples are tested under the following conditions during 10000 hours: (each unit)

Heater voltage

 V_f 6.3 V

Anode supply voltage

 V_{ba} 110 V

Grid supply voltage

 V_{bg} 17 V

Cathode resistor

 R_k 680 Ω

LIMITING VALUES (Absolute max. rating system)

(Each unit)

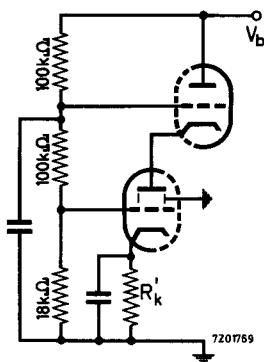
Anode voltage	V_{a_0}	max. 450 V
	V_a	max. 250 V
Anode dissipation	W_a	max. 2.7 W
Grid voltage	$-V_g$	max. 50 V
Grid peak voltage	$-V_{gp}$	max. 150 V
Duty factor max. 1%		
Pulse duration max. 10 μ s		
Cathode current	I_k	max. 40 mA
Cathode peak current	I_{kp}	max. 400 mA
Duty factor max. 10%		
Pulse duration max. 200 μ s		
Grid resistor	R_g	max. 1 M Ω
Automatic bias		
Voltage between cathode and heater		
Cathode positive	$V_{kf} (k+)$	max. 150 V
Cathode negative	$V_{kf} (k-)$	max. 50 V
Bulb temperature		max. 225 $^{\circ}$ C

OPERATING CHARACTERISTICS

Cascode circuit, Frequency 200 MHz

Supply voltage	V_b	200	200	V
Cathode resistor	R_k'	1200	680	Ω
Anode current	I_a	15.5	26.5	mA
Input resistance	$r_{g'}$	910	670	Ω
Input capacitance	C_i	11	12	pF
Noise figure	F	2.5	2.5	kT ₀

Adapted to minimum noise



PHILIPS

Data handbook



**Electronic
components
and materials**

ECC2000

page	sheet	date
1	1	1968.12
2	2	1968.12
3	3	1968.12
4	4	1968.12
5	5	1968.12
6	FP	2001.04.12