

S.Q. TUBE

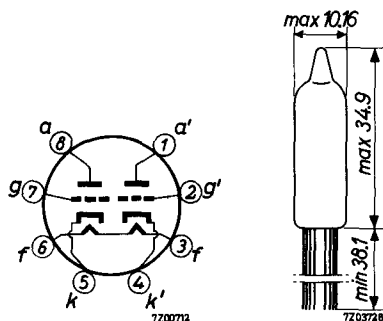
Special quality double triode designed for use as R.F. amplifier and oscillator.

QUICK REFERENCE DATA

Life test	1000 hours	
Mechanical quality	Shock and vibration resistant	
Base	Subminiature	
Heating	Indirect	
	A.C. or D.C.; parallel supply	
Heater voltage	V_f	6.3 V
Heater current	I_f	300 mA
Anode current	I_a	6.5 mA
Mutual conductance	S	5.4 mA/V

DIMENSIONS AND CONNECTIONS

Dimensions in mm



Connections should not be soldered nearer than 5 mm to the seal.

Leads should not be bent nearer than 1.5 mm to the seal.

CHARACTERISTICS (both sections if applicable)

Column I Nominal value or setting of the tube

II Range values for equipment design: Initial spread

III Range values for equipment design: End of life

		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	300	280 - 320		mA
Anode voltage	V_a	100			V
Cathode resistor	R_k	150			Ω
Anode current	I_a	6.5	4.5 - 8.5		mA
Difference in anode current of both systems	$ I_a - I_a' $		max. 1.6	ΔS : max. 25 %	mA
Mutual conductance	S	5.4	4.45 - 6.35		mA/V
Amplification factor	μ	35	30 - 40		
Internal resistance	R_i	6.5			k Ω
<u>Cut-off voltage</u>	$-V_g$		max. 6.5		V
Anode voltage	V_a	100			V
Anode current	I_a	100			μA
<u>Negative grid current</u>	$-I_g$		max. 0.3	max. 1.0	μA
Anode voltage	V_a	150			V
Cathode resistor	R_k	300			Ω
Grid resistor	R_g	1			M Ω
<u>Leakage current between cathode and heater</u>	I_{kf}		max. 5	max. 10	μA
Voltage between cathode and heater $V_{kf} = 100$ V					
<u>Insulation resistance between two electrodes</u>	R_{ins}		min. 100	min. 50	M Ω
Voltage between electrodes = 100 V					

CHARACTERISTICS (continued)

		I	II	III	
<u>Vibrational noise output</u>	V_o		max. 35		mV_{RMS}
Anode supply voltage $V_{ba} = 100$ V					
Anode resistor $R_a = 10$ k Ω					
Cathode resistor $R_k = 150$ Ω					
Cathode by pass capacitor $C = 1000$ μ F					
Vibration frequency = 40 Hz					
Acceleration = 15 g					
CAPACITANCES					
Grid to cathode and heater	$C_{g/kf}$	2.4	1.8 - 3.0		pF
Anode to cathode and heater	$C_{a/kf}$	0.28	0.20 - 0.36		pF
	$C_{a' / k' f}$	0.32	0.22 - 0.42		pF
Anode to grid	C_{ag}	1.5	1.2 - 1.8		pF
Grid to grid other section	$C_{gg'}$		max. 0.013		pF
Anode to anode other section	$C_{aa'}$		max. 0.52		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 to be within the end of life values (column III) under the following conditions during 1000 hours:

Anode voltage $V_a = 100$ V

Cathode resistor $R_k = 150$ Ω

Voltage between
cathode and heater $V_{kf} = 200$ V

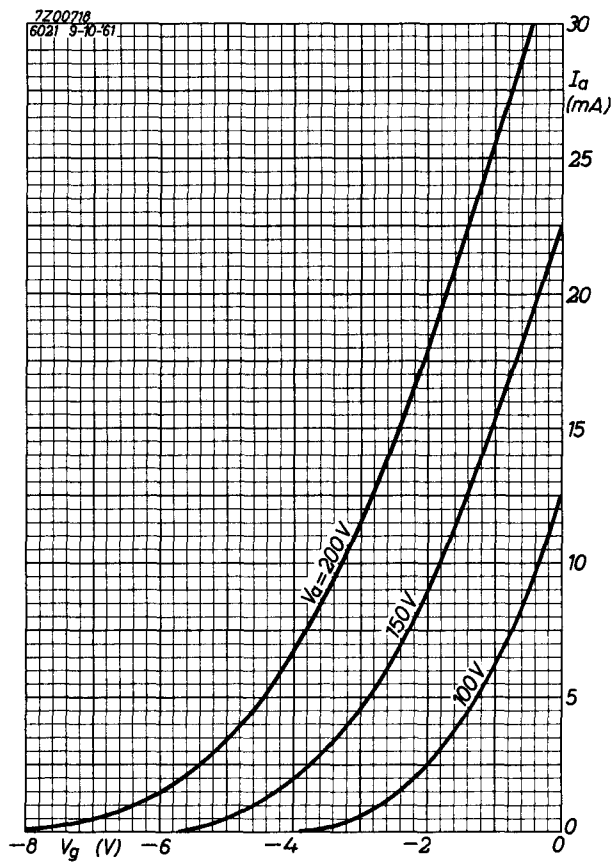
LIMITING VALUES (Absolute max. rating system)

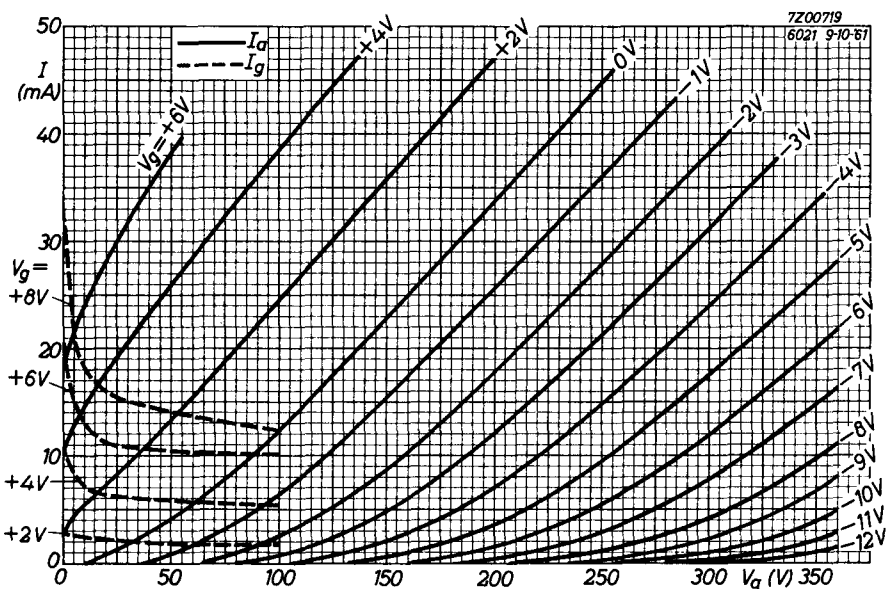
Anode voltage	V_{a0}	max.	330 V
Anode voltage	V_a	max.	165 V
Anode dissipation	W_a	max.	0.7 W
Anode current	I_a	max.	22 mA
Grid voltage	$-V_g$	max.	55 V
Grid current	I_g	max.	5.5 mA
Grid resistor	R_g	max.	1.1 M Ω
Voltage between cathode and heater d.c. or peak value	V_{kf}	max.	200 V
Bulb temperature	t_{bulb}	max.	220 °C

Heater voltage: The average heater voltage should be 6.3 V.

Variations of the heater voltage exceeding the range of 6.0 V to 6.6 V will shorten the tube life.

The tolerance of heater current (column II) should be taken into account.





PHILIPS

Data handbook



**Electronic
components
and materials**

6021

page	sheet	date
1	1	1968.12
2	2	1968.12
3	3	1968.12
4	4	1968.12
5	5	1968.12
6	6	1968.12
7	FP	2001.05.12