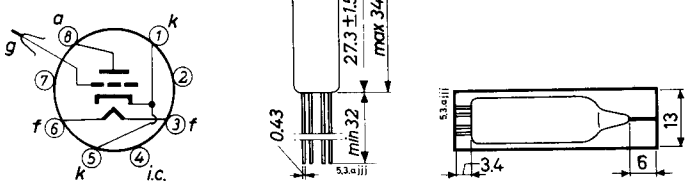
S.Q. TUBE

Special quality triode, designed for use as amplifier in measuring probes.

QUICK REFERENCE DATA				
Life test	1000 hours			
Envelope	Subminiature			
Low interface resistance				
Mechanical quality	Shock and vibration resistant			
Heating	Indirect A.C. or D.C.; parallel supply			
Heater voltage	V_f		6.3	V
Heater current	I_f		185	mA
Equivalent grid noise voltage	V_n	max.	1	mV
Anode current	I_a		14	mA
Mutual conductance	S		14.5	mA/V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Envelope: Subminiature



Leads should not be soldered nearer than 5 mm to the seal.
Leads should not be bent nearer than 2 mm to the seal.
Method of shielding. See fig.1.

CHARACTERISTICS

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	185	175- 195		mA
Anode voltage	V_a	80			V
Grid voltage	$-V_g$	2			V
Anode current	I_a	14			mA
Mutual conductance	S	14.5			mA/V
Amplification factor	μ	27.5			
Input resistance	r_g	300			Ω
Frequency = 250 MHz					
Input resonance frequency	f	400			MHz
Anode supply voltage	Vba	82			V
Cathode resistor	R_k	143			Ω
Anode current	I_a	14.0	11.2-16.8	min. 8.2	mA
Mutual conductance	S	14.5			mA/V
Anode supply voltage	Vba	90			V
Cathode resistor	R_k	680			Ω
Grid supply voltage	$+V_{bg}$	7.5			V
Anode current	I_a	14			mA
Mutual conductance	S	14.5	12.9-16.1	min. 9.2	mA/V
Negative grid current	$-I_g$		max. 0.01	max. 0.01	μA
Leakage current between cathode and heater	I_{kf}		max. 5	max. 10	μA
Voltage between cathode and heater = 55 V. Cath. positive					

CHARACTERISTICS (continued)

		I	II	
Equivalent grid microphony voltage	V_g		max. 1.0	mV_{RMS}
Peak acceleration = 4 g				
Frequency = 50 Hz				
Equivalent grid hum voltage	V_g		max. 1.0	mV_{RMS}
Grid resistor = 0.5 MΩ				
Cathode resistor = 100 Ω				
Heater centre grounded				

CAPACITANCES

Grid to cathode	C_{gk}	3.5	2.9 - 4.1	pF
Anode to grid	C_{ag}	1.7	1.4 - 2.0	pF
Grid to heater	C_{gf}	33	23 - 43	mpF
Anode to cathode	C_{ak}	450	325 - 575	mpF
Anode to heater	C_{af}	270	185 - 355	mpF

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

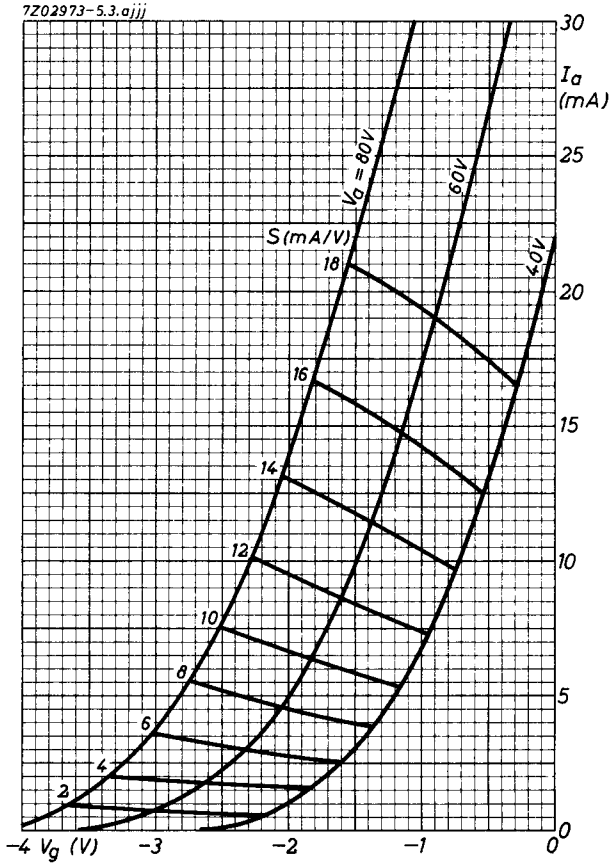
Production samples are tested to be within the end of life values during 1000 hours.

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a_o}	max.	275	V
	V_a	max.	110	V
Anode dissipation	W_a	max.	1.5	W
Grid voltage	$-V_g$	max.	55	V
Cathode current	I_k	max.	22	mA
Voltage between cathode and heater	V_{kf}	max.	55	V
Bulb temperature	t_{bulb}	max.	170	^oC

Grid resistor: The grid resistance should be restricted to a value such that no limiting values are exceeded at $-I_g = 0.01\ \mu A$.
The D.C. feed back factor of the operating circuit may be taken into account.
The R_g value will also be limited by the required current stability and the permissible hum level.

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.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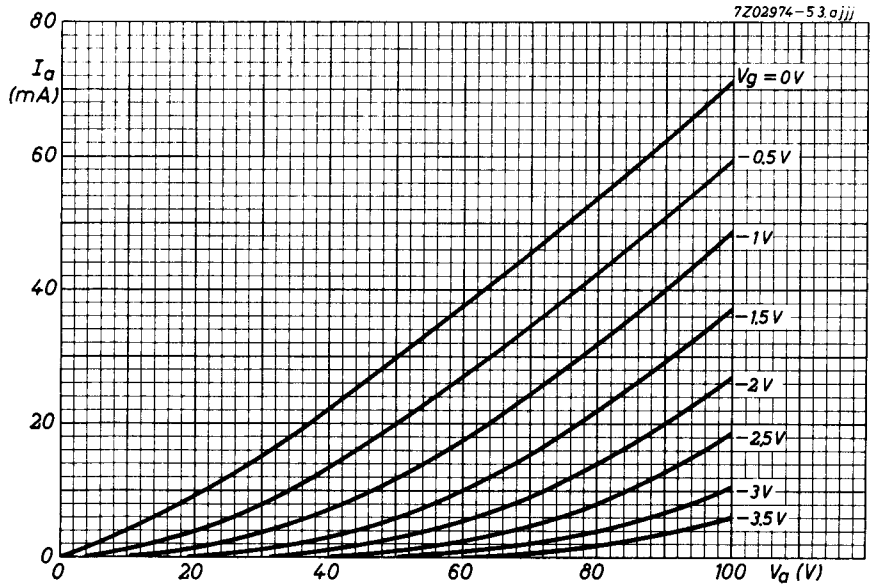
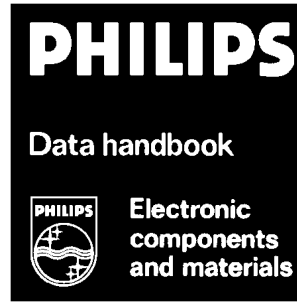
30
Ia
(mA)
25
20
15
10
5
0
Va = 80V
60V
40V
S(mA/V)
18
16
14
12
10
8
6
4
2
−4 Vg (V)
−3
−2
−1
0


7Z02974-53.ajj
80
I_a (mA)
60
40
20
0
0
20
40
60
80
100
V_a (V)
V_g = 0 V
−0.5 V
−1 V
−1.5 V
−2 V
−2.5 V
−3 V
−3.5 V



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