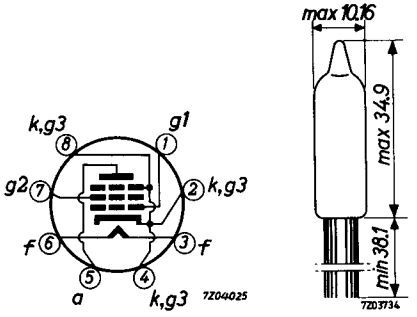
S.Q. TUBE

Special quality pentode designed for use as controlled R.F. or I.F. amplifier (max. freq. 400 MHz).

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	150	mA
Anode current	I_a	7.2	mA
Mutual conductance	S	4.5	mA/V

DIMENSIONS AND CONNECTIONS Dimensions in mm

Base: 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

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	150	140-160		mA
Anode voltage	V_a	100			V
Grid No.2 voltage	V_{g_2}	100			V
Cathode resistor	R_k	120			Ω
Anode current	I_a	7.2	5.2-9.2		mA
Grid No.2 current	I_{g_2}	2.0	1.0-3.0		mA
Mutual conductance	S	4.5	3.8-5.2	ΔS max. 25%	mA/V
Internal resistance	R_i	260	min.175		kΩ
Negative grid No.1 current	$-I_{g_1}$		max.0.3	max. 0.8	μA
Mutual conductance	S	25	1- 75		μA/V
Grid No.1 voltage	$-V_{g_1}$	14			V
Leakage current between cathode and heater Voltage between cathode and heater V_{kf} = 100 V	I_{kf}		max. 5	max. 10	μA
Insulation resistance between electrodes	R_{ins}		min.100		MΩ

CHARACTERISTICS (continued)

		I	II	
Vibrational noise output	V_o		max. 60	mV_{RMS}
Anode supply voltage V_{ba} = 100 V				
Grid No.2 supply voltage V_{bg_2} = 100 V				
Cathode resistor R_k = 120 Ω				
Anode resistor R_a = 10 kΩ				
Grid No.1 resistor R_{g_1} = 1 MΩ				
Cathode bypass capacitor C_k = 1000 μF				
Vibration frequency = 50 Hz				
Acceleration = 15 g				
CAPACITANCES With external shield				
Anode to grid No.2, cathode heater and screen	C_{a/g_2kfs}	3.4	2.9-3.9	pF
Grid No.1 to grid No.2, cathode heater and screen	C_{g_1/g_2kfs}	4.2	3.8-4.8	pF
Anode to grid No.1	C_{ag_1}		max. 15	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^o.

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.

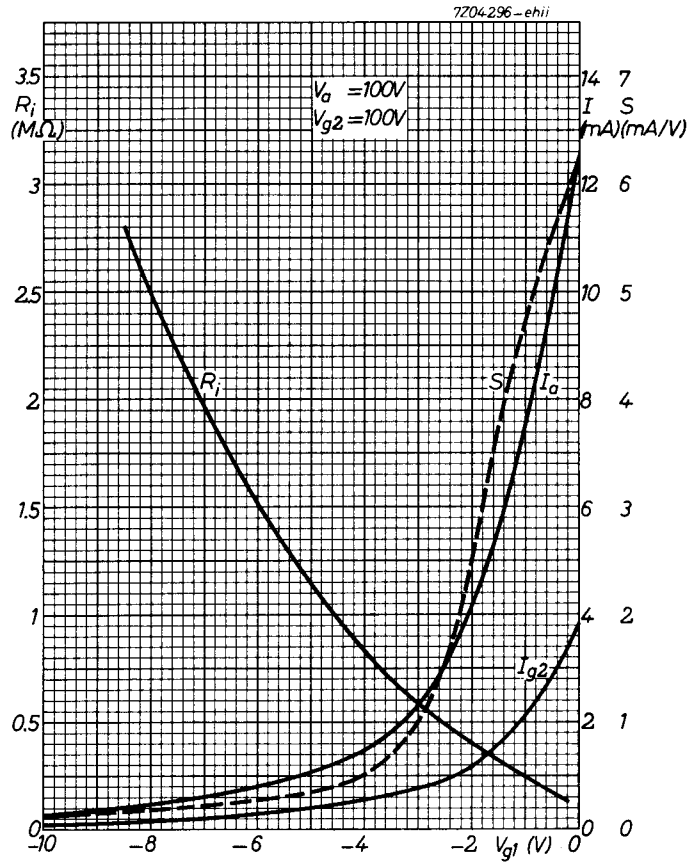
LIFE

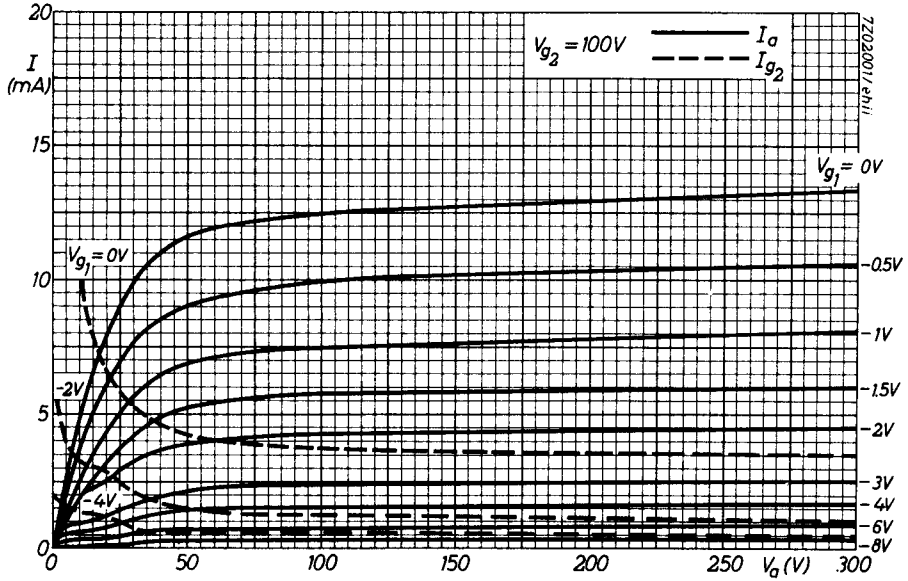
Production samples are tested to be within the end of life values (column III) under the following conditions during 1000 hours.

Anode voltage	V_a	100	V
Grid No.2 voltage	V_{g2}	100	V
Cathode resistor	R_k	120	Ω

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_a	max.	165	V
Grid No.2 voltage	V_{g_2}	max.	155	V
Anode dissipation	W_a	max.	1.1	W
Grid No.2 dissipation	W_{g_2}	max.	0.55	W
Cathode current	I_k	max.	16.5	mA
Voltage between cathode and heater	V_{kf}	max.	200	V
Grid No.1 resistor	R_{g_1}	max.	1.2	MΩ
Bulb temperature	t_{bulb}	max.	220	°C


7204-296-ehii
V_a =100V
V_{g2} =100V
R_i (MΩ)
I (mA)
S (mA/V)
R_i
S
I_a
I_{g2}
3.5
3
2.5
2
1.5
1
0.5
0
14 7
12 6
10 5
8 4
6 3
4 2
2 1
0 0
−10 −8 −6 −4 −2 V_{g1} (V) 0


20
I
(mA)
15
10
5
0
0
50
100
150
200
250
V_a (V)
300
V_{g_2} = 100V
I_a
I_{g_2}
ZZ020017e1/1
V_{g_1} = 0V
-0.5V
-1V
-1.5V
-2V
-3V
-4V
-6V
-8V
V_{g_1} = 0V
-2V
-4V

PHILIPS

Data handbook

Electronic components and materials

5899

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