

S.Q. TUBE

Special quality triode. Designed for use as grounded grid aerial amplifier for band IV and V.

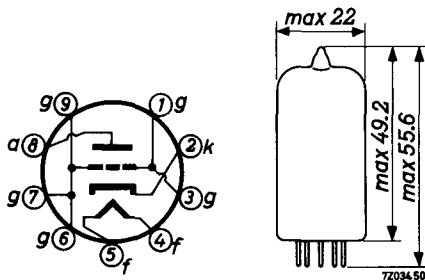
QUICK REFERENCE DATA

Life test	10 000 hours	
Low interface resistance		
Mechanical quality	Shock and vibration resistant	
Base	Noval. Gold plated pins	
Heating	Indirect A.C. or D.C.; parallel supply	
Heater voltage	V_f	6.3 V
Heater current	I_f	155 mA
Anode current	I_a	12.5 mA
Mutual conductance	S	13.5 mA/V
Noise figure at 850 MHz	F	9.6 dB
Equivalent noise resistance	R_{eq}	240 Ω

DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



CHARACTERISTICS

Column I Nominal value

II Range values for equipment design: Initial spread

		I	II	
Heater voltage	V_f	6.3		V
Heater current	I_f	155	147 - 163	mA
Anode voltage	V_a	160		V
Grid voltage	$-V_g$	1.25		V
Anode current	I_a	12.5		mA
Mutual conductance	S	13.5		mA/V
Amplification factor	μ	70		
Internal resistance	R_i	5.2		k Ω
Equivalent noise resistance	R_{eq}	240		Ω
Noise figure	F	9.6		dB
Frequency 850 MHz				
Bandwidth 15 MHz				
Anode supply voltage	V_{ba}	170		V
Cathode resistor	R_k	820		Ω
Grid supply voltage	$+V_{bg}$	9		V
Anode current	I_a	12.5		mA
Mutual conductance	S	13.5	10.5-16.5	mA/V
Anode supply voltage	V_{ba}	161		V
Cathode resistor	R_k	100		Ω
Grid supply voltage	V_{bg}	0		V
Anode current	I_a	12.5	9.5-16.1	mA
Mutual conductance	S	13.5		mA/V
Grid current, negative	$-I_g$		max. 0.1	μA
<u>Leakage current between cathode and heater</u>	I_{kf}		max. 15	μA
Voltage between cathode and heater $V_{kf} = 125$ V				

CHARACTERISTICS (continued)Input series resonance frequency ¹⁾

	I	
f_{inp}	1700	MHz
f_{outp}	1000	MHz

Output series resonance frequency ¹⁾**CAPACITANCES**

		With screen		Without screen		
		I	II	I	II	
Anode to cathode and heater	C_a/kf	50	35- 65			mpF
Grid to cathode and heater	C_g/kf	3.8	3.2-4.4			pF
Anode to grid	C_{ag}	1.7	1.4-2.0	1.1	0.9 - 1.3	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 during 10 000 hours under the following conditions:

Anode supply voltage	V_{ba}	170 V
Grid supply voltage	$+V_{bg}$	9 V
Cathode resistor	R_k	820 Ω

¹⁾ Measured between the tube pin connected to the relevant electrode and a metal reference plane placed against the tube bottom. The relevant pin and the reference plane are connected to the measuring device so that the minimum distance is obtained between these two connecting points. The remaining tube pins are connected to the reference plane with a negligible impedance. The tube is screened by a cylinder with an internal diameter of 23 mm placed on the reference plane.

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a0}	max.	400 V
	V_a	max.	200 V
Anode dissipation	W_a	max.	2.6 W
Cathode current	I_k	max.	16.5 mA
Grid voltage	$-V_g$	max.	50 V
Grid dissipation	W_g	max.	50 mW
Grid resistor	R_g	max.	1 M Ω
Cathode resistor $R_k = 100 \Omega$			

Voltage between cathode and heater

Cathode positive	$V_{kf(k+)}$	max.	125 V
Cathode negative	$V_{kf(k-)}$	max.	60 V
Bulb temperature	t_{bulb}	max.	170 °C

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

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

OPERATING CHARACTERISTICS

Driver or output tube (circuit fig. 1)

Frequency	f	800	MHz
Bandwidth		8	MHz
Anode supply voltage	V_{ba}	200	V
Anode resistor	R_a	1.5	k Ω
Cathode resistor	R_k	150	Ω
Input voltage	V_i	0 0.5 1.65	V _{RMS}
Anode current	I_a	11.4 12.8	mA
Output voltage	V_o	0 2.0 6.0	V _{RMS} ¹⁾
Inter modulation ratio		min. 26	dB
Sync. impuls compression		max. 30	%

¹⁾ Value of the sync. level with video modulation according to CCIR and with $Z = 60 \Omega$.

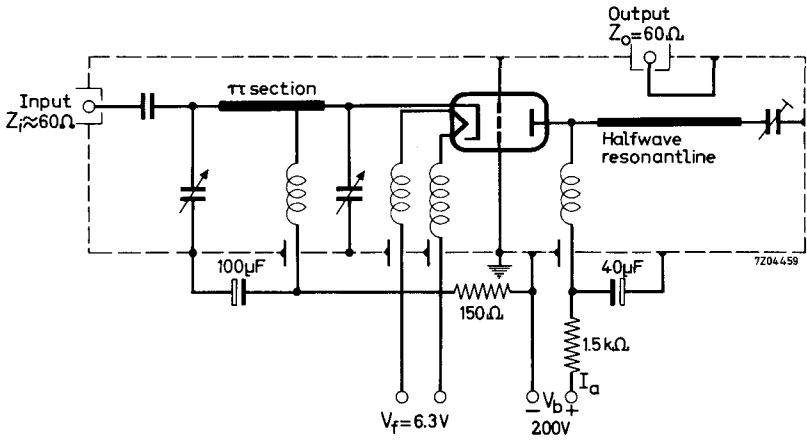
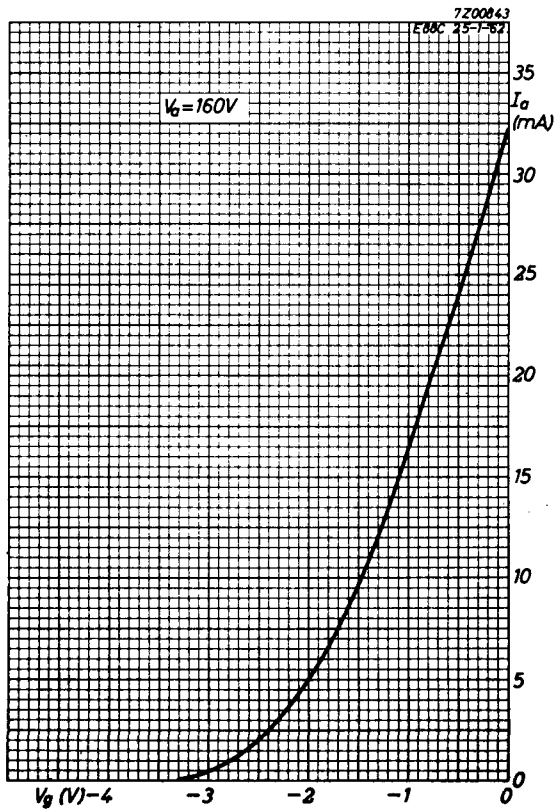
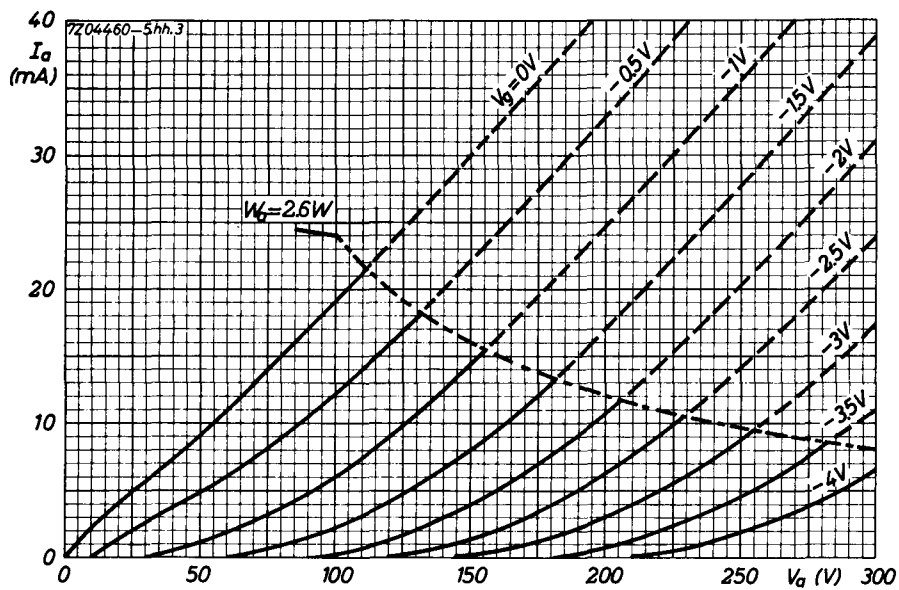


Fig. 1





PHILIPS

Data handbook



**Electronic
components
and materials**

E88C

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	2000.11.19