

## S.Q. TUBE

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

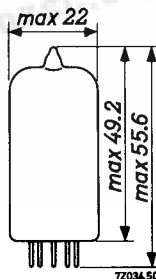
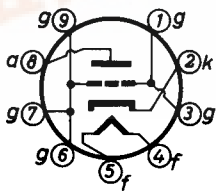
### QUICK REFERENCE DATA

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 $\Omega$

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



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## 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	$\mu$	70		
Internal resistance	$R_i$	5.2		k $\Omega$
Equivalent noise resistance	$R_{eq}$	240		$\Omega$
Noise figure	F	9.6		dB
Frequency 850 MHz				
Bandwidth 15 MHz				
Anode supply voltage	$V_{ba}$	170		V
Cathode resistor	$R_k$	820		$\Omega$
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		$\Omega$
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	$\mu A$
<u>Leakage current between cathode and heater</u>	$I_{kf}$		max. 15	$\mu A$

Voltage between cathode and heater  $V_{kf} = 125$  V

**CHARACTERISTICS** (continued)

	I	
Input series resonance frequency <sup>1)</sup>	$f_{inp}$	1700 MHz
Output series resonance frequency <sup>1)</sup>	$f_{outp}$	1000 MHz

**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

<sup>1)</sup> 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.

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## 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 $\Omega$

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 $\Omega$
Cathode resistor	$R_k$	150	$\Omega$
Input voltage	$V_i$	0 0.5 1.65	V <sub>RMS</sub>
Anode current	$I_a$	11.4 12.8	mA
Output voltage	$V_o$	0 2.0 6.0	V <sub>RMS</sub> <sup>1)</sup>
Inter modulation ratio		min. 26	dB
Sync. impuls compression		max. 30	%

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

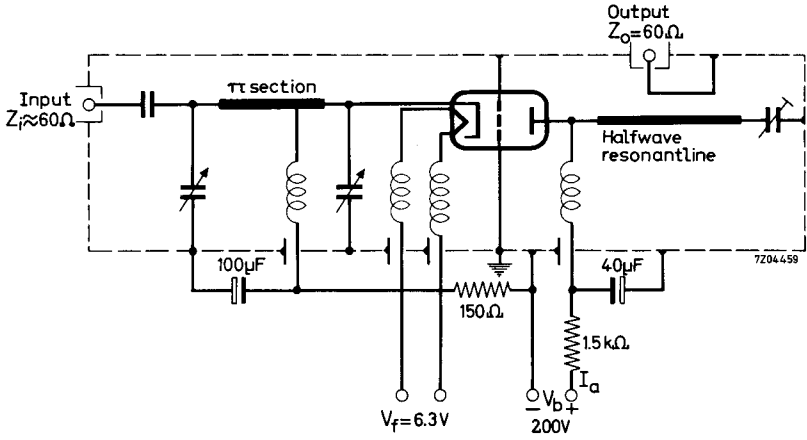
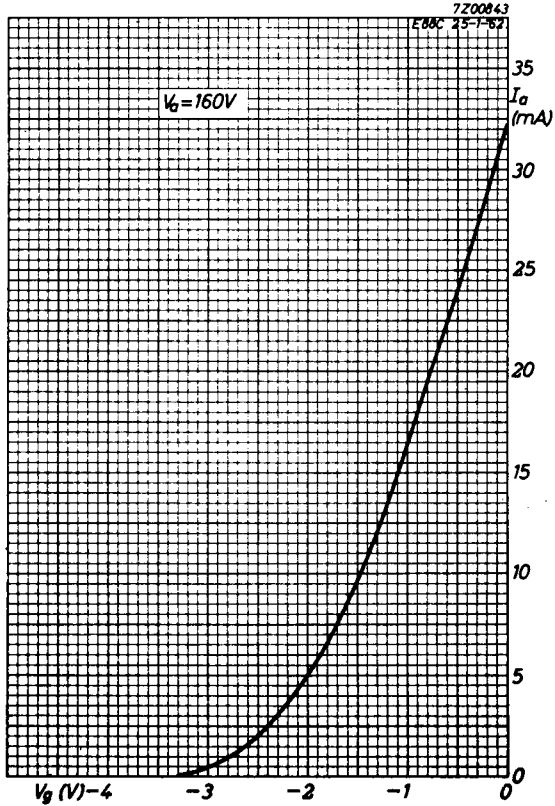
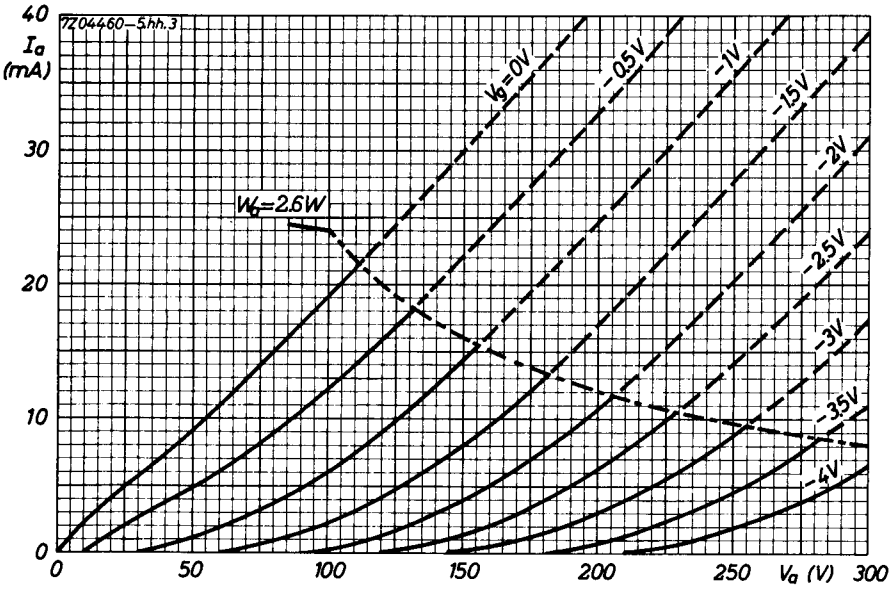


Fig. 1



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# PHILIPS

## Data handbook



**Electronic  
components  
and materials**

### E88C

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