

## S.Q. TUBE

Special quality double triode designed for use in cascode circuits and as R.F. or I.F. amplifier.

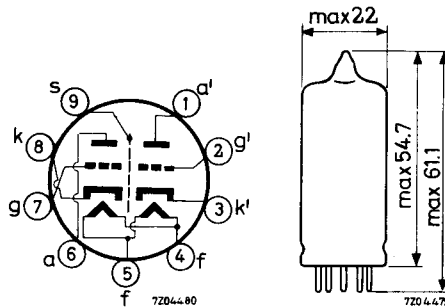
### QUICK REFERENCE DATA

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	$I_f$	475 mA
Anode current	$I_a$	30 mA
Mutual conductance	$S$	20 mA/V
Equivalent noise resistance (R.F.)	$R_{eq}$	200 $\Omega$
Noise figure	$F$	5.7 dB

### DIMENSIONS AND CONNECTIONS

Dimensions in mm

Base: Noval



**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	$I_f$	475	450 - 500		mA
Anode supply voltage	$V_{ba}$	100			V
Grid supply voltage	$+V_{bg}$	9			V
Cathode resistor	$R_k$	350			$\Omega$
Anode current	$I_a$	30	28 - 32	min. 26.5	mA
Mutual conductance	S	20	17 - 22.5	min. 14.5	mA/V
Amplification factor	$\mu$	25			
Internal resistance	$R_i$	1.25			k $\Omega$
Equivalent noise resistance	$R_{eq}$	200			$\Omega$
Noise figure in cascode circuit	F	5.7			dB
Adapted to minimum noise					
Negative grid current	$-I_g$		max. 0.2	max. 1	$\mu A$
Anode supply voltage	$V_{ba}$	60			V
Cathode resistor	$R_k$	80			$\Omega$
Anode current	$I_a$	1.5			mA
Mutual conductance	S	15.5			mA/V
Amplification factor	$\mu$	25			
Internal resistance	$R_i$	1.85			k $\Omega$
Noise figure in cascode circuit	F	5			dB
Adapted to minimum noise					

**CAPACITANCES** Each system if applicable

Grid to cathode heater and screen	$C_g/kfs$	4.7	pF
Anode to cathode heater and screen	$C_a/kfs$	1.9	pF
	$C_{a'}/k'fs$	1.8	pF
Anode to grid	$C_{ag}$	1.8	pF
Cathode to grid heater and screen	$C_k/gfs$	7.8	pF
Anode to grid heater and screen	$C_a/gfs$	3.5	pF
	$C_{a'}/gfs$	3.4	pF
Anode to cathode	$C_{ak}$	0.25	pF
Anode to anode other section	$C_{aa'}$	max. 0.05	pF
Grid to grid other section	$C_{gg'}$	max. 0.005	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.

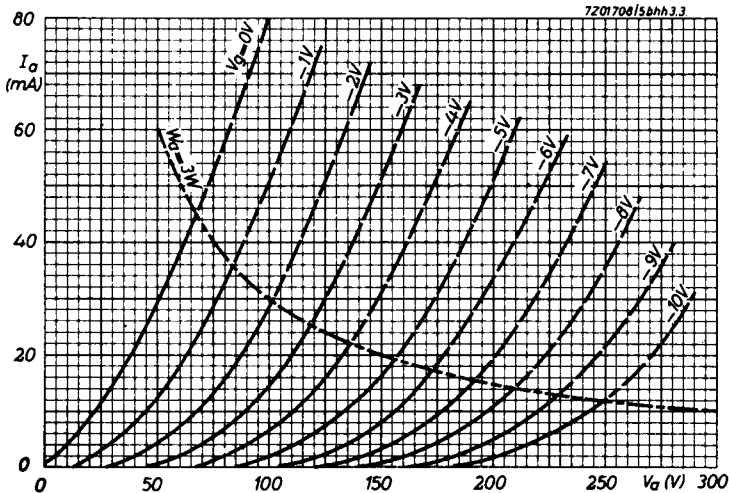
**LIFE**

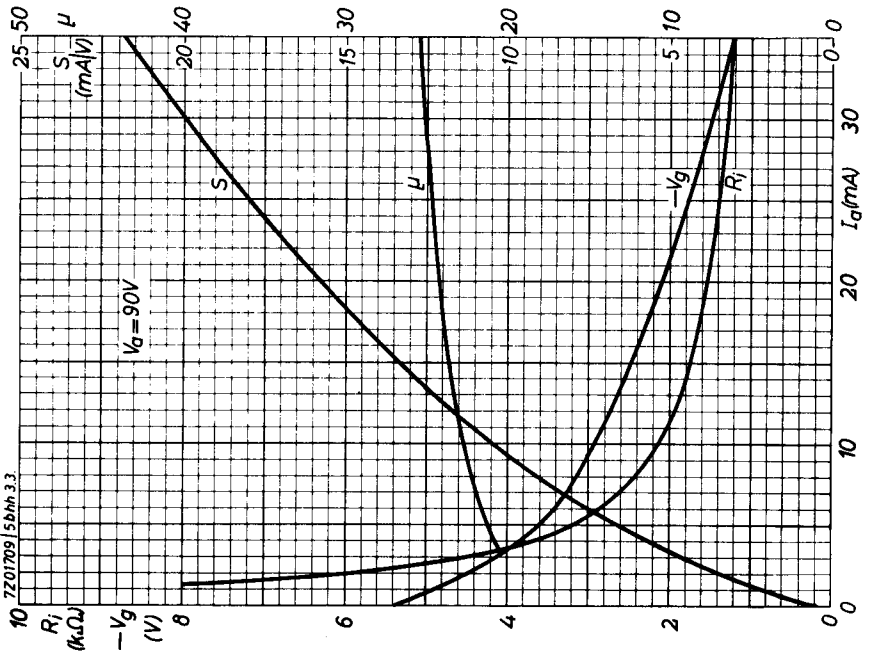
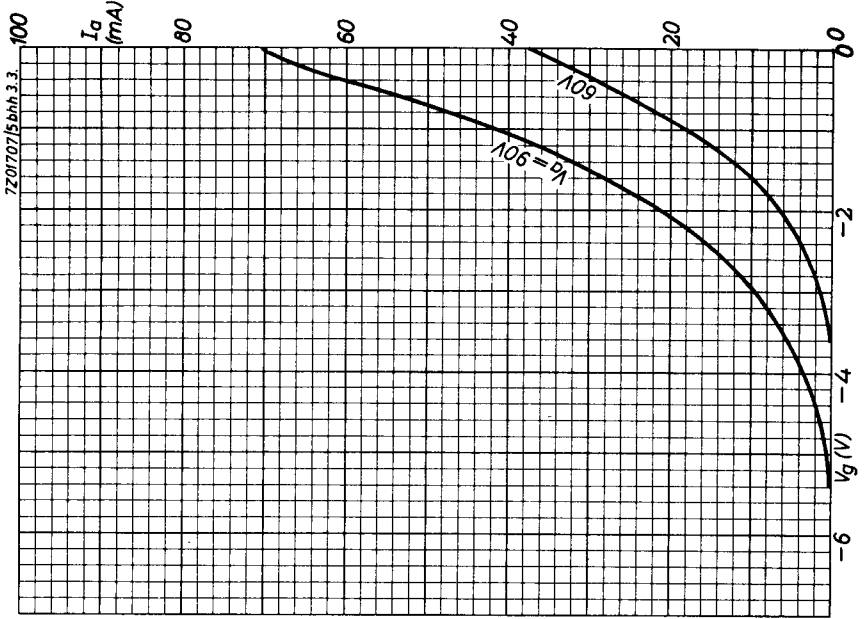
Production samples are tested during 10 000 hours.

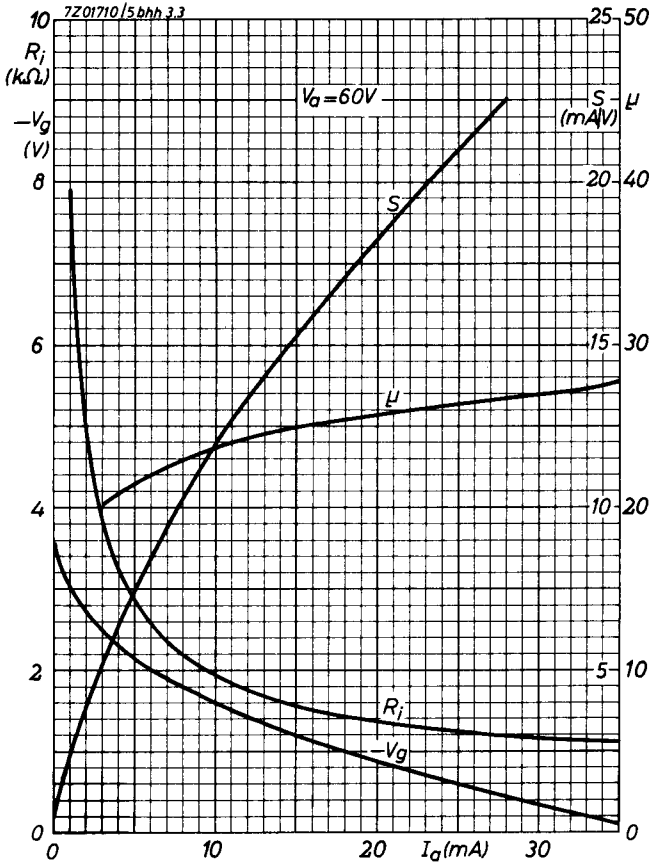
## LIMITING VALUES (Absolute max. rating system)

Anode voltage	$V_{aO}$	max. 400 V
	$V_a$	max. 250 V
Anode dissipation	$W_a$	max. 3 W
Grid voltage	$-V_g$	max. 50 V
Grid peak voltage	$-V_{gp}$	max. 150 V
Max. pulse duration		10 $\mu$ sec
Max. duty factor		0.01
Grid resistor with automatic bias	$R_g$	max. 1 M $\Omega$
Cathode current	$I_k$	max. 40 mA
Cathode peak current	$I_{kp}$	max. 400 mA
Max. pulse duration		10 $\mu$ sec
Max. duty factor		0.01
Voltage between cathode and heater	$V_{kf}$	max. 150 V
Bulb temperature	$t_{bulb}$	max. 190 $^{\circ}$ 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

## E288CC

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