

S.Q. TUBE

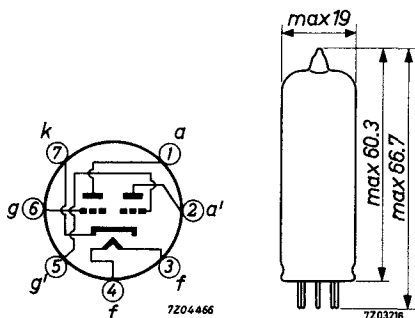
Special quality double triode designed for use in computer circuits.

QUICK REFERENCE DATA

Life expectancy	10 000 hours
Low interface resistance	
Base	Miniature, 7 pin
Heating	Direct A.C. or D.C. Series or parallel supply
Heater voltage	V_f 6.3 V
Heater current	I_f 400 mA

DIMENSIONS AND CONNECTIONS

Dimensions in mm



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

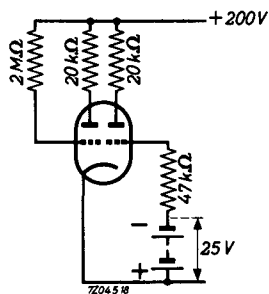
		I	II	III	
Heater voltage	V_f	6.3			V
Heater current	I_f	400	380 - 420		mA
Anode voltage	V_a	100			V
Negative grid voltage	$-V_g$	2.1			V
Anode current	I_a	8.5	4.5 - 12.5		mA
Mutual conductance	S	6.0			mA/V
Amplification factor	μ	27			
Anode voltage	V_a	100			V
Cathode resistor	R_k	250			Ω
Mutual conductance	S	6.0	4.5 - 7.5	min. 3.0	mA/V
<u>Negative grid current</u>	$-I_{g1}$		max. 0.2	max. 1.0	μA
Anode supply voltage	V_{ba}	150			V
Anode resistor	R_a	20			k Ω
Grid resistor	R_g	47			k Ω
Anode current	I_a	5.6	5.0 - 6.2	min. 4.5	mA
Grid supply voltage	V_{bg}	0			V
Anode current	I_a		max. 0.1	max. 0.1	mA
Grid supply voltage	$-V_{bg}$	10			V
Difference in grid voltage of two sections	$ V_g - V_{g'} $		max. 2	max. 2	V
Anode current	$I_a = I_{a'}$	0.1			V
<u>Leakage current between cathode and heater</u>	I_{kf}		max. 15	max. 30	μA
Voltage between cathode and heater	V_{kf}	100			V
<u>Insulation between two electrodes</u>	R_{ins}		min. 100	min. 20	M Ω
Voltage between electrodes	V	300			V

CAPACITANCES Each system if applicable.

		I	II	
Anode to cathode and heater	$C_{a/kf}$	0.35	0.25 - 0.45	pF
	$C_{a' / k' f}$	0.4	0.3 - 0.5	pF
Grid to cathode and heater	$C_{g/kf}$	3.4	2.9 - 3.9	pF
Anode to grid	C_{ag}	2.5	2.0 - 3.0	pF
Grid to heater	C_{gf}		max. 0.15	pF
	$C_{g'f}$		max. 0.3	pF
Anode to anode other section	$C_{aa'}$		max. 1.4	pF
Grid to grid other section	$C_{gg'}$		max. 0.22	pF
Anode to grid other section	$C_{ag'}$		max. 0.35	pF
Grid to anode other section	$C_{ga'}$		max. 0.15	pF
Cathode to heater	C_{kf}	6.5		pF

LIFE

Production samples are tested to be within the end of life values (column III) under the following conditions during 10 000 hours:



$$I_a = 8 \text{ mA}$$

$$I_{a'} = 0 \text{ mA}$$

$$V_{kf} = 100 \text{ V (k pos)}$$

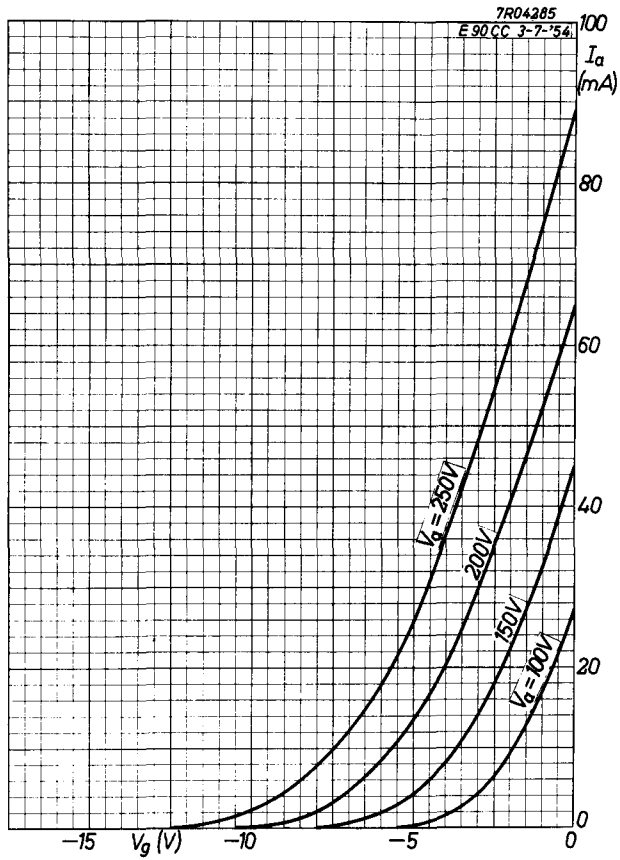
LIMITING VALUES (Absolute max. rating system)

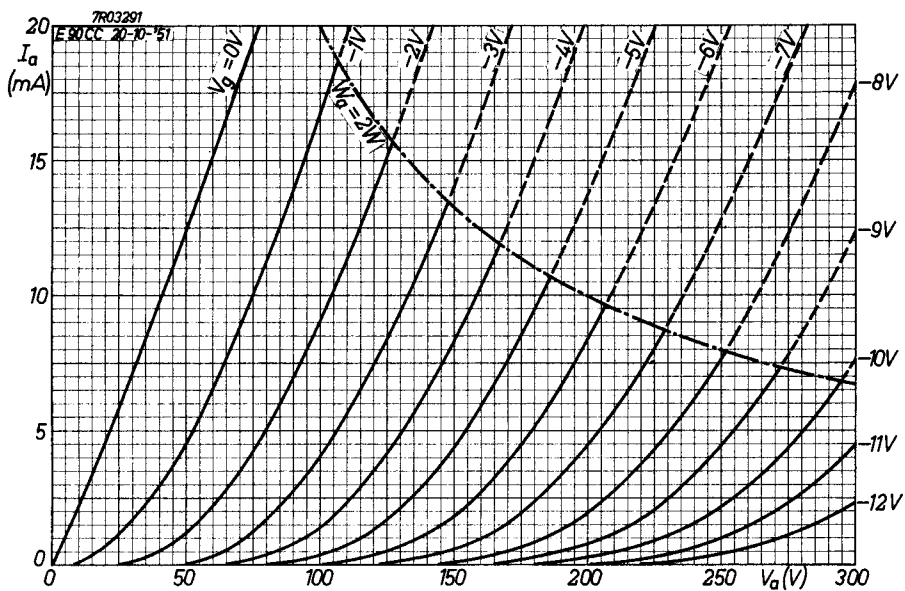
Anode voltage	V_{a_0}	max.	600 V
	V_a	max.	300 V
Anode dissipation	W_a	max.	2.0 W
Grid voltage	$+V_g$	max.	0 V
	$-V_g$	max.	100 V
Grid peak voltage	$-V_{gp}$	max.	200 V
Grid current	I_g	max.	250 μ A
Grid, peak current	I_{gp}	max.	1 mA
max. pulse duration 2.5 msec			
Cathode current	I_k	max.	15 mA
Cathode peak current	I_{kp}	max.	75 mA
max. pulse duration 2 msec			
Voltage between cathode and heater	V_{kf}	max.	100 V
Grid resistor, automatic bias	R_g	max.	1 $M\Omega$
fixed bias	R_g	max.	0.5 $M\Omega$
Bulb temperature	t_{bulb}	max.	170 $^{\circ}$ C

Heater voltage: The average heater 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**

E90CC

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	2000.11.24