

S.Q. TUBE

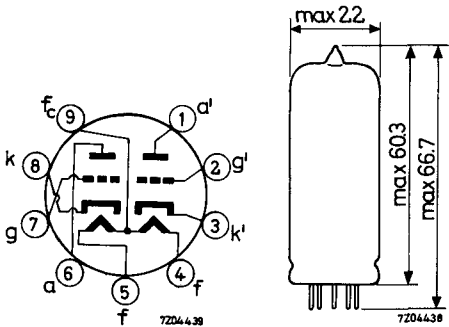
Special quality double triode designed for use in computer circuits.

QUICK REFERENCE DATA		
Life test	10 000 hours	
Low interface resistance		
Base	Noval	
Heating	Indirect A.C. or D.C.; parallel supply	
Heater voltage	V_f	6.3 or 12.6 V
Heater current	I_f	400 or 200 mA

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 (pin 9 and 4 and 5)	V_f	6.3			V
Heater current	I_f	400	380 - 420		mA
Heater voltage (pin 4 and 5)	V_f	12.6			V
Heater current	I_f	200			mA
Anode voltage	V_a	150			V
Grid voltage	$-V_g$	1.85			V
Anode current	I_a	8.5			mA
Mutual conductance	S	6.4			mA/V
Amplification factor	μ	46			
Internal resistance	R_i	7.2			k Ω
Anode voltage	V_a	150			V
Cathode resistor	R_k	220			Ω
Anode current	I_a	8.5	6.3 - 10.7	min. 5.0	mA
Mutual conductance	S	6.4	5.3 - 8.1	min. 4.0	mA/V
Negative grid current	$-I_g$		max. 0.2	max. 1.0	μA
<u>Cut off voltage</u>	$-V_g$	7.5			V
Anode voltage	V_a	150			V
Anode current	I_a		max. 150	max. 150	μA
<u>Difference in grid voltage</u> of 2 sections	$ V_g - V_g' $		max. 2	max. 2	V
Anode voltage	V_a	150			V
Anode current	I_a	0.15			mA

CHARACTERISTICS (continued)

		I	II	III	
Anode voltage	V_a	100			V
Grid voltage	$-V_g$	0.8			V
Anode current	I_a	8.5			mA
Mutual conductance	S	7.8			mA/V
Amplification factor	μ	50			
Internal resistance	R_i	6.4			k Ω
Anode voltage	V_a	100			V
Grid supply voltage	$+V_{bg}$	100			V
Grid resistor	R_g	0.5			M Ω
Anode current	I_a	17.8	13.6 - 22.0	min. 9.5	mA
<u>Leakage current between cathode and heater</u>	I_{kf}		max. 15	max. 30	μ A
Voltage between cathode and heater $V_{kf} = 200$ V					
Series resistor = 1 M Ω					
<u>Insulation resistance between two electrodes</u>			min. 100	min. 20	M Ω
Voltage between electrodes $V = 275$ V					

CAPACITANCES Without external screen

Each system if applicable

		I	II	
Anode to cathode and heater	$C_{a/kf}$	0.5	0.3 - 0.7	pF
Anode to cathode and heater	$C_{a'/k'f}$	0.45	0.25 - 0.65	pF
Grid to cathode and heater	$C_{g/kf}$	3.5	3.0 - 4.0	pF
Anode to grid	C_{ag}	2.2	1.8 - 2.6	pF
Anode to grid	$C_{a'g'}$	2.3	1.9 - 2.7	pF
Cathode to heater	C_{kf}	3.5		pF
Anode to anode other section	$C_{aa'}$		max. 1.3	pF
Grid to grid other section	$C_{gg'}$		max. 0.06	pF

LIFE

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

Anode supply voltage	V_{ba}	150 V
Grid supply voltage	V_{bg}	150 V
Anode resistor	R_a	2.6 k Ω
Grid resistor	R_g	1.5 M Ω ($I_g = 100 \mu A$)
Voltage between cathode and heater (k pos)	V_{kf}	200 V

LIMITING VALUES (Absolute max. rating system)

Anode voltage	V_{a0}	max. 600 V
	V_a	max. 275 V
Anode dissipation	W_a	max. 2.0 W
Grid, voltage	$-V_g$	max. 100 V
Grid, peak voltage	$-V_{gp}$	max. 200 V
Max. pulse duration = 10 μs		
Max. duty factor = 0.01		
Grid voltage	$+V_g$	max. 1 V
Grid current	I_g	max. 2 mA
Grid, peak current	I_{gp}	max. 50 mA
Max. pulse duration = 10 μs		
Max. duty factor = 0.01		
Cathode current	I_k	max. 20 mA
Cathode, peak current	I_{kp}	max. 200 mA
Max. pulse duration = 10 μs		
Max. duty factor = 0.01		

LIMITING VALUES (continued)

Voltage between cathode and heater,

Cathode positive (k pos.)

 V_{kf} max. 200 V

Cathode negative (k neg.)

 V_{kf} max. 100 V

Grid resistor with fixed bias

 R_g max. 0.5 M Ω

with automatic bias

 R_g max. 1.0 M Ω

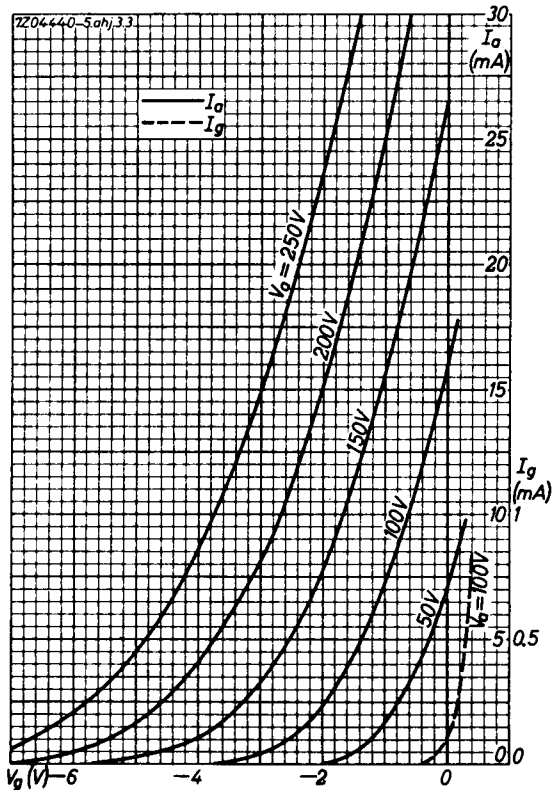
Bulb temperature

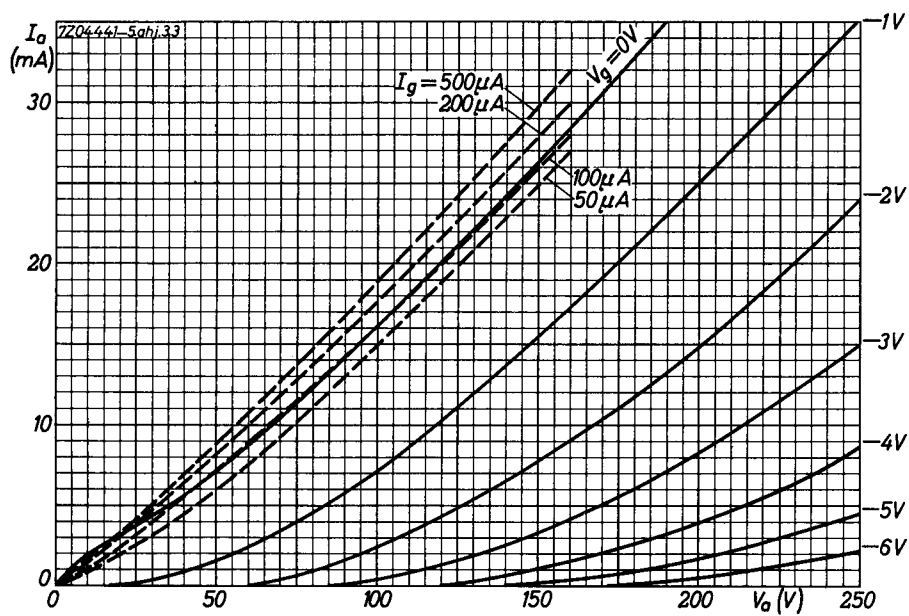
 t_{bulb} max. 170 °C

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 the heater current (column II) should be taken into account.





PHILIPS

Data handbook



**Electronic
components
and materials**

E180CC

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	2000.12.03