# SQ PHILIPS 7586

SPECIAL QUALITY, SHOCK AND VIBRATION RESISTANT TRIODE, nuvistor type

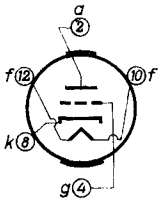
HEATING Indirect by A.C. or D.C.; parallel supply

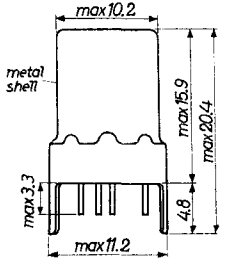
Heater voltage $V_f$ = 6.3 V

Heater current $I_f$ = 135 mA

Dimensions in mm

Base: TWELVAR 5 pin




LIMITING VALUES (Absolute limits)

| | | |
|---|---|---|
| Anode voltage in cold condition | $V_{a_o}$ | = max. 330 V |
| Anode voltage | $V_a$ | = max. 110 V |
| Anode dissipation | $W_a$ | = max. 1 W |
| Negative grid voltage | $-V_g$ | = max. 55 V |
| Peak positive grid voltage | $+V_{g_p}$ | = max. 4 V |
| Grid current | $I_g$ | = max. 2 mA |
| External grid resistance with fixed bias | $R_g$ | = max. 0.5 MΩ |
| External grid resistance with automatic bias | $R_g$ | = max. 1 MΩ |
| Cathode current | $I_k$ | = max. 15 mA |
| Peak voltage between heater and cathode | $V_{kf_p}$ | = max. 100 V |
| Shell temperature | $t_{bulb}$ | = max. 150 °C |
| Altitude | | any |

CHARACTERISTICS

Column I: Setting of the tube and average measuring results of new tubes

II: Characteristics range values for equipment design

Heater current

| | | I | II |
|---|---|---|---|
| Heater voltage | $V_f$ | = 6.3 | V |
| Heater current | $I_f$ | = 135 | 125-145 mA |

CHARACTERISTICS (continued)

Capacitances

| | | | I | II | |
|---|---|---|---|---|---|
| Grid to all other elements except anode | $C_g$ | = | 4.2 | 3.8-4.6 | pF |
| Anode to all other elements except grid | $C_a$ | = | 1.6 | 1.4-1.8 | pF |
| Anode to grid | $C_{ag}$ | = | 2.2 | 1.8-2.6 | pF |
| Anode to cathode | $C_{ak}$ | = | 0.26 | 0.20-0.32 | pF |
| Cathode to heater | $C_{kf}$ | = | 1.4 | 1.1-1.7 | pF |

Typical characteristics

| | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Anode supply voltage | $V_{ba}$ | = | 75 | | V |
| Cathode resistor | $R_k$ | = | 100 | | Ω |
| Anode current | $I_a$ | = | 10.5 | 9.0-12.5 | mA |
| Internal resistance | $R_i$ | = | 3.0 | | kΩ |
| Amplification factor | μ | = | 35 | | |
| Mutual conductance | S | = | 11.5 | 10-13 | mA/V[1] |

| | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Anode voltage | $V_a$ | = | 40 | | V |
| Grid resistor | $R_g$ | = | 0.5 | | MΩ [2] |
| Anode current | $I_a$ | = | 6.8 | | mA |
| Internal resistance | $R_i$ | = | 3.2 | | kΩ |
| Amplification factor | μ | = | 35 | | |
| Mutual conductance | S | = | 11 | | mA/V |

| | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Anode voltage | $V_a$ | = | 26.5 | | V |
| Grid resistor | $R_g$ | = | 0.5 | | MΩ [2] |
| Anode current | $I_a$ | = | 2.8 | | mA |
| Internal resistance | $R_i$ | = | 4.4 | | kΩ |
| Amplification factor | μ | = | 31 | | |
| Mutual conductance | S | = | 7 | | mA/V |

[1]) Mutual conductance at underheating ($V_f$ = 5.7 V) = min. 9.0 mA/V
Decrease of mutual conductance by underheating ($V_f$ = 6.3 V→5.7 V) = max. 15%

[2]) Grid current biasing

CHARACTERISTICS (continued)

| Cut-off voltage | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Anode voltage | $V_a$ | = | 75 | | V |
| Anode current | $I_a$ | = | 10 | | μA |
| Negative grid bias | $-V_g$ | = | 7 | | V |

| Grid current | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Anode voltage | $V_a$ | = | 80 | | V |
| Grid supply voltage | $V_{bg}$ | = | -1.2 | | V |
| Grid resistor | $R_g$ | = | 0.5 | | MΩ |
| Negative grid current | $-I_g$ | = | | < 0.1 μA[1] | |

| Insulation | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Voltage between heater and cathode | $V_{kf}$ | = | 100 | | V [2] |
| Heater to cathode current | $I_{kf}$ | = | | < 5 μA | |

| | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Voltage between grid and cathode + anode + metal shell | $V_{g-(a+k+s)}$ | = | 100 | | V |
| Insulation resistance between grid and cathode + anode + metal shell | $R_{g-(a+k+s)}$ | = | | > 1000 MΩ | |

| | | | I | II | |
|---|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | | V |
| Voltage between anode and cathode + grid + metal shell | $V_{a-(g+k+s)}$ | = | 300 | | V |
| Insulation resistance between anode and cathode + grid + metal shell | $R_{a-(g+k+s)}$ | = | | > 1000 MΩ | |

[1]) Metal shell connected to earth
[2]) Both polarities

CHARACTERISTICS (continued)

| Vibrational noise output | | | I | II |
|---|---|---|---|---|
| Heater voltage | $V_f$ | = | 6.3 | V |
| Anode supply voltage | $V_{ba}$ | = | 75 | V |
| Cathode resistor | $R_k$ | = | 100 | Ω |
| Cathode capacitor | $C_k$ | = | 1000 | μF |
| Anode resistor | $R_a$ | = | 2 | kΩ |
| Vibrational acceleration | a | = | 1 | g |
| Vibrational frequency | f | = | 50-6000 | c/s |
| Noise output | $V_o$ | = | | < 25 mV |
| Vibrational frequency | f | = | 6-15 | kc/s |
| Noise output | $V_o$ | = | | < 500 mV |

Shock resistance: 1000 g [1])

20 shocks as produced by the NRL impact machine, lifting the hammer over an angle of 60 °

Vibration resistance: 2.5 g [1])

Vibrational acceleration of 2.5 g during 48 hours at a frequency of 60 c/s

[1]) The specified conditions are test conditions for evaluation of the ruggedness of the tube and should not be interpreted as suitable operating conditions

PHILIPS

Electronic Tube HANDBOOK

**7586**

| page | sheet | date |
|---|---|---|
| 1 | 1 | 1962.07.07 |
| 2 | 2 | 1962.07.07 |
| 3 | 3 | 1962.07.07 |
| 4 | 4 | 1962.07.07 |
| | FP | 1999.03.27 |