# DOUBLE DIODE-TRIODE

Double diode-triode. Triode intended for use as A.F. amplifier.

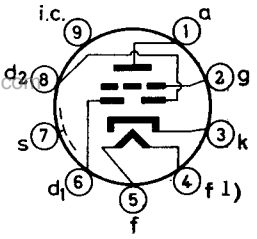
| QUICK REFERENCE DATA | | | |
|---|---|---|---|
| Triode section | | | |
| Anode current | $I_a$ | 1.5 | mA |
| Transconductance | S | 1.65 | mA/V |
| Amplification factor | $\mu$ | 70 | - |

**HEATING:** Indirect by A.C. or D.C.; series supply

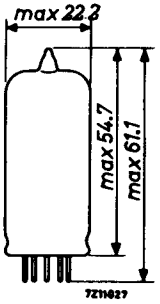
| | | | |
|---|---|---|---|
| Heater current | $I_f$ | 100 | mA |
| Heater voltage | $V_f$ | 14 | V |

**DIMENSIONS AND CONNECTIONS** Dimensions in mm

Base: Noval






1) Earthed side of the heater circuit.

## CAPACITANCES

Triode section

| | | | |
|---|---|---|---|
| Grid to all except anode | $C_{g(a)}$ | 2.3 | pF |
| Anode to all except grid | $C_{a(g)}$ | 2.3 | pF |
| Anode to grid | $C_{ag}$ | 1.2 | pF |
| Grid to heater | $C_{gf}$ | max. 0.05 | pF |

Diode sections

| | | | |
|---|---|---|---|
| Diode No.1 to all | $C_{d_1}$ | 0.9 | pF |
| Diode No.2 to all | $C_{d_2}$ | 0.9 | pF |
| Diode No.1 to diode No.2 | $C_{d_1d_2}$ | max. 0.2 | pF |
| Diode No.1 to heater | $C_{d_1f}$ | max. 0.25 | pF |
| Diode No.2 to heater | $C_{d_2f}$ | max. 0.05 | pF |

Between triode and diode sections

| | | | |
|---|---|---|---|
| Diode No.1 to grid | $C_{d_1g}$ | max. 0.007 | pF |
| Diode No.2 to grid | $C_{d_2g}$ | max. 0.007 | pF |
| Diode No.1 to anode | $C_{d_1a}$ | max. 0.005 | pF |
| Diode No.2 to anode | $C_{d_2a}$ | max. 0.01 | pF |

## TYPICAL CHARACTERISTICS OF THE TRIODE SECTION

| | | | | |
|---|---|---|---|---|
| Anode voltage | $V_a$ | 170 | 100 | V |
| Grid voltage | $V_g$ | -1.55 | -1.0 | V |
| Anode current | $I_a$ | 1.5 | 0.8 | mA |
| Transconductance | S | 1.65 | 1.4 | mA/V |
| Amplification factor | $\mu$ | 70 | 70 | - |
| Internal resistance | $R_i$ | 42 | 50 | kΩ |

## OPERATING CHARACTERISTICS

Triode section as A.F. amplifier, circuit Fig.1

| | | | | | | |
|---|---|---|---|---|---|---|
| Supply voltage | $V_b$ | 170 | 100 | 170 | 100 | V |
| Anode resistor | $R_a$ | 0.22 | 0.22 | 0.1 | 0.1 | MΩ |
| Cathode resistor | $R_k$ | 5.6 | 5.6 | 3.9 | 3.9 | kΩ |
| Grid resistor | $R_g$ | 1.0 | 1.0 | 1.0 | 1.0 | MΩ |
| Grid resistor next stage | $R_g$ | 0.68 | 0.68 | 0.33 | 0.33 | MΩ |
| Anode current | $I_a$ | 0.28 | 0.18 | 0.45 | 0.28 | mA |
| Voltage gain | $V_o/V_i$ | 44 | 41 | 37 | 34 | |
| Distortion at: | | | | | | |
| output voltage $V_o$ = 3 $V_{RMS}$ | $d_t$ | 1.1 | 1.4 | 1.1 | 2.0 | % |
| output voltage $V_o$ = 5 $V_{RMS}$ | $d_t$ | 1.3 | 1.9 | 1.7 | 3.5 | % |
| output voltage $V_o$ = 8 $V_{RMS}$ | $d_t$ | 1.85 | - | 2.6 | - | % |
| Supply voltage | $V_b$ | 170 | 100 | 170 | 100 | V |
| Anode resistor | $R_a$ | 0.22 | 0.22 | 0.1 | 0.1 | MΩ |
| Cathode resistor | $R_k$ | 0 | 0 | 0 | 0 | Ω |
| Grid resistor | $R_g$ | 22 | 22 | 22 | 22 | MΩ |
| Grid resistor next stage | $R_g'$ | 0.68 | 0.68 | 0.33 | 0.33 | MΩ |
| Anode current | $I_a$ | 0.46 | 0.21 | 0.82 | 0.35 | mA |
| Voltage gain | $V_o/V_i$ | 48 | 41 | 42 | 35 | |
| Distortion at | | | | | | |
| output voltage $V_o$ = 3 $V_{RMS}$ | $d_t$ | 0.95 | 1.45 | 0.75 | 1.6 | % |
| output voltage $V_o$ = 5 $V_{RMS}$ | $d_t$ | 1.1 | 2.0 | 1.0 | 2.8 | % |
| output voltage $V_o$ = 8 $V_{RMS}$ | $d_t$ | 1.3 | - | 1.2 | - | % |

**OPERATING CHARACTERISTICS** (continued)

Microphony

No special precautions against microphony are required in circuits where the input voltage is min. 10 mV for 50 mW output of the output tube.

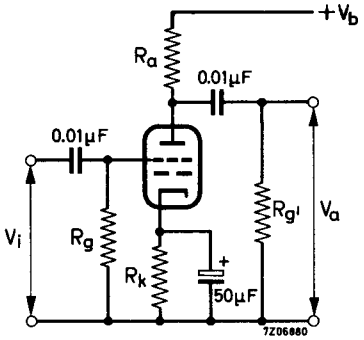



Fig.1

**LIMITING VALUES** (Design centre rating system)

Triode section

| | | | | |
|---|---|---|---|---|
| Anode voltage | $V_{a_o}$ | max. | 550 | V |
| | $V_a$ | max. | 250 | V |
| Anode dissipation | $W_a$ | max. | 0.5 | W |
| Cathode current | $I_k$ | max. | 5 | mA |
| Grid resistor | $R_g$ | max. | 3 | MΩ |
| Cathode to heater voltage | $V_{kf}$ | max. | 100 | V |



Diode sections (each diode)

| | | | | |
|---|---|---|---|---|
| Diode voltage, negative peak | $-V_{d_p}$ | max. | 350 | V |
| Diode current: | | | | |
| average | $I_d$ | max. | 0.8 | mA |
| peak | $I_{d_p}$ | max. | 5 | mA |
| Cathode to heater voltage | $V_{kf}$ | max. | 100 | V |

PHILIPS

Data handbook

Electronic components and materials

# UBC81

| page | sheet | date |
|---|---|---|
| 1 | 1 | 1970.01 |
| 2 | 2 | 1970.01 |
| 3 | 3 | 1970.01 |
| 4 | 4 | 1970.01 |
| 5 | FP | 1999.07.29 |