# RF POWER TRIODE

Air-cooled triodes of metal-ceramic construction with integral cooler intended for use as industrial oscillators.

## QUICK REFERENCE DATA

| | | | |
|---|---|---|---|
| Oscillator output power ($W_o$-$W_{feedb}$), typical | $W_{osc}$ | | 2,67 kW |
| Frequency for full ratings | f | max. | 250 MHz* |

To be read in conjunction with "General Operational Recommendations".

## RF CLASS C OSCILLATOR FOR INDUSTRIAL USE

### OPERATING CONDITIONS

| | | | |
|---|---|---|---|
| Frequency | f | 160 | 27,12 MHz |
| Filament voltage | $V_f$ | 6,0 | 6,3 V |
| Oscillator output power ($W_o$-$W_{feedb}$) | $W_{osc}$ | 2,22 | 2,67 kW |
| Anode voltage | $V_a$ | 4,5 | 5,0 kV |
| Anode current | $I_a$ | 700 | 750 mA |
| Anode input power | $W_{ia}$ | 3,15 | 3,75 kW |
| Anode dissipation | $W_a$ | 0,75 | 0,83 kW |
| Anode output power | $W_o$ | 2,4 | 2,9 kW |
| Anode efficiency | $\eta_a$ | 76 | 78 % |
| Oscillator efficiency | $\eta_{osc}$ | 71 | 71 % |
| Feedback ratio | $V_{gp}/V_{ap}$ | 17 | 17 % |
| Grid resistor | $R_g$ | 2,2 | 2,2 kΩ |
| Grid current, on load | $I_g$ | 225 | 235 mA |
| Grid voltage, negative | $-V_g$ | 495 | 517 V |
| Grid dissipation | $W_g$ | 70 | 80 W |
| Grid resistor dissipation | $W_{Rg}$ | 111 | 121 W |

* When used at frequencies above 160 MHz consult the manufacturer for more detailed information.

**LIMITING VALUES** (Absolute maximum rating system)

| | | | |
|---|---|---|---|
| Frequency for full ratings | f | up to | 250 MHz |
| Anode voltage | $V_a$ | | 5,5 kV |
| Anode current | $I_a$ | | 1,1 A |
| Anode input power | $W_{ia}$ | | 6,0 kW |
| Anode dissipation | $W_a$ | | 1,5 kW |
| Grid voltage | $-V_g$ | | 1,0 kV |
| Grid current | | | |
| on load | $I_g$ | | 280 mA |
| off load | $I_g$ | | 400 mA |
| Grid dissipation | $W_g$ | | 150 W |
| Grid circuit resistance | $R_g$ | | 20 kΩ |
| Cathode current | | | |
| mean | $I_k$ | | 1,4 A |
| peak | $I_{kp}$ | | 8 A |
| Envelope temperature | $T_{env}$ | | 240 °C |

**HEATING:** direct; filament thoriated tungsten

| | | |
|---|---|---|
| Filament voltage | | |
| $f \leqslant 120$ MHz | $V_f$ | 6,3 V |
| $f > 120$ MHz | $V_f$ | 6,0 V |
| Filament current at $V_f = 6,3$ V | $I_f$ | 33 A |

The filament is designed to accept temporary fluctuations of + 5% and −10%.

It is extremely important that the filament be properly decoupled. This should be done so that the resonance of the circuit formed by the filament and the decoupling elements remain below the fundamental oscillator frequency. In grounded-grid circuits this resonance should be below the grid-cathode resonance. For further information please see Application Book "Tubes for RF heating" or contact the manufacturer.

**CAPACITANCES**

| | | |
|---|---|---|
| Anode to filament | $C_{af}$ | 0,4 pF |
| Grid to filament | $C_{gf}$ | 17 pF |
| Anode to grid | $C_{ag}$ | 14 pF |

**CHARACTERISTICS** measured at $V_a = 2,0$ kV, $I_a = 0,5$ A

| | | |
|---|---|---|
| Transconductance | S | 10 mA/V |
| Amplification factor | $\mu$ | 20 |

**COOLING**

See cooling curves.

A low velocity air flow directed to the seals may be required.

To obtain optimum life, the temperature of the seals and of the envelope should, under normal operating conditions, be kept below 200 °C.

To maintain these temperatures additional cooling may be necessary. At frequencies higher than about 4 MHz cooling of the seals becomes mandatory.

## ACCESSORIES

| | |
|---|---|
| Filament connector | type 40688 |
| Filament/cathode connector | type 40689 |
| Grid connector | type 40686 |

## MECHANICAL DATA

Dimensions in mm

### YD1240

Mounting position: vertical with anode up or down

Net mass: approx. 1,3 kg

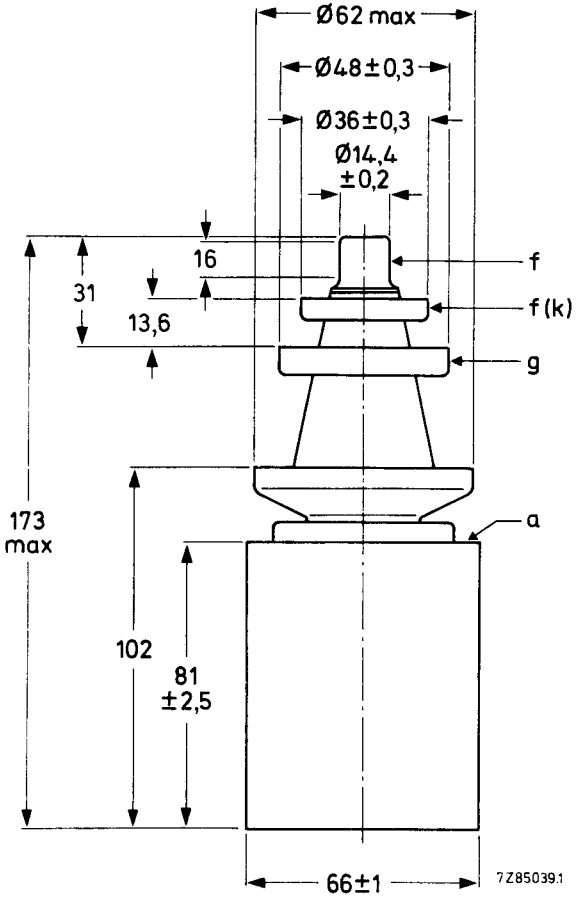


Fig. 1 Mechanical outline – YD1240.

**YD1244**

Dimensions in mm

Mounting position: vertical with anode up or down

Net mass: approx. 1,4 kg

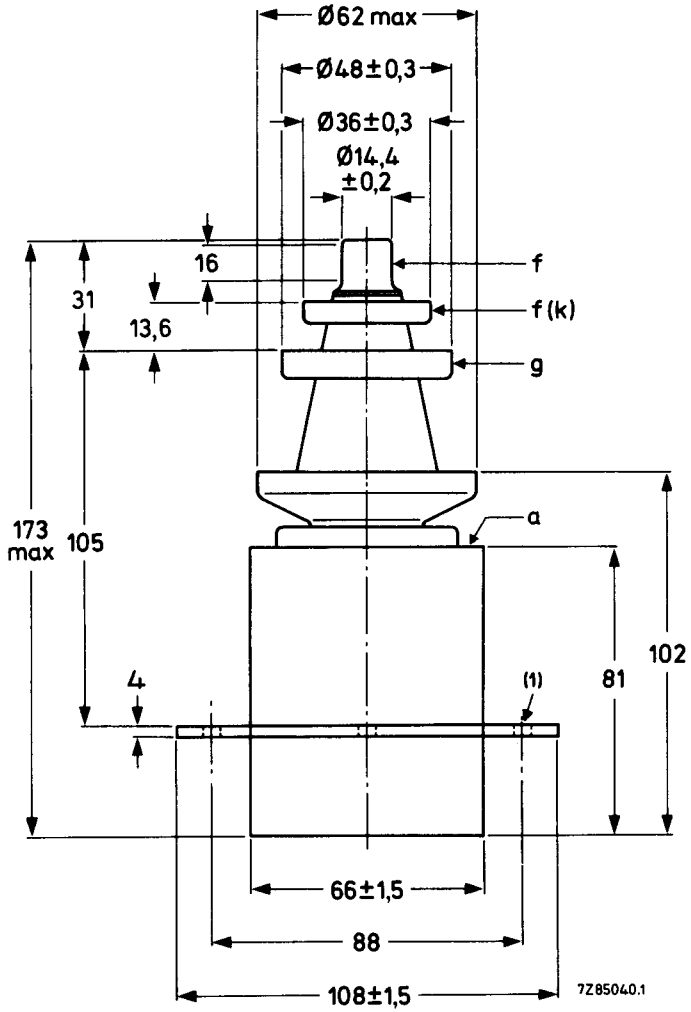


Fig. 2 Mechanical outline – YD1244.

(1) 4 x 5 mm $\phi$ holes.

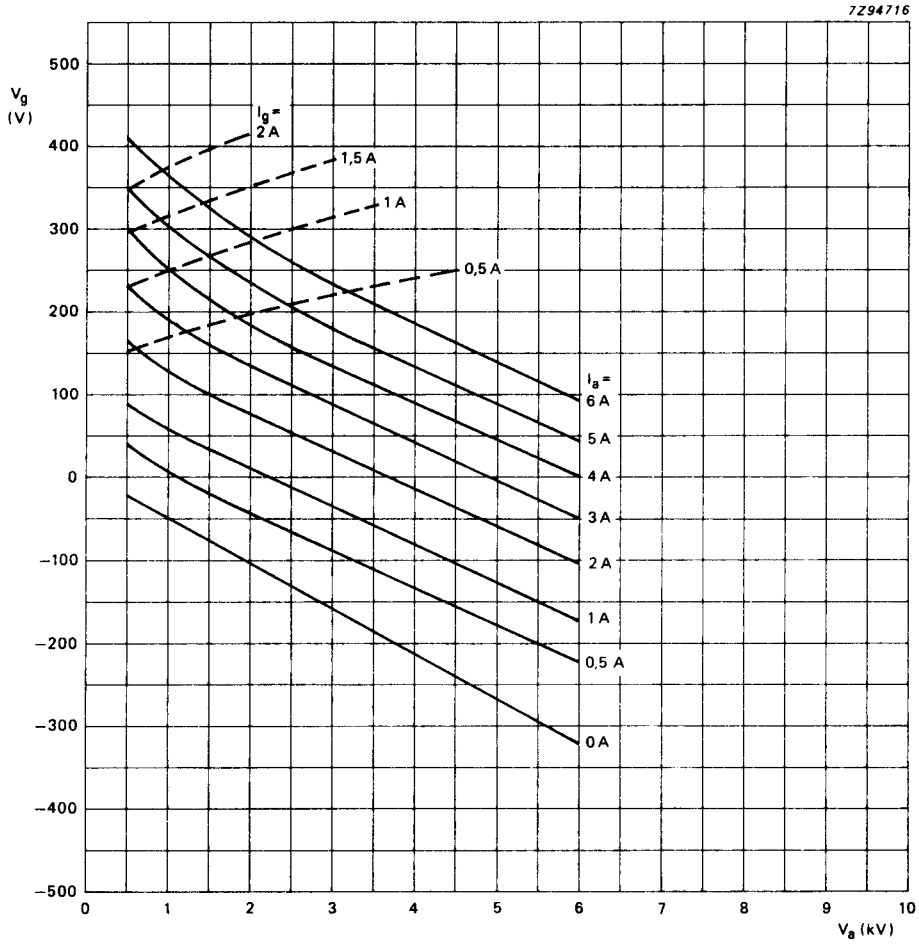


Fig. 3 Constant current characteristics.

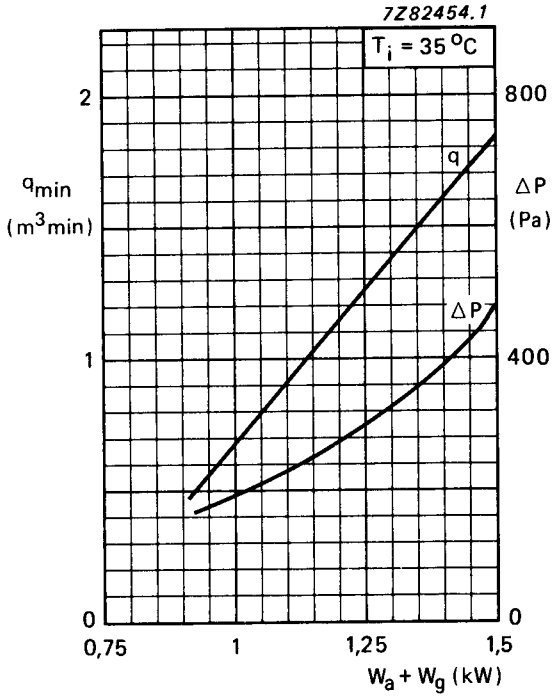


Fig. 4 Cooling curves.

PHILIPS

Data handbook

Electronic components and materials

**YD1240 YD1244**

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|---|---|---|
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| 7 | FP | 2000.09.09 |