

## VAPOUR COOLED R.F. INDUSTRIAL TRIODE

Vapourcooled triode of metal-ceramic construction intended for use as an industrial oscillator.

### QUICK REFERENCE DATA

|                                                               |                  |      |     |
|---------------------------------------------------------------|------------------|------|-----|
| Oscillator output power ( $W_o - W_{\text{feedb}}$ ), typical | $W_{\text{osc}}$ | 62.7 | kW  |
| Frequency for full ratings                                    | $f$ max.         | 100  | MHz |

To be read in conjunction with "General Recommendations Transmitting tubes, Tubes for R.F. heating".

### R.F. CLASS C OSCILLATOR FOR INDUSTRIAL USE

#### OPERATING CONDITIONS

|                                                      |                     |      |          |
|------------------------------------------------------|---------------------|------|----------|
| Frequency                                            | $f$                 | 30   | MHz      |
| Oscillator output power ( $W_o - W_{\text{feedb}}$ ) | $W_{\text{osc}}$    | 62.7 | kW       |
| Anode voltage                                        | $V_a$               | 8.0  | kV       |
| Anode current                                        | $I_a$               | 10   | A        |
| Anode input power                                    | $W_{ia}$            | 80   | kW       |
| Anode dissipation                                    | $W_a$               | 15   | kW       |
| Anode output power                                   | $W_o$               | 65   | kW       |
| Anode efficiency                                     | $\eta_a$            | 81.2 | %        |
| Oscillator efficiency                                | $\eta_{\text{osc}}$ | 78.4 | %        |
| Feedback ratio                                       | $V_{gp}/V_{ap}$     | 14.6 | %        |
| Grid resistor                                        | $R_g$               | 300  | $\Omega$ |
| Grid current, on load                                | $I_g$               | 2.25 | A        |
| Grid voltage, negative                               | $-V_g$              | 675  | V        |
| Grid dissipation                                     | $W_g$               | 750  | W        |
| Grid resistor dissipation                            | $W_{Rg}$            | 1.52 | kW       |

**LIMITING VALUES** (Absolute max. rating system)

|                            |           |       |     |                    |
|----------------------------|-----------|-------|-----|--------------------|
| Frequency for full ratings | $f$       | up to | 100 | MHz <sup>1)</sup>  |
| Anode voltage              | $V_a$     | max.  | 9.6 | kV                 |
| Anode current              | $I_a$     | max.  | 12  | A                  |
| Anode input power          | $W_{ia}$  | max.  | 96  | kW                 |
| Anode dissipation          | $W_a$     | max.  | 40  | kW                 |
| Grid voltage               | $-V_g$    | max.  | 1.5 | kV                 |
| Grid current, on load      | $I_g$     | max.  | 2.5 | A                  |
| off load                   | $I_g$     | max.  | 3.5 | A                  |
| Grid dissipation           | $W_g$     | max.  | 1   | kW                 |
| Grid circuit resistance    | $R_g$     | max.  | 10  | k $\Omega$         |
| Cathode current, mean      | $I_k$     | max.  | 14  | A                  |
| peak                       | $I_{kp}$  | max.  | 70  | A                  |
| Envelope temperature       | $t_{env}$ | max.  | 240 | $^{\circ}\text{C}$ |

**HEATING** : direct; filament thoriated tungsten

|                                |          |           |            |
|--------------------------------|----------|-----------|------------|
| Filament voltage               | $V_f$    | 8.4       | V          |
| Filament current               | $I_f$    | 235       | A          |
| Peak filament starting current | $I_{fp}$ | max. 1500 | A          |
| Cold filament resistance       | $R_{fo}$ | 3.9       | m $\Omega$ |

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

**CAPACITANCES**

|                   |          |     |    |
|-------------------|----------|-----|----|
| Anode to filament | $C_{af}$ | 1.3 | pF |
| Grid to filament  | $C_{gf}$ | 100 | pF |
| Anode to grid     | $C_{ag}$ | 45  | pF |

**CHARACTERISTICS** measured at  $V_a = 8$  kV,  $I_a = 6$  A

|                      |       |    |      |
|----------------------|-------|----|------|
| Transconductance     | $S$   | 90 | mA/V |
| Amplification factor | $\mu$ | 35 |      |

1) When the tube has to be used at frequencies above 30 MHz the manufacturer should be consulted for more detailed information.

**COOLING**

See also cooling curves

With integrated boiler-condensor type K735.

| Anode + grid<br>dissipation<br>$W_a + W_g$<br>(kW) | Inlet<br>temperature<br>$t_i$<br>(°C) | Rate of<br>flow<br>$q$ min<br>(ℓ/min) | Pressure<br>drop<br>$P_i$<br>(atm) | Outlet<br>temperature<br>$t_o$<br>(°C) |
|----------------------------------------------------|---------------------------------------|---------------------------------------|------------------------------------|----------------------------------------|
| 40                                                 | 20                                    | 11                                    | 0.05                               | 74                                     |
|                                                    | 35                                    | 15                                    | 0.07                               | 74                                     |
|                                                    | 50                                    | 25                                    | 0.16                               | 74                                     |
| 30                                                 | 20                                    | 8                                     | 0.03                               | 76                                     |
|                                                    | 35                                    | 11                                    | 0.05                               | 76                                     |
|                                                    | 50                                    | 17                                    | 0.09                               | 76                                     |
| 20                                                 | 20                                    | 5                                     | 0.02                               | 80                                     |
|                                                    | 35                                    | 6.7                                   | 0.03                               | 80                                     |
|                                                    | 50                                    | 10                                    | 0.04                               | 80                                     |

Air-cooling of seals is required.

To obtain optimum life, the seal/envelope temperature under continuously loaded conditions should be kept at or lower than 200 °C.

**ACCESSORIES**

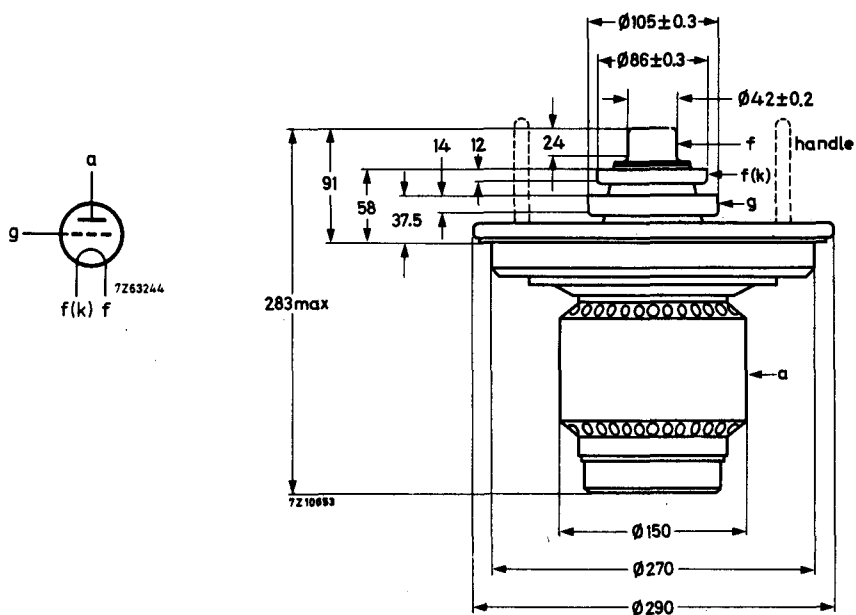
|                                 |      |       |            |     |    |
|---------------------------------|------|-------|------------|-----|----|
| Filament connector              | type | 40706 | net weight | 390 | g  |
| Filament/cathode connector      | type | 40705 | net weight | 330 | g  |
| Filament cables (both required) | type | 40718 | net weight | 460 | g  |
|                                 | and  |       |            |     |    |
|                                 | type | 40719 | net weight | 475 | g  |
| Grid connector                  | type | 40736 | net weight | 450 | g  |
| Boiler condenser                | type | K735  | net weight | 70  | kg |

## MECHANICAL DATA

Dimensions in mm

Mounting position: vertical with anode down

Net weight: approx 15.7 kg



Note: The handles should be removed before switching on the tube.

