

PET12-1A

Air Cooled Triode
For Industrial RF Heating

Drop in equivalent of ITL 12-1

- Output Power: 33 kW in CW
- Anode voltage: 12 kV
- Anode dissipation: 12 kW
- Frequency up to 120 MHz

Manufactured in India, in a world-class facility equipped with high quality machinery, materials and components sourced from reputed suppliers in America, Europe and Japan.

Fifty-two weeks warranty against manufacturing defects irrespective of the number of hours of operation.



PET12-1A

The PET12-1A is a RF power triode designed specifically for industrial applications. This tube uses a coaxial design and metal-ceramic technology. This triode may be operated in CW or pulse modes. For operation in pulse mode, the parameters depend on each equipment characteristics. Contact us for specific information. The PET12-1A is a air cooled triode.

Electrical characteristics

| | |
|---|--------------------|
| Filament | thoriated tungsten |
| Filament voltage (+ 5 %, - 10 %) (see note 1) | 5.8 V |
| Filament current | 145 A |
| Surge current (maximum) | 600 A |
| Cold resistance | 5 mΩ |
| Capacitances: | |
| • Grid to Anode | 21 pF |
| • Grid to Cathode | 55 pF |
| • Cathode to Anode (see note 2) | 1 pF |
| Amplification factor | 22 (approx.) |
| Transconductance (Va: 10 kV, Ia: 4 A) | 50 mA/V (approx) |

Mechanical characteristics

| | |
|--------------------|----------------------------|
| Operating position | vertical, anode up or down |
| Weight | 6.5 kg (14 lbs) approx. |
| Dimensions | see outline drawing |

Maximum ratings

| | |
|---------------------------------------|---------|
| Frequency (see note 3) | 120 MHz |
| Anode voltage: | |
| • Up to 30 MHz | 12 kV |
| • From 30 to 60 MHz | 9 kV |
| • From 60 to 90 MHz | 7 kV |
| • From 90 to 120 MHz. | 6 kV |
| Control grid voltage | -1500 V |
| Anode current | 5.5 A |
| Control grid current: | |
| • At full load | 0.8 A |
| • At no load | 1.5 A |
| Peak cathode current, CW | 28 A |
| Anode dissipation: | |
| • inlet air temperature = 25°C | 12 kW |
| • inlet air temperature = 45°C | 10 kW |
| Grid dissipation: | |
| • Up to 30 MHz | 350 W |
| • From 30 to 60 MHz | 320 W |
| • From 60 to 90 MHz | 300 W |
| • From 90 to 120 MHz. | 280 W |
| Grid resistance (tube non conducting) | 10 KΩ |

Typical operation (see note 4)

Class C RF oscillator for industrial applications

| | | | |
|-----------------------|-------|-------|----------|
| Frequency | 30 | 30 | MHz |
| Anode voltage | 10 | 8 | kV |
| Grid bias | - 640 | - 560 | V |
| Grid voltage | 960 | 900 | V |
| Anode current | 4.3 | 4.8 | A |
| Grid current, on load | 0.53 | 0.72 | A |
| Anode input power | 43 | 38.4 | kW |
| Anode output power | 33 | 29 | kW |
| Anode dissipation | 9.6 | 8.6 | kW |
| Grid dissipation | 145 | 220 | W |
| Grid resistance | 1210 | 790 | Ω |
| Feedback ratio | 10.5 | 12.9 | % |
| Oscillator efficiency | 76.5 | 76 | % |

Note:

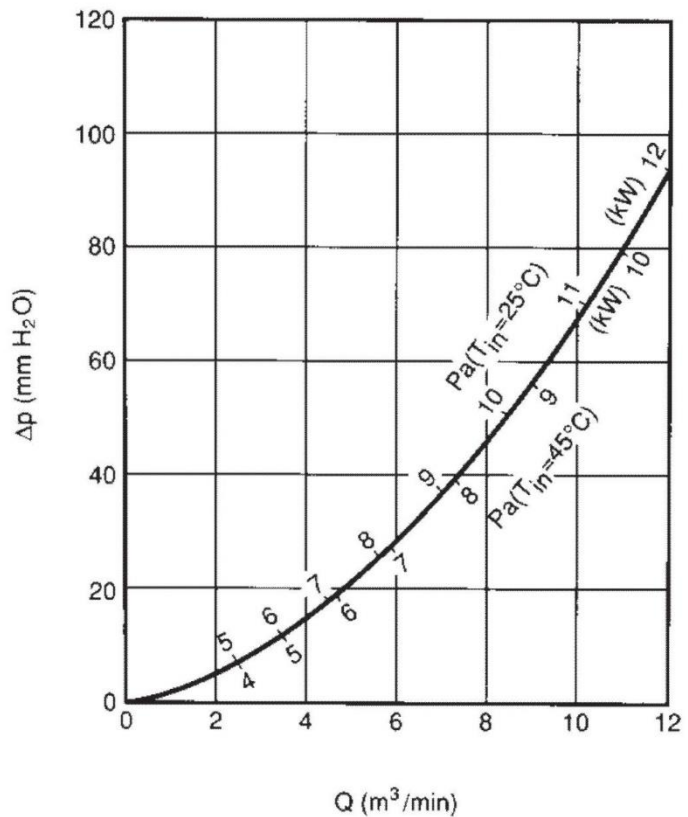
1. At frequencies above 50 MHz, the filament voltage is reduced so that the ratio of filament voltage to current becomes the same as that without an anode voltage.
2. Measured with a 40 x 40 cm shielding plate attached to the grid plate.
3. Limited conditions above 30 MHz. Please consult Piani Electron Tubes & Devices.
4. Operation with higher frequencies on request.

Cooling

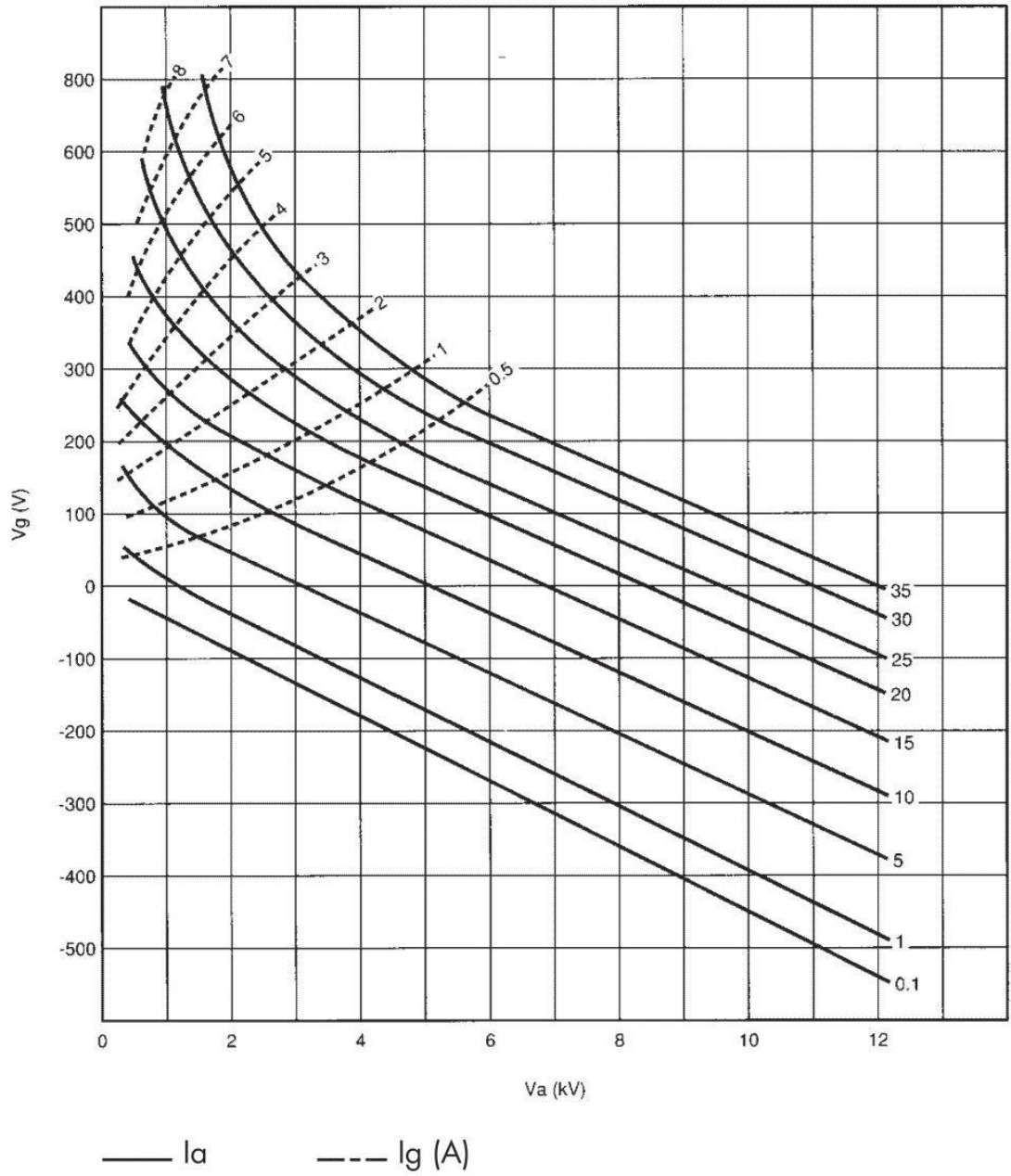
Anode cooling: forced air
 Inlet air temperature: 45 °C max.
 Cooling air flow: 6 m³/min min.
 Temperature at any point on tube envelope: 220 °C max.

The required air flow rates and pressure drop are as shown in the graph. This is valid for air flow towards the cooling fins or away from them.

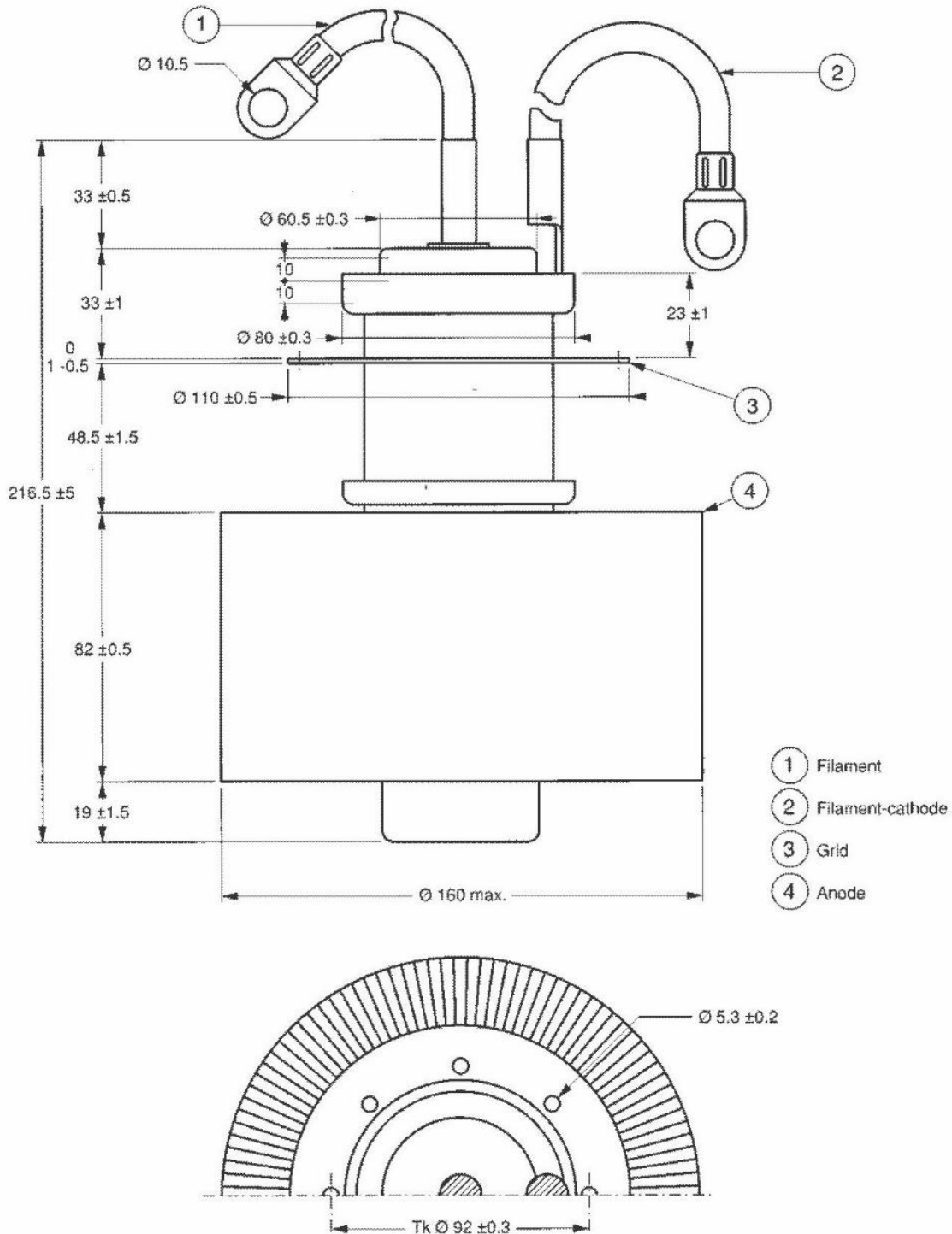
Pa: anode dissipation
 Δp : pressure drop across the cooler fins
 q: air flow rate
 T_{in}: inlet air temperature



Constant current characteristics



Outline Drawing (in mm)



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