

ITL9-1 Industrial Triode



The **Marshall Components ITL9-1** is a power triode designed specifically for industrial applications.

- Uses a coaxial design and metal-ceramic technology
- May operate in CW or pulse mode. For operation in pulse mode, the parameters depend on each equipment characteristics.
- It is an forced air cooled triode.
- The anode voltage is 12kV.
- Output power is 25kW in CW mode.
- The max anode dissipation is 8.5kW.
- The frequency up to 120MHz.

General Characteristics

Electrical

Filament	Thoriated-tungsten mesh
Filament voltage	(+5%, -10%) 5.8V
Filament Current	145A
Surge current (max)	600A
Cold resistance	5mΩ
Amplification factor	(approx) 22
Capacitances:	
Grid to filament	21.0pF
Grid to anode	55.0pF
Transconductance (Ua:4kV, Ia:4A)(approx)	50mA/V

Mechanical

Operating position	Vertical, Anode up or down
Maximum dimensions:	see outline drawing
Net weight	4. 4 kg

Maximum ratings

Frequency	120MHz
Anode voltage	
up to 30MHz	12kV
up to 30 to 60MHz	9kV
up to 60 to 90MHz	7kV
from 90 to 160MHz	6kV
Control-grid voltage	-1.0kV
Anode current, CW	4A
Control-grid current:	
at full load	0.8A
at no load	1.5A
Peak cathode current, CW	25A
Anode dissipation	
Inlet air temperature, 25°C	8.5kW
Inlet air temperature, 45°C	5kW
Grid dissipation:	
up to 30MHz	350W
up to 30 to 60MHz	320W
up to 60 to 90MHz	300W
from 90 to 160MHz	280W
Grid resistance (at blocked tube)	10kΩ

Cooling

Anode cooling	forced air
Cooling air flow	2 m ³ /min
Inlet air temperature	45°C max
Temperature at any point on tube envelope	220°Cmax

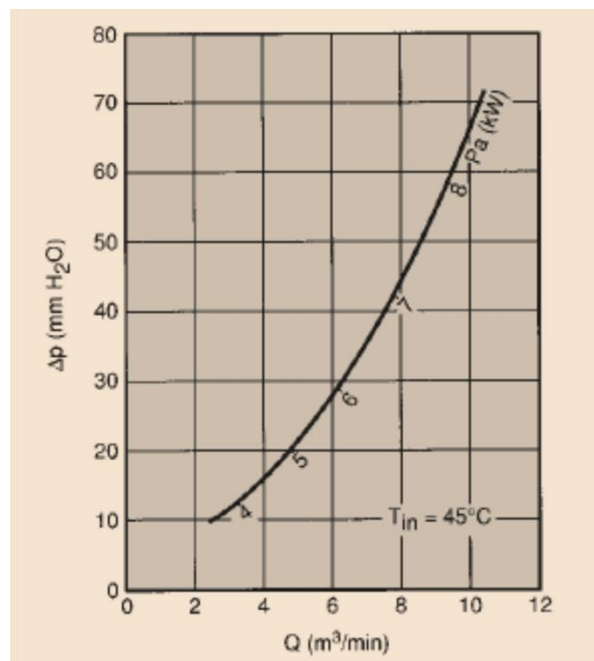
Typical operation

Class C RF oscillator for industrial applications

Examples	1	2	
Frequency	30	30	MHz
Anode voltage	10	8	kV
Grid bias	-610	-520	V
Grid voltage	860	7775	V
Anode current	3.3	3.4	A
Grid current on load	0.35	0.40	A
Anode input power	33	27.2	kW
Anode output power	24.7	19	kW
Anode dissipation	8.0	7.6	kW
Grid dissipation	76	88	W
Grid resistance	1750	1300	Ω
Feedback ratio	9.6	11.1	%
Oscillator efficiency	74.8	70	%

Cooling curves

- The required flow rates and pressures drop may be read off the cooling curve.
- This is valid for both air-flow directions. The maximum values given for the inlet-air temperature, the cooler temperature the metal-ceramic solder points must be respected.
- Pa: anode dissipation
- Δp : pressure drop across the cooler fins Q: air flow rate
- T_{in} : inlet air temperature



CONSTANT CURRENT CHARACTERISTICS

