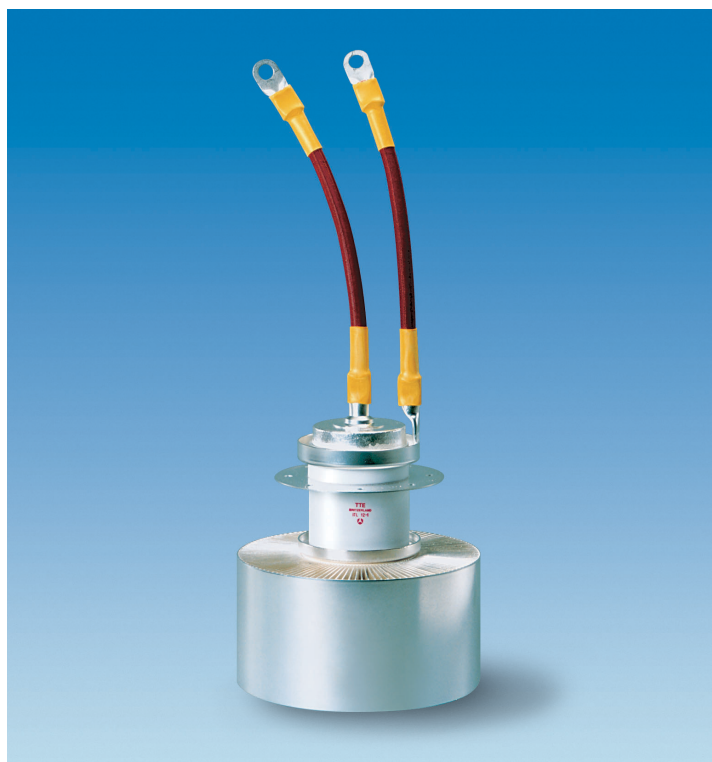


ITL 12-1

Forced-air cooled triode

33 kW

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





ITL 12-1

The ITL 12-1 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 ITL 12-1 is an air cooled triode.

This product is designed, developed and manufactured at an ISO 9001 registered production site.

Electrical characteristics

Filament	thoriated tungsten		
Filament voltage (+ 5 %, - 10 %) (1)	5.8	V	
Filament current	145	A	
Surge current	600	A	max.
Cold resistance	5	mΩ	
Capacitances:			
• grid-anode	21	pF	
• grid-cathode	55	pF	
• cathode-anode (2)	1	pF	
Amplification factor	22		approx.
Transconductance (Va: 10 kV, Ia: 4 A)	50	mAV	approx.

Mechanical characteristics

Operating position	vertical, anode up or down		
Weight	6.5	kg	approx.
Dimensions	see outline drawing		

Maximum ratings

Frequency (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	- 1 500	V
Anode current	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

(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 Thales Electron Devices.

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.

Typical operation (4)

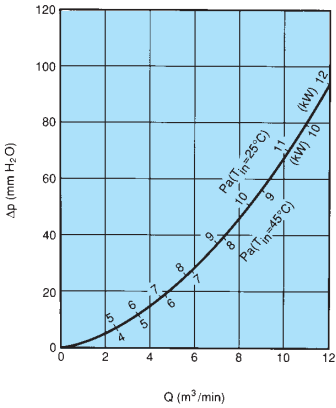
Examples	Class C RF oscillator for industrial applications		
	1	2	
Frequency	30	30	MHz
Anode voltage	10	8	kV
Grid bias	- 640	- 560	V
Grid voltage	960	900	V
Anode current	4.3	4.8	A
Grid current, on load	0.53	0.72	A
Anode input power	43	38.4	kW
Anode output power	33	29	kW
Anode dissipation	9.6	8.6	kW
Grid dissipation	145	220	W
Grid resistance	1 210	790	Ω
Feedback ratio	10.5	12.9	%
Oscillator efficiency	76.5	76	%

(4) Operation with higher frequencies on request.

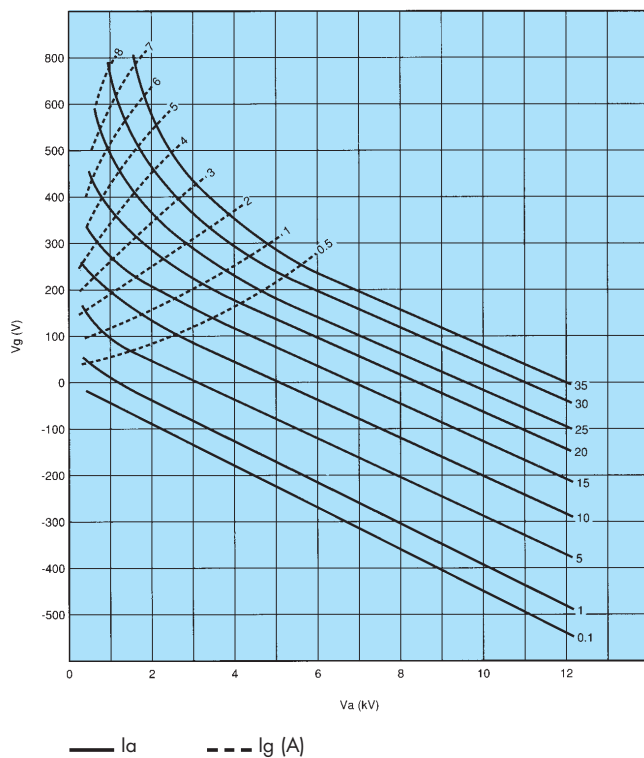
Cooling curve

The required flow rates and pressures drop may be read off the cooling curve. This is valid for both air-flow directions.

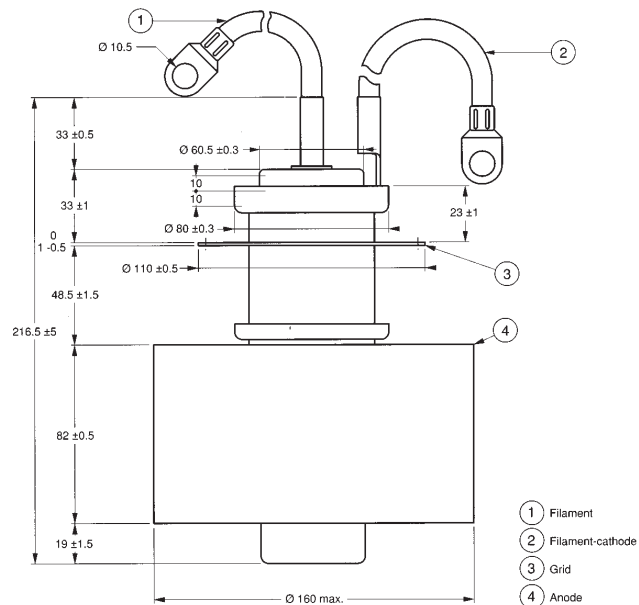
Pa: anode dissipation
Δp: pressure drop across the cooler fins
q: air flow rate
T_{in}: inlet air temperature



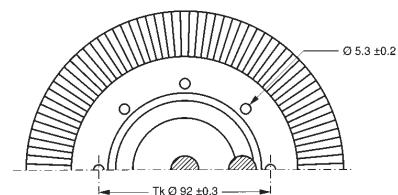
Constant current characteristics



Outline drawing (dimensions in mm)



Top view (dimensions in mm)



This document cannot be considered to be a contractual specification. The information given herein may be modified without notice due to product improvement or further development. Consult Thales Electron Devices before making use of this information for equipment design.

For further information, please contact:

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