INDUSTRIAL
RF HEATING

ITL 25-3

Forced-air cooled triode

84 kW

- Output power:
  84 kW in CW mode
- Anode voltage: 12 kV
- Anode dissipation: 30 kW
- Frequency up to 100 MHz

THALES

ITL 25-3

The ITL 25-3 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 25-3 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)	9	V	
Filament current	180	A	
Surge current	720	A	max.
Cold resistance	6.5	mΩ	
Capacitances:			
• grid-anode	30	pF	
• grid-cathode	80	pF	
• cathode-anode (2)	2.0	pF	
Amplification factor	20		approx.
Transconductance (Va: 4 kV, Ia: 4 A)	72	mA/V	approx.

Mechanical characteristics

Operating position	vertical, anode up or down		
Weight	14	kg	approx.
Dimensions	see outline drawing		

Maximum ratings

Frequency (3)	100	MHz
Anode voltage:		
• up to 30 MHz	14	kV
• from 30 to 50 MHz	12	kV
• from 50 to 80 MHz	10	kV
• from 80 to 100 MHz	8	kV
Control grid voltage	- 1 500	V
Anode current	12	A
Control-grid current:		
• at full load	2.2	A
• at no load	4	A
Peak cathode current, CW	55	A
Anode dissipation:		
• air inlet temperature = 25°C	30	kW
• air inlet temperature = 45°C	25	kW
Grid dissipation:		
• up to 50 MHz	1 200	W
• from 50 to 80 MHz	1 000	W
• from 80 to 100 MHz	700	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	15	m^3/min	min.
Temperature at any point on tube envelope	220	°C	max.

Typical operation (4)

	Class C RF oscillator for industrial applications		
Examples	**1**	**2**	
Frequency	30	30	MHz
Anode voltage	12	10	kV
Grid bias	- 830	- 735	V
Grid voltage	1 215	1 140	V
Anode current	9.1	9.6	A
Grid current, on load	1.1	1.2	A
Anode input power	109	96	kW
Anode output power	83.4	73.2	kW
Anode dissipation	24	21	kW
Grid dissipation	360	420	W
Grid resistance	760	615	Ω
Feedback ratio	11.3	12.6	%
Oscillator efficiency	76.5	76.3	%

(4) Operation with higher frequencies on request.

Cooling curve

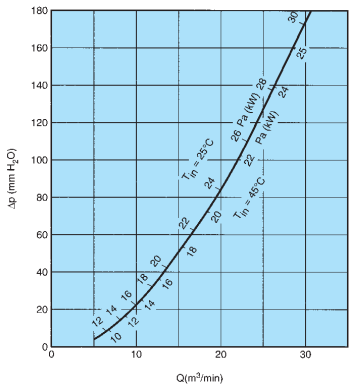
The required flow rates and pressures drop may be read off the cooling curve.
This is valid for both air-flow directions.

Pa: anode dissipation

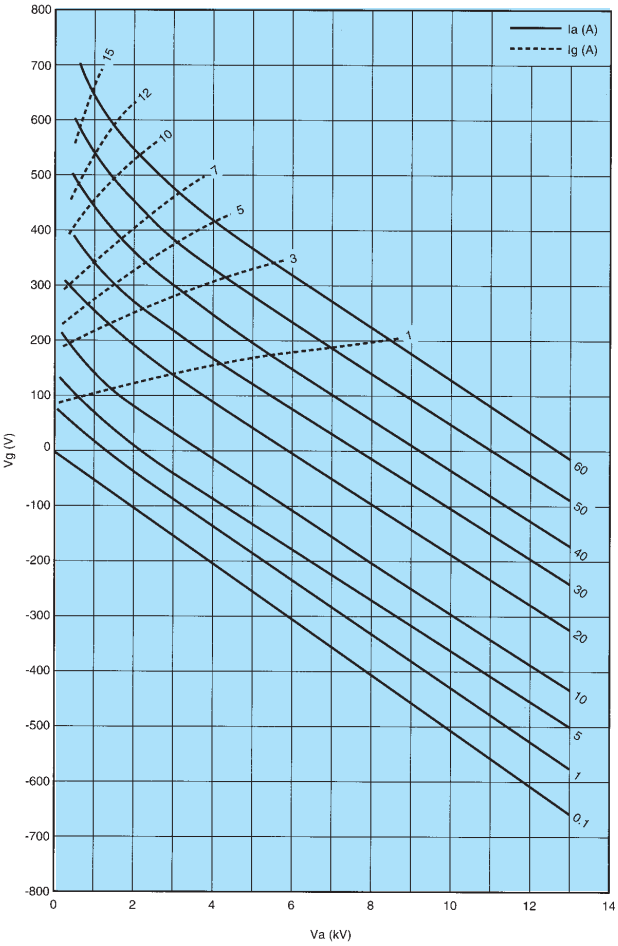
Δp: pressure drop across the cooler fins

q: air flow rate

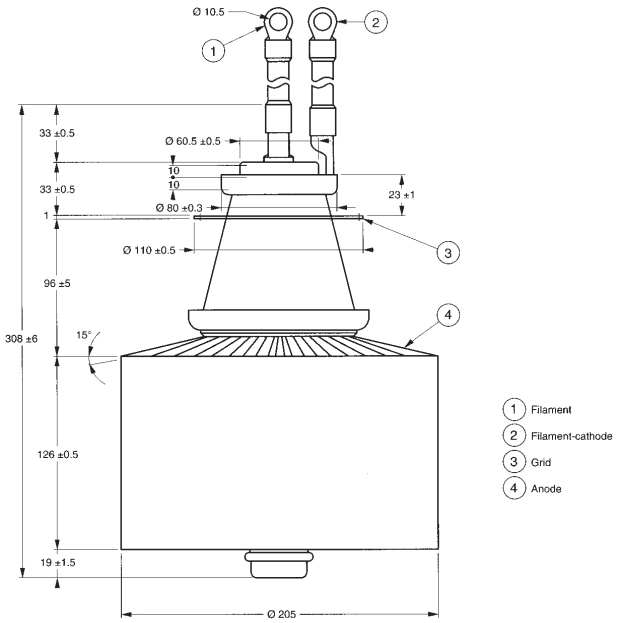
T_{in}: inlet air temperature



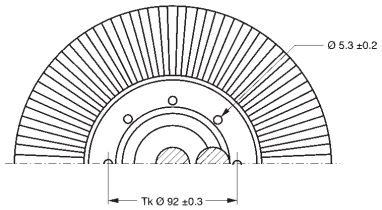
Constant current characteristics



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:

THALES ELECTRON DEVICES
2 bis, rue Latécoère - 78941 Vélizy Cedex - France
Tel: + 33 1 30 70 35 00 - Fax: + 33 1 30 70 35 35
www.thalesgroup.com/electrondevices

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