

CTK 3-1
CTK 3-3
High- μ triodes

5 kW

- Output power : 5 kW in CW mode
- Anode voltage : 7.2 kV
- Anode dissipation : 3 kW
- Frequencies up to 160 MHz
- Water cooled





CTK 3-1

The CTK 3-1 and CTK 3-3 are high-power, high- μ triodes designed specifically for industrial applications. These tubes use a coaxial design and metal-ceramic technology. They may be operated in CW or pulse modes. For operation in pulse mode, the parameters

depends on each equipment characteristics, contact us for specific information.

Ces produits ont été conçus, développés et fabriqués dans un site de production certifié ISO 9001.

Electrical characteristics

Cathode	thoriated tungsten		
Filament voltage (+5 %, -10 %) (1)	6.3	V	
Filament current	35	A	
Surge current	140	A	max.
Cold resistance	22	m	
Capacitances :			
• grid-anode	14	pF	
• grid-cathode	17	pF	
• cathode-anode (2)	0.05	pF	
Amplification factor	150		approx.
Transconductance (V_a : 4kV, I_a : 1 A)	16	mA/V	approx.

Mechanical characteristics

Operating position	vertical, anode up or down		
Weight	1.6	kg	approx.
Dimensions	see outline drawing		
CTK 3-1	filament connection by flexible leads - length 200	mm	approx.
CTK 3-3	without leads		

Maximum ratings

Frequency (3)	160	MHz	
Anode voltage :			
• up to 85 MHz	7.2	kV	
• from 85 to 160 MHz	6	kV	
Control grid voltage	- 1000	V	
Peak cathode current, CW	7.5	A	
Anode dissipation	3	kW	
Grid dissipation :			
• up to 85 MHz	180	W	
• from 85 to 160 MHz	130	W	
Grid resistance (tube non conducting)	10	k	max.

(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 80 MHz. Please consult Thales Electron Devices.

Cooling

Anode cooling	water		
Cooling water flow and pressure gradient	see cooling curves		
Temperature at outlet (industrial water)	60	°C	max.
Cooling water inlet pressure	5	bar	max.
Temperature at any point on tube envelope	220	°C	max.
Air flow on filament head	0.5	m ³ /mn	

Typical operation (4)

Class C, RF amplifier or oscillator, CW

Frequency	60	60	MHz
Anode voltage	6	5	kV
Grid bias	- 210	- 195	V
Grid voltage	535	500	V
Anode current (5)	1.1	1	A
Grid current (5)	0.48	0.43	A
Anode input power	6.6	5	kW
Anode output power (oscillator)	4.7	3.5	kW
Anode dissipation (5)	1.7	1.3	kW
Grid dissipation (5)	135	115	W
Grid drive power (6) (circuit losses not included)	235	200	W
Grid resistance (oscillator)	440	450	

(4) Other type of operation possible on request (higher frequencies, AB2-linear amplifier, class B RF amplifier in pulsed operation).

(5) Average value.

(6) Cathode-grounded operation. Grid-grounded operation possible on request.

Cooling curves

Distilled, deionized or tap water may be used for cooling. The water flow rate and pressure drop required for a particular anode dissipation are indicated on the cooling curves.

P_a : anode dissipation

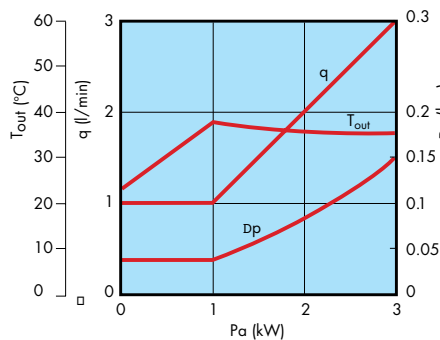
Δp : pressure drop across the water cooler

q : water flow rate

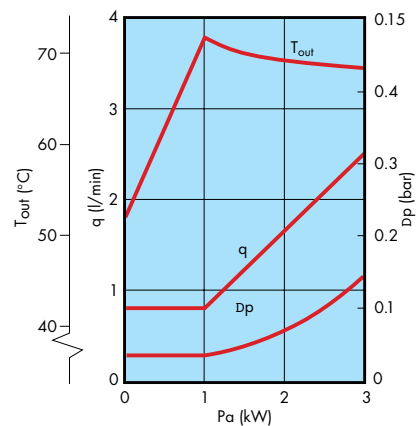
T_{out} : outlet water temperature

(for an inlet water temperature of 20°C with industrial water and 50°C with distilled or deionized water).

Industrial water - minimum resistivity : 5 kΩ.cm

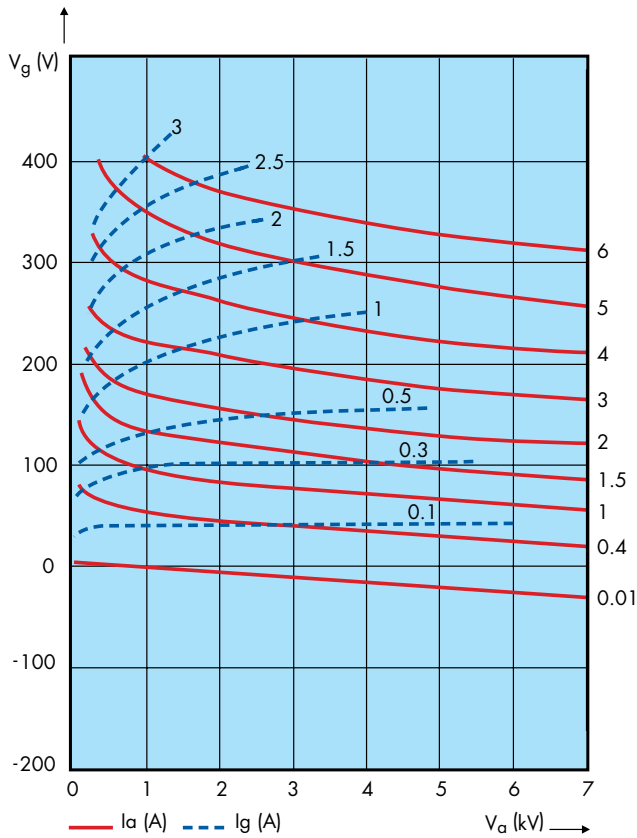


Distilled or deionized water - minimum resistivity : 50 kΩ.cm

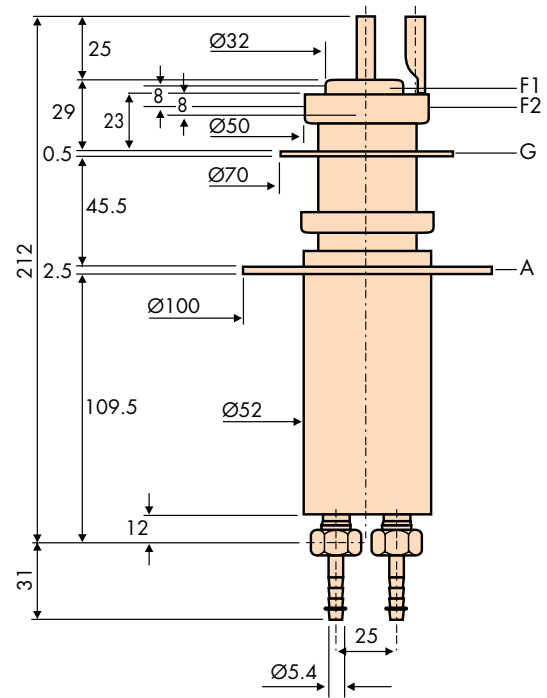


CTK 3-1 CTK 3-3

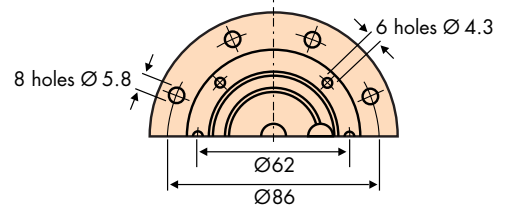
Constant current characteristics



CTK 3-3 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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