

YD120287

Amperex

YD1202/8752

RF Power Triode

The Amperex YD1202/8752 is an RF Power Triode in metal-ceramic construction intended for use as an industrial oscillator. The YD1202 has an integral water cooler.

GENERAL DATA

Electrical:

Filament-Thoriated Tungsten^{Note 1}

Voltage 12.2 V
Current 250 A

Characteristics: measured at: $V_a = 10$ kV, $I_a = 8$ A

Amplification Factor μ 36
Transconductance S 140 mA/V

Direct Interelectrode Capacities:

Grid-Anode C_{ag} 57 pF
Grid-Filament C_{gf} 160 pF
Anode-Filament C_{af} 2.4 pF

Mechanical:

Overall Dimensions:

Length max 460 mm
Diameter max 191 mm

Mounting Position

Vertical, with anode up or down

Cooling Type:

Water



Cooling:

To obtain optimum life, the temperature of the seals and the envelope should, under continuously loaded conditions, be kept below 200°C. At frequencies up to about 4 MHz the seals are sufficiently cooled if the filament connectors are water-cooled by a flow of about 0,5 l/min. At higher frequencies however, an additional airflow of about 4 m³/min must be led along the seals from a 50 mm diameter nozzle positioned at a distance of 250 mm from the tube header.

Table 1: Water cooling characteristics

anode + grid dissipation $W_a + W_g$ kW	inlet temperature T_i °C	rate of flow q_{min} l/min	pressure drop delta P kPa	outlet temperature T_o °C
100	20	52	55	49
	50	78	105	69
80	20	39	32	51
	50	60	65	70
60	20	29	19	52
	50	42	32	72
40	20	18	8	54
	50	27	15	73

Absolute max. water inlet temperature T_i max 50 °C
Absolute max water pressure P max 600 kPa

Avenue du 4 Juillet 1776
Z.I. La Marquisie, B.P. 25
19101 Brive Cedex
France



Richardson Electronics, Ltd.

40W267 Keslinger Road
LaFox, IL 60147
USA
(708) 208-2200

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LIMITING VALUES (Absolute maximum rating system)

Frequency for Full Ratings	f	up to	100 MHz ^{Note 2}
Anode Voltage	V_a	max.	15 kV
Anode Current	I_a	max.	19 A
Anode input power	W_{in}	max.	220 kW
Anode dissipation	W_a	max.	80 kW
Grid voltage	$-V_g$	max.	2 kV
Grid current, on load	I_g	max.	5 A
Grid current, off load	I_g	max.	7 A
Grid dissipation	W_g	max.	2.5 kW
Grid circuit resistance	R_g	max.	10 k Ω
Cathode current			
mean	I_k	max.	24 A
peak	I_{kp}	max.	110 A
Envelope Temperature	T_{ew}	max.	240 °C

RF CLASS C OSCILLATOR FOR INDUSTRIAL USE

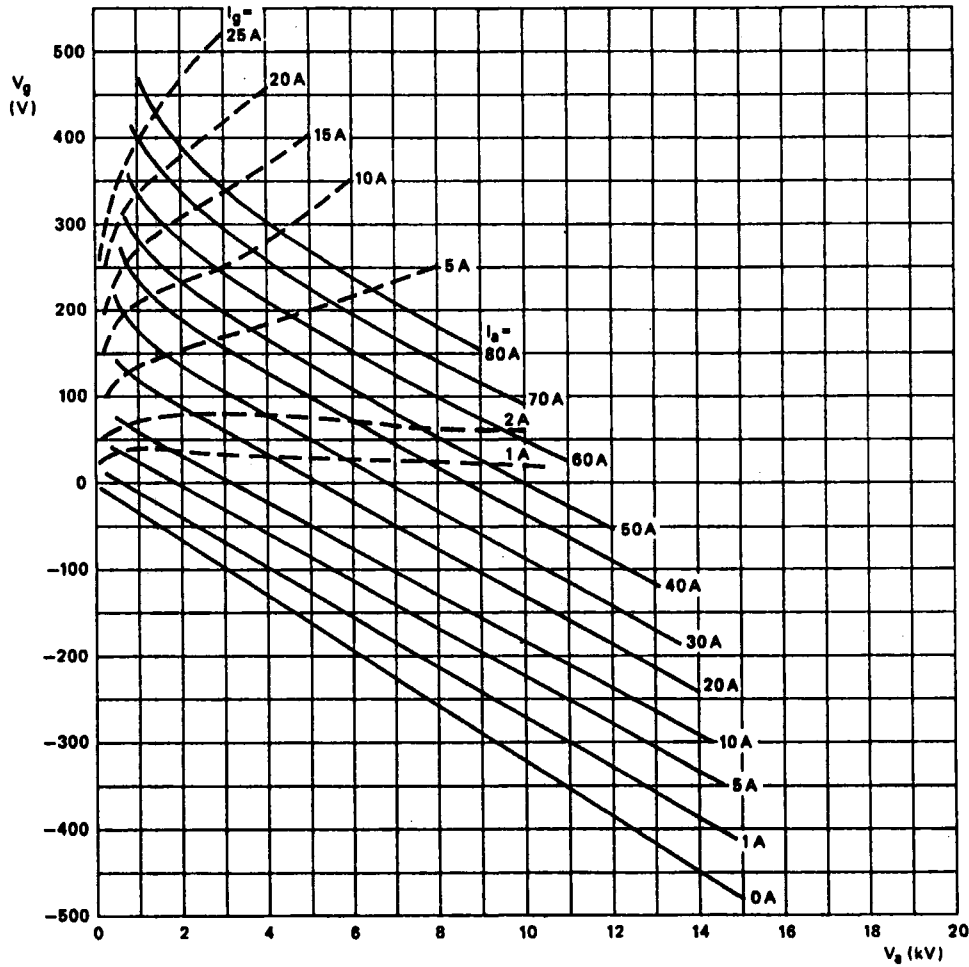
OPERATING CONDITIONS

Frequency	f	30	30	MHz
Oscillator output power ($W_o - W_{feed}$)	W_{osc}	120	163	kW
Anode Voltage	V_a	10	12	kV
Anode Current	I_a	16	18	A
Anode input power	W_{in}	160	216	kW
Anode dissipation	W_a	36	47	kW
Anode output power	W_o	124	169	kW
Anode efficiency	η_a	77.5	78	%
Oscillator efficiency	η_{osc}	75	75.4	%
Feedback ratio	V_{gp}/V_{ap}	11.5	12.5	%
Grid resistor	R_g	200	225	Ω
Grid current, on load	I_g	3.5	4	A
Grid voltage, negative	$-V_g$	700	900	V
Grid dissipation	W_g	1.5	2	kW
Grid resistor dissipation	W_{Rg}	2.45	3.6	kW
Peak filament starting current	I_{fp}	max.	1500	A
Cold filament resistance	R_{fo}	max.	5.3	m Ω

Notes

1. The filament is designed to accept temporary fluctuations of +5% and -10%. To ensure that the cathode temperature remains constant irrespective of the operating frequency, it may be necessary to reduce the filament voltage at higher frequencies. When doing so it must be borne in mind that the filament voltage-to-current ratio measured with only the filament voltage applied should remain constant under all operating conditions. It is extremely important that the filament be properly decoupled. This should be done so that the resonance of the circuit formed by the filament and the decoupling elements remain below the fundamental oscillator frequency. In grounded-grid circuits this resonance should be below the grid-cathode resonance.
2. When the tubes are to be used at frequencies above 30MHz the manufacturer should be consulted for more detailed information.

Figure 1 - Constant Current Characteristics



Richardson Electronics, Ltd. acquired Philips Electronics' transmitting tube operation in 1988. Richardson Electronics continues to manufacture these high quality electron tubes under the Amperex name.

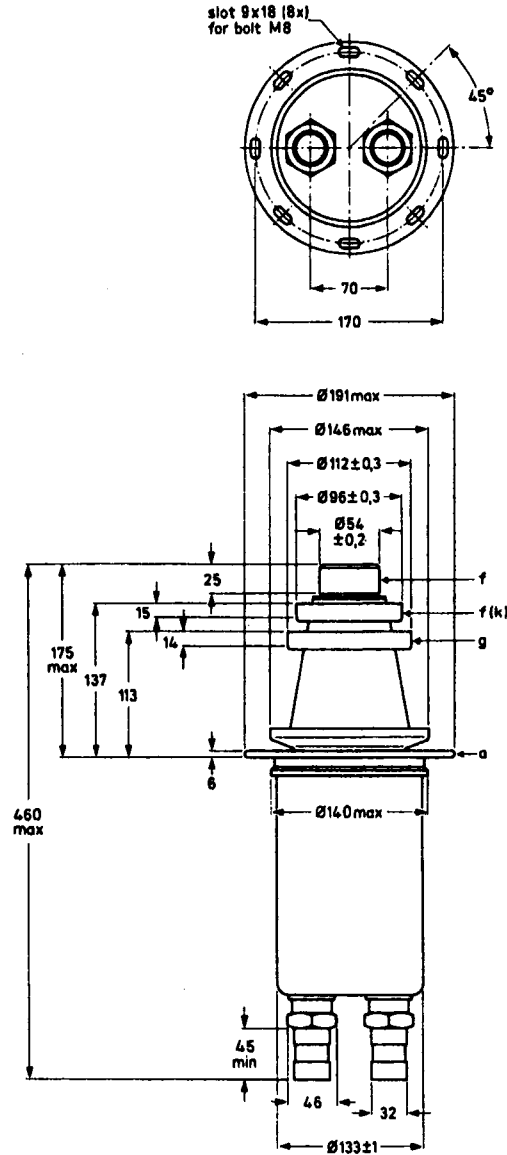
Characteristics and operating values are based upon performance tests. These figures may change without notice as the result of additional data or product refinement. Richardson Electronics, Ltd. should be consulted before using this information for final equipment design.

AmpereX

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Figure 2 - Mechanical Outline

Dimensions in mm



MECHANICAL DATA:

Net Mass: 11.5 kg

Thread of water connections BSP 1-1/4 inches.

When using the tube in the anode up position, the input and output water connections should be reversed.

The handles should be removed before switching on the tube.

ACCESSORIES:

Filament connector with cable	type 40695A
Filament/cathode connector with cable	type 40696A
Grid connector	
$f > 4$ MHz	type 40737
$f \leq 4$ MHz	type 40694