

TRIODE

TY12-25A

Application: R.F. Industrial heating.
Power Output: 37.5kW continuous rating.
Frequency: 30Mc/s max. at full rating
Construction: External anode, forced-air cooled.

PRELIMINARY DATA

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS – TRANSMITTING VALVES included in this volume of the handbook.

FILAMENT Thoriated tungsten

V_f	8.0	V
$*I_f$	98	A

*The filament current must never exceed a surge value of 210A at any time during the warming-up period.

MOUNTING POSITION Vertical, with anode down.

CAPACITANCES

C_{a-g}	28	pF
C_{a-f}	0.3	pF
C_{g-f}	33	pF

CHARACTERISTICS

g_m (measured at $V_a=2kV$, $I_a=13A$)	30	mA/V
g_m (measured at $V_a=12kV$, $I_a=2A$)	20	mA/V
μ (measured at $I_a=4A$)	34	

COOLING

Forced-air

Max. temperature of seals 180 °C

The amount of forced-air cooling required for this valve depends on the height above sea level and the anode dissipation.

Typical values of inlet temperature, rate of flow of air and pressure difference between the inlet and outlet of the housing are given in the following table:-

Anode dissipation	Height above sea level	Max. inlet temperature	Min. rate of flow of air	Pressure difference between inlet and outlet
P_a (kW)	h (m)	T_{in} (°C)	(m ³ /min)	(mm of H ₂ O)
7.0	0	35	6.6	10
7.0	0	45	7.7	13
7.0	1500	35	7.9	12
7.0	3000	25	8.3	12
10	0	35	10.5	23
10	0	45	12.3	31
10	1500	35	12.6	28
10	3000	25	13.2	27
15	0	35	18.1	60
15	0	45	21.2	79
15	1500	35	21.7	73
15	3000	25	22.8	70

OPERATION AS SINGLE VALVE R.F. OSCILLATOR (CLASS 'C')

Limiting values (absolute ratings)

f max.	30	Mc/s
V _a max.	13	kV
I _a max.	4.8	A
-V _g max.	1.5	kV
I _g max.	800	mA
P _a max.	15	kW
R _{g-f} max.	10	kΩ

Maximum operating conditions

f	30	30	30	Mc/s
V _{transformer (r.m.s.)}	6.0*	7.4*	8.9*	kV
V _a	8.0	10	12	kV
I _a	4.5	4.5	4.5	A
I _g	800	800	800	mA
R _{g-f}	0.75	1.0	1.25	kΩ
P _{in}	36	45	54	kW
P _a	13	13.9	15	kW
P _{out}	22	30	37.5	kW
η	61.2	66.7	69.5	%
**P _{load}	18.7	25.5	32	kW

Typical operating conditions

f	30	30	30	30	Mc/s
V _{transformer (r.m.s.)}	5.1†	6.0*	7.4*	8.9*	kV
V _a	6.0	8.0	10	12	kV
I _a	3.0	3.2	3.2	3.2	A
I _g	600	550	500	500	mA
R _{g-f}	0.67	1.1	1.6	2.0	kΩ
P _{in}	18	25.6	32	38.4	kW
P _a	6.0	7.7	8.7	9.4	kW
P _{out}	11.3	17.1	22.4	28	kW
η	63	67	70	73	%
**P _{load}	9.6	14.5	19	24	kW

*Anode voltage obtained from a 3 phase full-wave rectifier without filter.

†Anode voltage obtained from a 3 phase half-wave rectifier without filter.

**At 85% transfer efficiency.

OPERATING NOTE

To ensure a uniform r.f. current distribution in the grid seal, especially at higher frequencies, the grid lead should be connected to the middle wing nut of the grid bracket.

ACCESSORIES

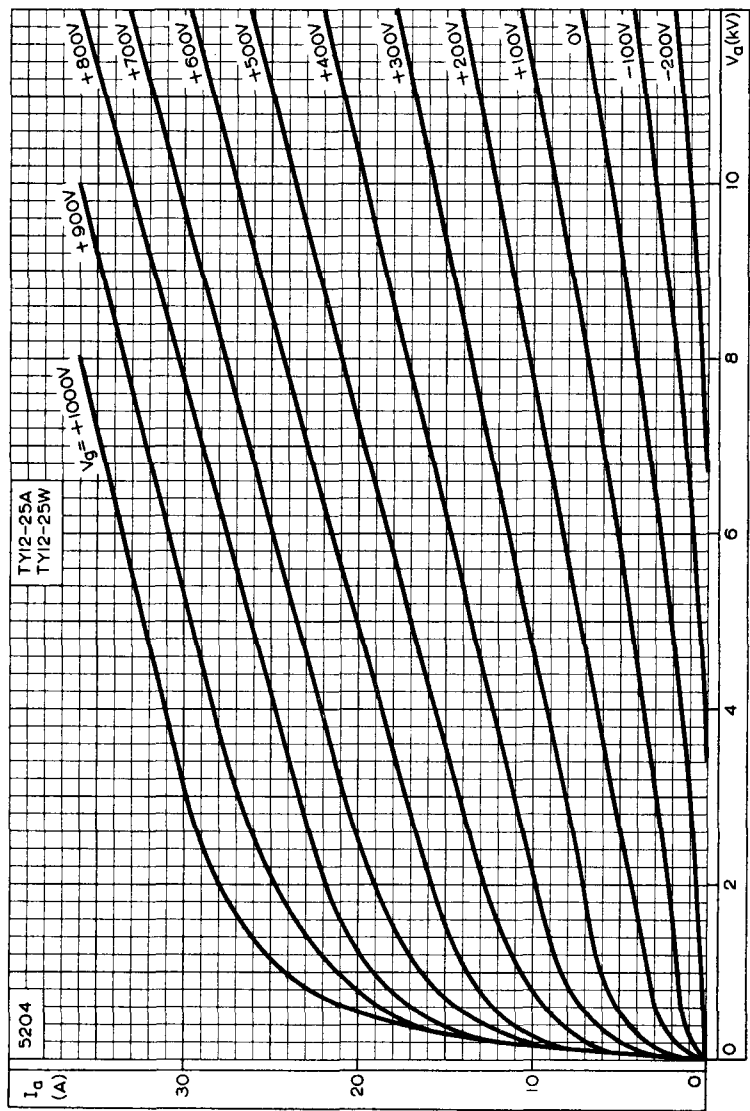
Information on these items can be obtained from the Government and Industrial Valve Division, Mullard Limited.

WEIGHT

Valve only	{ 17.5	kg
	{ 38.5	lb
Shipping weight	{ 85.5	kg
	{ 188	lb

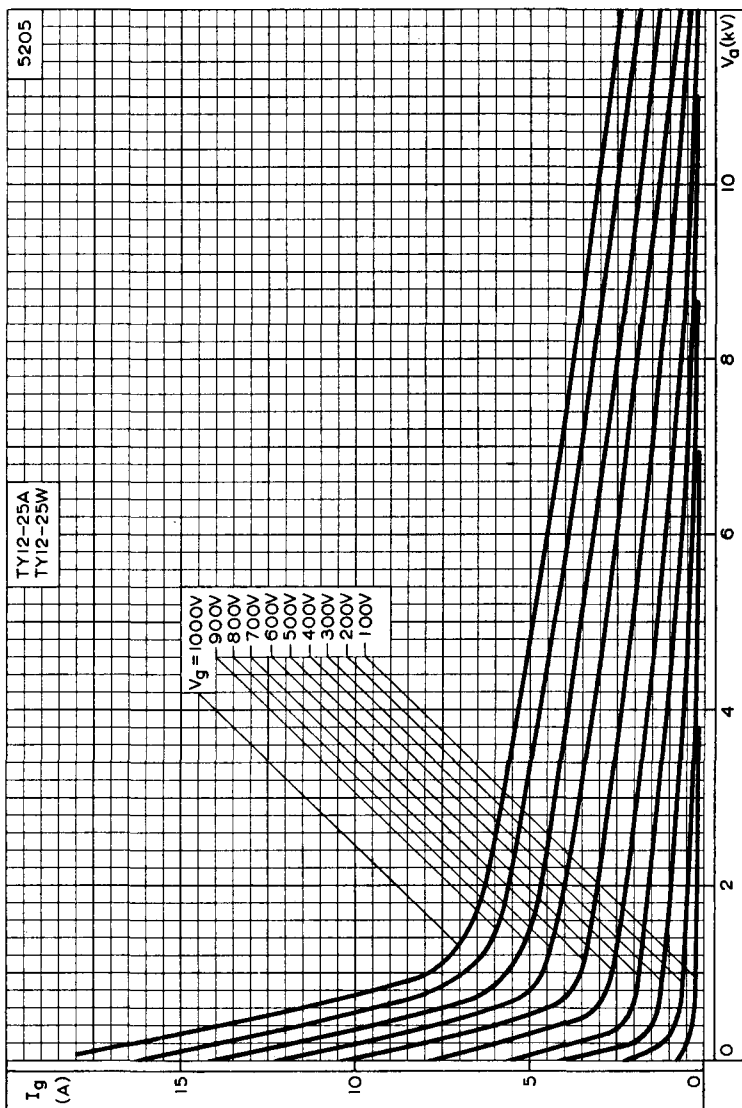
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TRIODE



ANODE CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH CONTROL-
GRID VOLTAGE AS PARAMETER

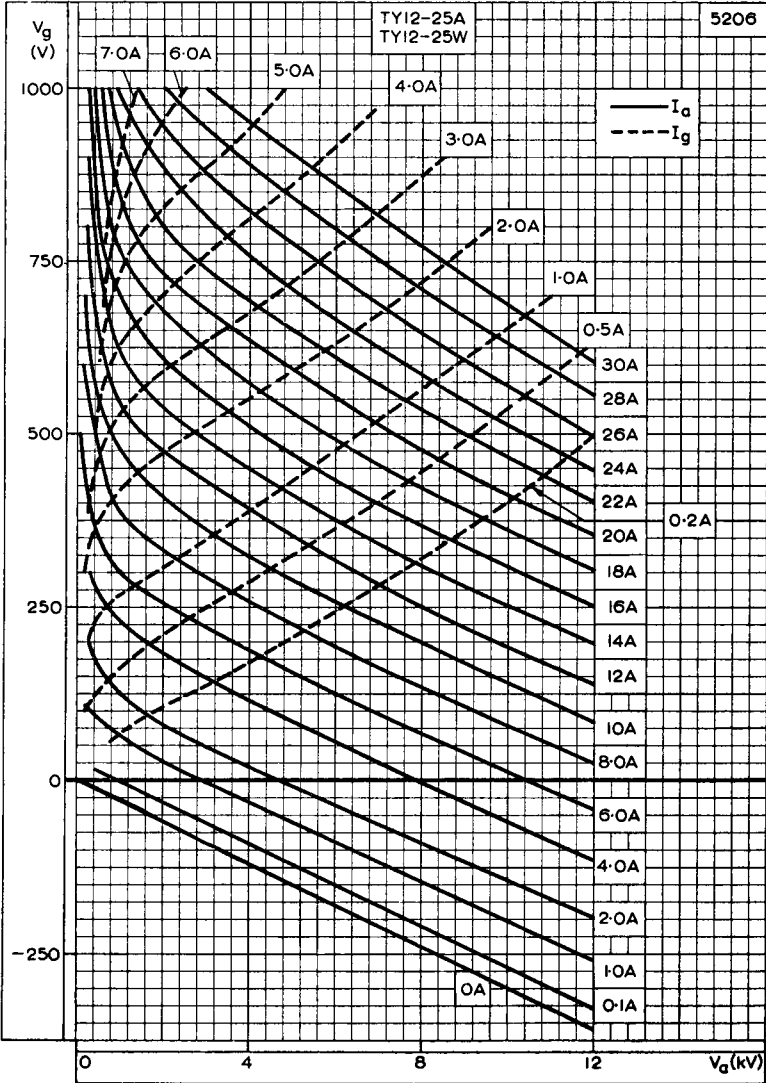




CONTROL-GRID CURRENT PLOTTED AGAINST ANODE VOLTAGE WITH
CONTROL-GRID VOLTAGE AS PARAMETER

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TRIODE



CONSTANT CURRENT CURVES

