

MAGNETRON

Frequency: 'X' band, fixed.
Power output: 25W, pulsed, high-duty ratio.
Construction: Packaged, forced-air cooled.

JP8-02

PRELIMINARY DATA

This data should be read in conjunction with GENERAL OPERATIONAL RECOMMENDATIONS – MICROWAVE DEVICES: INTRODUCTION and RADAR AND COMMUNICATION MAGNETRONS which precede this section of the handbook.

CHARACTERISTICS

	Min.	Max.	
Frequency	8.77	8.83	Gc/s
Fixed within the band			
Pulse voltage ($I_{\text{pulse}} = 150\text{mA}$)	750	850	V
R.F. pulse output power ($I_{\text{pulse}} = 150\text{mA}$)	18	—	W
Frequency pulling factor (v.s.w.r. = 1.5)	—	15	Mc/s
Frequency pushing factor	—	0.25 Mc/s per mA	←
Frequency temperature coefficient	—	-0.25 Mc/s per °C	←
Input capacitance	—	9.0	pF←

CATHODE

Indirectly heated

V_h	6.3	V
I_h	1.2	A←

Heating time. At ambient temperatures above 0°C the cathode must be heated for at least 2 minutes before the application of h.t. Below this temperature the heating time must be increased to at least 3 minutes.

TYPICAL OPERATION

Heater voltage (running)	6.3	V←
Pulse duration	4.0	μs
Pulse repetition frequency	100,000	p/s
Duty cycle	0.4	
Pulse current	150	mA
Pulse voltage	800	V
R.F. pulse output power	25	W
Mean input current	60	mA
Mean input power	48	W
Mean r.f. output power	10	W
Frequency pulling (v.s.w.r. = 1.5)	12	Mc/s←
Rate of rise of pulse voltage	4.0	kV/μs

COOLING

It is necessary to direct a flow of cooling air between the radiator fins, in order to keep the temperature below the permitted maximum.

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ABSOLUTE MAXIMUM RATINGS

	<i>Min.</i>	<i>Max.</i>	
Pulse current	120	180	mA
Pulse voltage	700	900	V
Pulse duration	—	5.0	μ s
Duty cycle	—	0.5	
Mean input power	—	60	W
Rate of rise of voltage pulse	—	5.0	kV/ μ s
Load mismatch (v.s.w.r.)	—	1.5	
Temperature of anode block	—	140	$^{\circ}$ C

MOUNTING POSITION

Any

PHYSICAL DATA

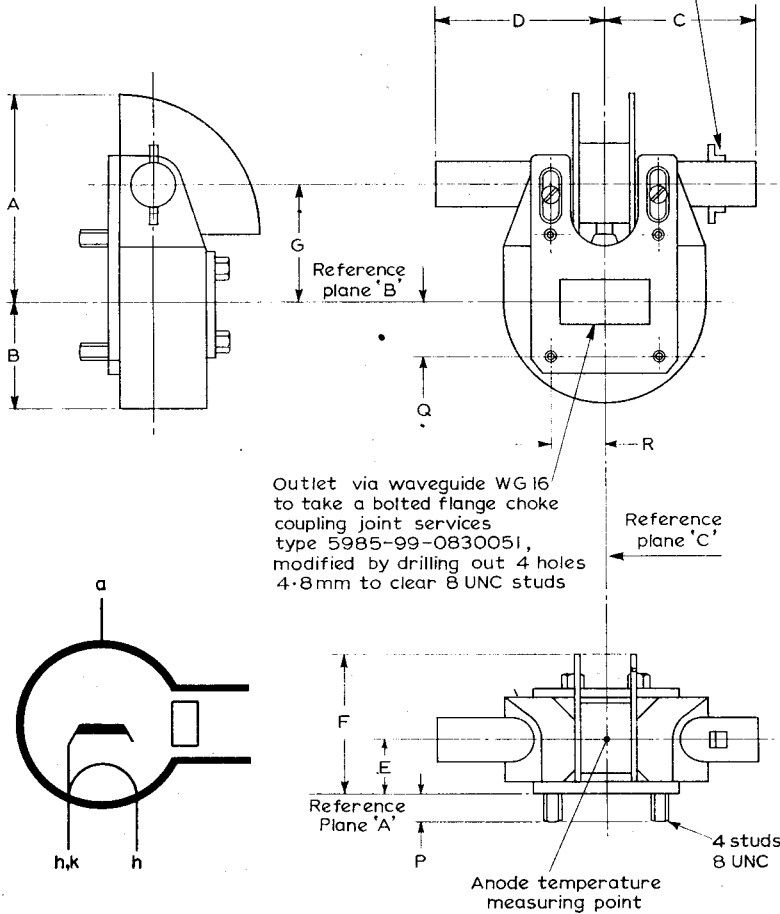
Weight of magnetron	{ 1.0	lb
	{ 454	g
Weight of magnetron in carton	{ 2 lb	4 oz
	{ 1.02	kg
Dimensions of storage carton	{ 5.0 x 7.25 x 7.25	in ←
	{ 127 x 184 x 184	mm

DIMENSIONS

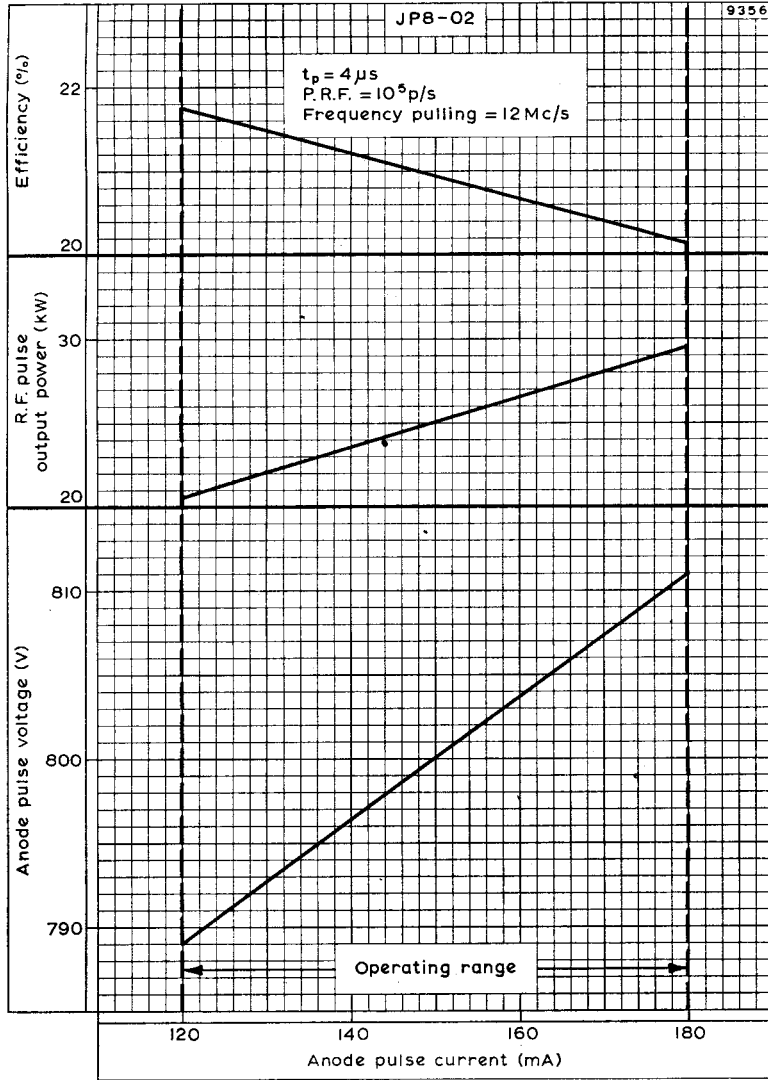
	<i>Inches</i>	<i>Millimetres</i>	
A	2.36	60	max.
B	1.26	32	max.
C	1.73	44	max.
D	1.73	44	max.
E	0.53 ± 0.02	13.5 ± 0.5	
F	1.77	45	max.
G	1.22 ± 0.08	31 ± 2	
P	0.32 ± 0.04	8 ± 1	
Q	0.64	16.2	
R	0.61	15.5	

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Terminals for heater and cathode.
Common heater-cathode terminal marked 'k'



ANODE CONNECTION TERMINATED AT THE BASE PLATE



ANODE PULSE VOLTAGE, R.F. PULSE OUTPUT POWER AND EFFICIENCY ←
PLOTTED AGAINST ANODE PULSE CURRENT