

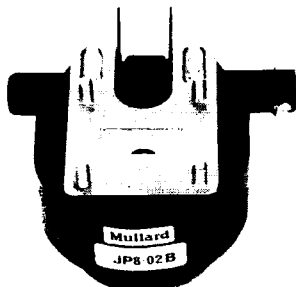
**QUICK REFERENCE DATA**

X-band, fixed frequency, pulsed magnetron.

|                                   |                     |          |
|-----------------------------------|---------------------|----------|
| Frequency (fixed within the band) | 8.770 to 8.835      | GHz      |
| Power output (peak)               | 25                  | W        |
| Output connection                 | Waveguide 16 flange |          |
| Construction                      |                     | Packaged |

Services type: CV6072

To be read in conjunction with  
GENERAL OPERATIONAL RECOMMENDATIONS - MICROWAVE DEVICES



## TYPICAL OPERATION

### Operating conditions

|                               |        |             |
|-------------------------------|--------|-------------|
| Heater voltage                | 4.7    | V           |
| Anode current (peak)          | 150    | mA          |
| Pulse duration ( $t_p$ )      | 4.0    | $\mu$ s     |
| Pulse repetition rate         | 50 000 | pulse/s     |
| Rate of rise of voltage pulse | 4.0    | kV/ $\mu$ s |

### Typical performance

|                      |     |   |
|----------------------|-----|---|
| Anode voltage (peak) | 800 | V |
| Power output (peak)  | 25  | W |
| Power output (mean)  | 5.0 | W |

## CATHODE

### Indirectly heated

|                                     |     |   |
|-------------------------------------|-----|---|
| Heater voltage (see note 1)         | 6.3 | V |
| Heater current                      | 1.2 | A |
| Heating time (minimum) (see note 2) | 120 | s |

## TEST CONDITIONS AND LIMITS

The magnetron is tested to comply with the following electrical test specification.

### Test conditions

|  |         |             |
|--|---------|-------------|
| Heater voltage                             | 4.5     | V           |
| Anode current (mean)                       | 30      | mA          |
| Duty factor                                | 0.2     |             |
| Pulse duration ( $t_p$ ) (see note 3)      | 4.0     | $\mu$ s     |
| v. s. w. r. at output coupler              | 1.05: 1 |             |
| Rate of rise of voltage pulse (see note 4) | 5.0     | kV/ $\mu$ s |

### Limits and characteristics

|  | Min.  | Max.              |     |
|--|-------|-------------------|-----|
| Anode voltage (peak)                         | 750   | 850               | V   |
| Power output (mean)                          | 3.5   | -                 | W   |
| Frequency                                    | 8.800 | 8.835             | MHz |
| R. F. bandwidth at 1/4 power<br>(see note 5) | -     | $\frac{2.5}{t_p}$ | MHz |

## TEST CONDITIONS AND LIMITS (contd.)

|  | Min. | Max. |     |
|--|------|------|-----|
| Minor lobe level (see note 5)                  | 6.0  |      | dB  |
| Frequency pulling (see note 6)                 | -    | 15   | MHz |
| Stability (see note 7)                         | -    | 0.5  | %   |
| Heater current (see note 8)                    |      |      |     |
| Frequency temperature coefficient (see note 9) |      |      |     |
| Input capacitance (see note 10)                |      |      |     |

## RATINGS (ABSOLUTE MAXIMUM SYSTEM)

These ratings cannot necessarily be used simultaneously and no individual rating should be exceeded.

|  | Min. | Max.   |              |
|--|------|--------|--------------|
| Heater voltage (see note 11)               | 5.9  | 6.7    | V            |
| Heater current (surge)                     |      | 7.0    | A            |
| Anode current (peak)                       | 110  | 180    | mA           |
| Anode voltage (peak)                       | -    | 850    | V            |
| Power input (peak)                         | -    | 160    | W            |
| Power input (mean)                         | -    | 60     | W            |
| Duty factor                                | -    | 0.5    |              |
| Pulse duration ( $t_p$ ) (see note 3)      | -    | 5.0    | us           |
| Rate of rise of anode voltage (see note 4) | 2.5  | 5.0    | kV/ $\mu$ s  |
| Anode temperature (see note 12)            | -    | 140    | $^{\circ}$ C |
| v. s. w. r. at output coupler              |      | 1.3: 1 |              |

## END OF LIFE PERFORMANCE

The quality of all production is monitored by the random selection of magnetrons which are then life tested under the stated test conditions. If the magnetron is to be operated under different conditions from those specified above, Mullard Ltd. should be consulted to verify that the life will not be affected. The magnetron is considered to have reached the end of life when it fails to meet the following limits when operated under the specified test conditions.

|                              | Min.  | Max.              |                        |
|------------------------------|-------|-------------------|------------------------|
| Anode voltage (peak)         | 750   | 850               | V                      |
| Power output (mean)          | 2.8   | -                 | W                      |
| Frequency                    | 8,765 | 8,835             | GHz                    |
| R, F, bandwidth at 1/4 power | -     | $\frac{2.5}{t_p}$ | MHz                    |
| Stability                    | -     | 1.0               | $\frac{\%}{\text{yr}}$ |

## MOUNTING AND STORAGE

|                                  |             |
|----------------------------------|-------------|
| Mounting position                | Any         |
| Mounting and storage precautions | see note 13 |

## OUTPUT COUPLER

The output connection of the magnetron should be directly connected to a WG16 bolted flange as specified in DEF5352.

## COOLING

Forced air is necessary to ensure that the temperature of the anode does not exceed the maximum stated in 'Ratings'.

## PHYSICAL DATA

|                                       |                 |
|---------------------------------------|-----------------|
|                                       | kg              |
| Weight of magnetron                   | 0.53            |
| Weight of magnetron in storage carton | 1.258           |
|                                       | mm              |
| Dimensions of storage carton          | 127 × 184 × 184 |

## VIBRATION

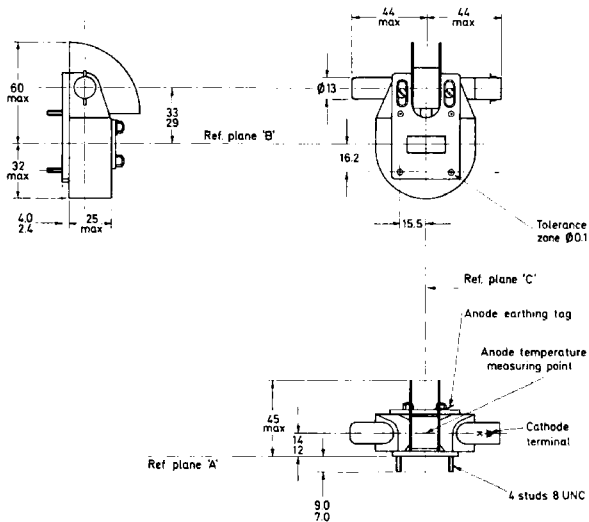
The magnetron is vibration tested in each of three mutually perpendicular directions one of which is perpendicular to the plane of the output flange. The vibration has accelerations of 2g from 100 to 200Hz and 0.5g from 200 to 500Hz. The maximum frequency modulation under these conditions does not exceed 500kHz.

## NOTES

1. With no anode power. Immediately after the application of anode power the heater voltage must be reduced. When the mean anode current is 30mA the heater voltage should be reduced to  $4.7 \pm 5\%$ .
2. For ambient temperatures above  $0^{\circ}\text{C}$ . For ambient temperatures between  $0^{\circ}\text{C}$  and  $-55^{\circ}\text{C}$  the cathode heating time is 180 seconds.
3. The tolerance of pulse current duration ( $t_p$ ) measured at 50% amplitude is  $\pm 10\%$ .
4. Defined as the steepest tangent to the leading edge of the voltage pulse above 80% amplitude.
5. Measured with the magnetron operating into a v. s. w. r. of 1.3:1 varied through all phases over an anode current range of 110 to 180mA peak.
6. Measured with the magnetron operating into a v. s. w. r. of 1.5:1 at an anode current of 150mA peak.
7. Measured with the conditions described in note 5. Pulses are defined as missing when the r. f. energy level is less than 70% of the normal level in the frequency range 8.800 to 8.835GHz. Missing pulses are expressed as a percentage of the number of input pulses applied during the period of observation after a period of ten minutes of operation.
8. Measured with a heater voltage of 6.3 volts and no anode input power, the heater current limits are 1.1 to 1.3A.
9. Design test only. The maximum frequency change with anode temperature change (after warming) is  $-0.25\text{MHz}/^{\circ}\text{C}$ .
10. Design test only. The maximum input capacitance is 9pF.
11. The magnetron is normally tested with a sinewave heater supply of 50Hz and is suitable for operation from a 400Hz sinewave supply. Mullard Ltd. should be consulted if the magnetron is to be operated with a heater supply having different frequency or waveform conditions.
12. Measured at the point indicated on the outline drawing.
13. When mounting and handling the magnetron, care must be taken to prevent demagnetisation. It is necessary to keep all magnetic materials as far as possible, at least 50mm (2 in), from the magnet.

When storing, magnetrons should be kept as far apart as possible, at least 150mm (6 in). During shipment adequate separation is provided by the dimensions of the inner packs of the storage cartons and it is recommended that magnetrons not in use be kept in these packs.

OUTLINE DRAWING OF JP8-02B



All dimensions in mm

D3564