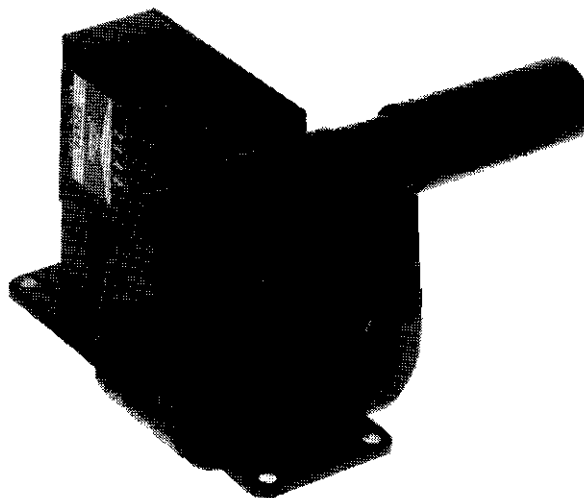


The Toshiba 2J42, 9M61 and 9M66/M4502E are fixed frequency pulsed type magnetrons intended for use in radar systems.

The peak power output is 9 kW in the frequency region between 9345 MHz and 9475 MHz.

The tube is an integral magnet type and is cooled by forced air.

The output fitting is designed to mate a waveguide.



GENERAL DATA

ELECTRICAL:

Frequency	2J42	.....	9375±30 MHz
	9M61	.....	9410±30 MHz
	9M66/M4502E	.....	9445±30 MHz
Heater voltage	.....	6.3	V
Heater current	.....	0.52	A
Cathode preheating time	.....	180	s

- ★ The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of TOSHIBA or others.
- ★ The information contained herein may be changed without prior notice. It is therefore advisable to contact TOSHIBA before proceeding with the design of equipment incorporating this product.

MECHANICAL:

Dimensions	See Dimensional Outline.
Base and electrical connection	See Dimensional Outline.
Mounting position	Any
RF Coupling	Mate with UG-40/U or BRJ-10
Magnetic field	Integral
Cooling	Forced air
Net weight	1.4 kg approx.
Type of cathode	Oxide coated unipotential

MAXIMUM RATINGS

	Minimum	Maximum	Unit
Heater voltage (preheat)	5.7	6.9	V
Heater surge current	-	3	A
Cathode preheating time	120	-	s
Heater voltage (operate)			Note
Peak anode voltage	5	6	kV
Rate of rise of voltage	-	75	kV/ μ s
Peak anode current	3.5	5.5	A
Average anode current	-	14	mAdc
Peak anode power input	17.5	33	kW
Average anode power input	-	82.5	W
Pulse width	0.1	2.5	μ s
Duty cycle	-	0.0025	
Load VSWR	-	1.5	
Anode temperature (see dimensional outline for measuring point.)	-	120	$^{\circ}$ C
Cold impedance	8	-	
Distance for VSW minimum from output flange into valve,	13.5	22.5	mm

TYPICAL OPERATION

			Unit
Heater voltage (operate)	6.3	4.5	V
Peak anode voltage	5.5	5.5	kV
Peak anode current	4.5	4.5	A
Average anode current	0.9	9	mA _{dc}
Pulse width	0.1	1	μs
Pulse repetition rate	2000	2000	pps
Duty cycle	0.0002	0.002	
Peak power output	9	9	kW
Average power output	1.8	18	W
RF Band width	20	2	MHz
Pulling factor (load VSWR = 1.5)	10	10	MHz
Cooling quantity (forced air)	1000	1000	ℓ/min

Note : For average anode power inputs in excess 25 watts, the heater voltage shall be reduced within 3 seconds after applying high voltage according to the following schedule:

$$E_f = 6.3 \left(1 - \frac{P_i}{180} \right) \text{ Volts}$$

where P_i = Average anode power input in watts.

PRECAUTIONS FOR SAFETY

Carefully take the following precautions for safety in using the microwave tubes for applications.

The microwave tubes must be handled by individuals possessing adequate backgrounds of electrical, electronic, microwave and mechanical experience.

Toshiba Corporation can not be responsible for the interpretation of this information, nor can it be assumed any liability in connection with its use.

1. High Voltage

Since the microwave tube is operated at high voltage, a special attention must be taken as follows.

- 1.1 Do not touch nor come close to the high potential terminals or their surrounding during operation.
- 1.2 Since a specified part of a tube is used as a return pass of a circuit, the part must be certainly grounded.
- 1.3 It is necessary to provide protection devices: a fence to keep away from high voltage cables: a door switch which turns the power off when anybody opens the door of the fence: an earth rod to discharge a high voltage capacitor.

2. X-Ray Radiation

High voltage microwave tubes emit a significant intensity of X-rays when the operation voltage exceeds about 10 kV.

The X-rays constitute a health hazard unless adequate shielding is provided. This is a characteristics of all microwave tubes and the X-rays emitted correspond to a voltage much higher than the anode voltage applied.

3. Radiation Leakage

Attention must be taken for radiation leaked from the microwave tube, though the leakage from the microwave tube is restricted to a level which human body is not adversely affected.

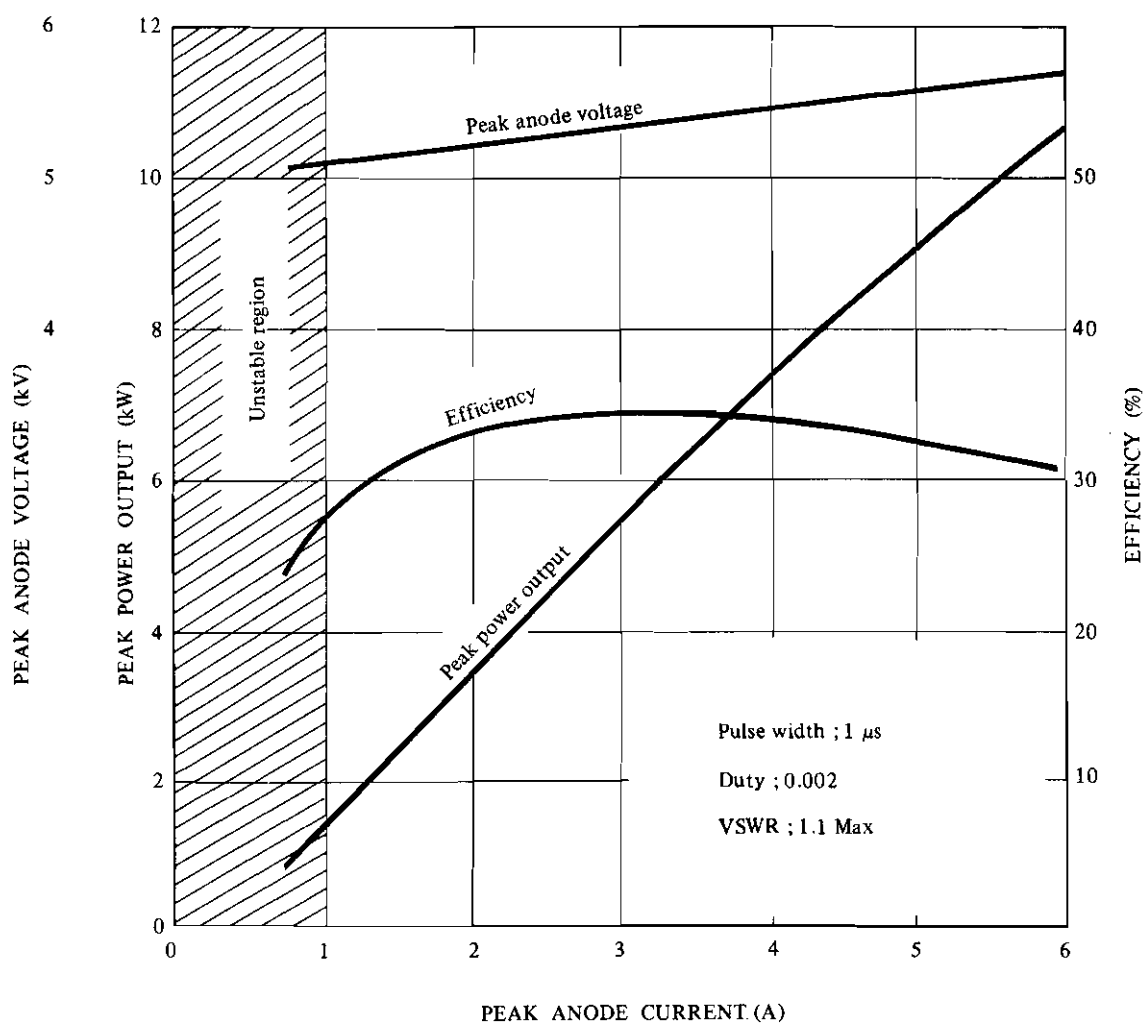
- 3.1 Properly install and tightly fasten the microwave tube in the wave guide coupler.
- 3.2 Do not remove the shielding cover and always keep your eyes apart from the operating microwave tube in consideration of any unexpected hazardous condition.

4. Temperature

Although the microwave tube is subjected to forced air cooling during operation, high temperature (sometimes more than 200°C) is observed on the enclosure of the microwave tube. Attention should be taken as follows.

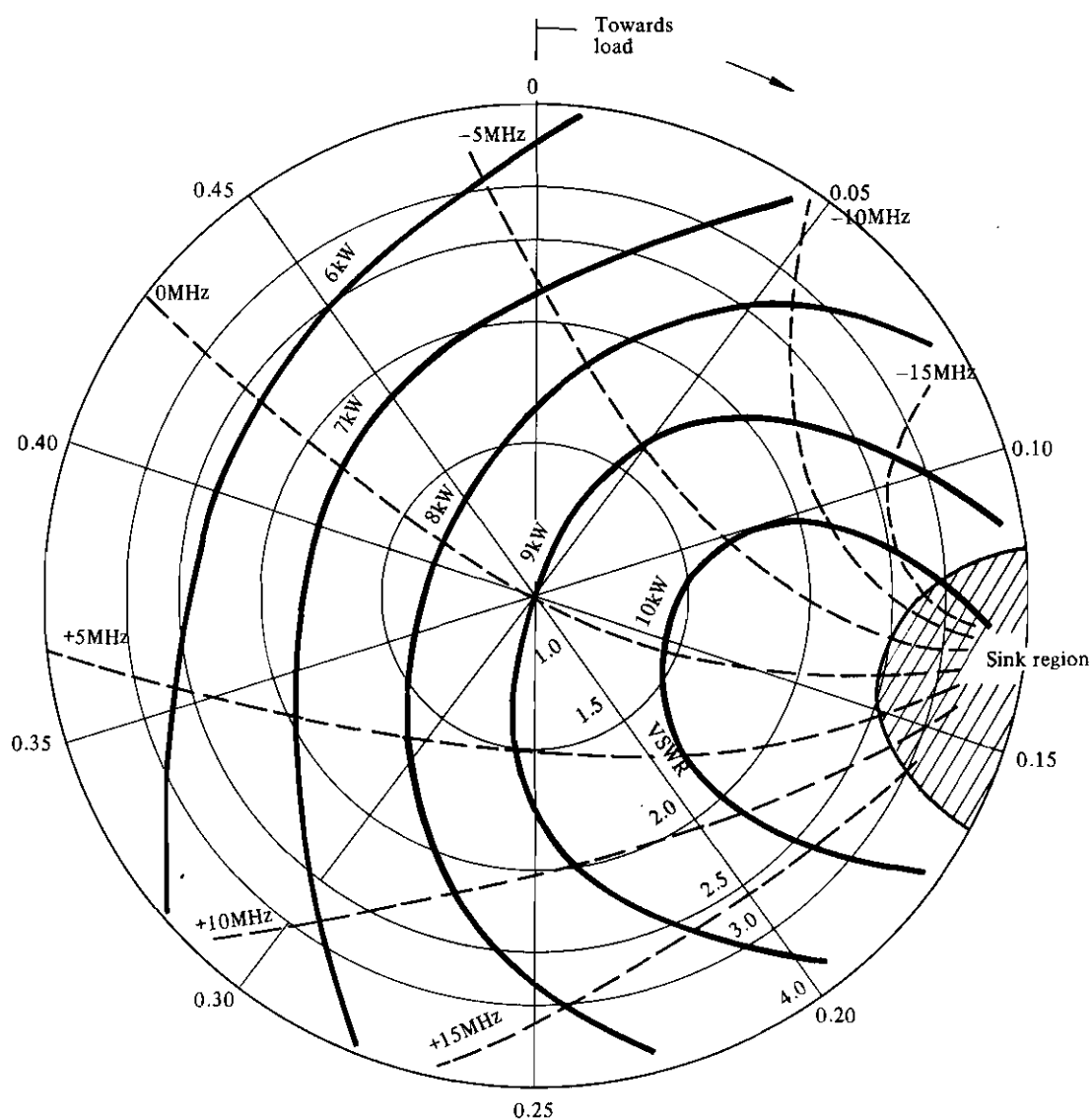
- 4.1 Do not touch the microwave tube immediately after turning the power off. Allow the microwave tube to cool before handling.
- 4.2 Putting on cotton gloves or the equivalent is recommended for safe handling.

OPERATING CHARACTERISTICS



RIEKE DIAGRAM

	Test condition
Heater voltage	4.5 V
Pulse width	1 μ s
Pulse repetition rate	2000 pps
Duty cycle	0.002
Average anode current	9 mA _{dc}
Peak anode voltage	5.5 kV (at matched load)
Reference point surface	Output flange



DIMENSIONAL OUTLINE

Unit mm

