This Specifications is based on the General Rules of Inspection for Electron Tubes ED-1101 and the Testing Methods for Continuous Wave Magnetrons ED-1501 set by the Electronic Industries Association of Japan (EIAJ).

Description	Continuous wave Magnetron (Fixed Frequency, Packaged Magnet, Probe Output)											
Outline	Refer Outline Drawing					Net weight		Approx. 0.9 Kg				
Absolute Maximum Ratings	Item	Ef	tk	ebm	Ib	ibm	Pi	σ L	Ta([5])	Tp([2])	Tc([2])	Storage
	Unit	V	sec	kV	mAdc	A	kW	—	℃	℃	℃	℃
	Max.	3.75	—	4.65	350	1.2	1.4	4	350	240([3])	120([4])	60
	Min.	2.8	0	—	—	—	—	—	—	—	—	-30
Standard Test Conditions ([1])		3.3	3	—	300	—	—	MAX 1.1	—	—	—	—

Test Specifications

Test Item ([8])		Test Method (ED-1501)	Test Conditions ([1])	Symbol	Nominal	Limit		Unit
						Min.	Max.	
**Vibration		5.4.1	—	—	No unusual phenomenon occur			
Breakdown Voltage		4.2	Eb=10kVdc or 7.1kVac t=60s	BVaf	No unusual phenomenon occur			
* Filament Current		4.1.1	tk=120s	If	10	8	12	A
Peak Anode Voltage		4.3.1	([6])	ebm	4.45	4.30	4.65	kV
Average Output Power (1)		4.3.3.1	([6])	Po(1)	960	895	—	W
Frequency		4.3.4	—	f	2460	2450	2470	MHz
* Load Characteristics	Pulling Figure	4.3.6	σ L=1.5	fpl	10	—	15	MHz
	Sink Phase	4.3.7	σ L=4	λ sin/ λ g	0.25	—	—	—
* Stability	Moding (1)	4.3.11.2	σ L=2,3,4 t=60s	ST	No moding occur			
Emission Moding (2)		4.3.11.3	t≦5s,Ef=2.5V	Efm				
* Fundamental Frequency Radiation		4.3.15	σ L=4	SI	—	—	1	mW/cm^2
* Surge Voltage		—	([7])	—	—	—	10	kV
Insulation		—	1kVdc	Raf	—	1000	—	MΩ
**Life Test		4.5.1	—	t	—	500	—	h
** Life Test End Point	Variation Rate against Average Output Power(1)	4.3.3.1	([6])	Po(1)	—	—	20	%
	Stability Moding (1)	4.3.11.2	σ L=2,3,4 t=60s	ST	No moding occur			

Note

(1) The tube shall be mounted on the output coupler (shown in the attached drawing) or similar one. Ambient temperature is 25℃ and cooled by forced 1000L/min.
Single phase full wave rectifier without filter shall be used for power supply.

(2) The point for measuring anode/Tp and filter case/Tc temperature are shown in the outline drawing.

(3) In an abnormal condition (without load in the cavity), the maximum allowable anode temperature is 300℃, provided that the operation time does not exceed 30 minutes per operation and the dwell time at the anode temperature 240～300℃ does not exceed 25 hour in total.

(4) The maximum temperature of feed through capacitor should be 120℃.

(5) Antenna temperature/Ta is measured by thermopaint.
The point of measuring is the antenna cap near by ceramic.
(Refer the outline drawing.)

(6) The tests shall be completed within 30 seconds after anode voltage supplied.

(7) Measured by standard power supply and provided condition of Matsushita. The no load voltage of the transformer shall be less than 2.1kv rms.

(8) Classification of tests.

** mark :Type approval Test.
* mark :Design Test.
None :Production Test.

Fig.1 Performance Chart

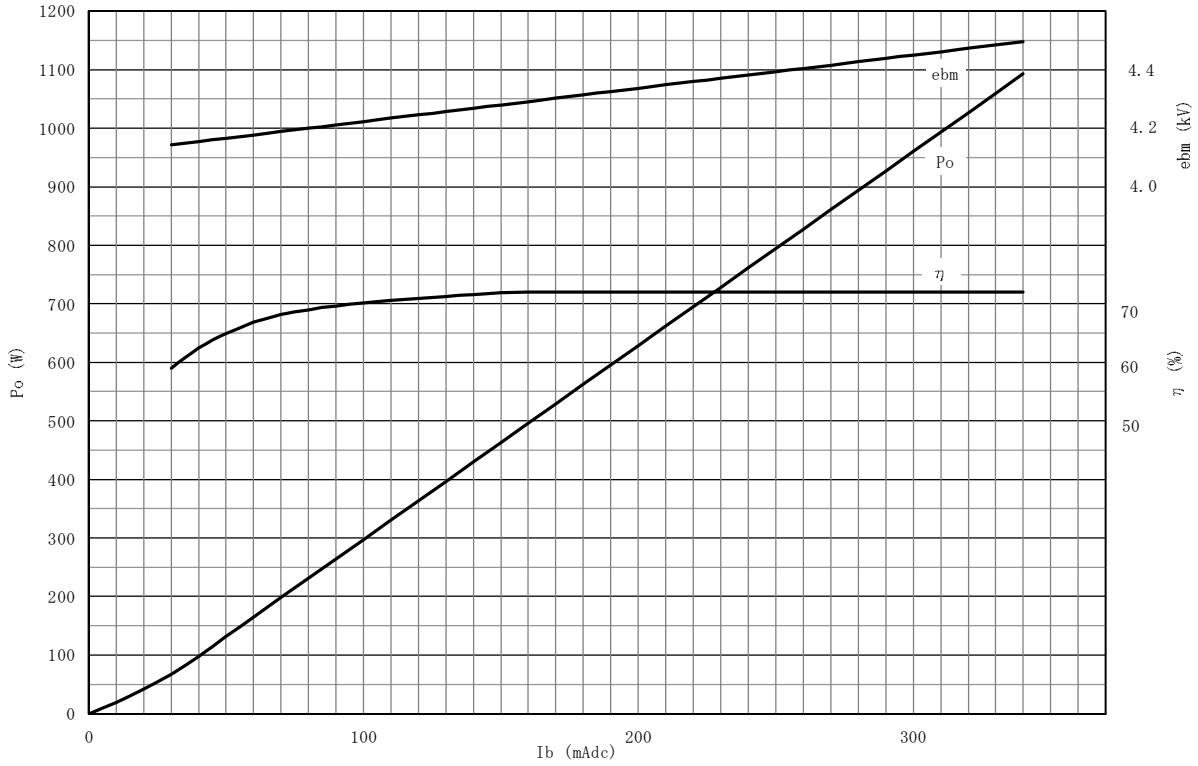
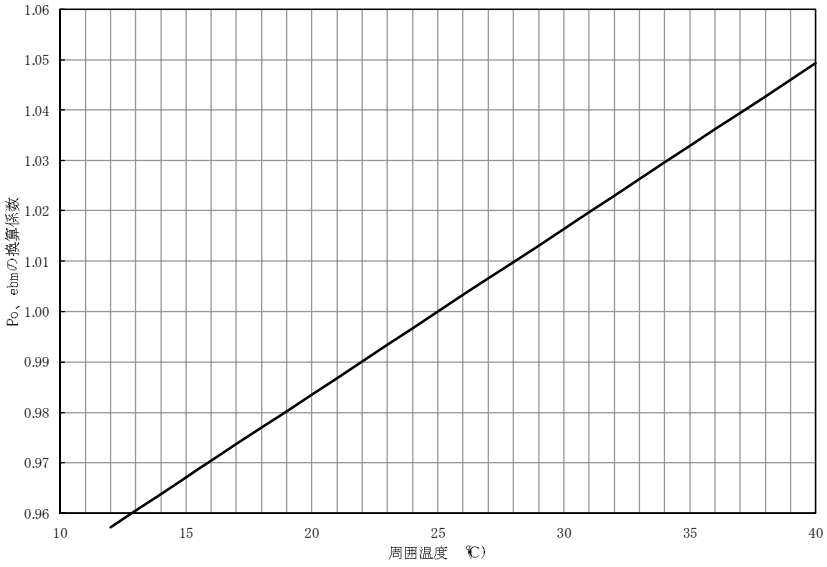


Fig.2 Correction Factor



Conversion should be done using the following equation.

Po or ebm at 25℃	=	Po or ebm values at ambient temperature	×	Correction Factor of ambient temperature

Fig.3 Typical Rieke Diagram

Anode supply	: Single phase full wave rectifier without filer.	Matched load condition	
Filament voltage	: 3.3 V	Peak anode voltage	: 4.45kV
Mean anode current	: 300 mAdc	Mean output power	: 960 W
Reference plane	: Antenna	Frequency	: 2460MHz

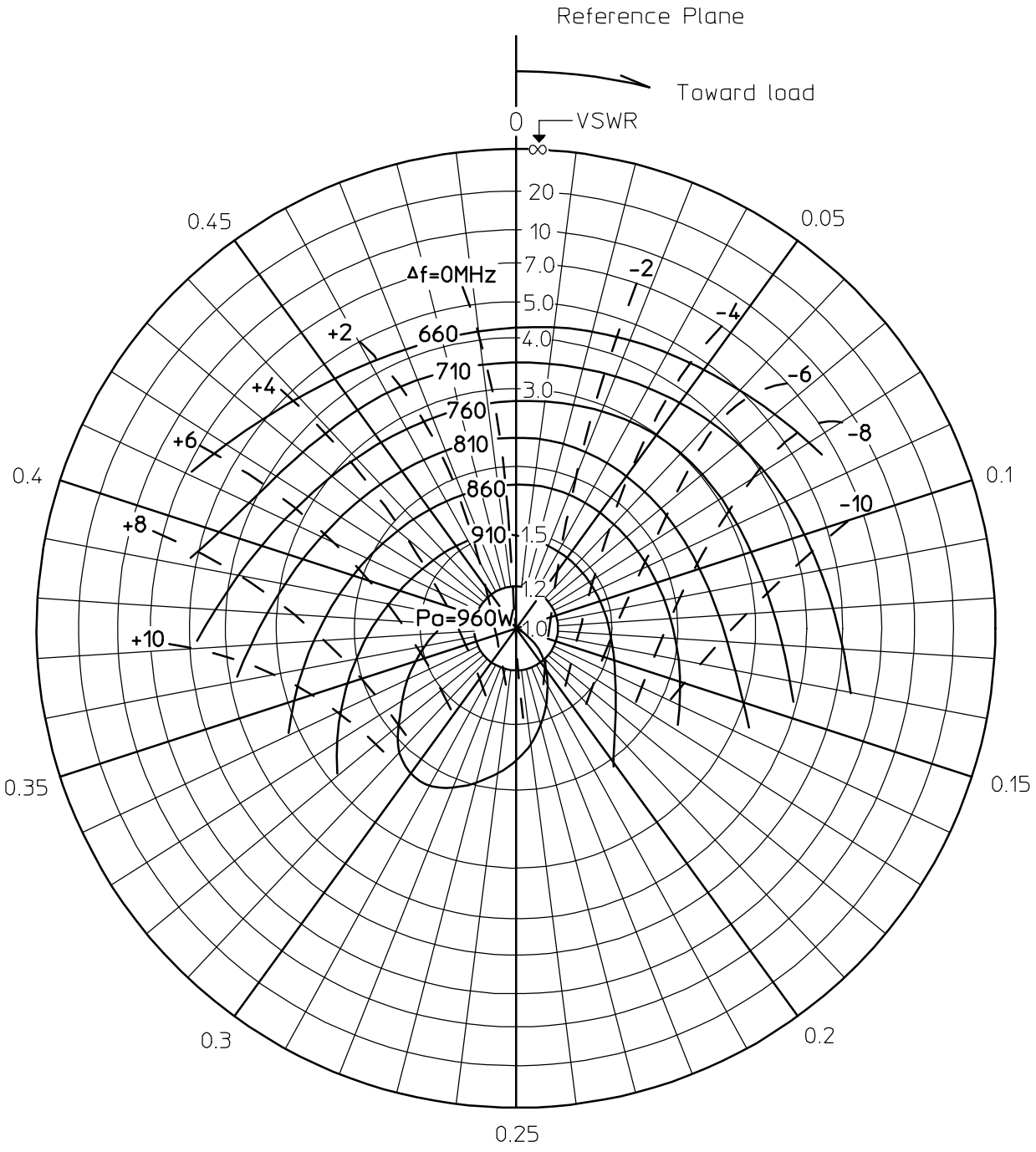
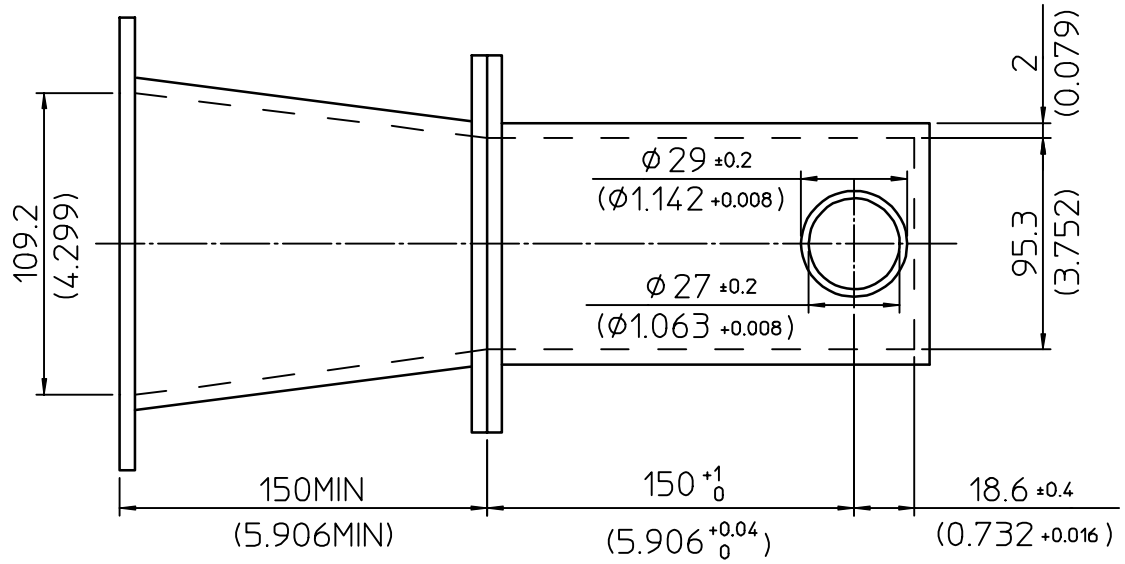


Fig.4 R.F.coupler

Unit : mm (inch)



The flange mates with Japanese standard BRJ-2.

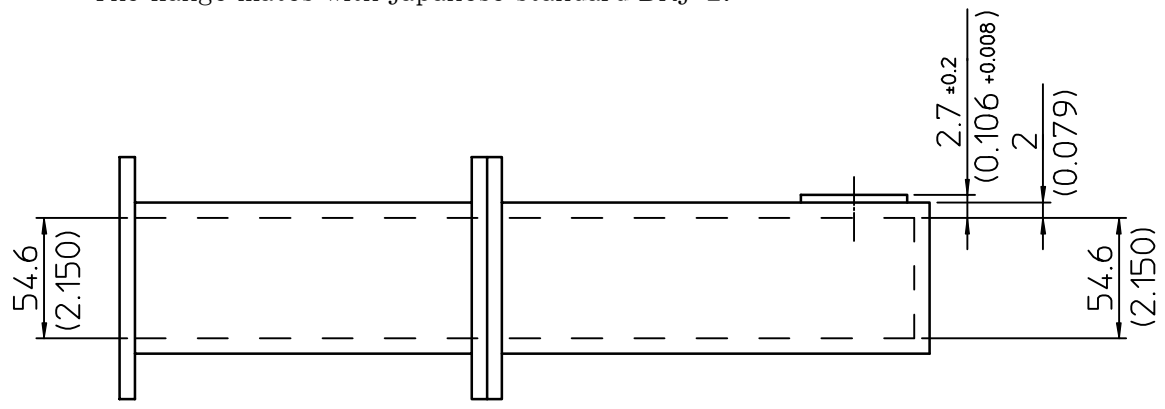
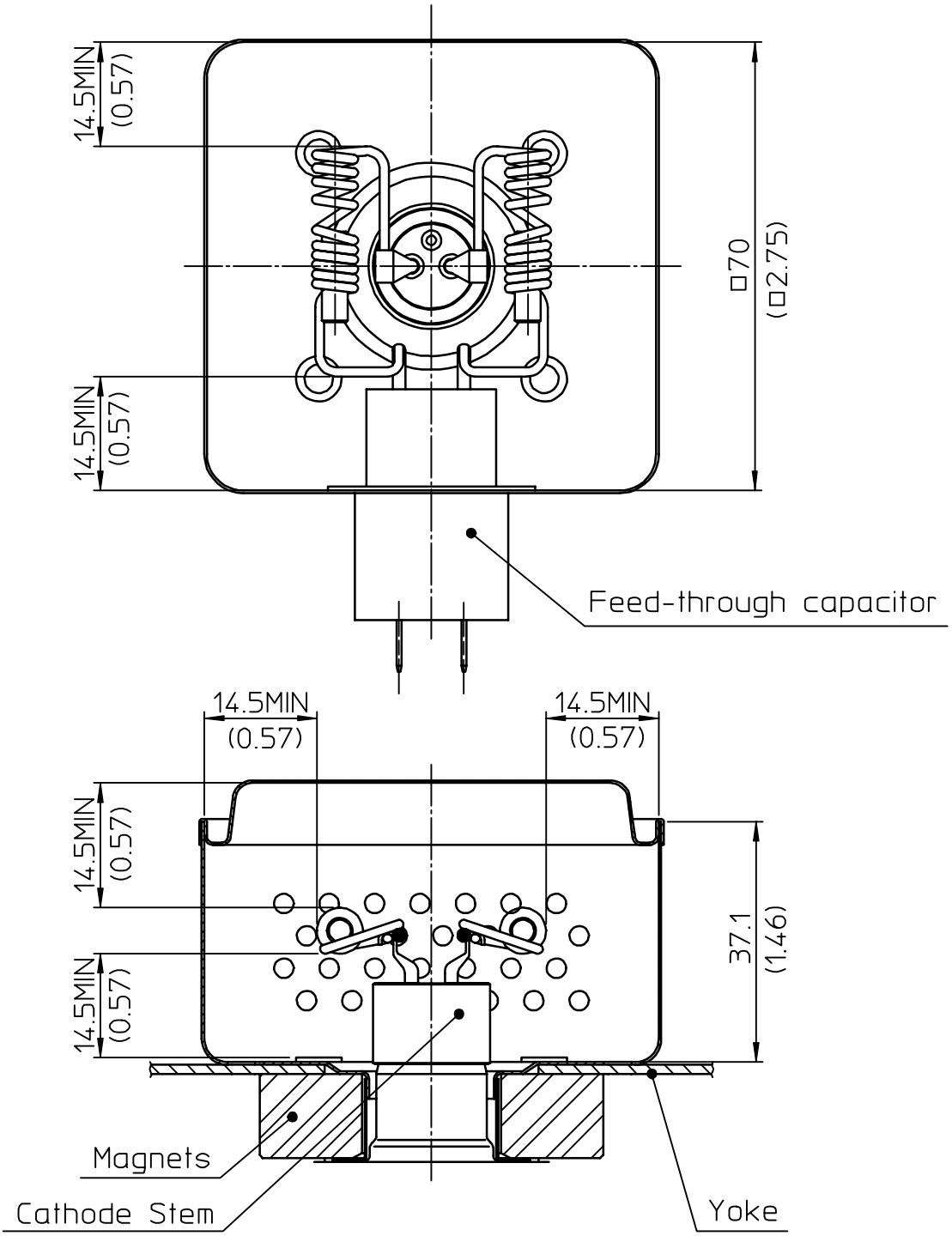


Fig.5 Clearances

Unit : mm (inch)



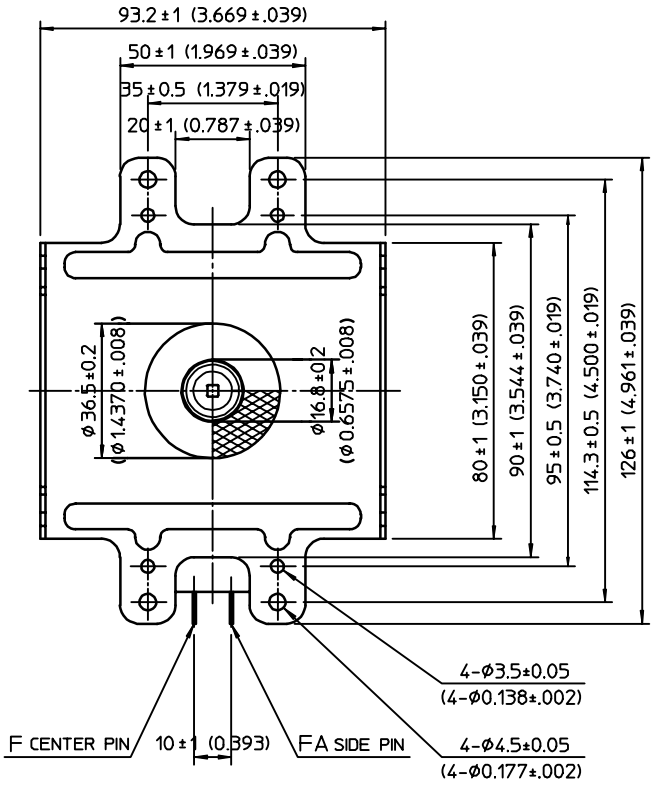
Unit : mm (inch)

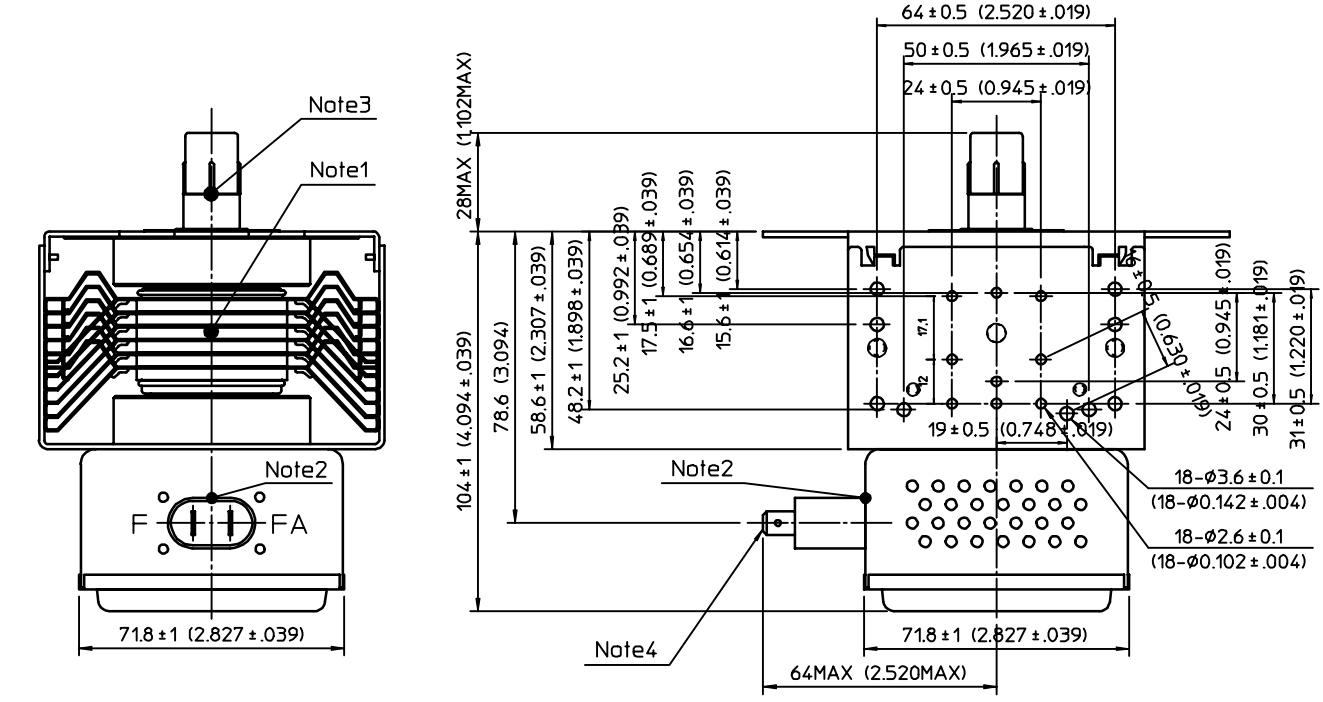
Note1. Anode temperature measuring point. To be measured at the outlet side of air flow.

Note2. Filter case temperature measuring point.

Note3. Antenna temperature measuring point.

Note4. Adaptable for #250 faston receptacle.

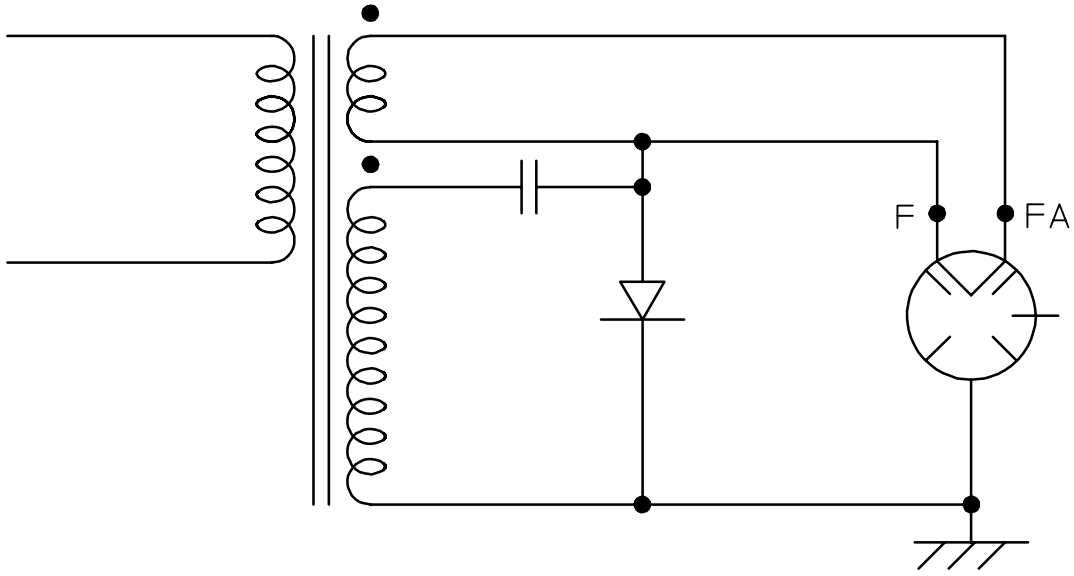




TECHNICAL NOTE

1.Cold start operation

Preheating of filament for a few seconds is desirable for reliable operation.
If the magnetron is operated under the cold start conditions (without preheating) the inductance of transformer shall be designed as low as possible to minimize transient voltage (surge voltage). Also the connection for the filament terminals F and FA to the transformer taps shall be set up in such a way that the mean anode current of the magnetron decreases and anode voltage increases as shown below circuit. To protect the diode from transient voltage a surge absorber shall be installed power supply.



2.Connection of filament terminals

The filament terminal of magnetron shall be connected as good as possible electrically and mechanically to protect defect, because poor mechanical contact easily cause poor connections.

3.Handling

Magnetron has strong construction in mechanical and thermal because it's constructed with ceramic and metal. However filament has poor mechanical strength against vibration or shock. Due to particular fact that filament use is made of thoriated-tungsten wire, the surface of which has been specially treated (known as carbonization) in order to ensure good electron emission. Therefore, the user has to pay enough attention to handling.
Also magnetron shall be prevented against mechanical vibration of 300～400 Hz frequency because filament has synchronous mechanical vibration at that frequency.

As the magnetron is operated with a high voltage supply to the cathode terminal, it is necessary that hands should be kept away from the terminals of the tube being operated.

Microwave leakage from magnetron input (filament terminal) is prevented by filter circuit. However leakage from output shall be pay attention to confirm electrical contact of magnetron gasket and wave-guide lip.

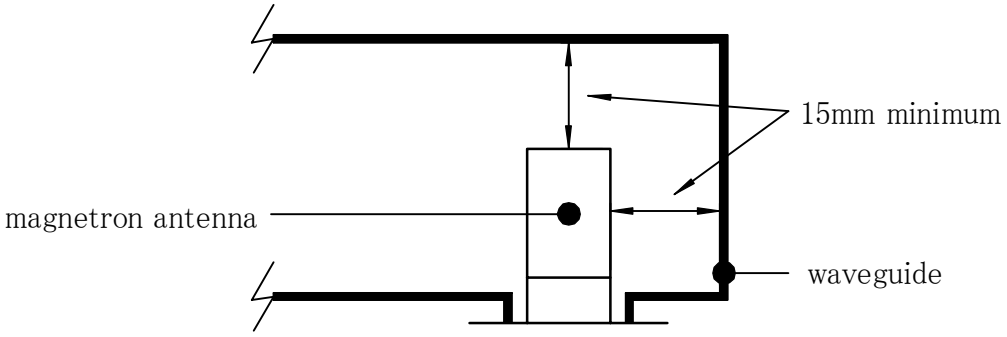
4.Load impedance

In designing microwave ovens, it is important for the magnetron life and stable oscillation that the V.S.W.R. (voltage standing wave ratio) shall be kept as low as possible even when the smallest load is applied.
When a magnetron is operated with the V.S.W.R. beyond the maximum ratings, it will appear unusual phenomena like high antenna or anode temperature, antenna spark, moding or runaway and may cause the tube to damage.

5.Recommended waveguide design

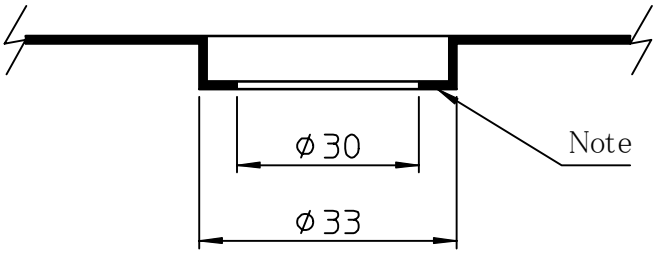
(1) Distance between magnetron antenna and waveguide

To prevent spark between magnetron antenna and waveguide inner wall, we recommend to design waveguide as shown below.



(2) Recommended structure of launcher

To prevent microwave leakage from launcher, we recommend to design launcher as shown below.



Note : Flatness of embossed edge should be kept. Also electrical contact should be kept as low as possible.