

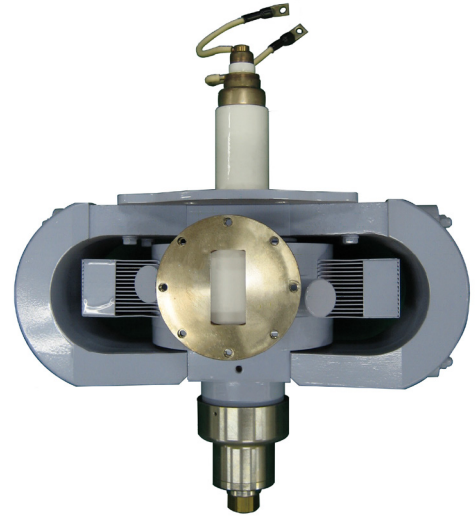
C-band 300kW Magnetron

■ GENERAL DESCRIPTION

M1941 is a mechanically tunable frequency pulsed type C-band magnetron designed to operate in the frequency range of 5250MHz to 5400MHz with a peak output power of 300kW.

It is a waveguide output type and is forced air cooled.

A permanent magnet is packaged as part of the magnetron.



■ GENERAL CHARACTERISTICS

ELECTRICAL

PARAMETERS		
Heater voltage	(note 1)	5.0 V
Heater current		19 A
Minimum preheat time		300 sec

MECHANICAL

PARAMETERS		
Dimensions		See outline drawing
Mounting position		Any
Cooling		Forced air.
Output		WR187 waveguide
Output coupling		Mates with UG-148C/U flange.

■ MAXIMUM AND MINIMUM RATINGS(ABSOLUTE)

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

PARAMETERS	Min	Max	Units
Heater voltage	-	7	V
Heater current	17	21	A
Heater surge current	-	45	A
Cathode preheating time	300	-	sec
Anode voltage (peak)	-	29.0	kV
Anode current (peak)	15	32	A
input power (peak)	-	928	kW
input power (average)	-	928	W
Rate of rise of voltage pulse(note 6)	50	100	kV/ μ s
Duty cycle	-	0.0012	-
Pulse duration	0.2	3.5	μ s
Pulse recurrence rate	-	2000	pps

PARAMETERS	Min	Max	Units
Anode temperature	-55	115	°C
Cathode bushing temperature	-55	250	°C
V.S.W.R at load	-	1.5:1	-
Tuner torque	-	10	kgf·cm
Pressurizing of output circuit	0.1	0.31	Mpa(abs.)
	1	3.2	kg/cm ² (abs.)

■ ELECTRICAL CHARACTERISTICS

Test conditions	Oscillation	Units
Heater voltage (preheating)	5.0	V
Heater voltage (for test)	4.8	V
Anode current (average)	30	mA
Duty cycle	0.001	-
Pulse duration	1.7 to 2.3	μs
V.S.W.R. at the output coupler	1.1:1	-
Rate of rise of voltage pulse (note 6)	90 max	kV/μs
Pressurizing of output circuit	0.15~0.2	MPa
	1.5~2	kg/cm ²

Limits	Min	Max	Units
Anode voltage (peak)	25	28	kV
Output power (average) (note3)	300	-	W
Tunable Frequency	Upper Limit	5410	-
	Lower Limit	-	5240
R.F. bandwidth at 1/4 power (note 3,5)	-	2.5/tpc	MHz
Minor lobes (note 3,5)	8	-	dB
Stability (note2,3,4)	-	0.5	%
Heater current Ef=5.0V, tk=300sec min	17	21	A

■ LIFE TEST
Life Test conditions

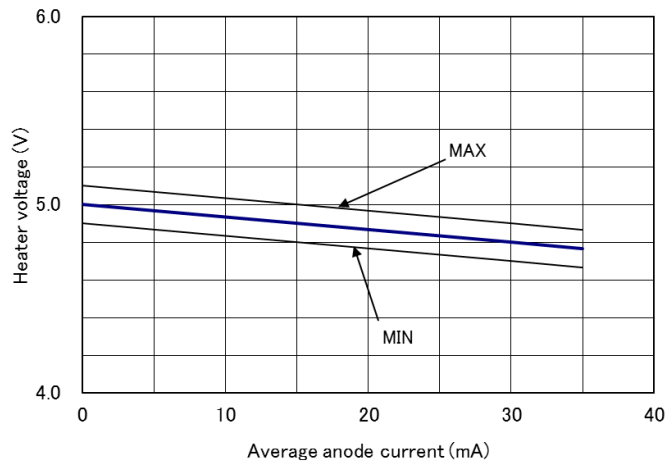
Under the test conditions specified above.

The tube is deemed to have reached end of life when it fails to satisfy the following:

PARAMETERS	Min	Max	Units
Output power (average) (note3)	240	-	W
R.F. bandwidth at 1/4 power (note3,5)	-	3.0/tpc	MHz
Stability (notes 2,3,4)	-	1.0	%

Notes

1. With no anode input power. During high voltage operation, it is essential to operate the heater according to the following schedule:

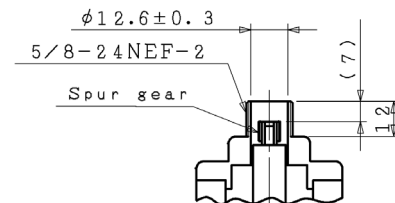
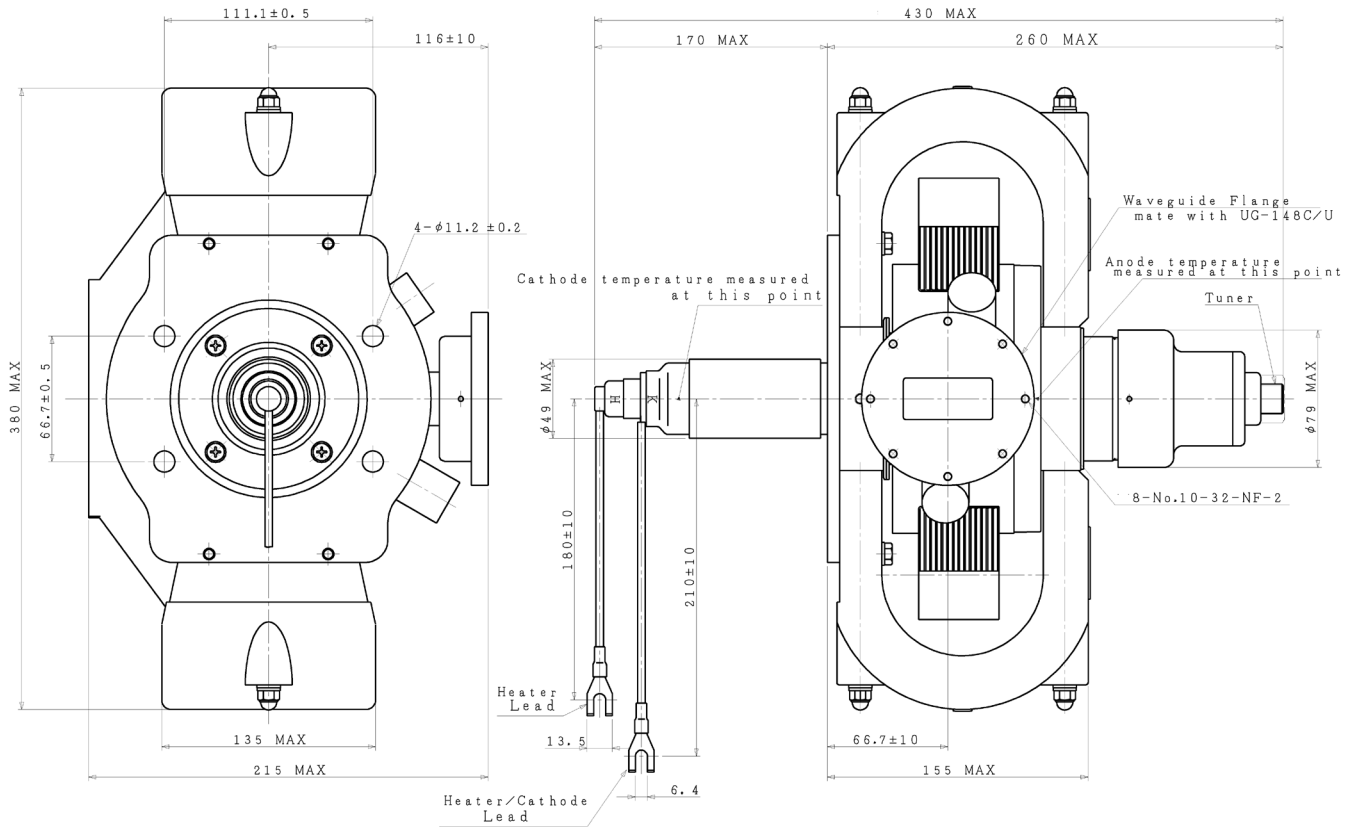


The magnetron heater shall be protected against arcing by use of a minimum capacitance of 4000pF shunted across the heater directly at the terminals.

2. Pulses are defined as missing when the r.f. energy level is less than 70% of the normal energy level in the rated frequency range of the magnetron. Missing pulses are expressed as a percentage of the number of input pulses applied during the last 3 minutes of a test interval not to exceed 6 minutes.
3. These tests are carried out at
 - F1=5250±20MHz,
 - F2=5300±20MHz,
 - F3=5350±20MHz.
4. With the magnetron operating into a V.S.W.R. of 1.3:1 phased to give maximum instability.
5. With the magnetron operating into a V.S.W.R. of 1.3:1 phased to give maximum spectrum degradation.
6. The rate of rise of voltage is the slope of the steepest tangent to the leading edge of the voltage pulse above 70% amplitude. Any capacitance used in the viewing system must not exceed 6.0pF.

OUTLINE

(Units : mm)



Spur gear dimension

Number of teeth	12
Module	0.529
Pitch diameter	$\phi 6.35$
Pressure angle	14.5°