Date
Feb. 20, 2019

Released

C band 300kW Magnetron

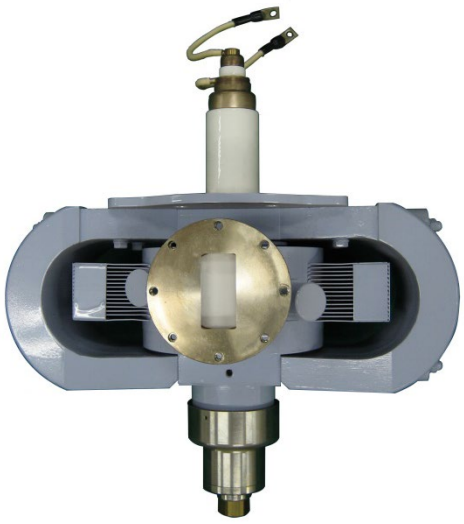
Model No. M1941

■ GENERAL DESCRIPTION

M1913A is a mechanically tunable frequency pulsed type C band magnetron designed to operate in the frequency range of 5500 MHz to 5700 MHz with a peak output power of 300 kW.

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

■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETERS		MINIMUM	MAXIMUM	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/μs
Duty cycle		-	0.0012	-

＊Above Specifications are subject to change without notice.

PARAMETERS	MINIMUM	MAXIMUM	UNITS
Pulse duration	0.2	3.5	μs
Pulse recurrence rate	-	2000	pps
Anode temperature	-55	115	℃
Cathode bushing temperature	-55	250	℃
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(abs.)
	1.5～2	kg/cm^2(abs.)

LIMITS		MINIMUM	MAXIMUM	UNITS
Anode voltage (peak)		25	28	kV
Output power (average)	(note 3)	300	-	W
Tunable Frequency				
Upper Limit		5410	-	MHz
Lower Limit		-	5240	MHz
R.F. bandwidth at 1/4 power	(note 3,5)	-	$2.5/t_p$	MHz
Minor lobes	(note 3,5)	8	-	dB
Stability	(note 2,3,4)	-	0.5	%
Heater current Ef = 5.0 V, tk = 300 sec min		17	21	A

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■ LIFE TEST

Life Test conditions

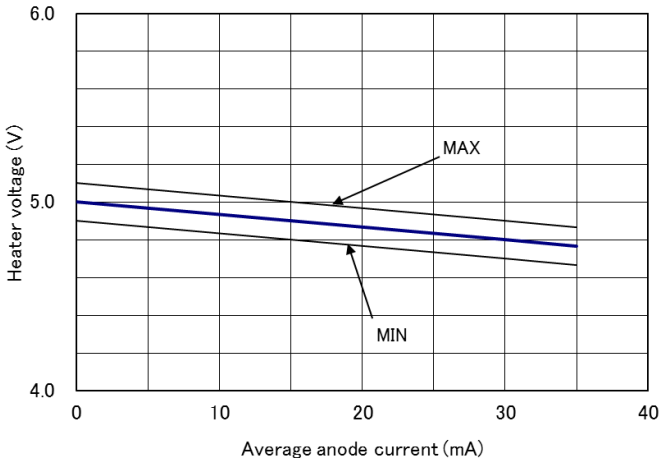
Under the test conditions specified above.

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

PARAMETERS		MINIMUM	MAXIMUM	UNITS
Output power (average)	(note3)	200	-	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.

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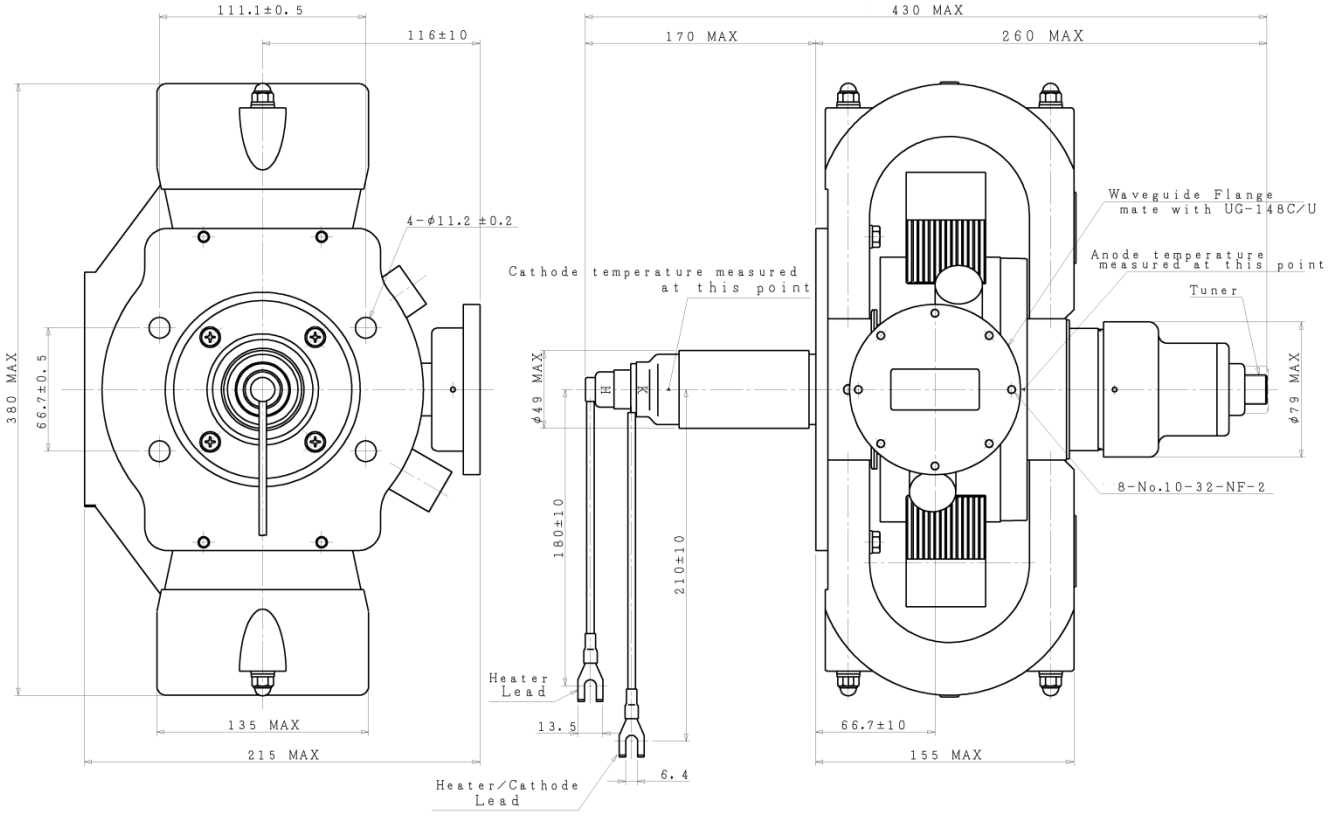
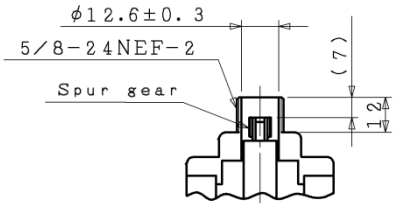
■ OUTLINE

(Units : mm)





TUNER DETAIL

Spur gear dimension

Number of teeth	12
Module	0.529
Pitch diameter	φ6.35
Pressure angle	14.5°

RoHS COMPLIANT

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