

Date

Feb. 20, 2019

Released

C band 300kW Magnetron

Model No. M1913A

Copyright© 2019
New Japan Radio Co., Ltd.
Microwave Division

-Notice of Proprietary Information-

This document and its contents are proprietary to New Japan Radio Co., Ltd.
This publication and its contents may not be reproduced or distributed for any other purpose
without the written permission of New Japan Radio Co., Ltd.
Those specifications listed in this document are subject to change at any time, without notice.

New Japan Radio Co., Ltd.
Microwave Division

Title:

Datasheet of M1913A

Reference No.:
DS-M1913A

Rev.:
02E

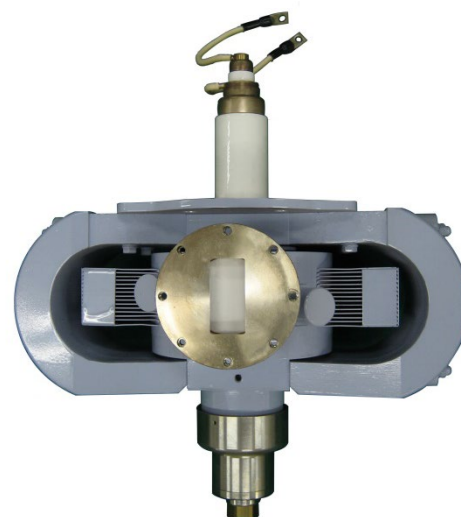
Sheet:
1/5

■ 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/ μ s
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	°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(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	5720	-	MHz
Lower Limit	-	5480	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

* Above Specifications are subject to change without notice.

■ LIFE TEST

Life Test conditions

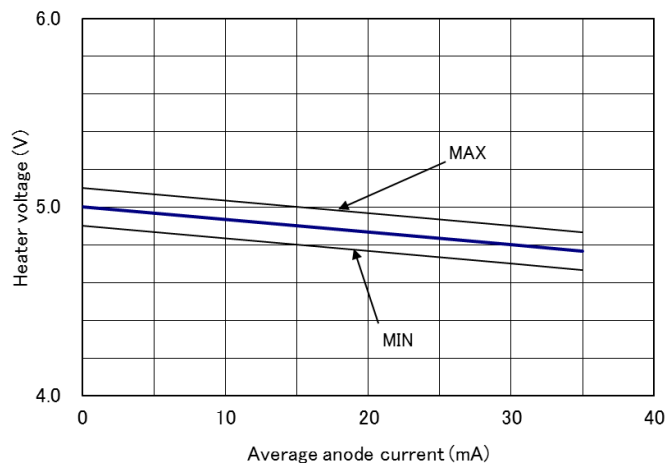
Under the test conditions specified above.

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:



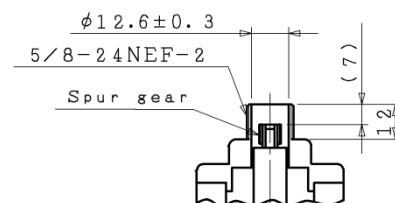
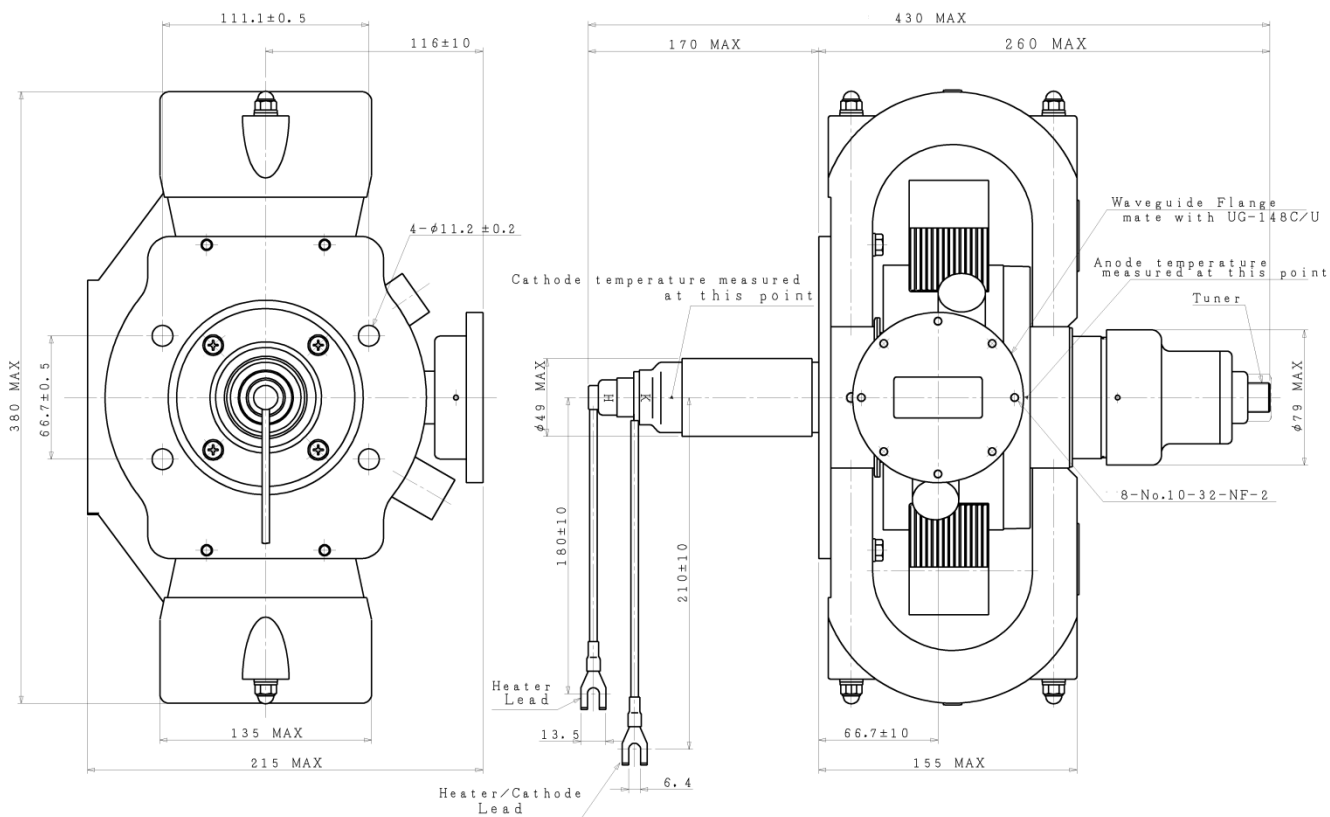
The magnetron heater shall be protected against arcing by use of a minimum capacitance of 4000pF shunted across the heater directly at the terminals.

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 = 5500 ± 20 MHz,
 - F2 = 5600 ± 20 MHz,
 - F3 = 5700 ± 20 MHz.
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.

* Above Specifications are subject to change without notice.

OUTLINE

(Units : mm)



TUNER DETAIL

Spur gear dimension

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

* Above Specifications are subject to change without notice.