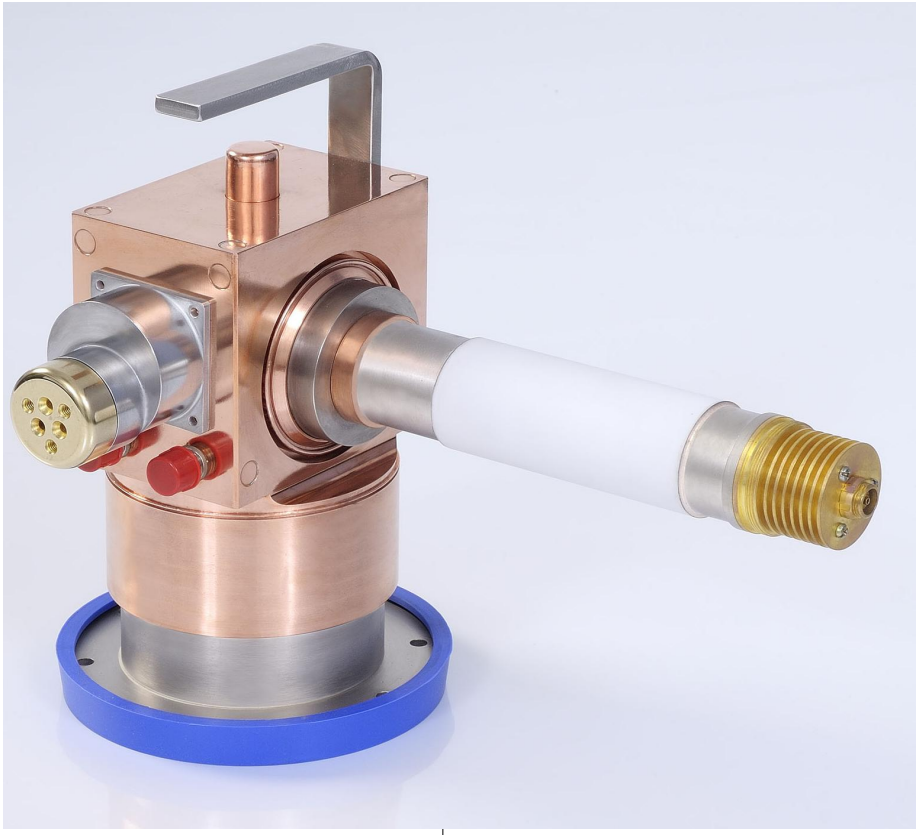
GDM6090

Tunable S-Band Magnetron



ABRIDGED DATA

Mechanically tuned pulse magnetron intended primarily for linear accelerators.

Frequency range
(cooling water 40℃)……..2993 to 3002 MHz
Peak output power. . . . . ……...3.1MW
Magnet …….separate
Output……..…to no. 10 (WR284) waveguide
(72.14×34.04 mm internal)
Cooling ……..……water

GENERAL DATA

Electrical

Cathode…… indirectly heated
Heater voltage…….. ……14 V dc
Heater current……...8.0 A
Peak heater starting current, not to be exceeded…….……20 A max
Cathode pre-heating time
(minimum)……10 min

Mechanical

Overall dimensions…….see outline
Net weight…….8.6 kg approx
Tuner revolutions to cover frequency range
…….. 4.75
Mounting position……..any

Cooling

The magnetron is water cooled and has an integral water jacket. The recommended water flow is 5 litres per minute or more; a pressure of approximately 1.25 kg/cm^2 will be necessary to give this rate of flow. The outlet water temperature must not exceed 50℃.

MAXIMUM AND MINIMUM RATINGS

(Absolute values)

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

	Min	Max	
Magnetic field …… … .	110.0	1650	mT
	1100	1650	gauss
Heater voltage……	–	14	V dc
Heater starting current (peak).....	–	20	A
Anode voltage (peak)……...	–	52	kV
Anode current (peak)……	60	120	A
Input power (mean)……	–	8.0	kW
Pulse duration ……	–	5.0	μ s
Rate of rise of voltage pulse ……	80	120	kV/ μ s
Outlet water temperature……	–	50	℃
VSWR at output coupler ……...	–	1.5:1	
Pressurizing of waveguide …… ….	–	3.1 kg/cm^2 g	

TEST CONDITIONS AND LIMITS

The magnetron is tested to comply with the following electrical specification.

Test Conditions

Magnetic field.. .. ..160 ± 0.5 mT
1600 ± 5 gauss
Heater voltage (for test)……..0 V
Anode current (peak)……...…115 A
Duty cycle…….0.001
Pulse duration……..5.0 μ s
VSWR at output coupler ……1.1:1
Minimum rate of rise of voltage pulse
……..120 kV/ μ s

Limits

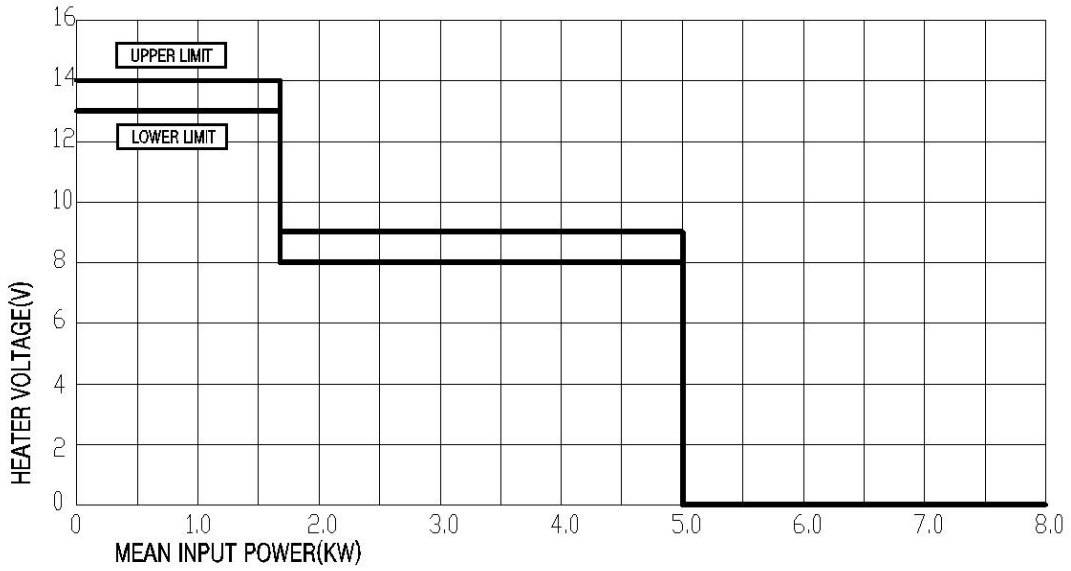
	Min	Max	
Anode voltage (peak) …….	46	52	kV
Output power (mean)……...	3.0	–	kW
Frequency:			
lower end of tuning range……...	–	2993	MHz
upper end of tuning range …….	3002	–	MHz
RF bandwidth at 1/4 power ……	–	1.2	MHz
Frequency pulling (VSWR not less than 1.5:1)…… …..	–	7.0	MHz
Stability …….	–	0.5	%

Inlet water at 25℃

LIFE TEST

The quality of all production is monitored by the random selection of tubes which are then life-tested under typical operation conditions.

HEATER VOLTAGE REDUCTION SCHEDULE



OUTLINE (All dimensions without limits are nominal)