

**Magnetron, 2 kW Water Cooled  
(PEP+)**

APPROVALS			REVISIONS			
	INITIALS	DATE	REV	DESCRIPTION	DATE	APPR
Drawn	JFG	13FEB06	1	Release	18FEB06	JFG
Engineering						
Manufacturing						
Marketing						

**1.0 General Description**

This document describes a custom water cooled version of the Hitachi 2M130 having 1/4" ISO Parallel female pipe threads for water supply and drain connections. This magnetron is a fully compatible replacement for installation in Novellus Systems "PEP+" tools and provides the same performance and life. Two version of the magnetron are available, one with an integrated thermal cut-out (Novellus p/n 05-162425-00) and one without the thermal cut-out (Novellus p/n 60-2043).

**2.0 Reference Documents**

940008 Magnetron Installation Instructions for Field Replacement

**3.0 Specifications****3.1 Absolute Maximum Ratings:**

ITEM	SYM	MIN	MAX	UNITS
Filament surge current	-	-	100	Aac
Filament voltage, Stand-by	Ef	4.4	4.8	Vac
Filament voltage, Ib = 725 mAdc	Ef	3.2	3.6	Vac
Filament warm-up	Tk	5	-	Sec
Anode voltage, peak	Ebm	-	4.3	kV
Anode current, peak	Ibm	-	2.1	A
Anode current, average	Ib	-	750	mAdc
Anode input power	Pi	-	3	kW
Load VSWR	$\phi L$	-	1.5	-
Anode core temperature	Tp	-	160	°C
Case temperature	Tcase	-	100	°C
Storage temperature	-	-30	60	°C

**3.2 Test Conditions for Electrical Characteristics:**

Power Supply Type	Single-phase, full-wave bridge rectifier without filter
Filament voltage	Ef = 4.6 Vac (stand-by), 3.4 Vac (Ib = 725 mAdc)
Average anode current	Ib = 725 mAdc
Load VSWR	$\phi L < 1.1$

TPS No: 900082

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### 3.3 Limits and Characteristics:

ITEM	CONDITION	SYM	BOGIE	MIN	MAX	UNITS
Filament current, stand-by	Tk=120sec min.	If	20	18.5	21.5	Aac
Anode voltage, peak		Ebm	4.00	3.85	4.20	kVp
Output power, average		Po	2000	1750	-	W
Frequency		fe	2455	2440	2470	MHz
Stability	$\phi L < 3$	ST	-	700	-	mAdc
Breakdown voltage		Et	-	10	-	kVdc

### 3.4 Mechanical:

Mounting studs:	M5
Cooling water connections	1/4" ISO Parallel female pipe threads
Cooling water flow	0.5 gpm min. @ 35 °C max. input temperature
Thermal Cut-out	Normally Closed (N.C.) switch, 55 °C set point, wire leads with ferrules

### 4.0 Ordering Information

Part Number	Description	Novellus P/N
911147	Magnetron Assembly, with Thermal Cut-out	05-162425-00
911147-1	Magnetron Assembly, without Thermal Cut-out	60-2043

### 5.0 Outline Drawing

