

**Magnetron Assembly, Water Cooled  
(Fusion Semiconductor)**

APPROVALS			REVISIONS			
	INITIALS	DATE	REV	DESCRIPTION	DATE	APPR
Drawn	JFG	12DEC05	1	Prototype Release	11JAN06	JFG
Engineering			2	Revised part numbers	30AUG10	JFG
Manufacturing			3	Added xref part numbers	18NOV15	JFG
Marketing	JC	18NOV15				

**1.0 General Description**

This document describes a custom water cooled versions of the Hitachi 2M131 magnetron having 1/4" Swagelok® tube fittings for water supply and drain connections. These magnetrons are used in the M150PC and M200PC wafer fab tools manufactured by Fusion Semiconductor (Axcelis). A unique characteristic of these magnetrons is that their operating frequency differs slightly ("low" or "high") from the nominal 2450 MHz as with standard 2M131 magnetrons.

**2.0 Specifications****2.1 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	3.6	4.0	Vac
Filament warm-up	Tk	5	-	Sec
Anode voltage, peak	Ebm	-	4.0	kV
Anode current, peak	Ibm	-	1.8	A
Anode current, average	Ib	-	750	mAdc
Anode input power	Pi	-	2.6	kW
Load VSWR	$\phi L$	-	4	-
Anode core temperature	Tp	-	160	°C

**2.2 Test Conditions for Electrical Characteristics:**

Power Supply Type	Single-phase, full-wave voltage doubler
Filament voltage	Ef = 4.6 Vac (stand-by), 3.8 Vac (Ib = 725 mAdc)
Average anode current	Ib = 725 mAdc
Load VSWR	$\phi L < 1.1$

**2.3 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	3.60	3.45	3.75	kVp
Output power, average		Po	1500	1400	-	W
Stability	$\phi L = 2$	1ST	-	1.1	-	Adc
	$\phi L = 3$	2ST	-	0.7	-	Adc
Breakdown voltage		Et	-	7.0	-	kVdc
Frequency ("Low")		fe	2445	2435	2455	MHz
Frequency ("High")		fe	2470	2460	2480	MHz

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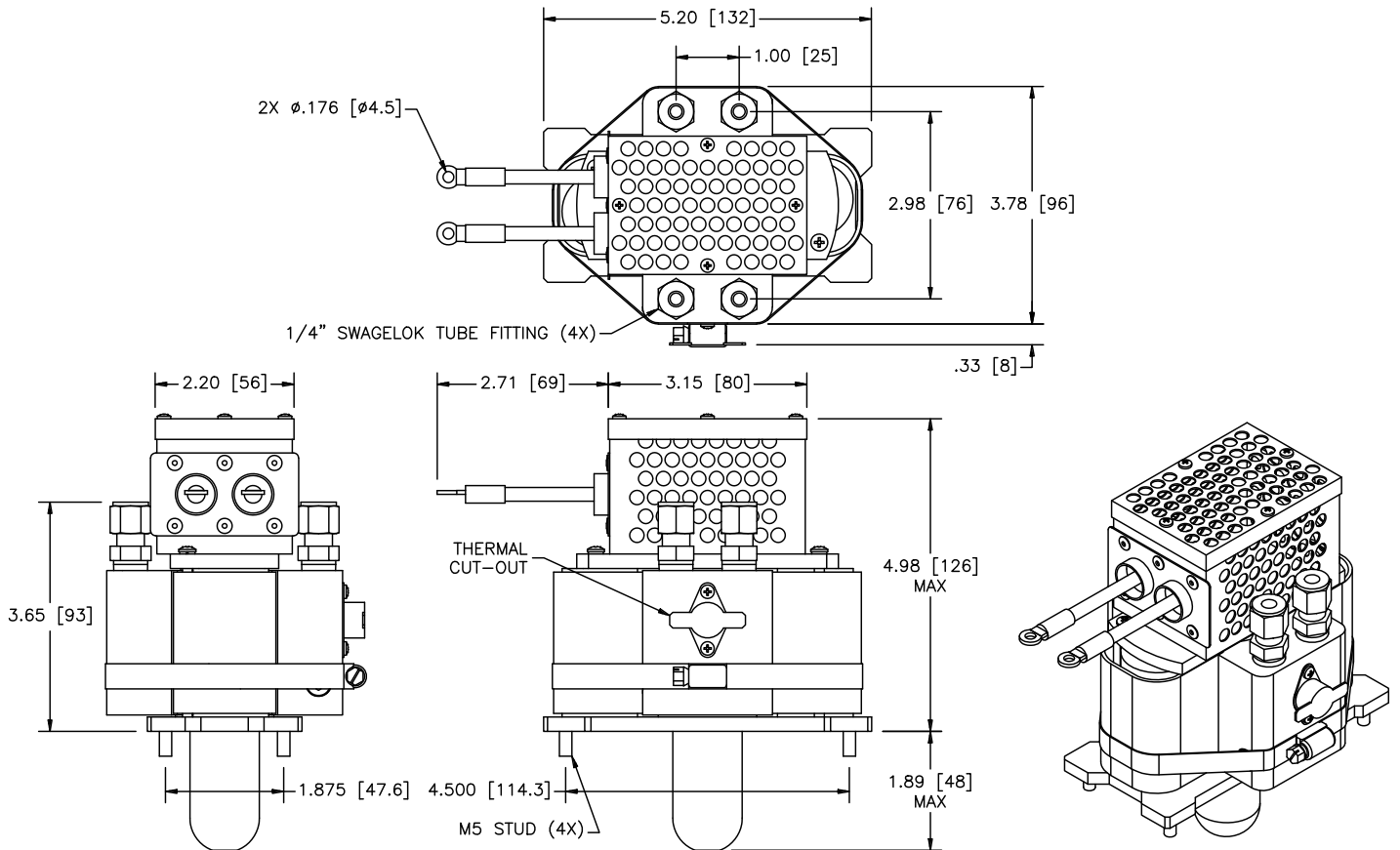
### 2.4 Mechanical:

Mounting studs:	M5
Cooling water connections	1/4" Swagelok® tube fittings
Cooling water flow	0.5 gpm min. @ 35 °C max. input temperature
Thermal Cut-out	Normally Closed (N.C.) switch, 1/4" tabs

### 3.0 Ordering Information

<u>GAE P/N</u>	<u>Description</u>	<u>Fusion P/N</u>	<u>REL P/N</u>
912334	Magnetron Assy, 1/4" Straight Swagelok, Low Freq	085331	NL10251-4LOW
912406-1	Magnetron Assy, 1/4" Angled Swagelok, High Freq	080921	NL10251-3HIGH
912406-2	Magnetron Assy, 1/4" Angled Swagelok, Low Freq	080924	NL10251-3LOW

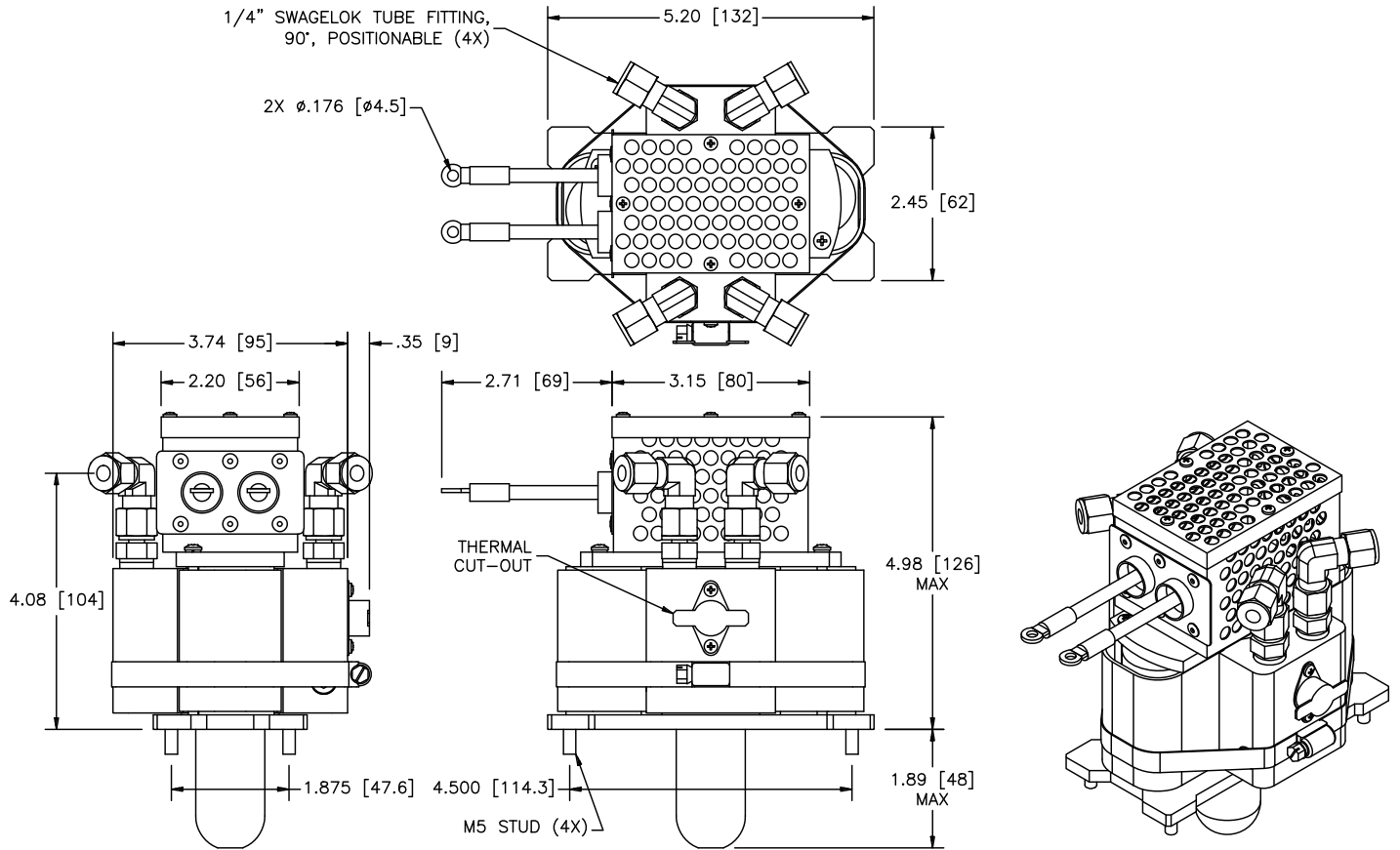
### 4.0 Outline Drawing



GAE p/n 912334 (Fusion p/n 085331)

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GAE p/n 912406-1 and 912406-2 (Fusion p/n 080921 and 080924)