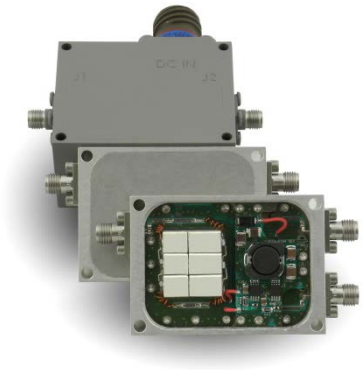
Pre-Filtered GPS LNA (Low Noise Amplifier)

Designed to amplify GPS signals while protecting the GPS receiver by filtering out interferers



Features

- Pre-Filtered
- Low Noise Figure, 1.8 dB Typical
- Wide Input Voltage Range
- Tested to many MIL-STD-810 & MIL-STD-461 Requirements
- Small Lightweight Hermetic Package
- Additional non-standard features available, contact factory

Applications

- Inline Booster
- Satellite Navigation
- Avionics
- Marine Navigation
- Survey/Mapping
- Military

The 312 series pre-filtered GPS LNA module is designed to amplify GPS signals while protecting the front end of the GPS receiver by filtering out interferers from an increasingly crowded EM spectrum. The module leverages API Technologies' core competencies in low-loss filter, amplifier and mechanical design that results in a module that maximizes out of band rejection while minimizing system noise figure and maintaining a small size. The pre-filtered GPS LNA is offered in a wide range of performance options including GPS band configuration, gain level, supply voltage, multiple outputs and input and output connectors.

Parameter	Min.	Typ.	Max.	Units
Frequency Range		L1, L1/L2, L5, L1/L5		N/A
Gain ± 3 dB		16, 19, 22, 25, 28, 31, 34, 37, 40		dB
Noise Figure		1.8	2.5	dB
OP1dB	0[1]	+5.5[1]		dBm
OIP3		+16[1]		dBm
Rejection f ≤ 1050 MHz f = 1410 MHz f ≥ 1730 MHz	-40	-45		dBc
Input Return Loss	-9.5	-17.7		dB
Output Return Loss	-9.5	-14.0		dB
Group Delay Variation[2]		±2		ns
Supply Voltage Standard Low-Voltage	 5 3.3		 32 5	V
Supply Current (Icc) ≤25 dB Gain Option ≥28 dB Gain Option		 50 68	 55 75	 mA

[1] 34 dB Gain Option [2] Group Delay Variation over GPS Bands

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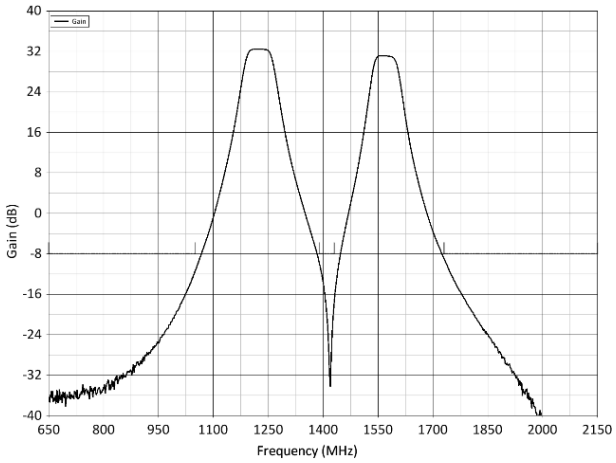
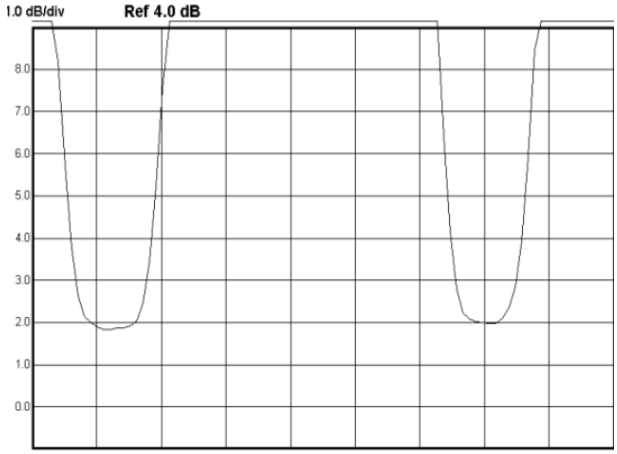
Typical Performance Graphs

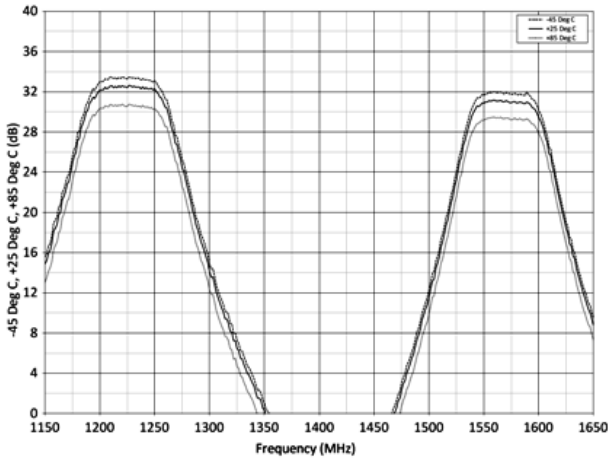
Gain



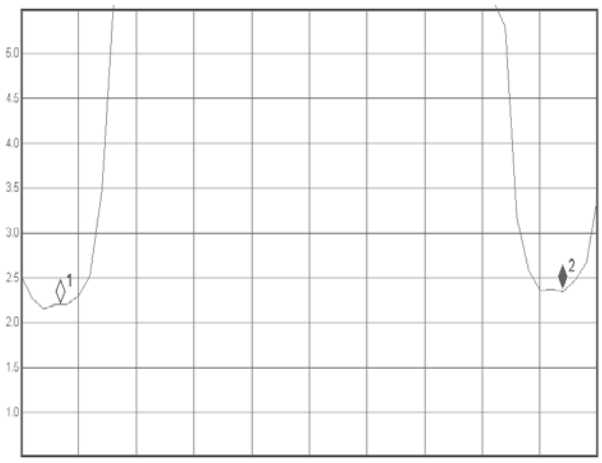
Noise Figure at +25°C



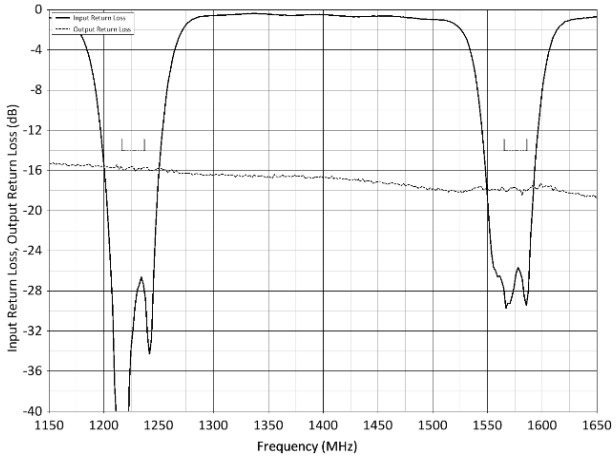
Gain Variation over Temperature



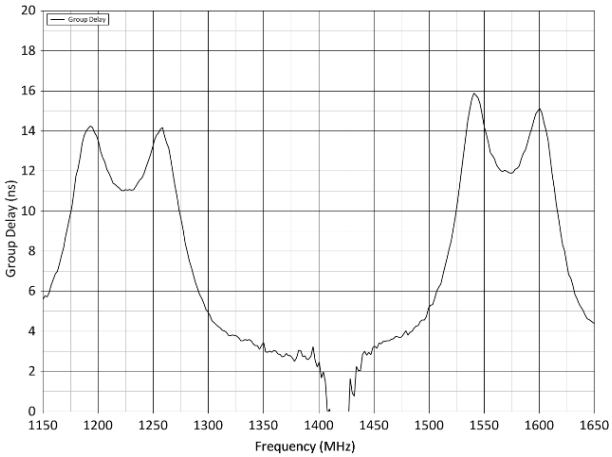
Noise Figure at +85°C



Return Loss



Group Delay



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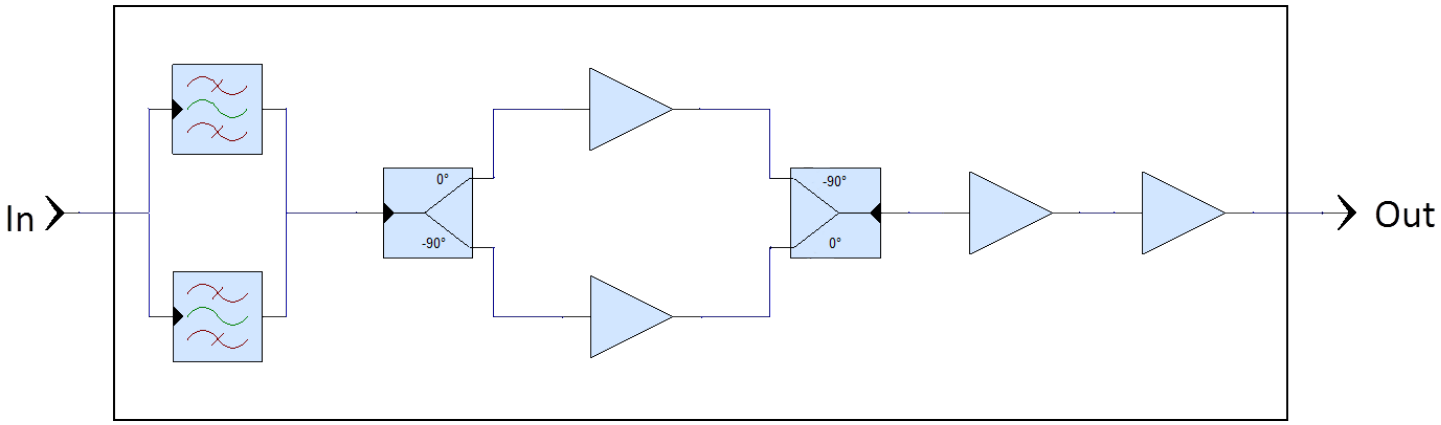
Environmental Conditions

Acceleration	MIL-STD-810D	Method 513.3 Helicopter Category
Altitude	MIL-STD-810F	Method 500.4 Class II
Shock	MIL-STD-810F MIL-STD-810D	Method 516.5 Procedures I, V, VI Method 416.5 Procedure V
Vibration	MIL-STD-810F	Method 514.6 Procedure I, Categories 13 (Propeller) & 14 (Helicopter)
Explosive Atmosphere	MIL-STD-810F	Method 511.4 Procedure I
Humidity	MIL-STD-810F	Method 507.4 Figure 507.4-1
Salt Fog	MIL-STD-810D	Method 509.2
Sand and Dust	MIL-STD-810F	Method 510.4 Procedures I, II
Electrical Bonding	MIL-STD-464	Section 5.10
Electrostatic Discharge ESD[1]	DO-160D	Section 25
Indirect Lightning Strike[1]	DO-160D	Section 22, Waveforms K & WF3
EMI	MIL-STD-461E	CE101, CE102, CE106, CS101, CS103, CS104, CS105, CS114, CS115, CS116, RE101, RE102, RS101, RS103[2]

1. Conditions met only with coaxially biased option.

Functional Block Diagram



Absolute Maximum Ratings

Supply Voltage +5-36 VDC +3.3 VDC	 +4.8 to +40 VDC +6 VDC
RF Input Power	+5 dBm
Storage Temperature	-55 to +125 °C
Operating Temperature	-45 to +85 °C
ESD Sensitivity	Class 1B

ELECTROSTATIC SENSITIVE DEVICE. OBSERVE PROPER HANDLING PRECAUTIONS

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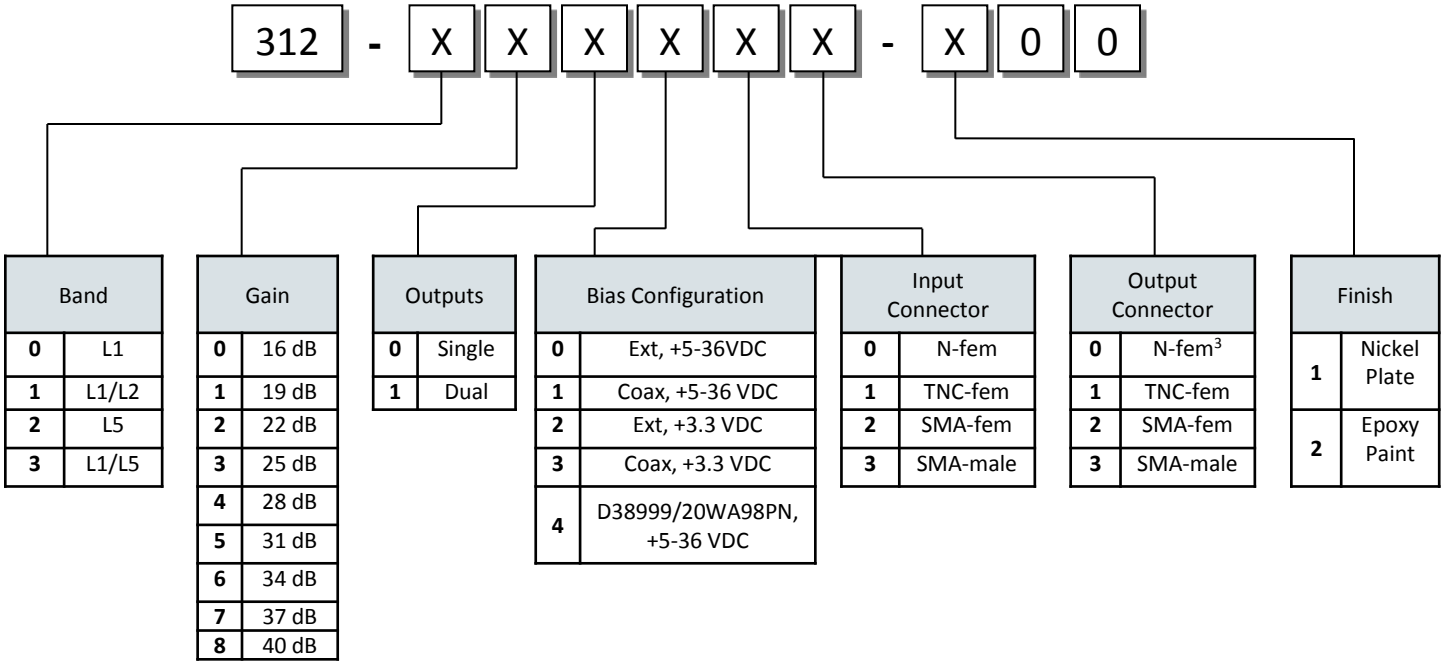
Ordering Information



[3] Dual output configuration is not available with Type-N RF connectors in standard package

[4] 312-X81XXX-X00 40 dB gain, dual output model is not available

Outline Information

Outline	Bias Configuration	Input / Output Connectors	Notes
Outline 1	0,1,2,3	2	All bias configurations except 4 with SMA Female RF connector types
Outline 2	0,1,2,3	0,1,3	All bias configurations except 4 with TNC Type N, or SMA Male RF connector types
Outline 3	4	All	Bias configuration 4 with all RF connector types

Specifications are subject to change without notice

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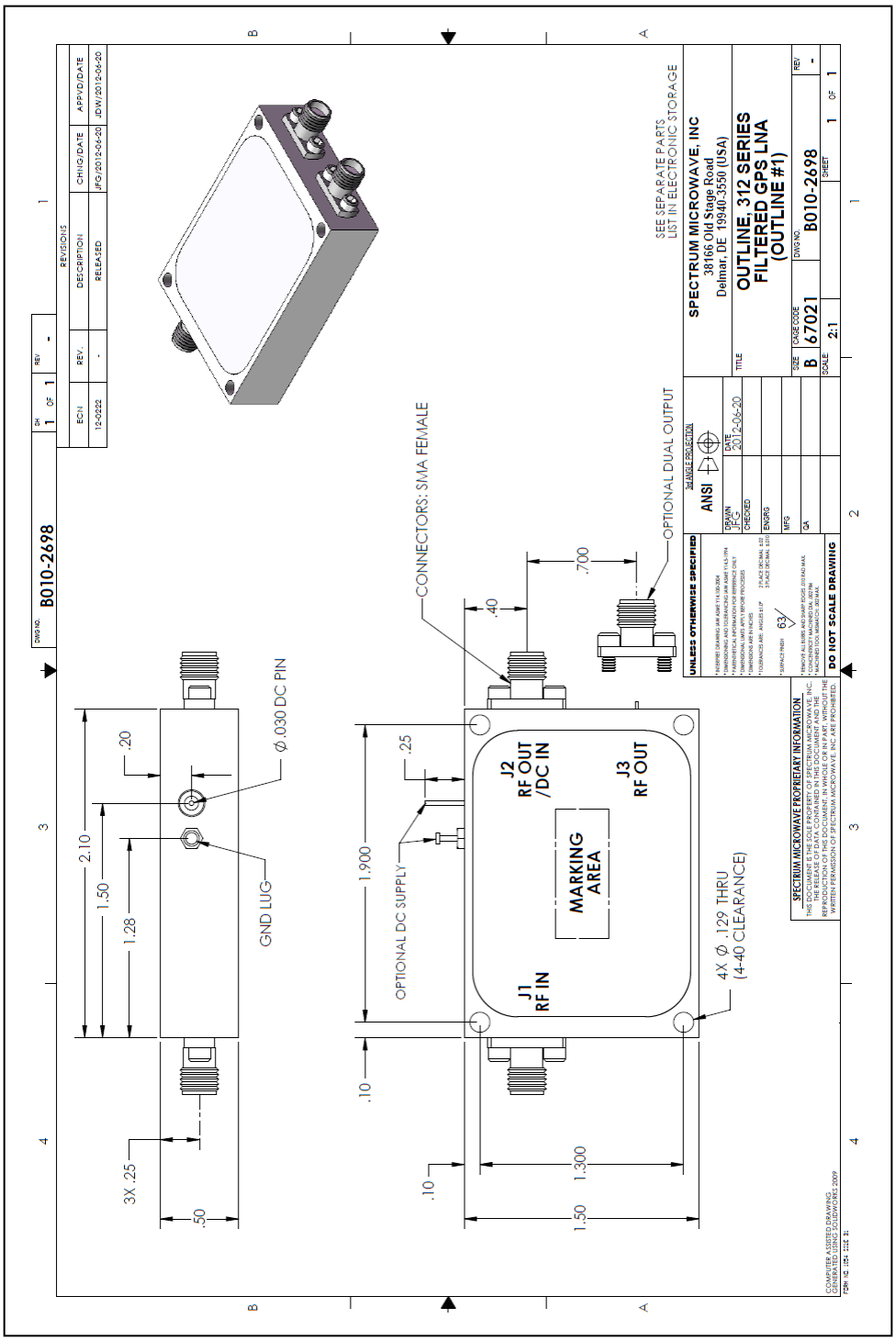
Outline Drawing 1

Weight: 47 grams typical



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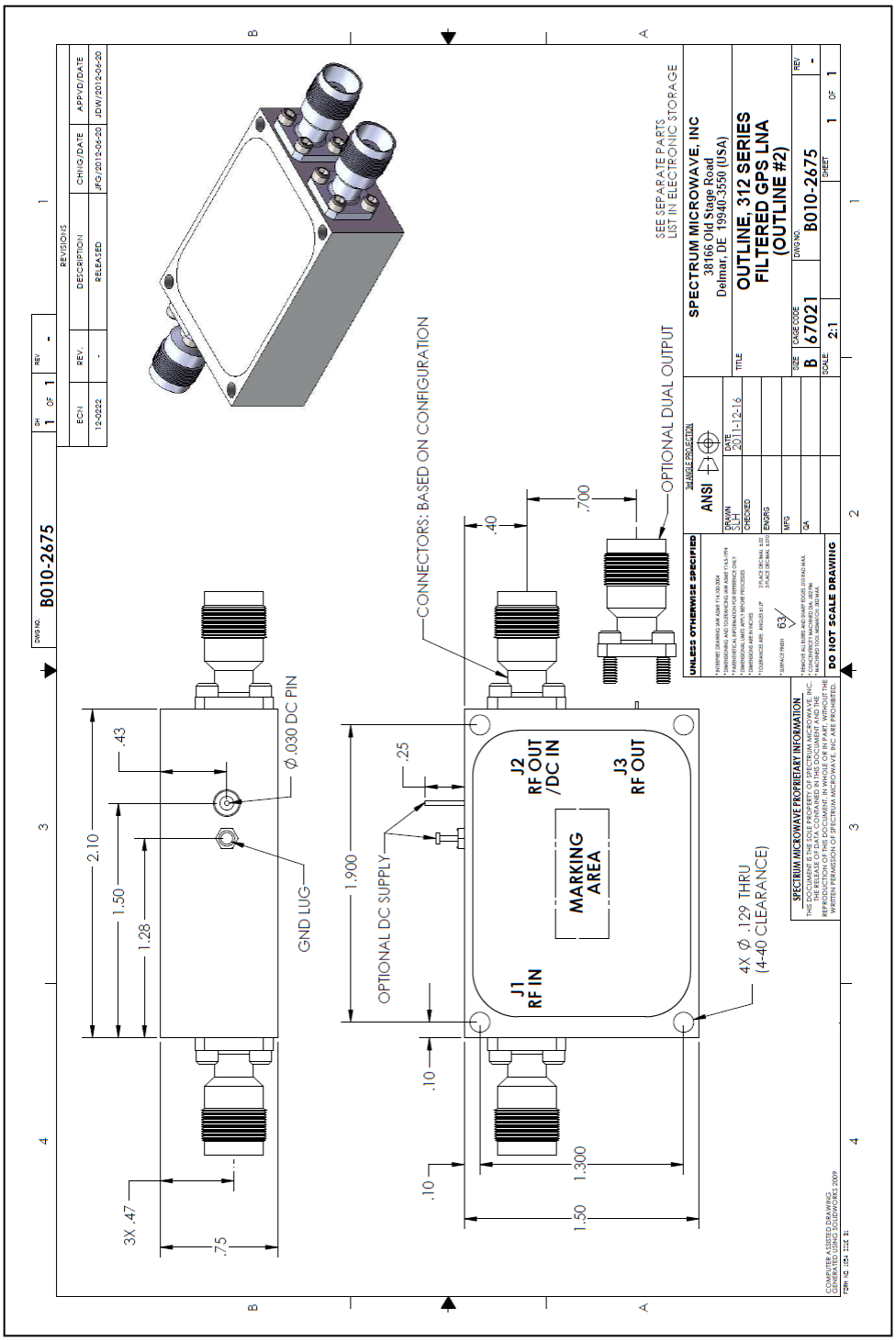
Outline Drawing 2



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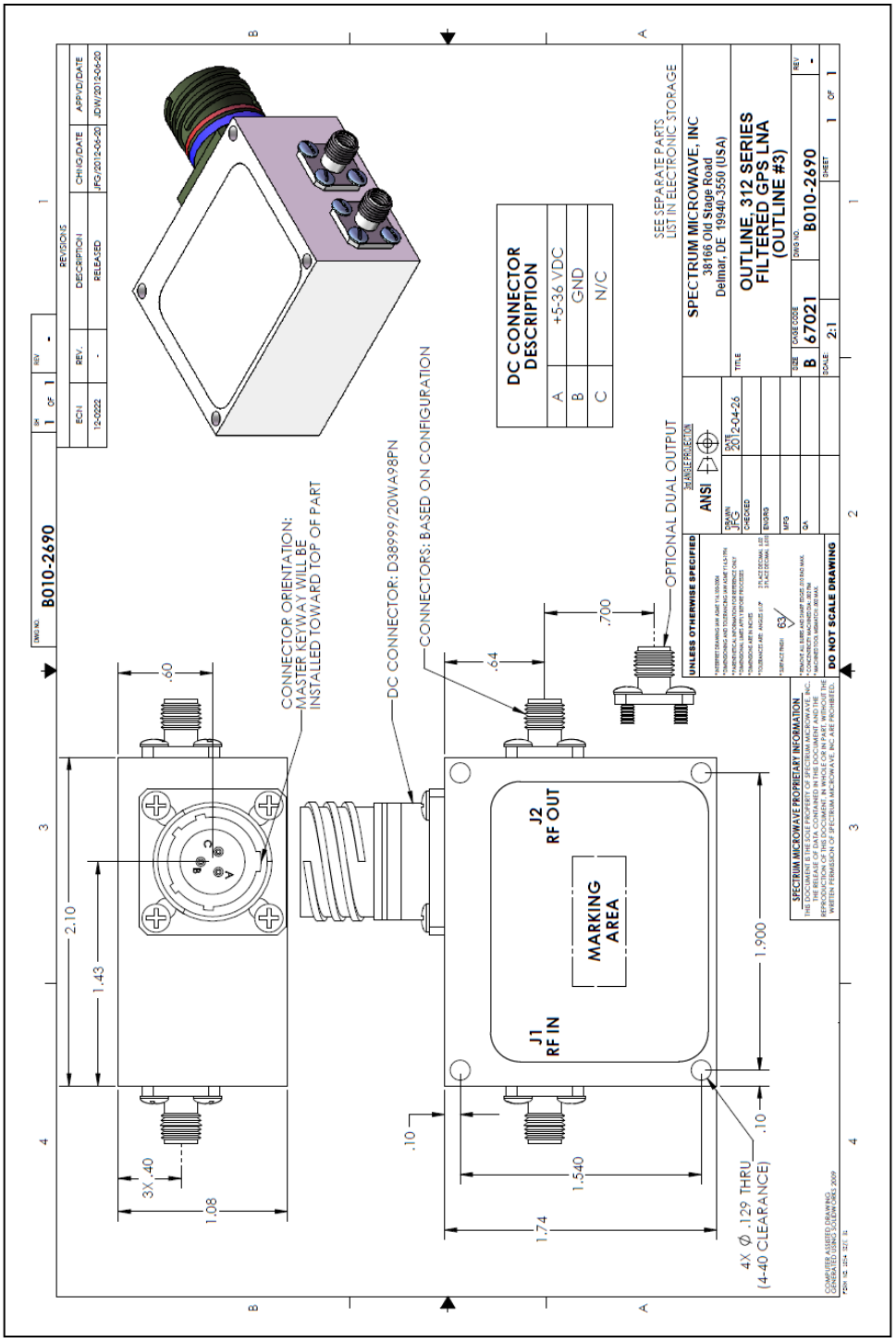
Outline Drawing 3



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