

<i>Nova Research and Engineering, Inc.</i> 11930 A 44th Street North Clearwater FL 33762	Specification Number: N10452	Rev: B Date: 5/21/2021
Specification Control Document Assembly, Dual RF Trap with CT, 5kV, 100k to 15 MHz		Department: ENG Originator: JFK

Description:

This assembly is a radio frequency (RF) filter used to protect an electrostatic chuck power supply (EPS). It reduces the RF energy that is coupled into an electrostatic chuck (ESC) in the plasma environment before it reaches the EPS using a pi-structured RF decoupling network. It is primarily used in semiconductor plasma processing equipment and is required to protect the EPS in RF plasma and ICP plasma environments. This unit has an additional port to connect a DC potential to the EPS center tap. This port also has the RF decoupling network attached.

Electrical Specifications:

High Voltage Input Connector

<u>Pin</u>	<u>Function</u>
1	E1 or (+) terminal
2	Center Tap between E1/E2
3	E2 or (-) terminal
4	Chassis or safety ground
5	Interlock pin
6	Interlock pin

The high-voltage input connector is an AMP/Tyco Part No. 867535-1 or equivalent. This uses recessed pins for safe connection, and has a rated dielectric breakdown of 5000VDC. The required mating connector is an AMP/Tyco Part No. 867534-1. Use AMP/Tyco cable clamp Part No. 206062.

ESC Connections

The connections for the electrostatic chuck are MHV connectors with a rated dielectric breakdown of 5000VDC. Standard BNC connectors will not mate with this connector. The required mating connector is Part No. C1060 from Federal Custom Cable, or Part No. PE4093 from Pasternack Enterprises. The shield connection of the MHV connector is tied to pin 4 of the High Voltage Input Connector.

CT Connector

The center tap connector is a standard 50-ohm BNC connector. The source of this connector is connected to the input connector through an RF decoupling circuit.

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Attenuation Characteristics

<1dB to 75kHz

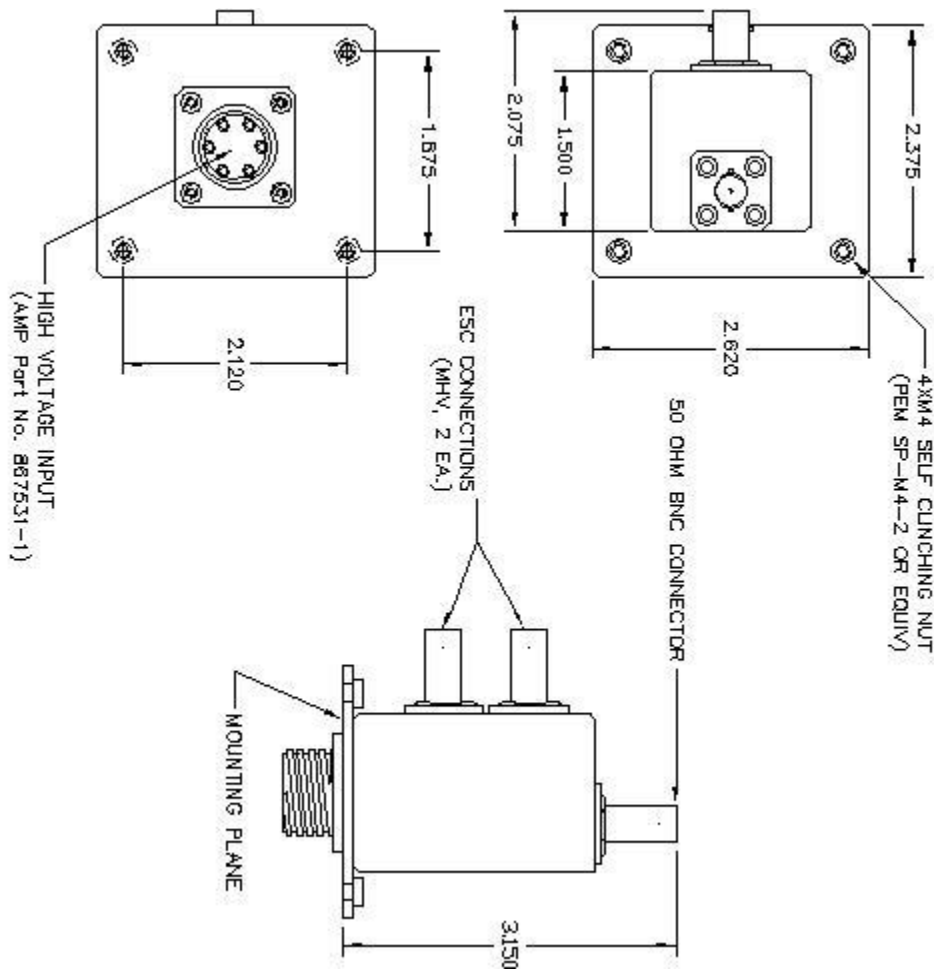
-13dB min at 1MHz

-30dB min at 5MHz

-50dB min at 10MHz

Flat response from 9MHz to beyond 20MHz. No spurious responses in the range from 100kHz to 20MHz.

Mechanical Specifications:



Document revised 7/6/2018: Length and Overall width dimensions corrected.

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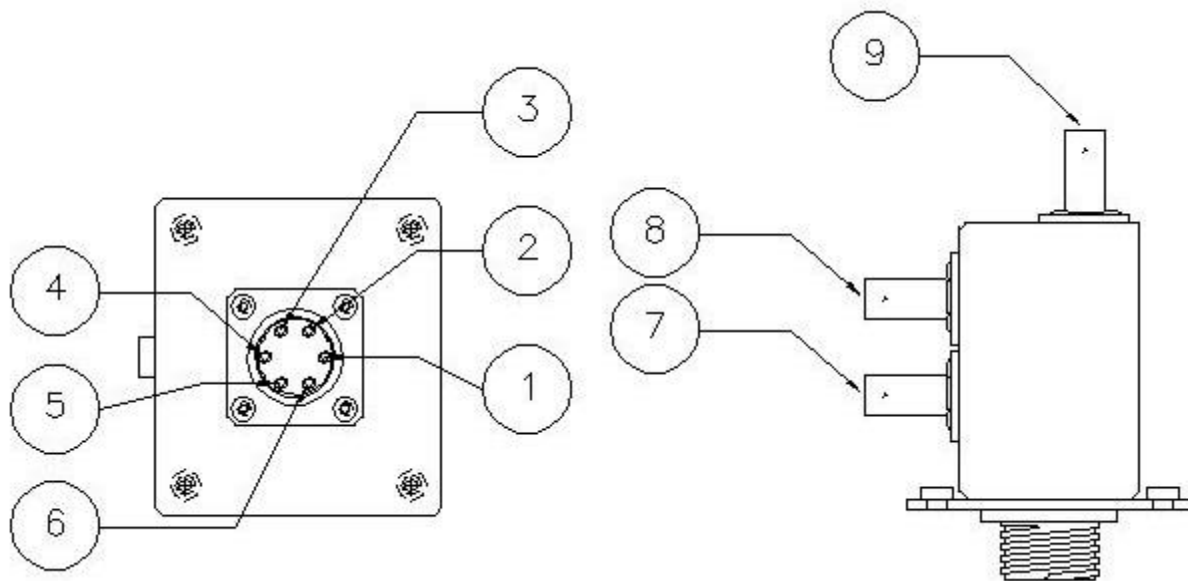
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N10452 DUAL RF TRAP NOMINAL IMPEDANCES

DCR (OHMS)

REV A 20190401

	To Pin 1	To Pin 2	To Pin 3	To Pin 4	To Pin 5	To Pin 6	To Pin 7	To Pin 8	To Pin 9
From Pin 1	---	OPEN	OPEN	OPEN	OPEN	OPEN	354K +/- 10%	OPEN 330K +/- 10%	OPEN
From Pin 2	OPEN	---	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN 354K +/- 10%
From Pin 3	OPEN	OPEN	---	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN
From Pin 4	OPEN	OPEN	OPEN	---	OPEN	OPEN	OPEN	OPEN	OPEN
From Pin 5	OPEN	OPEN	OPEN	OPEN	---	<0.5	OPEN	OPEN	OPEN
From Pin 6	OPEN	OPEN	OPEN	OPEN	<0.5	---	OPEN	OPEN	OPEN
Housing	OPEN	OPEN	OPEN	<0.5	OPEN	OPEN	OPEN	OPEN	OPEN

Document revised 4/1/2019: Pin diagram and connection table added.