

## Data Sheet

### EC-BIAS-TM High Power Bias Network 50MHz to 6GHz



## Applications

- RF transistor characterization
- Power amplifiers
- Broadband amplifiers

## Features

- Max VDC = 200V, Max IDC = 4A
- Return Loss > 13, Isolation > 26dB
- Insertion loss < 1.6 dB over 6 GHz BW

## Description

The EC-BIAS-TM is a high-power, high-voltage, high-current DC bias network (bias tee) for RF transistor biasing applications. This static DC bias network can be used for RF and microwave transistor characterization as well as broadband, low-noise and power amplifier development. The DC bias network has three ports: RF, DC and RF+DC. The RF port accepts RF signals, the DC port accepts DC biases, and the RF+DC port presents the combined signal to the device. The EC-BIAS-TM can handle DC voltages up to 200 V and DC currents up to 4 A. The DC bias network is especially well-suited for biasing high-voltage, high-current RF power devices like GaN HEMT transistors.

The RF-to-RF+DC path operates from 50 MHz to 6 GHz when considering a maximum insertion loss of 1.6 dB and minimum return loss of 13 dB. The DC-to-RF and DC-to-RF+DC isolation is > 27 dB.

## Specifications

<i>Parameter</i>	<i>Test Cond.</i>	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	<i>Units</i>
Impedance			50		Ohm
Operating Frequency	IL < 1.6dB	0.05		6.0	GHz
VSWR	0.1 to 6 GHz	1.1		1.6	
Return Loss	0.1 to 6 GHz			12	dB
Insertion loss	0.05 to 6 GHz			1.6	dB
Isolation	0.05 to 6 GHz		27		dB
DC port voltage				200*	DC or Pulsed
DC port current				4*	ADC

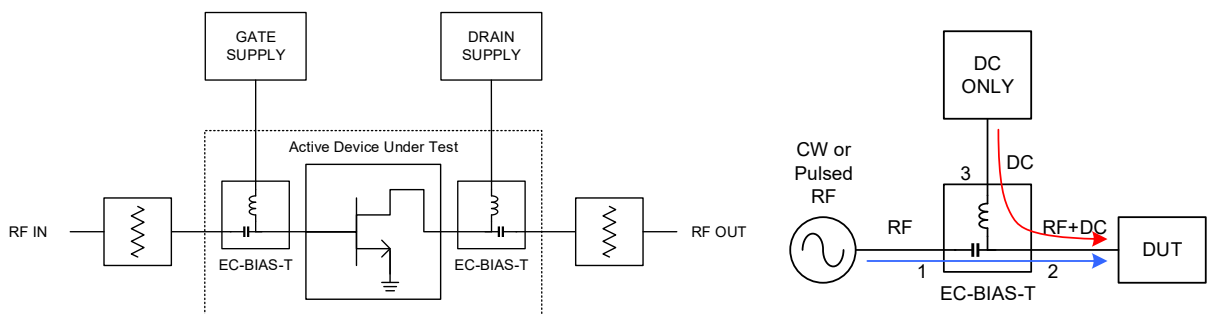
\*based on component specs

## Typical Application

The EC-BIAS-TM is typically used in conjunction with an active transistor device or amplifier requiring a DC bias at the device terminals. A conventional application with a transistor test fixture is shown below. In the diagram, one EC-BIAS-TM is placed at the gate of the device and one is placed at the drain of the device. The input bias tee module receives an RF signal from a source, combines this with the bias voltage and applies the composite signal to the device gate. The gate voltage can be positive or negative, making it suitable for all FET devices. The output bias tee simultaneously feeds the bias voltage to the drain and allows for the RF output produced by the transistor to pass to the drain next stage.

A typical connection to the EC-BIAS-TM is shown below. The DC signal is supplied by a static DC voltage. The RF signal is supplied by a pulsed RF or a CW RF signal.

Transistor characterization setup using EC-BIAS-T

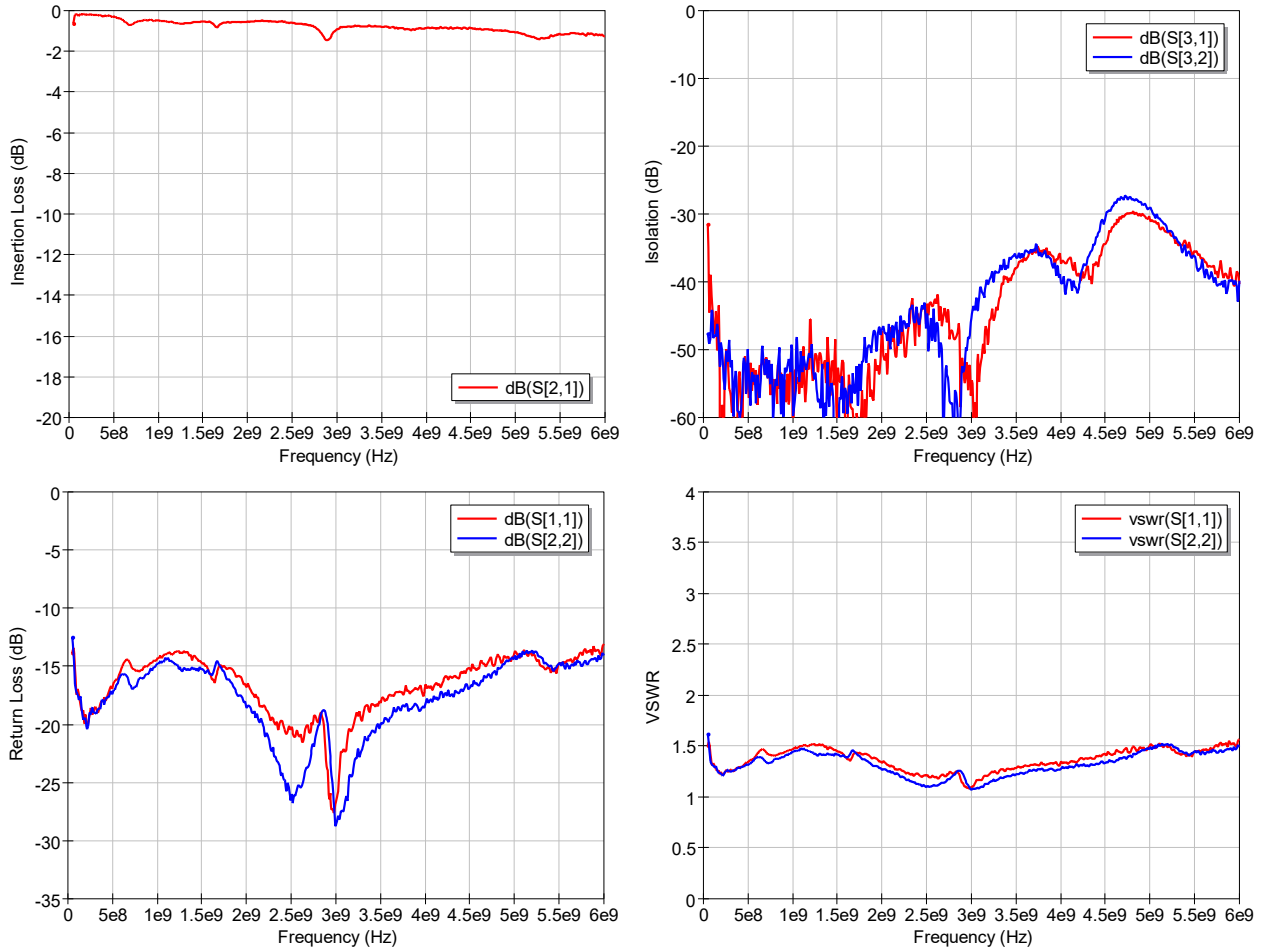


## Performance

### Small-signal Performance

The S-parameters for the EC-BIAS-TM are provided below. The three port network consisting of RF (port 1), RF+DC (port 2), DC (port 3) ports are measured from 0.05 GHz to 6.0 GHz and show excellent insertion loss, return loss and isolation.

Typical S-parameters from 0.05 to 6.0 GHz

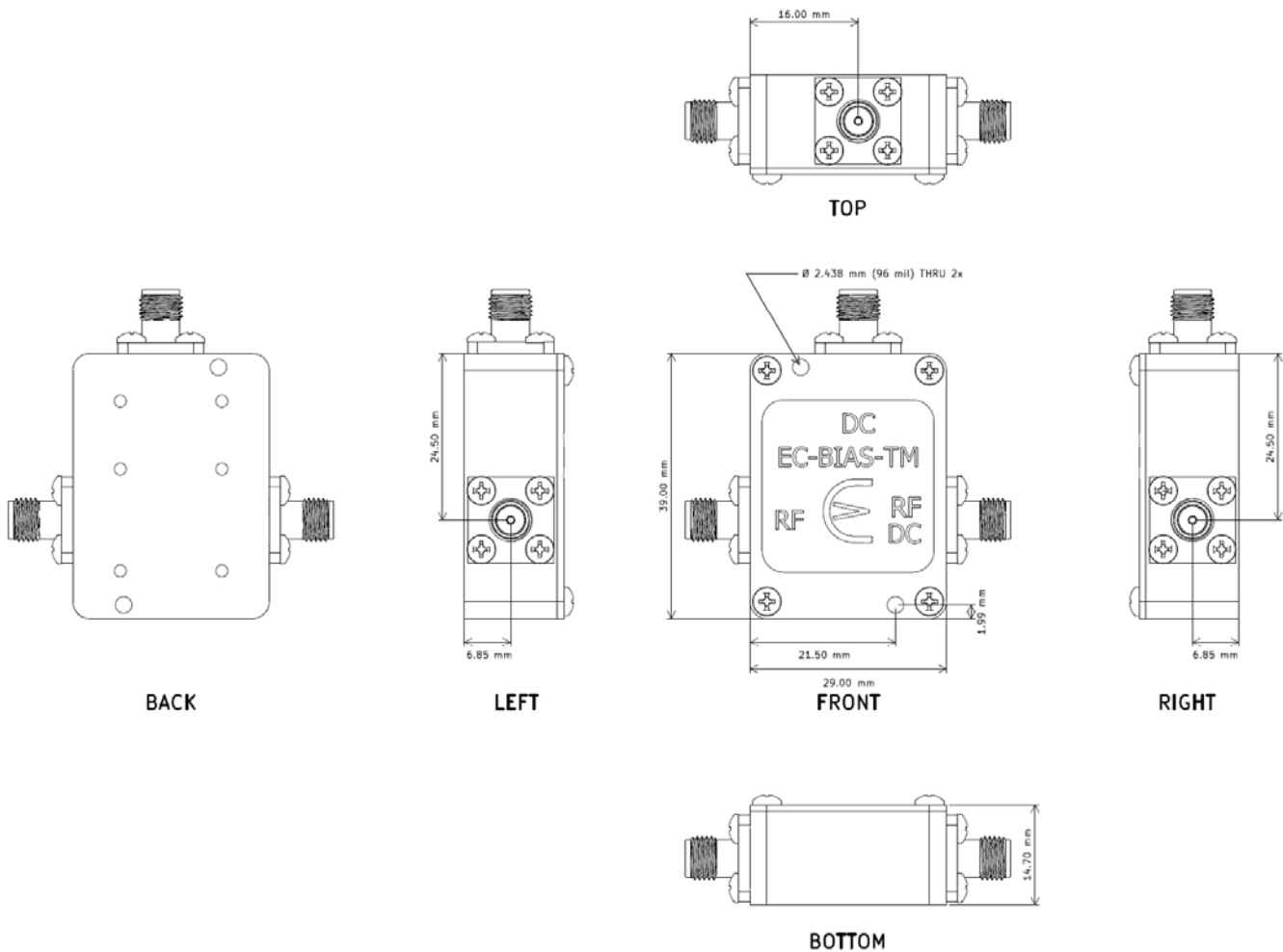


## Mechanical

Mechanical dimensions. All units in mm [inches].

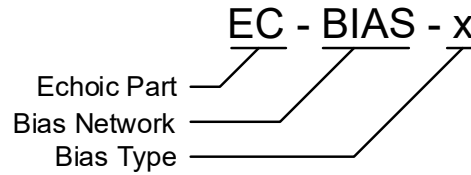
<i>Configuration</i>	<i>Parameter</i>	<i>Typical</i>	<i>Units</i>
Body without connectors	Width	29	mm
	Length	39	mm
	Height	14.7	mm
Overall with connectors (approximate)	Width	47.9	mm
	Length	48.5	mm
	Height	15.9	mm
Connector	Torque	8	In-lbs

Mechanical drawing



## Ordering Information

Please use the following model number designation for ordering this and any other part from our bias line:



For example, EC-BIAS-TM is an Echoic part, bias network for static DC operation.

## Web Resource

For more information and supporting files for this product please visit [www.echoicrf.com/products](http://www.echoicrf.com/products)

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