

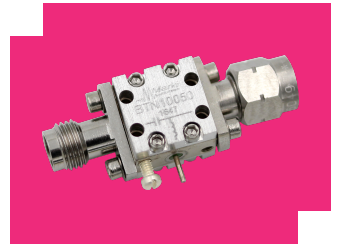
# BTN1-0050

## High Power Bias Tee

### DEVICE OVERVIEW

#### General Description

The BTN1-0050 is constructed using a custom-made, resonance-free conical inductor to achieve extremely broadband performance. By minimizing the overall inductor size and using proprietary packaging techniques, the BTN1-0050 is a superior option in terms of performance, reliability and ease-of-use when compared to cumbersome user-designed bias tees employing off-the-shelf conical inductors. The extremely low cutoff and resonance free operation makes the BTN1-0050 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.



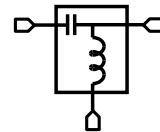
#### Features

- Broadband: 500 kHz to 50 GHz
- Low Insertion Loss
- High Power
- Non-Resonant
- Compact Size

#### Applications

- Test and Measurement Equipment

#### Functional Block Diagram



#### Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
BTN1-0050	High Power Bias Tee	<u>Standard</u>	REACH RoHS	Released	EAR99

## Table Of Contents

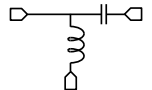
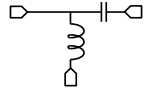
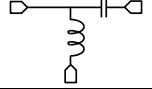
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## Revision History

Revision Code	Revision Date	Comment
C	2020-10-01	Added Performance plots vs Bias current

## Port Configuration and Functions

### Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
Common	RF+DC	2.4M	This port is DC blocked to the RF port and DC connected to the DC port through an internal RF choke	
DC	DC	-	This port is internally connected to an RF choke which is DC connected to the RF+DC port and DC blocked to the RF port.	
RF	RF	2.4F	This port is internally DC blocked to the RF+DC and DC ports.	

**Specifications**

**Absolute Maximum Ratings**

Parameter	Maximum Rating	Unit
DC Current	1	A
DC Voltage	50	V
Maximum Storage Temperature	125	°C
Minimum Storage Temperature	-65	°C
RF Power Handling	5	W

**Package Information**

Parameter	Details	Rating
Weight	-	10g
Dimensions	-	11.94 x 11.94 mm

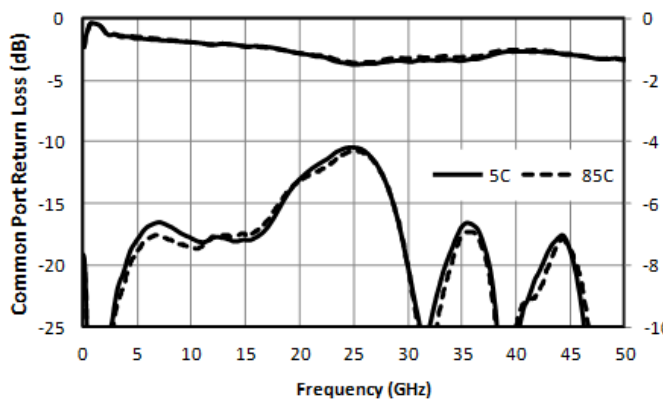
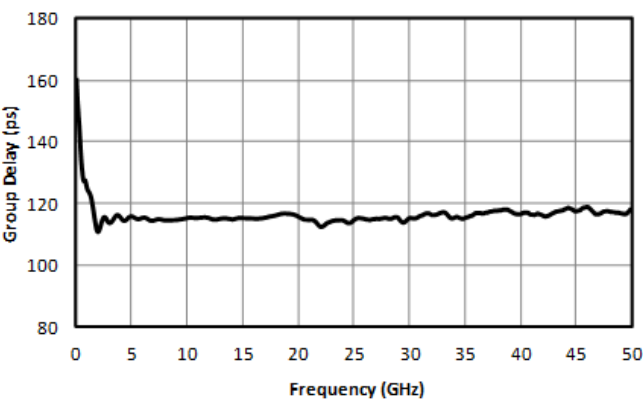
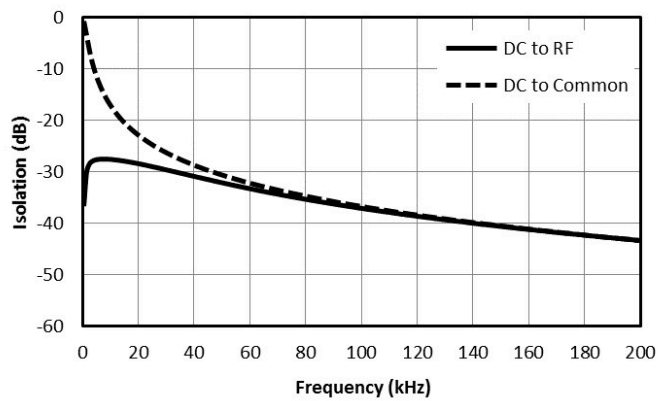
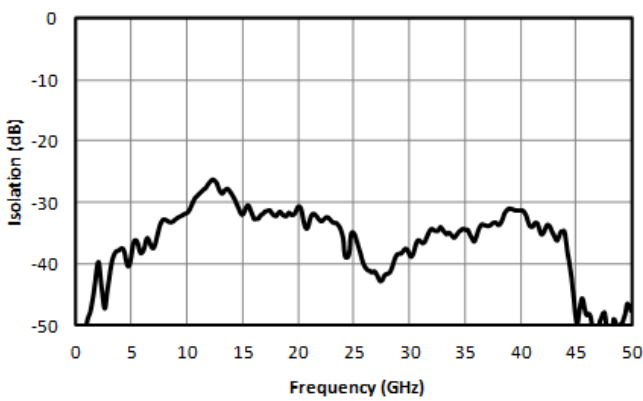
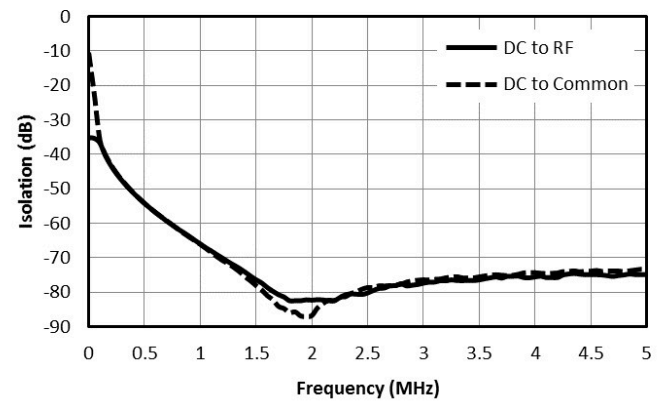
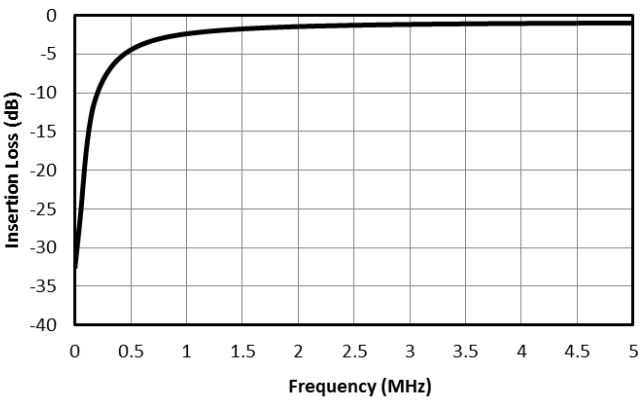
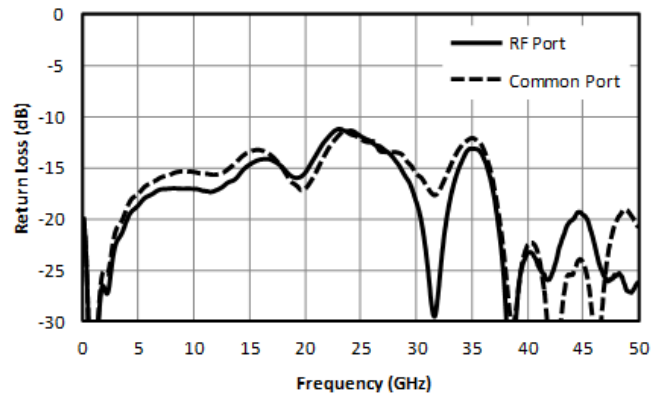
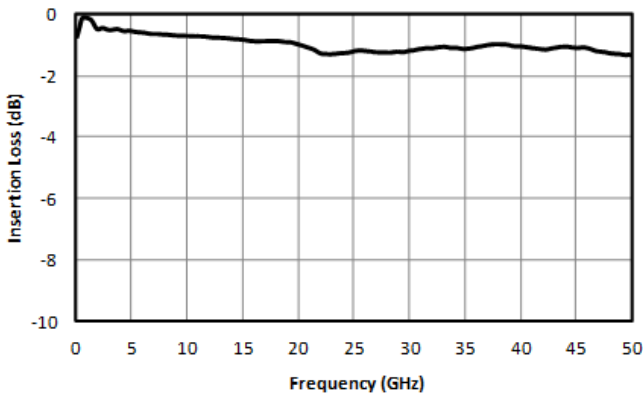
## Electrical Specifications

Specifications guaranteed at +25C, measured in a 50-Ohm system

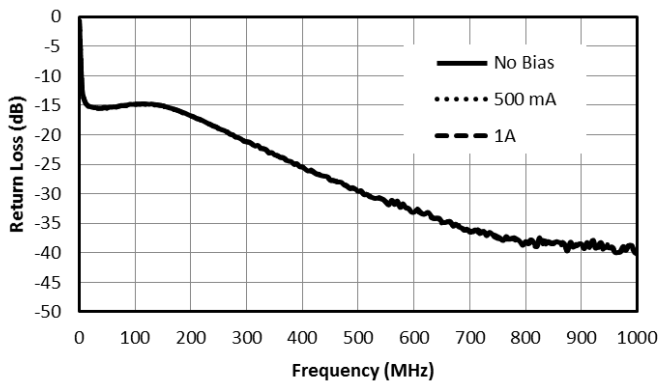
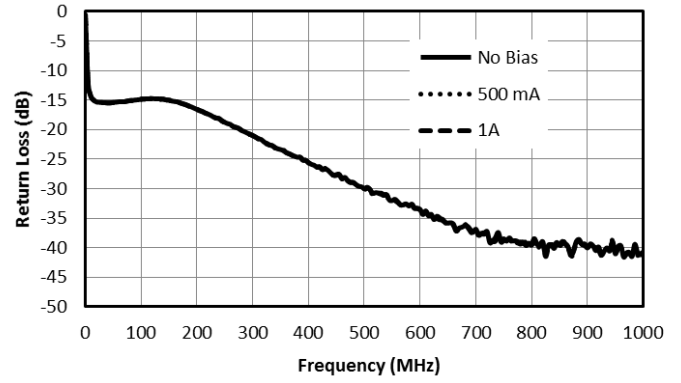
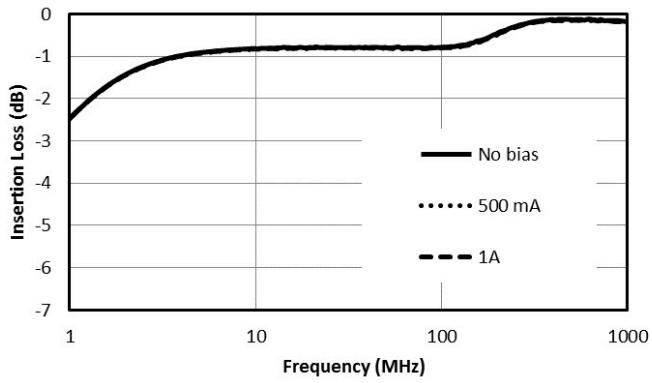
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Capacitance	-	-	-	-	100	-	nF
DC Port Isolation	-	0.0005	1	-	50	-	dB
DC Port Isolation	-	1	50	-	30	-	dB
DC Resistance	-	-	-	-	0.5	-	Ω
Inductance	-	-	-	-	22	-	μH
Insertion Loss	-	0.0005	0.004	-	2	-	dB
Insertion Loss	-	0.004	50	-	1.5	2.5	dB
Return Loss	-	0.0005	50	-	13	-	dB
Risetime/Falltime <sup>1</sup>	-	-	-	-	10	-	ps

<sup>[1]</sup> Specified as 90%/10%. Calculated from  $\tau_{bt}^2 = (\tau_{out}^2 - \tau_{in}^2)$

**Typical Performance**

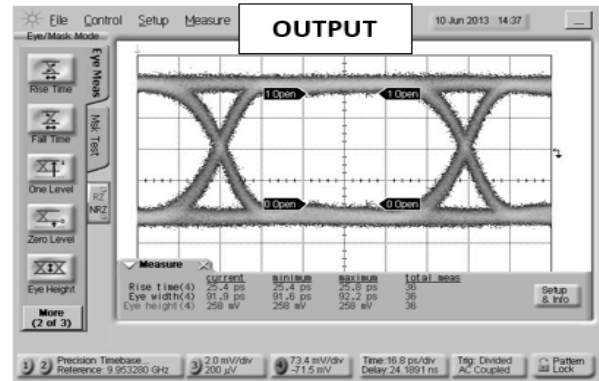
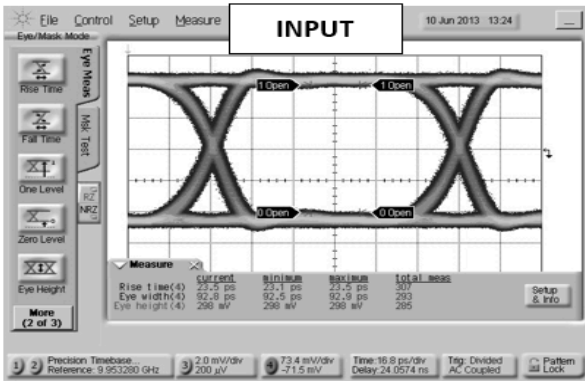


**Typical Performance vs Bias Current at Low frequencies**

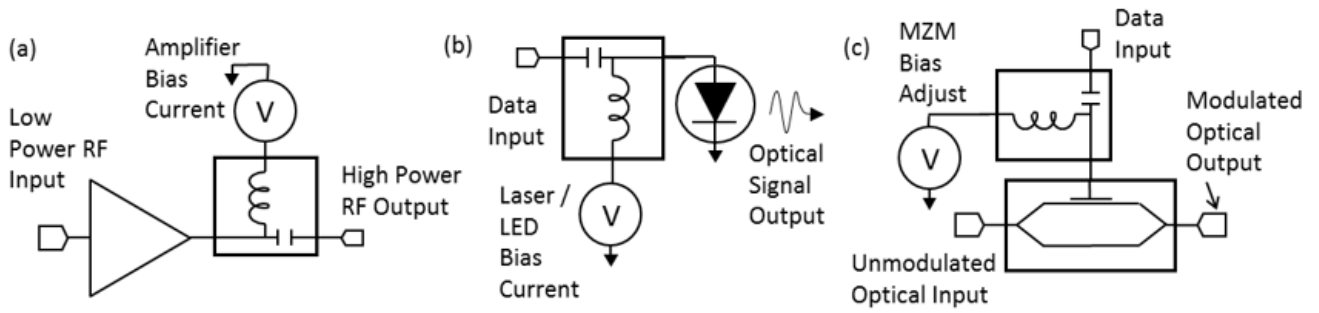


### Time Domain Plots

Oscilloscope measurements of the BTN1-0050 with a 10Gb/s PRBS pattern. Eye diagrams are taken with a  $2^{31}-1$  PRBS input demonstrating minimal eye distortion/closure afforded by the extremely low frequency operation of the bias tee.



**Application Information**

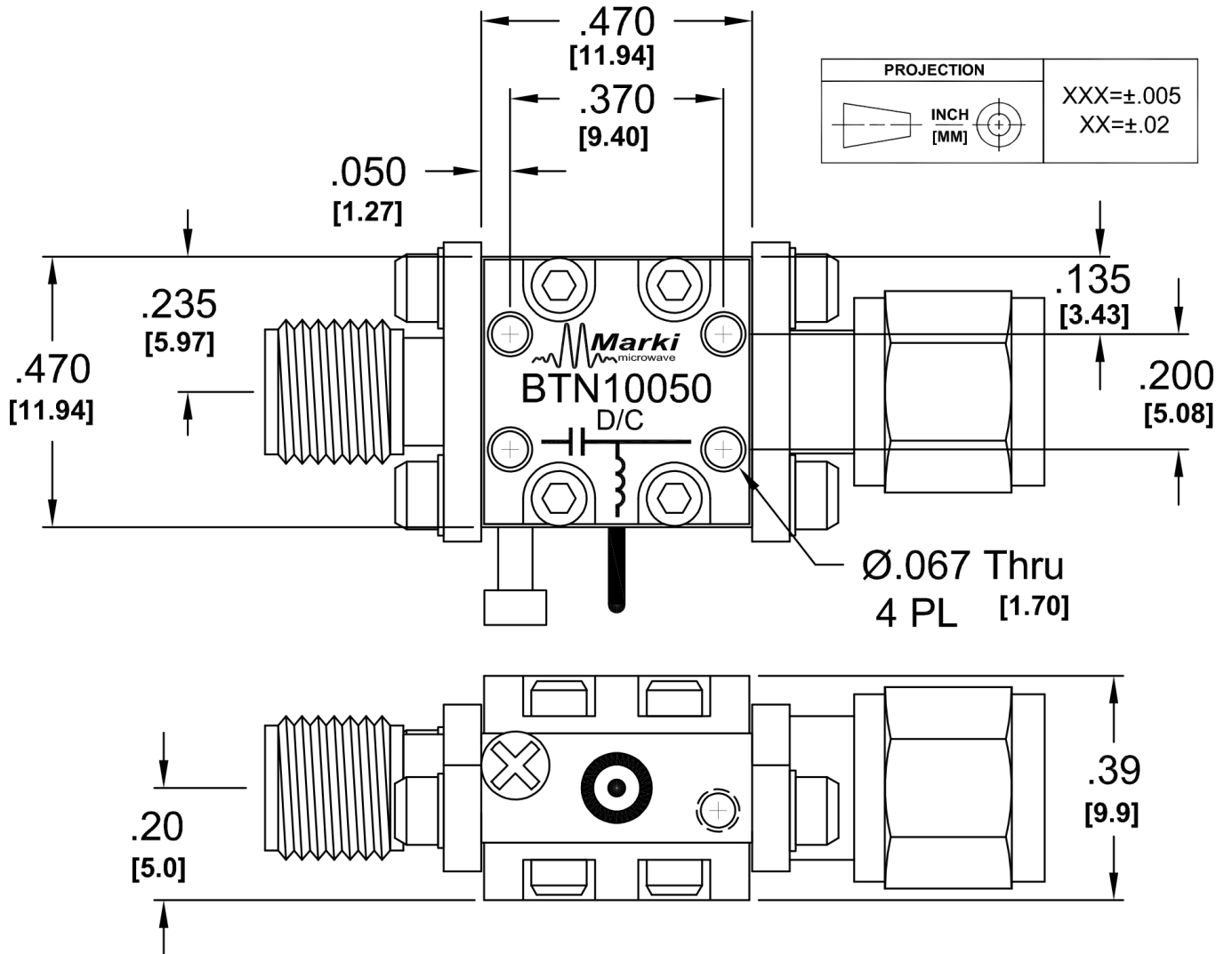


Example Schematics of a) Broadband Microwave Amplifier Biasing, b) Laser/LED Biasing for Data Communication and c) Mach-Zender Modulator Biasing for Data Communication

**Mechanical Data**

**Outline Drawing**

Download : [Outline 2D Drawing](#) | [Outline 3D Drawing](#) | [Outline 3D STP](#)



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