

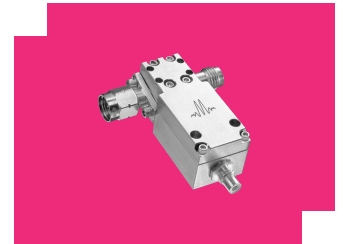
BT-0050

Bias Tee

DEVICE OVERVIEW

General Description

The BT-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 BT-0050 is a superior option in terms of performance, reliability and ease-of-use when compared to cumbersome self-made bias tees employing off-the-shelf conical inductors. The extremely low cutoff and resonance free operation makes the BT-0050 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.



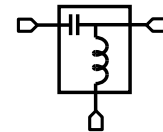
Features

- Broadband: 4 kHz to 50 GHz
- Low Insertion Loss
- 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
BT-0050	Bias Tee	<u>Standard</u>	RoHS REACH	Released	EAR99

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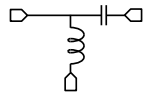
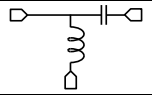
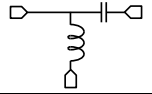
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Revision History

Revision Code	Revision Date	Comment
-	2010-10-01	Datasheet Initial Release
A	2019-02-01	Corrected Low Frequency plots
B	2020-04-01	Performance vs Bias current plots
C	2020-06-01	Updated Outline Drawing

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	0.5	A
DC Voltage	30	V
Maximum Storage Temperature	125	°C
Minimum Storage Temperature	-65	°C
RF Power Handling	1	W

Package Information

Parameter	Details	Rating
Weight	-	23.5g
Dimensions	-	15.24 x 36.07 mm

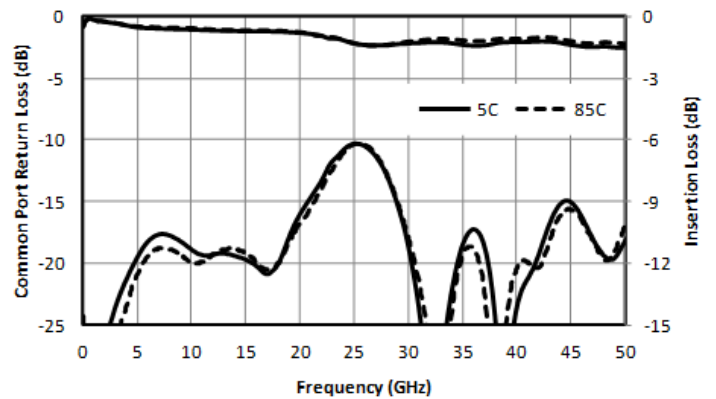
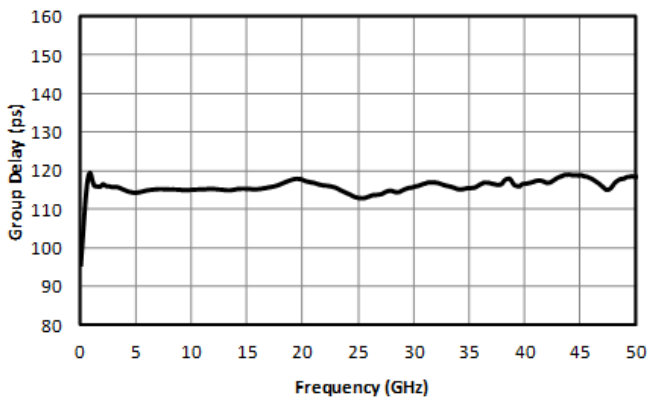
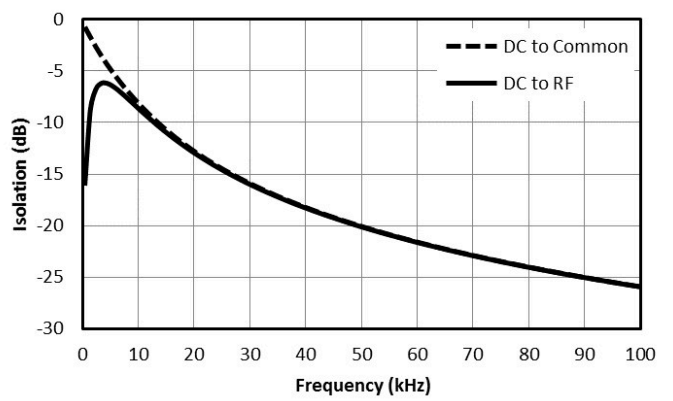
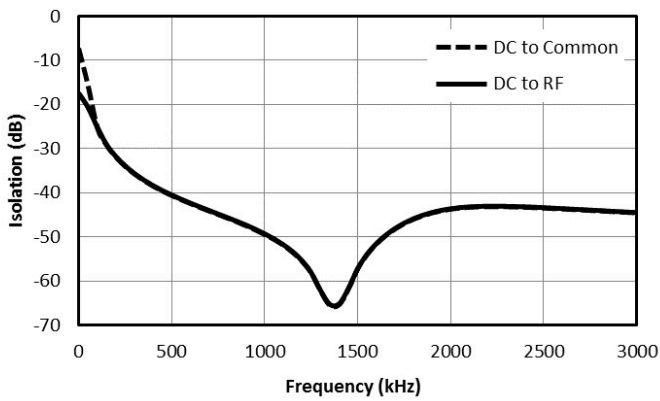
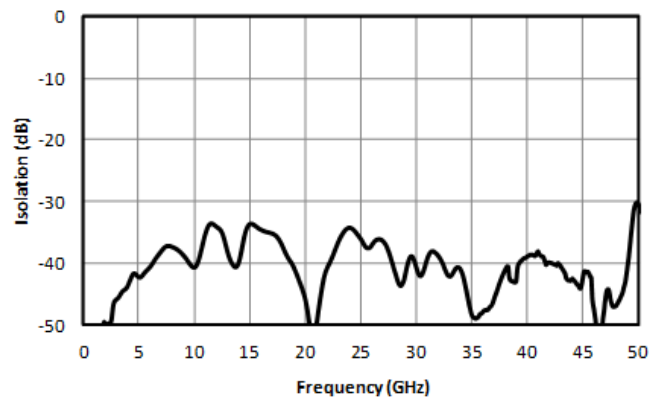
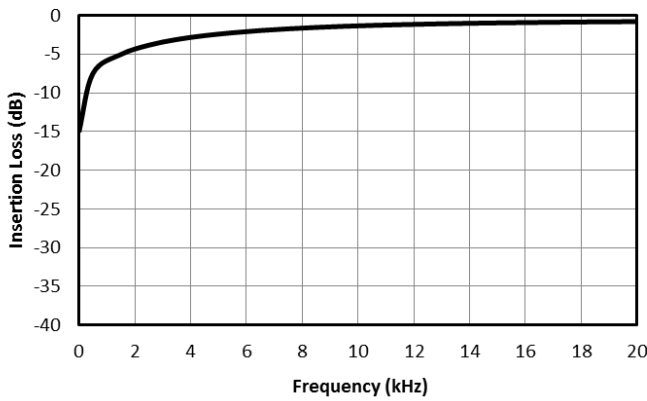
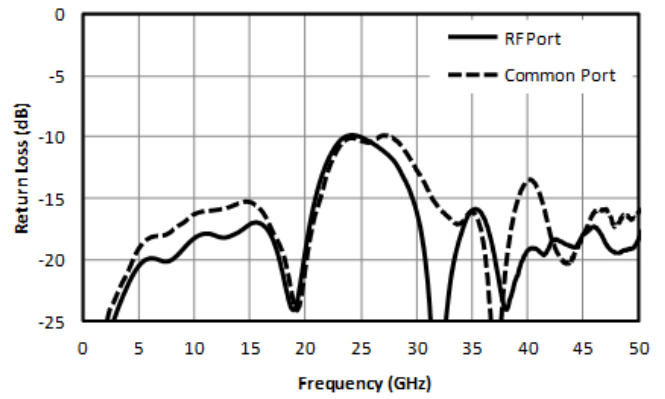
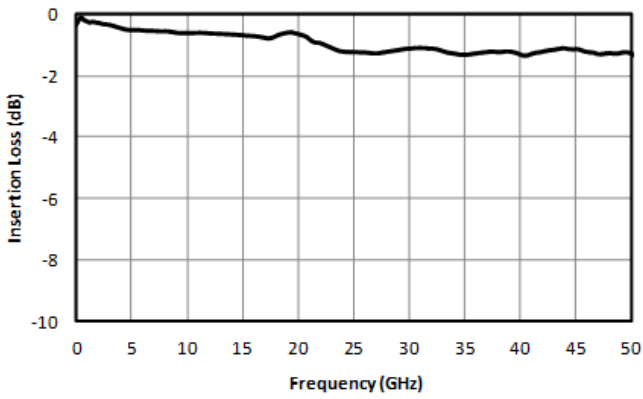
Electrical Specifications

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

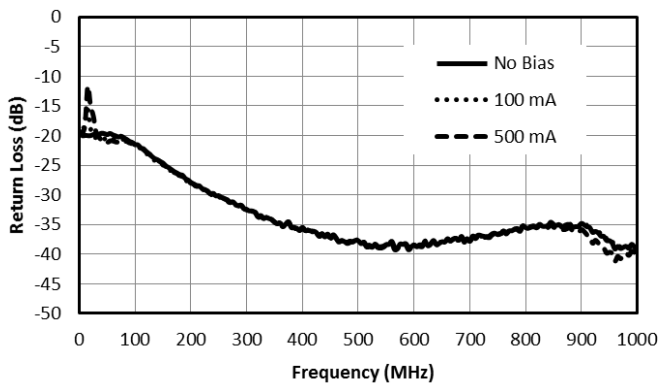
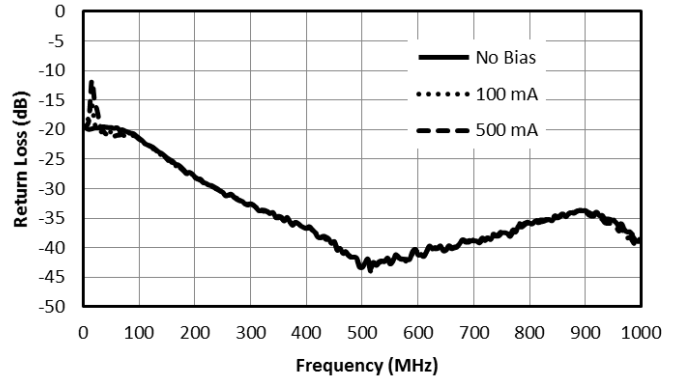
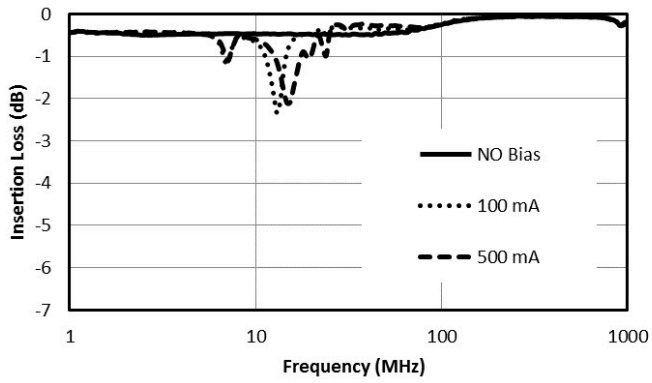
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Capacitance	-	0.000004	50	-	1.1	-	μF
DC Port Isolation	-	0.000004	50	-	30	-	dB
DC Resistance	-	0.000004	50	-	3	-	Ω
Inductance	-	0.000004	50	-	1000	-	μH
Insertion Loss	-	0.000004	50	-	1.8	2.5	dB
Return Loss	-	0.000004	50	-	12	-	dB
Risetime/Falltime ¹	-	0.000004	50	-	10	-	ps

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

Typical Performance Plots

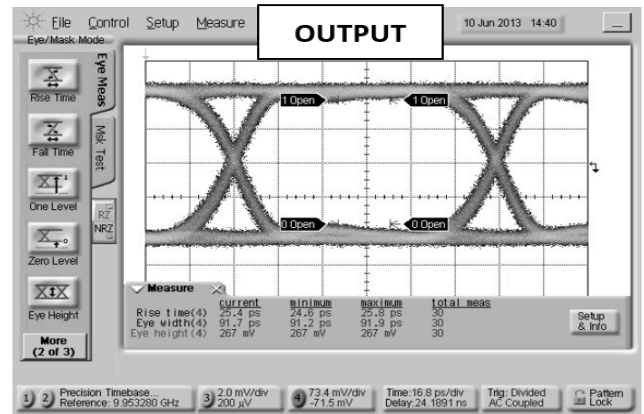
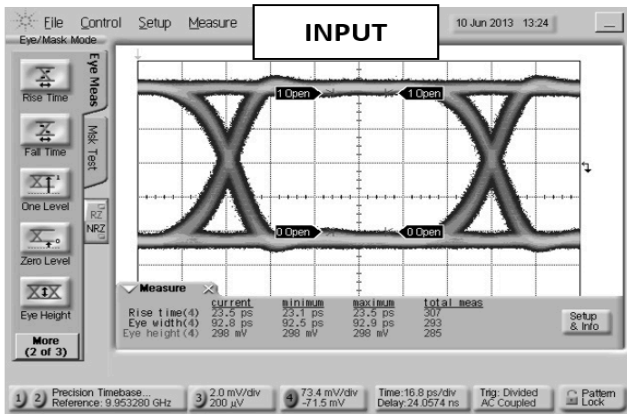


Typical Performance vs Bias Current at Low frequencies

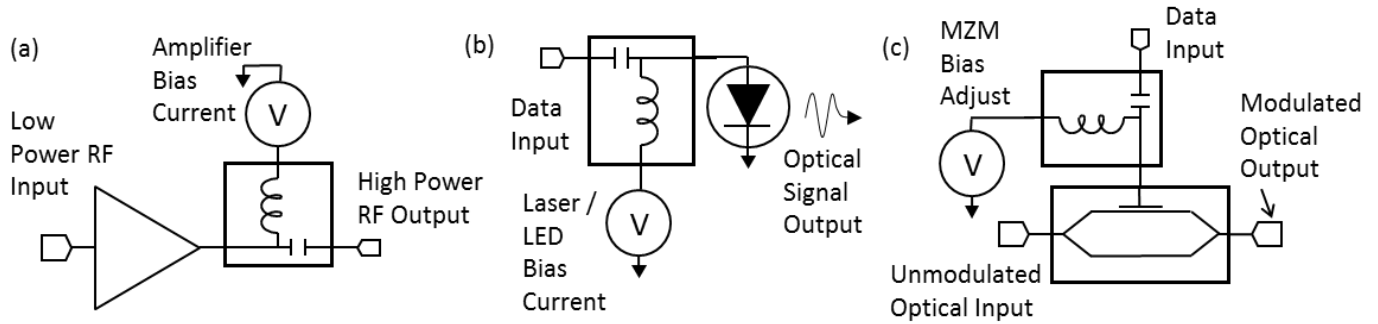


Time Domain Performance Plots

Oscilloscope measurements of the BT-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

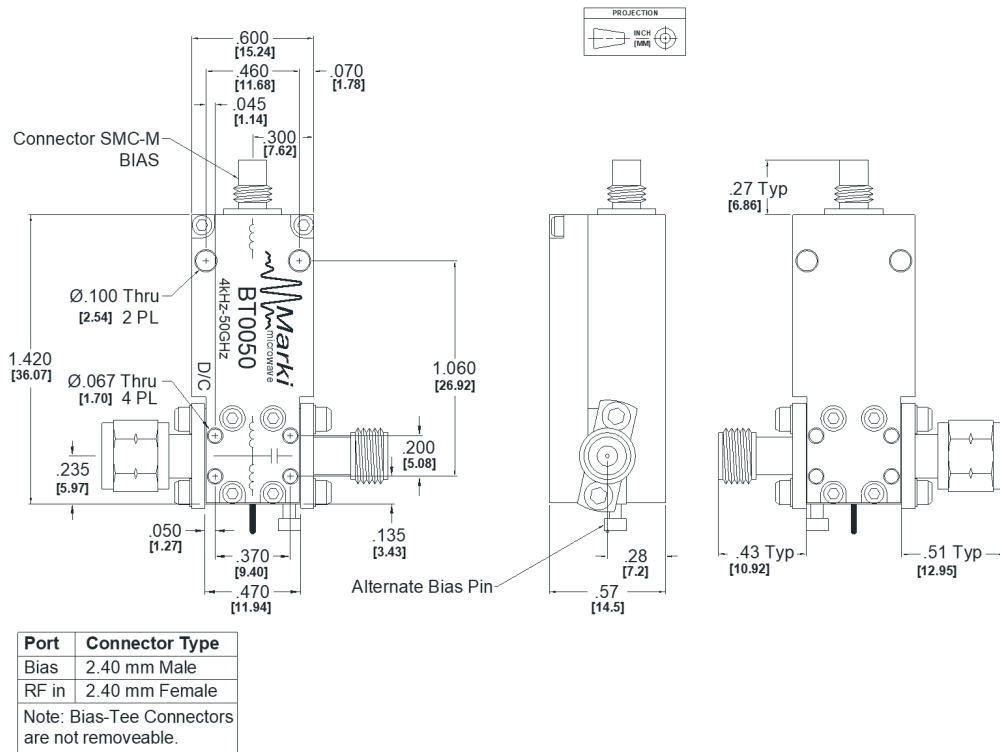


Example Schematics of a) Broadband Microwave Amplifier Biasing, b) Laser/LED Biasing for Data Communication and c) Mach-Zehnder Modulator Biasing for Data Communication

Mechanical Data

Outline Drawing

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



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