

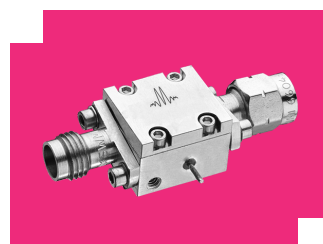
BT-0018

Bias Tee

DEVICE OVERVIEW

General Description

The BT-0018 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-0018 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-0018 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.



[Download s-parameters here](#)

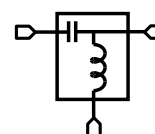
Features

- Broadband: 40 kHz to 18 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-0018	Bias Tee	Standard	REACH RoHS	Released	EAR99

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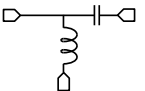
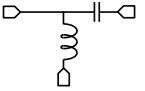
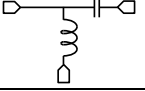
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Revision History

Revision Code	Revision Date	Comment
B	2020-10-01	Performance vs Bias current plots.

Port Configuration and Functions

Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
Common	RF+DC	SMAM	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	SMAF	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
Dimensions	-	11.94 x 11.94 mm

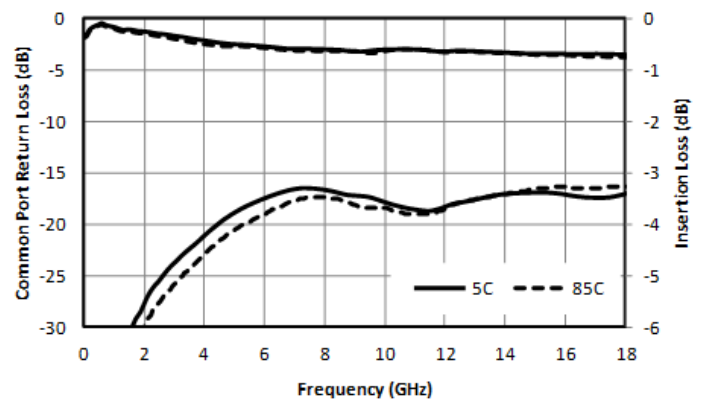
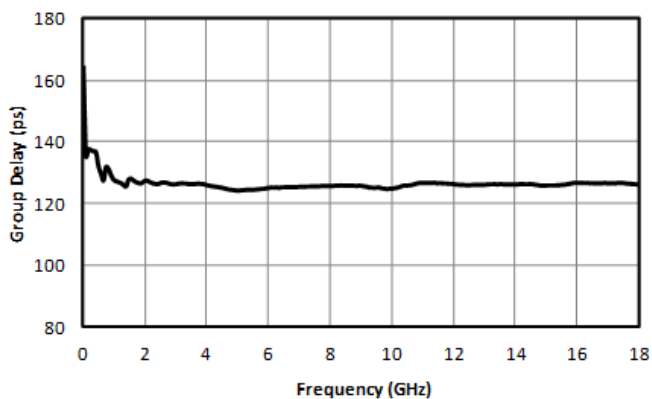
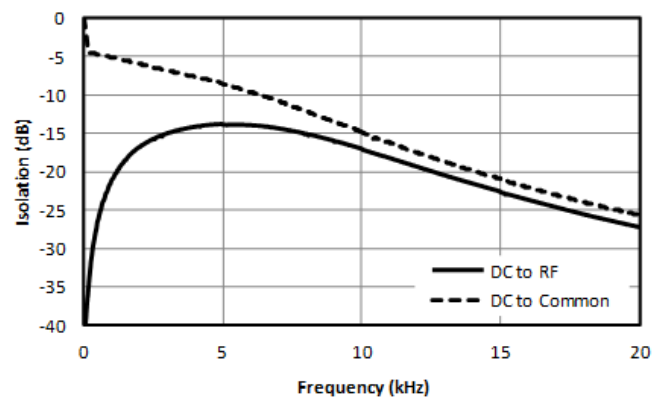
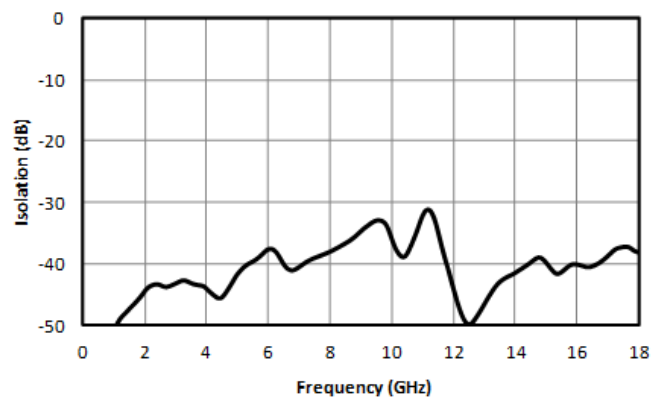
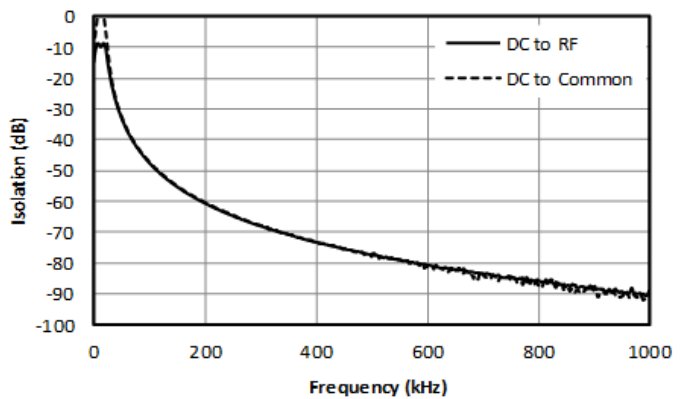
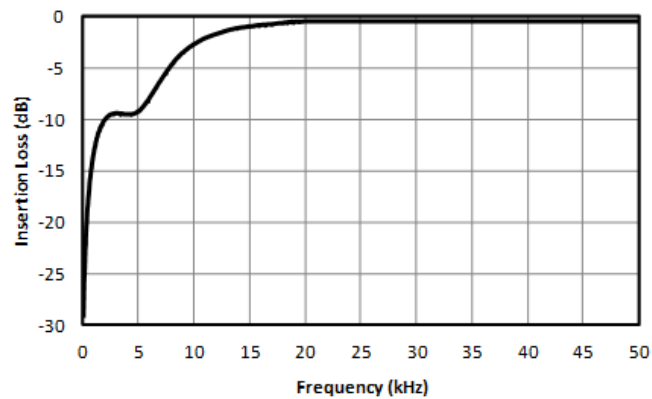
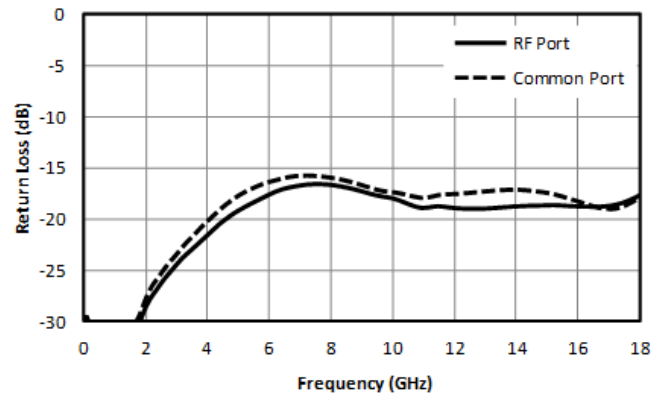
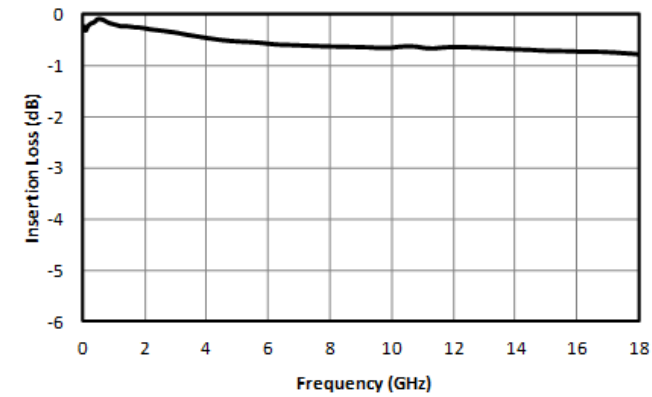
Electrical Specifications

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

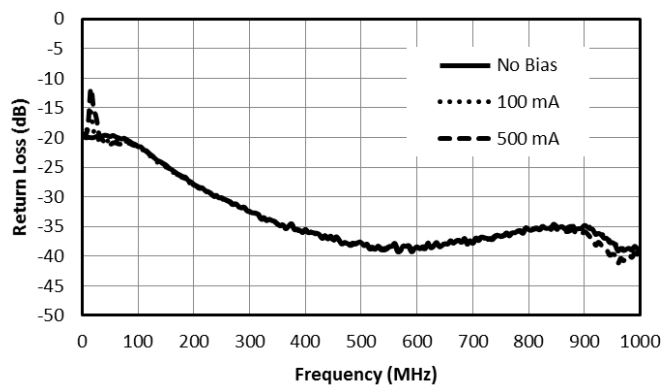
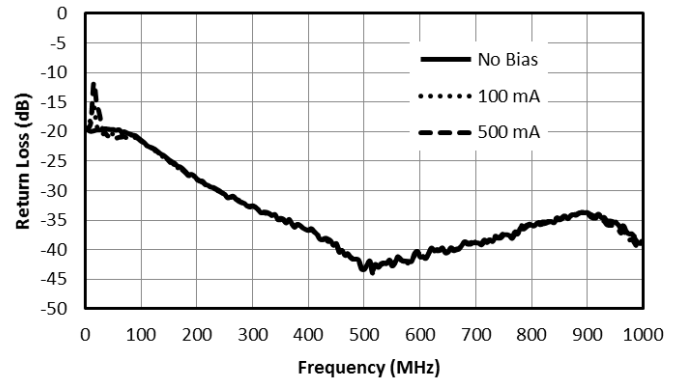
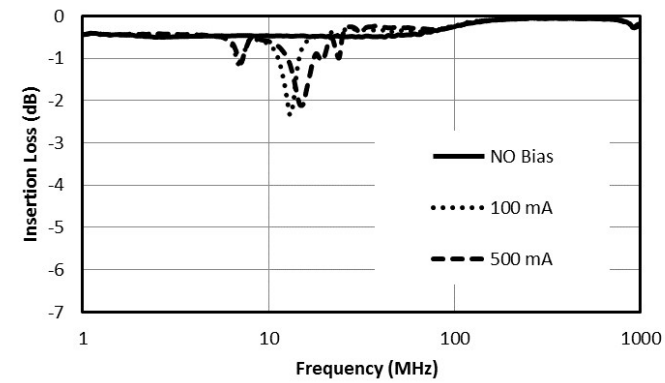
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
DC Port Isolation	-	0.00004	18	-	35	-	dB
DC Resistance	-	0.00004	18	-	6	-	Ω
Insertion Loss	-	0.00004	18	-	0.6	1.5	dB
Return Loss	-	0.00004	18	-	16	-	dB
Risetime/Falltime ¹	-	0.00004	18	-	13	-	ps

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

Typical Performance Plots

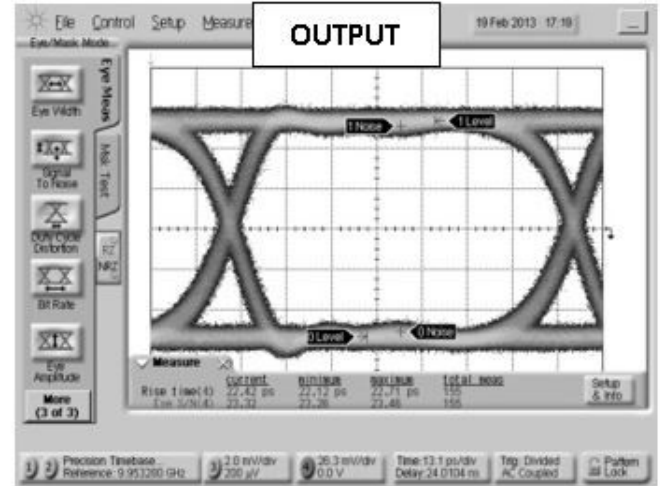
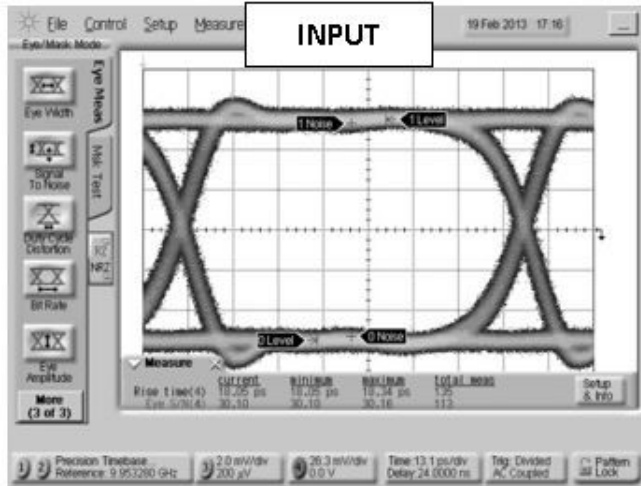


Typical Performance vs Bias Current at Low Frequencies Plots

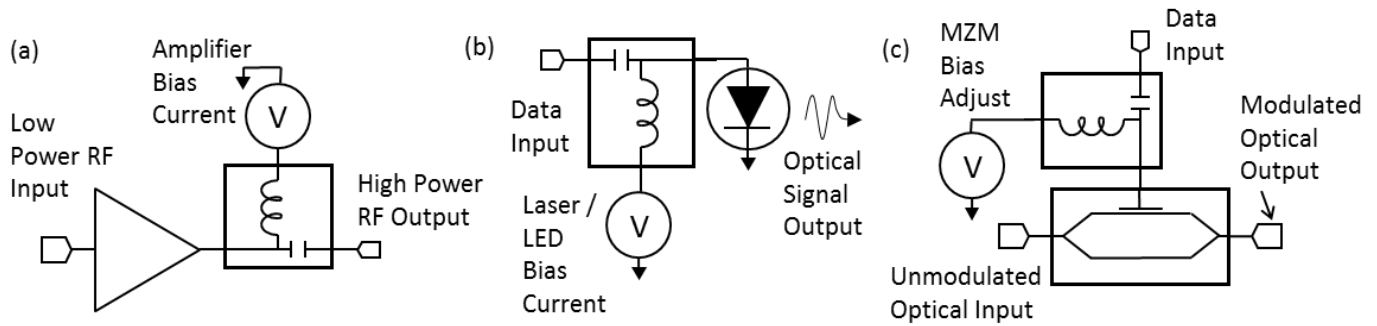


Time Domain Performance Plots

Oscilloscope measurements of the BT-0018 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

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