

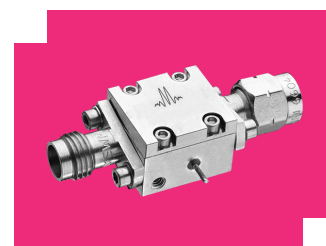
BTN-0040

Bias Tee

DEVICE OVERVIEW

General Description

The BTN-0040 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 BTN-0040 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 BTN-0040 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.



[Download s-parameters here](#)

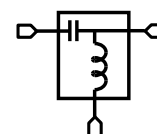
Features

- Broadband: 40 kHz to 40 GHz
- Low Insertion Loss
- Non-Resonant
- Compact Size

Applications

- Test and Measurement Equipment

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
BTN-0040	Bias Tee	-	-	RoHS	Released	EAR99

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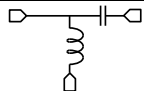
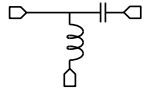
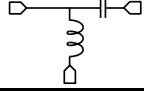
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Revision History

Revision Code	Revision Date	Comment
B	2020-03-01	Performance vs Bias Current plots

Port Configuration and Functions

Port Functions

Port	Function	Description	Equivalent Circuit for Package
Common	RF+DC	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	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
RF Power	1	W

Package Information

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

Electrical Specifications

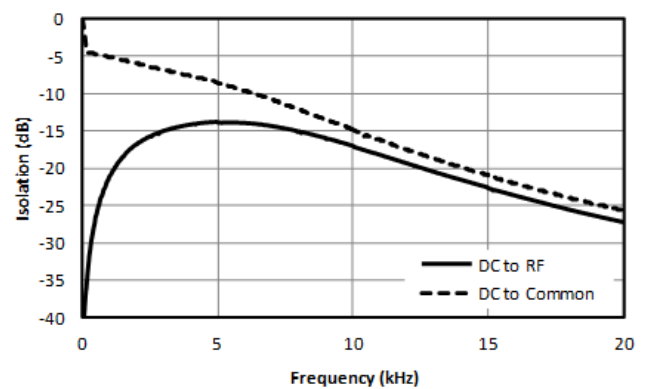
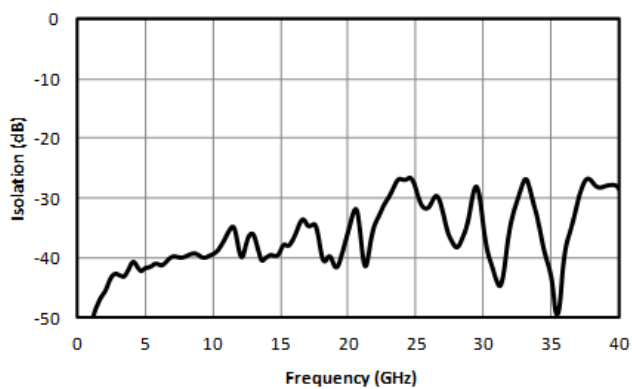
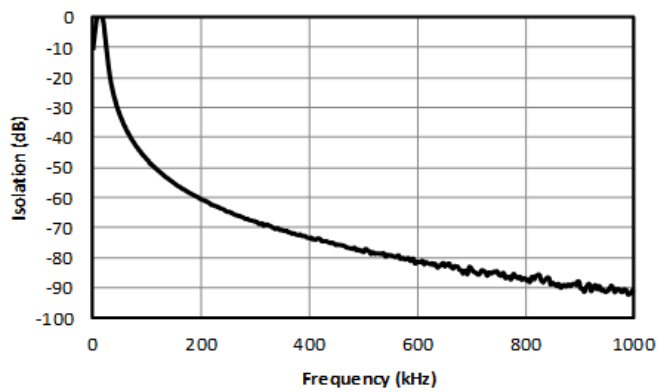
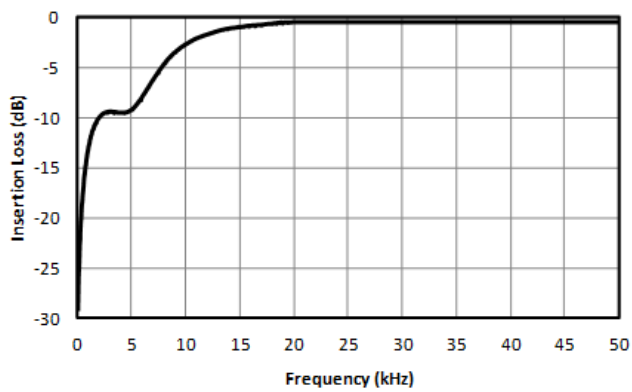
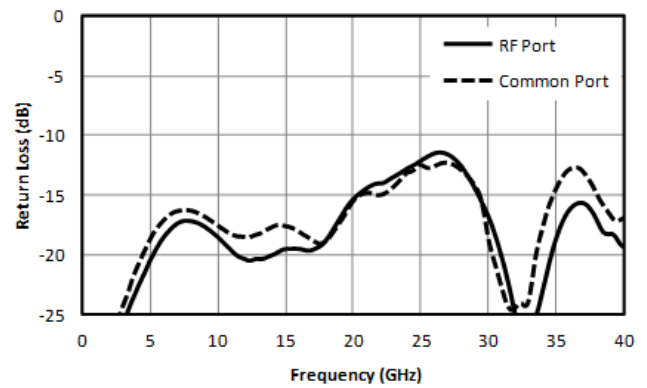
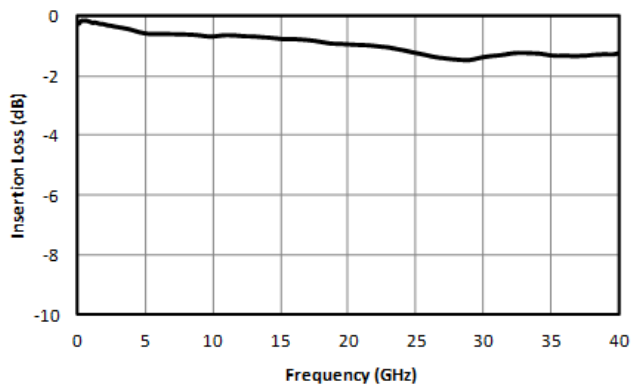
Specifications guaranteed from -55 to +100°C, measured in a 50Ω system.

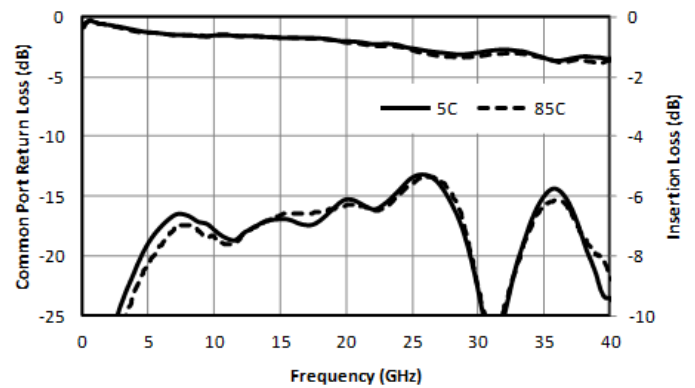
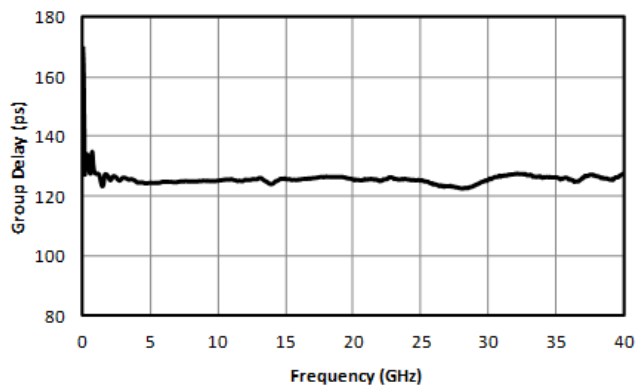
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Capacitance	-	0.00004	40	-	1.1	-	μF
DC Port Isolation	-	0.00004	40	-	30	-	dB
DC Resistance	-	0.00004	40	-	6	-	Ω
Inductance	-	0.00004	40	-	1000	-	μH
Insertion Loss ¹	-	0.00004	40	-	1.5	2.2	dB
Return Loss	-	0.00004	40	-	14	-	dB
Risetime/Falltime ₂	-	0.00004	40	-	11	-	ps

^[1] Insertion loss is specified without DC current applied. DC current limit is destructive limit, application of lower current levels will affect RF performance.

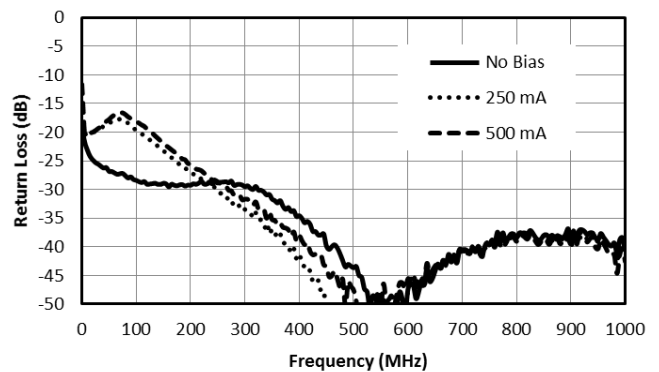
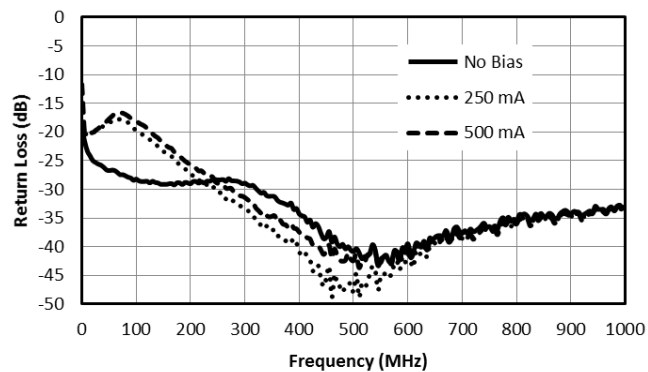
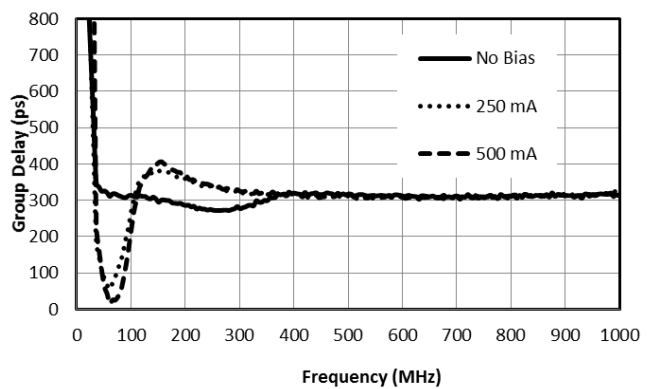
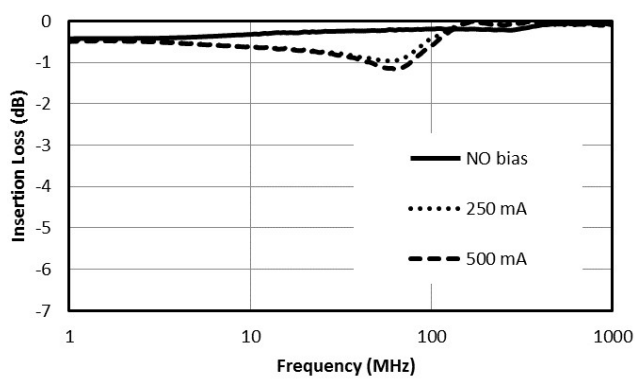
^[2] Specified as 90%/10%. Calculated from $\tau_{bt}^2 = (\tau_{out}^2 - \tau_{in}^2)$

Typical Performance Plots

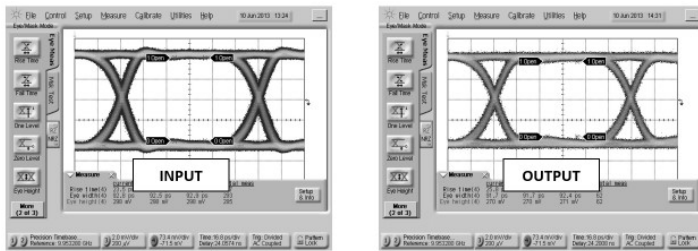




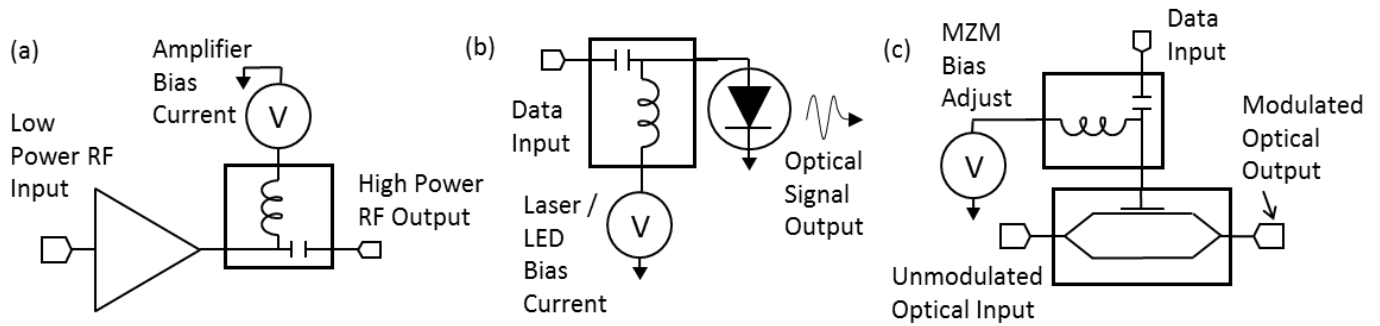
Typical Performance vs Bias Current at Low frequencies



Time Domain Performance Plot



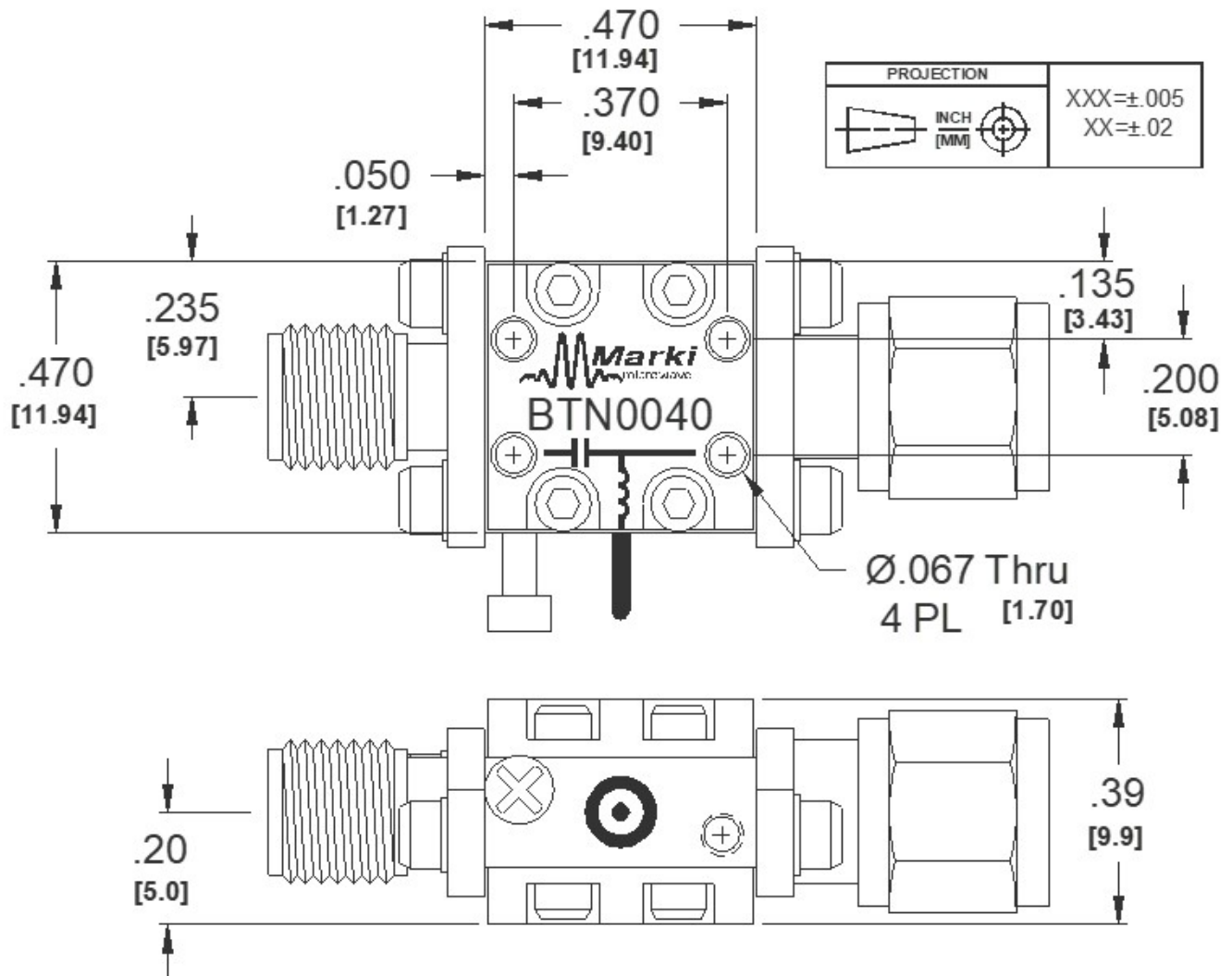
Application Information



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



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