HIGH POWER BIAS TEE

BTN1-0040

The BTN1-0040 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 BTN1-0040 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 BTN1-0040 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.

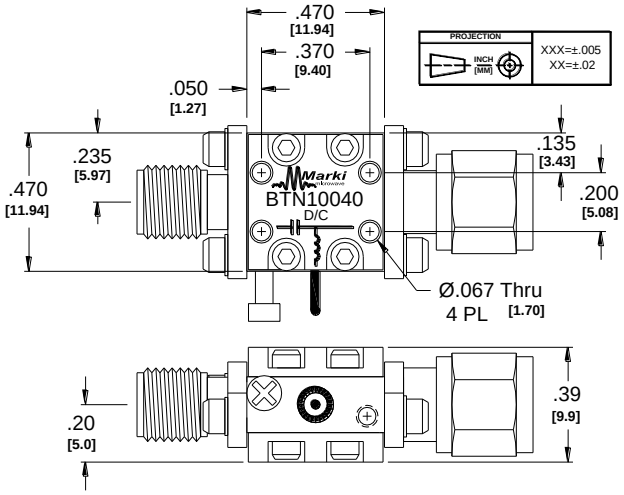
Features

- Broadband: 500 kHz to 40 GHz
- Low Insertion Loss
- High Power
- Non-Resonant
- Compact Size

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

Parameter	Frequency Range	Min	Typ	Max
Insertion Loss (dB)	4 MHz-40 GHz		1.5	2.2
	500 kHz-4 MHz		2	
DC Port Isolation (dB)	500 kHz -1 GHz		50	
	1-40 GHz		30	
Return Loss (dB)	500 kHz-40 GHz		13	
RF Power (W)				10
DC Current (A)				1
DC Voltage (V)				50
DC Resistance (Ω)			0.5	
Risetime /Falltime (ps)[1]			10	

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



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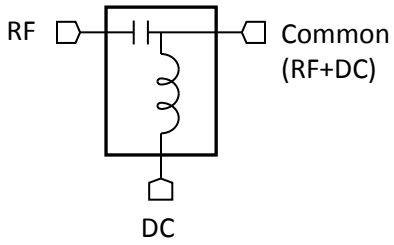
Schematic



Application Examples

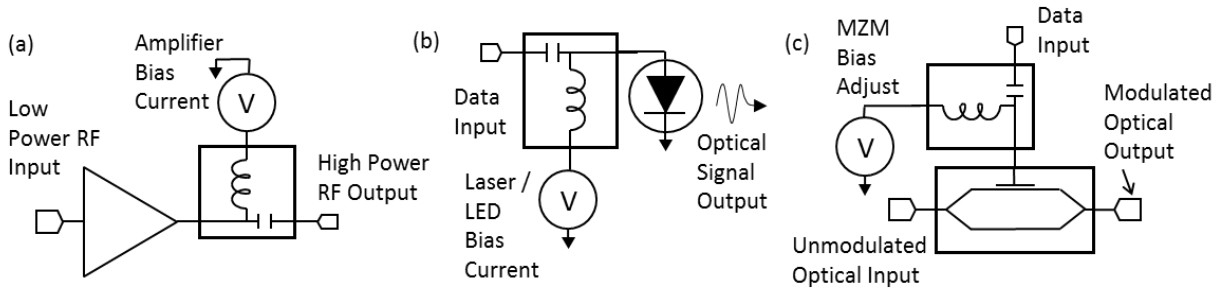


Fig. 1. Example Schematics of a) Broadband Microwave Amplifier Biasing, b) Laser/LED Biasing for Data Communication and c) Mach-Zender Modulator Biasing for Data Communication

Typical Performance

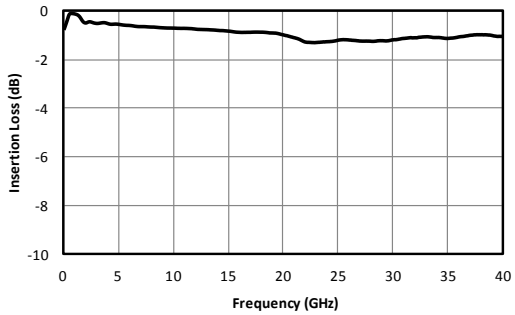


Fig. 2. RF insertion loss.

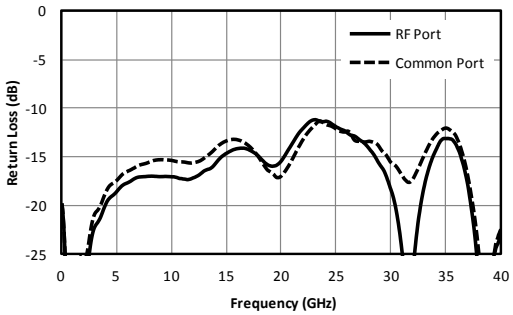


Fig. 3. Return loss.

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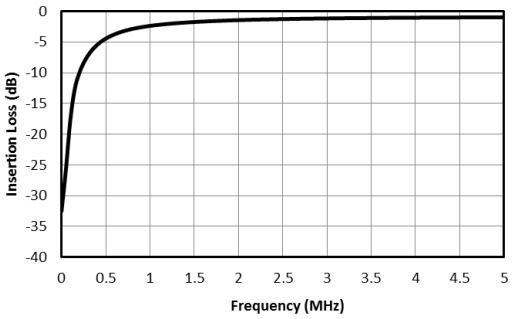


Fig. 4. Low frequency RF response.

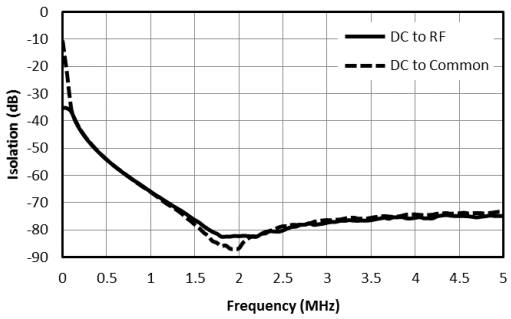


Fig. 5. Low frequency

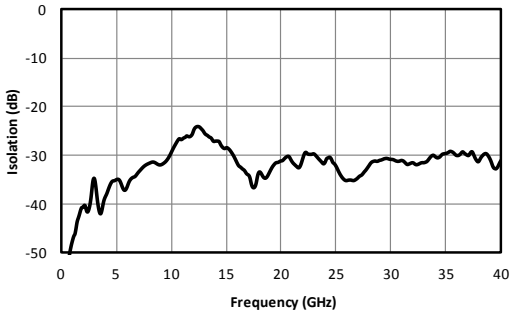
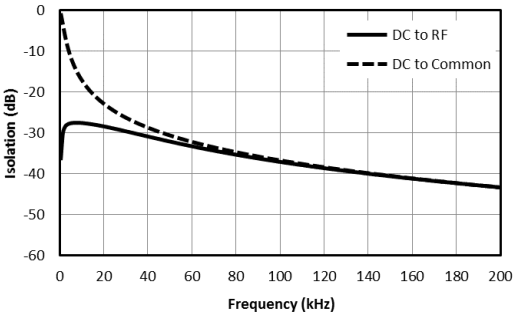


Fig. 6. DC-RF isolation.



isolation.

Fig. 7. Near DC isolation

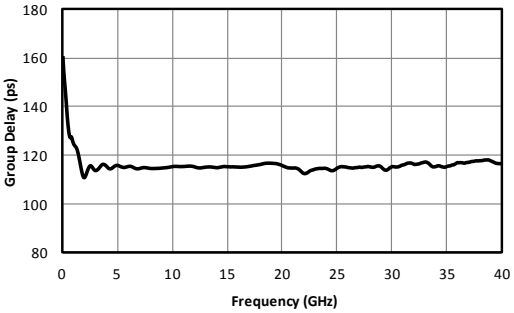


Fig. 8. Group delay.

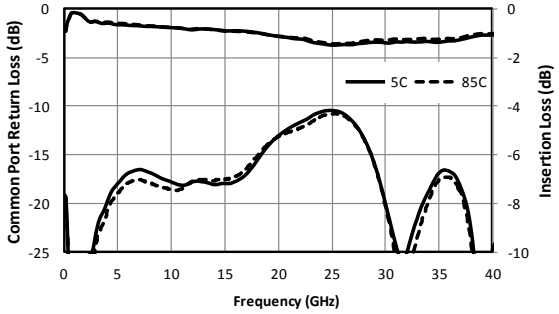


Fig. 9. Performance over temperature

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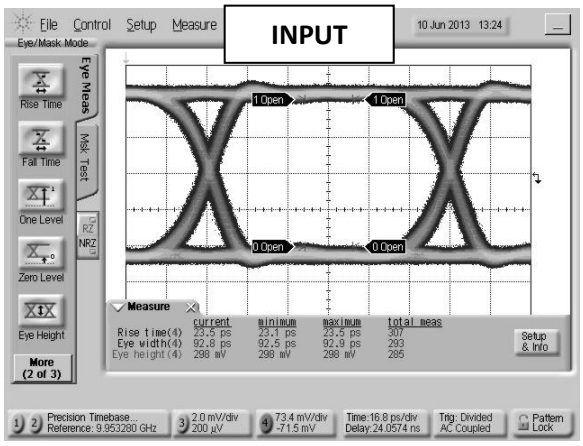

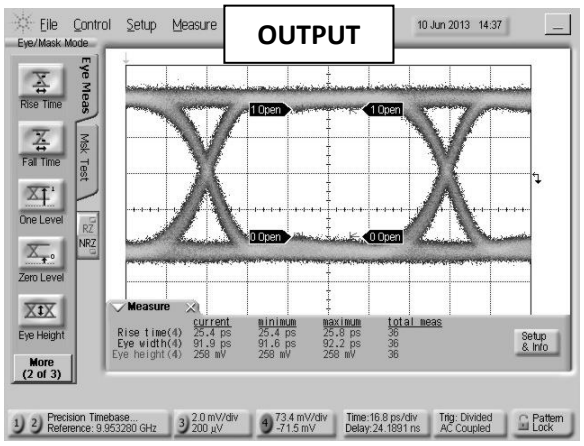

Fig. 7. Oscilloscope measurements of the BTN1-0040 with a 10Gb/s PRBS pattern. Eye diagrams are taken with a 2^{31}-1 PRBS input demonstrating minimal eye distortion/closure afforded by the extremely low frequency operation of the bias tee.

Model Number	Description
BTN1-0040	500 kHz to 40 GHz High Power Bias Tee with 2.92 mm connectors[1]

[1]Consult factory for other connector options.

Revision History

Revision code	Revision Date	Comment
-	June 2013	Datasheet initial Release
A	February 2019	Corrected Low Frequency plots