LEAD-FREE / RoHS-COMPLIANT

HIGH POWER BIAS TEE

BTN1-0026

The BTN1-0026 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 BTN1-0026 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 BTN1-0026 suitable for biasing amplifiers, lasers, and modulators driven with high frequency data patterns.

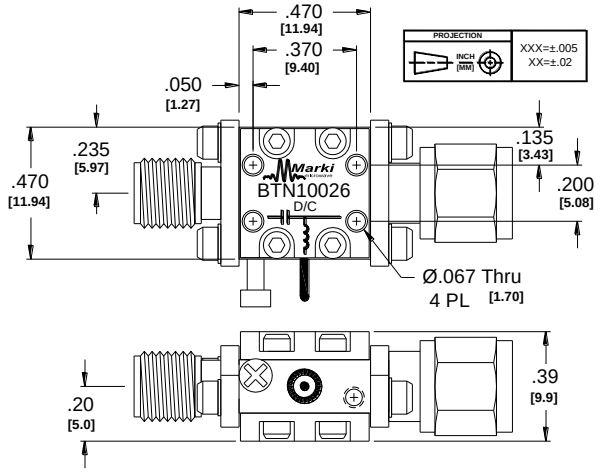
Features

- Broadband: 500 kHz to 26.5 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-26.5 GHz		1	2
	500 kHz-4 MHz		2	
DC Port Isolation (dB)	500 kHz -1 GHz		50	
	1-26.5 GHz		30	
Return Loss (dB)	500 kHz-26.5 GHz		14	
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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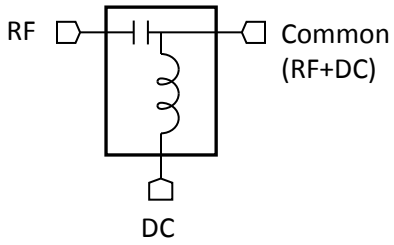
Schematic



Application Examples

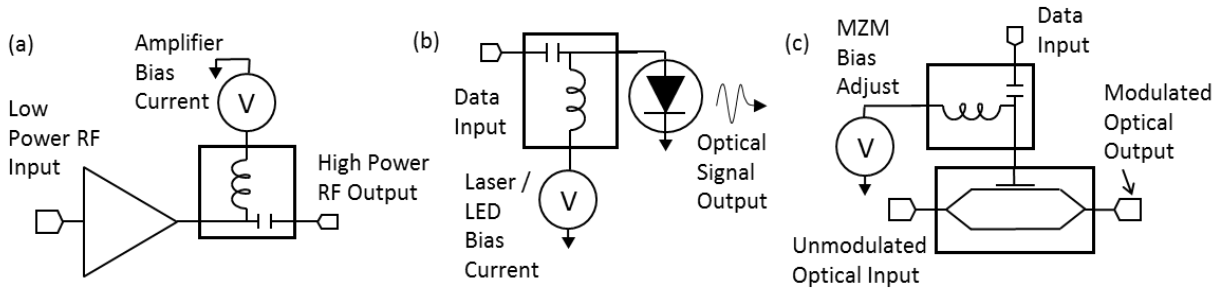


Fig. 1. Example Schematics of a) Broadband Microwave Amplifier Biasing, b) Laser/LED Biasing for Data Communication and c) Mach-Zender Modulator Biasing for Data Communication

Typical Performance

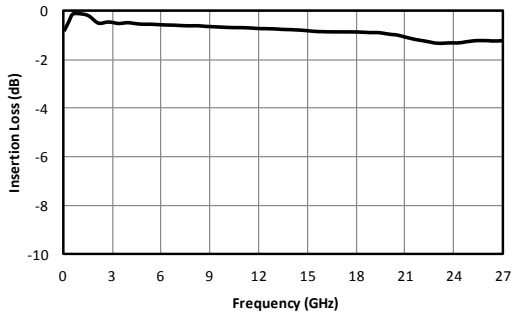


Fig. 2. RF insertion loss.

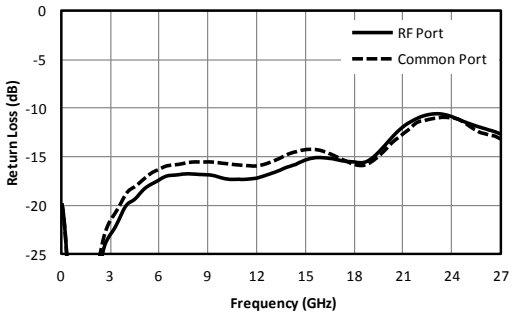


Fig. 3. Return loss.

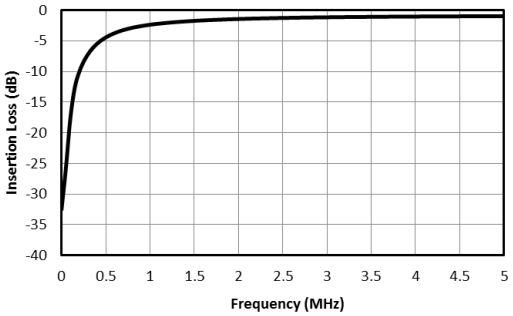


Fig. 4. Low frequency RF response.

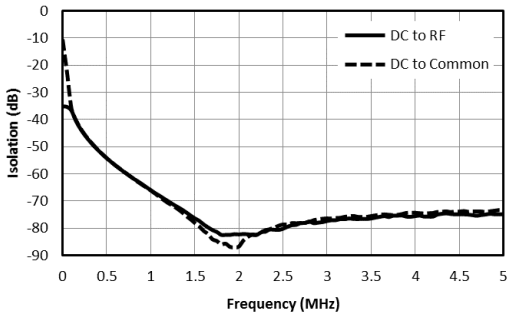


Fig. 5. Low frequency isolation.

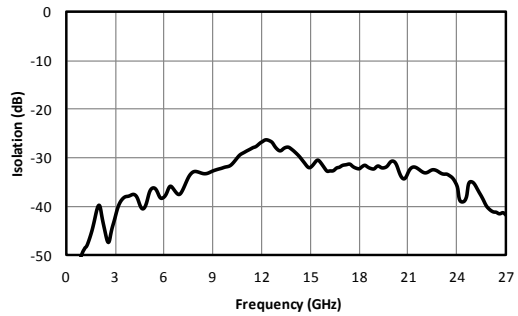


Fig. 6. DC-RF isolation.

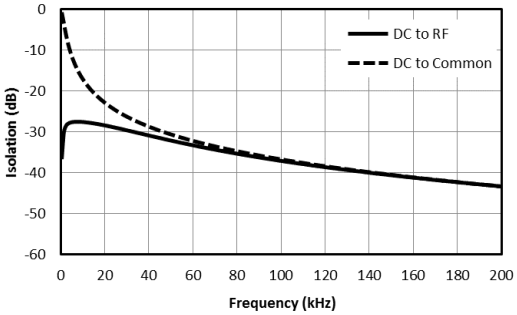


Fig. 7. Near DC isolation

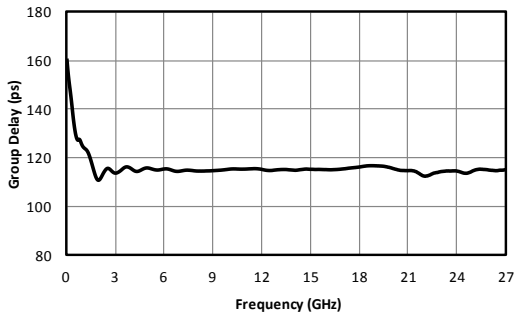


Fig. 8. Group delay.

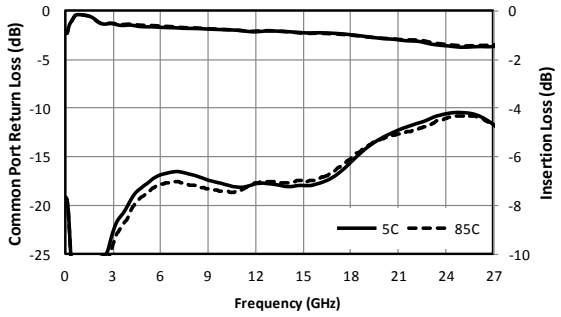


Fig. 9. Performance over temperature

Typical Performance vs Bias Current at Low frequencies

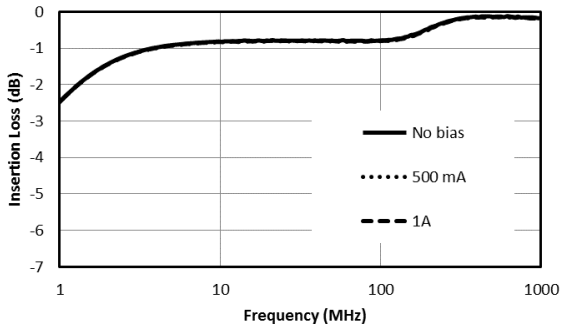


Fig. 10. Insertion Loss vs Bias Current.

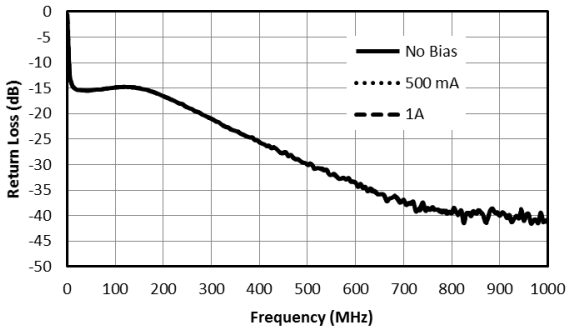


Fig. 11. Common Return Loss vs Bias Current.

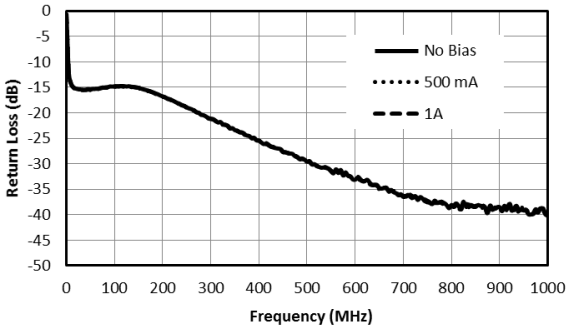
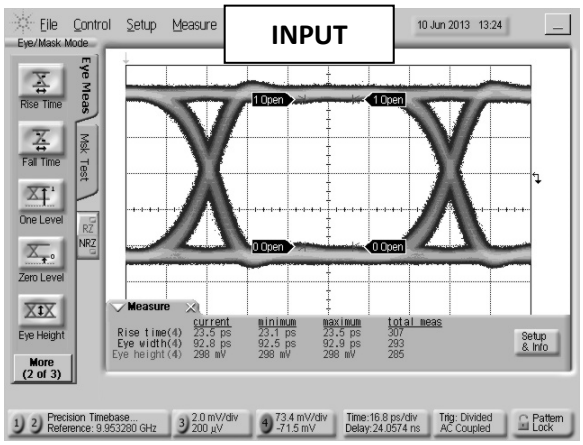


Fig. 12. RF Return Loss vs Bias Current.



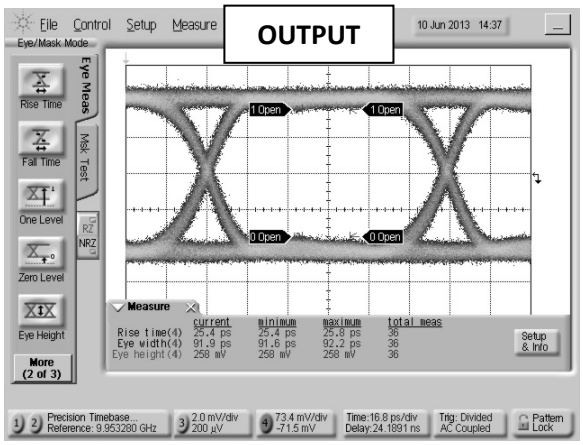


Fig. 13. Oscilloscope measurements of the BTN1-0026 with a 10Gb/s PRBS pattern. Eye diagrams are taken with a 2^{31}-1 PRBS input demonstrating minimal eye distortion/closure afforded by the extremely low frequency operation of the bias tee.

Model Number	Description
BTN1-0026	500 kHz to 26.5 GHz High Power Bias Tee with SMA 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
B	October 2020	RoHS Assembly