

## LEAD-FREE / RoHS-COMPLIANT

### BIAS TEE

### BTN-0040

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.



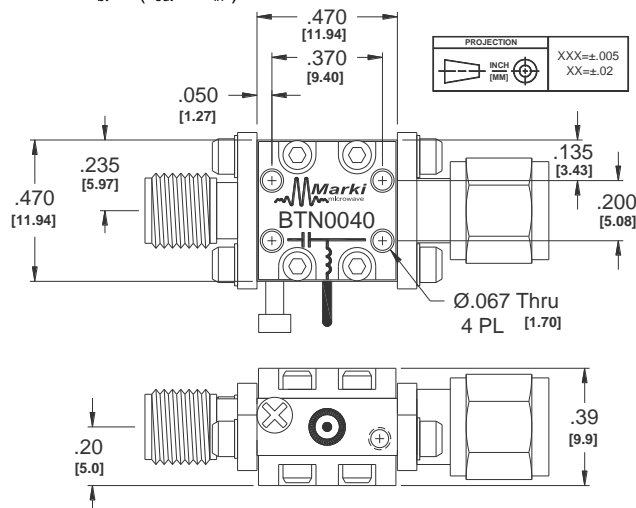
#### Features

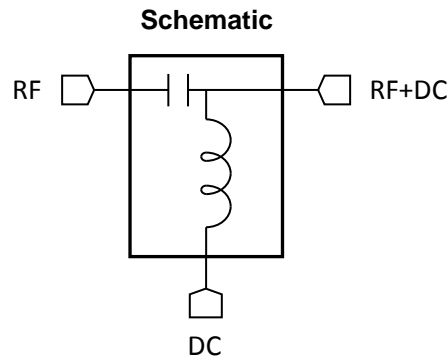
- Broadband: 40 kHz to 40 GHz
- Low Insertion Loss
- Non-Resonant
- Compact Size

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

| Parameter                           | Frequency Range | Min | Typ  | Max |
|-------------------------------------|-----------------|-----|------|-----|
| Insertion Loss (dB)                 | 40 kHz-40 GHz   |     | 1.5  | 2.2 |
| DC Port Isolation (dB)              |                 |     | 30   |     |
| Return Loss (dB)                    |                 |     | 14   |     |
| RF Power (W)                        |                 |     |      | 1   |
| DC Current (mA)                     |                 |     |      | 500 |
| DC Voltage (V)                      |                 |     |      | 30  |
| DC Resistance (Ω)                   |                 |     | 6    |     |
| Inductance (uH)                     |                 |     | 1000 |     |
| Capacitance (uF)                    |                 |     | 1.1  |     |
| Weight (g)                          |                 |     | 10   |     |
| Risetime/Falltime (ps) <sup>1</sup> |                 |     | 11   |     |

<sup>1</sup>Specified as 90%/10%. Calculated from  $\tau_{bf}^2 = (\tau_{out}^2 - \tau_{in}^2)$





**Application Examples**

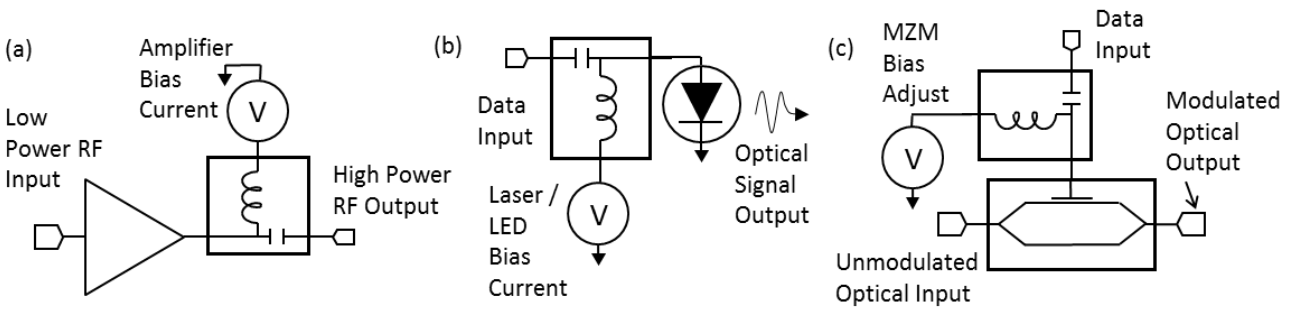


Fig. 1. Example Schematics of a) Broadband Microwave Amplifier Biasing, b) Laser/LED Biasing for Data Communication and c) Mach-Zender Modulator Biasing for Data Communication

**Typical Performance**

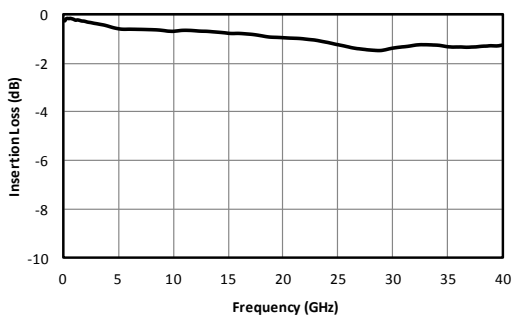


Fig. 2. RF insertion loss.

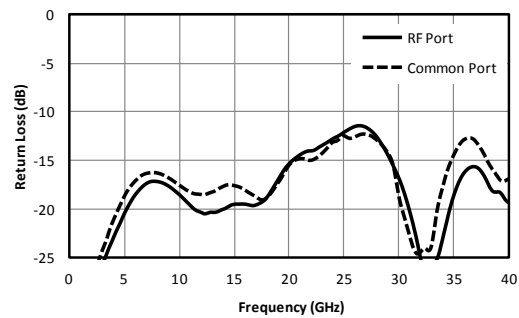


Fig. 3. Return loss.

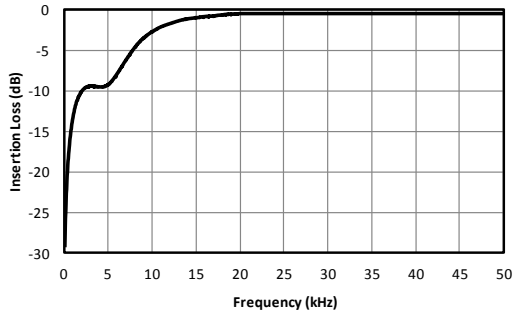


Fig. 4. Low frequency RF response.

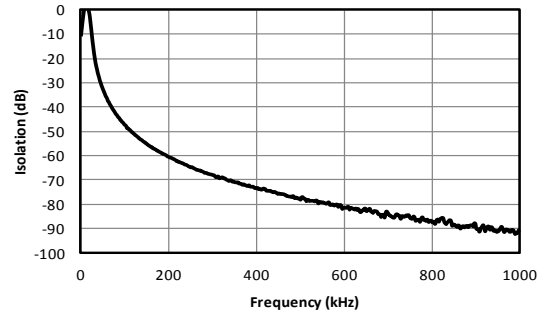


Fig. 5. Low frequency isolation.

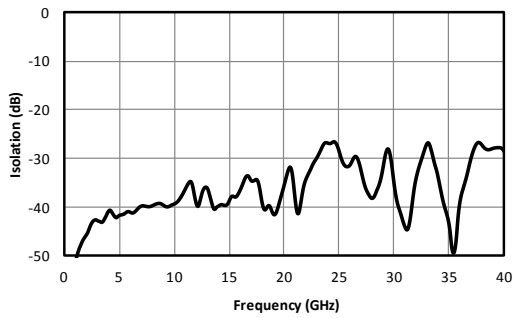


Fig. 6. DC-RF isolation.

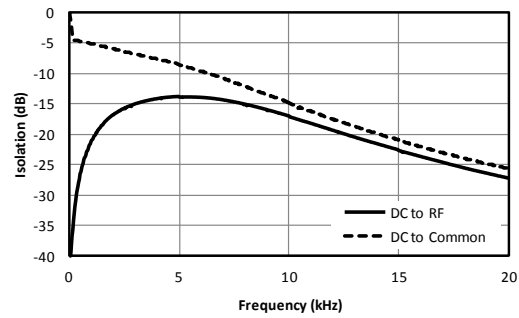


Fig. 7. Near DC isolation

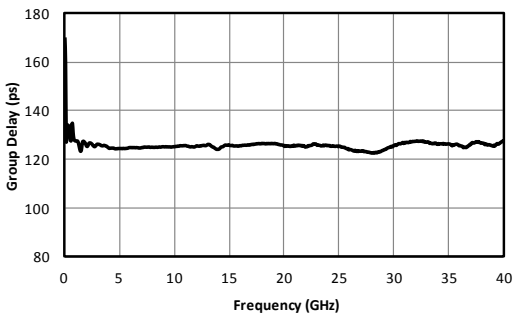


Fig. 8. Group delay.

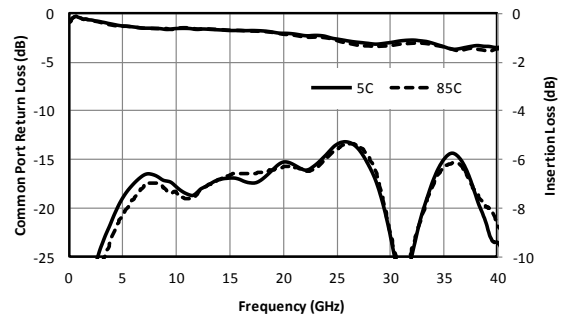


Fig. 9. Performance over temperature

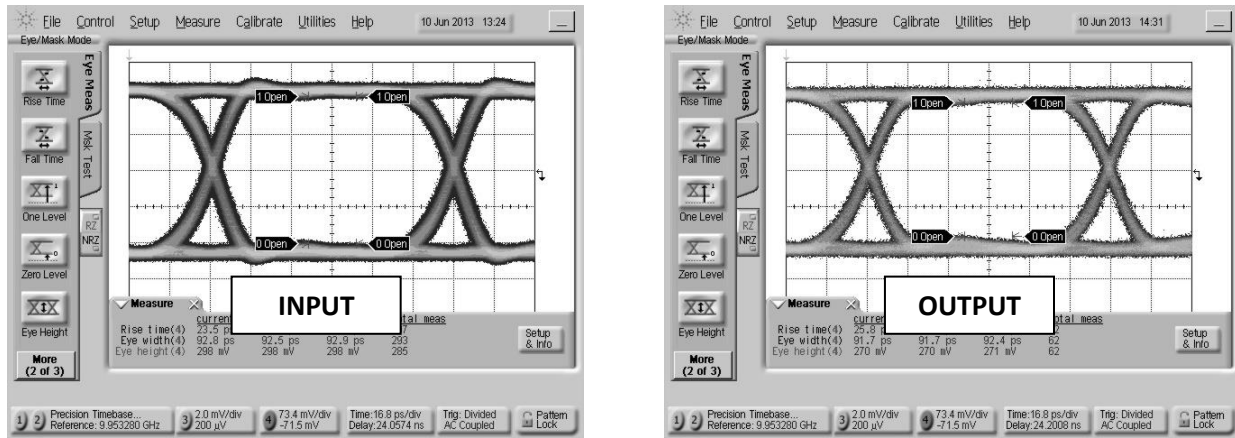


Fig. 7. Oscilloscope measurements of the BTN-0040 with a 10Gb/s PRBS pattern. Eye diagrams are taken with a 2<sup>31</sup>-1 PRBS input demonstrating minimal eye distortion/closure afforded by the extremely low frequency operation of the bias tee.

| Model Number | Description  |
|--------------|--|
| BTN-0040     | 40 kHz to 40 GHz Bias Tee with 2.92 mm connectors <sup>1</sup> , <b>LEAD-FREE/RoHS COMPLIANT</b> |

<sup>1</sup>Consult factory for other connector options.

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**Revision History**

| Revision code | Revision Date  | Comment                 |
|---------------|----------------|-------------------------|
| A             | September 2019 | RoHS Compliant Assembly |