



## BROADBAND BALUN (200 kHz to 6 GHz)

**BAL-0006**

### Features

- 200 kHz to 6 GHz Balun (Balanced to Unbalanced Transformer)
- Matched 50 Ohm Impedance on Input and Output Ports
- Tuned for Optimal Phase/Amplitude Balance
- Applications: Analog to Digital Converters, Balanced Receivers, Baseband Digital Modulation, Signal Integrity



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

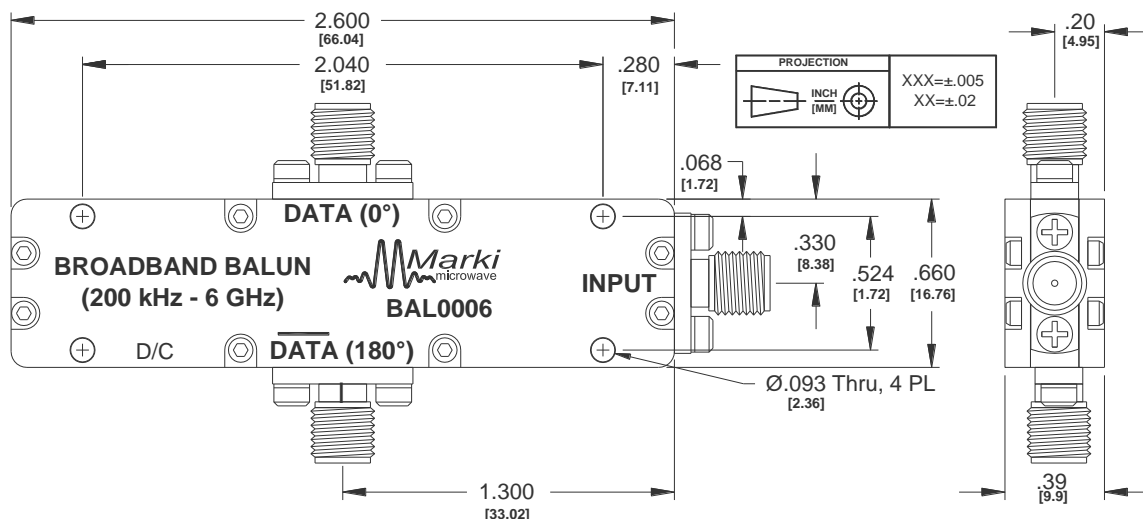
| Parameter                               | Frequency Range  | Min | Typ   | Max  |   |
|---|------------------|-----|-------|------|---|
| Nominal Insertion Loss (dB)             | 200 kHz to 6 GHz |     | 6     |      |   |
| Nominal Phase Shift (Degrees)           |                  |     | 180   |      |   |
| Amplitude Balance (dB)                  |                  |     | ±0.05 | ±0.5 |   |
| Phase Balance (Degrees)                 |                  |     | ±1    | ±5   |   |
| Common Mode Rejection (dB)              |                  |     | 30    | 40   |   |
| Excess Insertion Loss (dB) <sup>1</sup> |                  |     |       | 1.5  | 3 |
| Isolation (dB)                          |                  |     |       | 9    |   |
| VSWR (Input)                            |                  |     |       | 1.35 |   |
| VSWR (Output)                           |                  |     |       | 1.7  |   |
| Risetime /Falltime (ps) <sup>2</sup>    |                  |     |       | 40   |   |
| Weight (g)                              |                  |     |       | 27   |   |

<sup>1</sup>Excess Insertion Loss = (Common Port to Output Port Insertion Loss) – 6 dB.

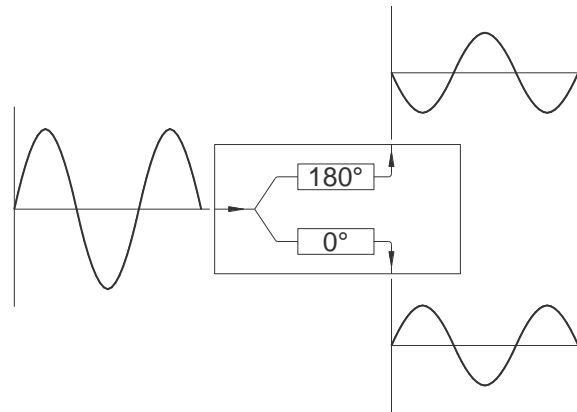
<sup>2</sup>Specified as 90%/10%. Calculated from  $\tau_{balun}^2 = (\tau_{out}^2 - \tau_{in}^2)$

| Model Number | Description   |
|--------------|---|
| BAL-0006     | 200 kHz to 6 GHz Balun with SMA connectors <sup>1</sup> |

<sup>1</sup>Default is SMA female connectors. Consult factory for other connector options.



**Block Diagram**



**Typical Performance**

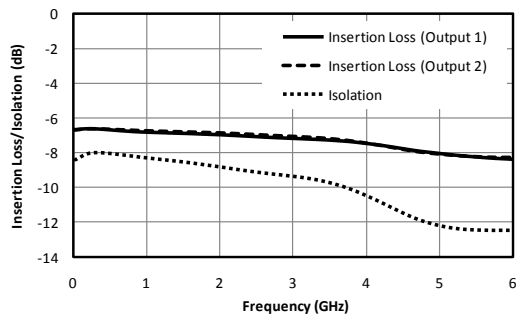


Fig. 1. Common to output port insertion loss and output to output port Isolation.

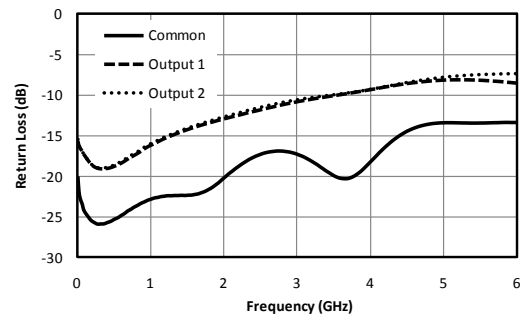


Fig. 2. Return loss for common port and output ports.

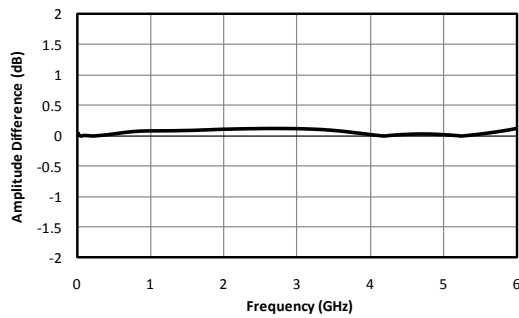


Fig. 3. Amplitude balance between output ports.

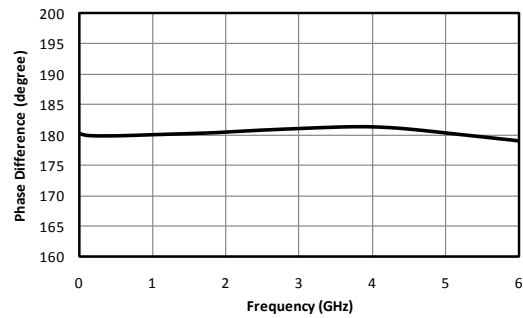


Fig. 4. Phase balance between output ports.

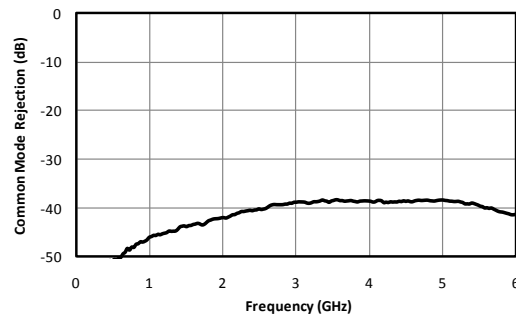


Fig. 5. Common mode rejection.

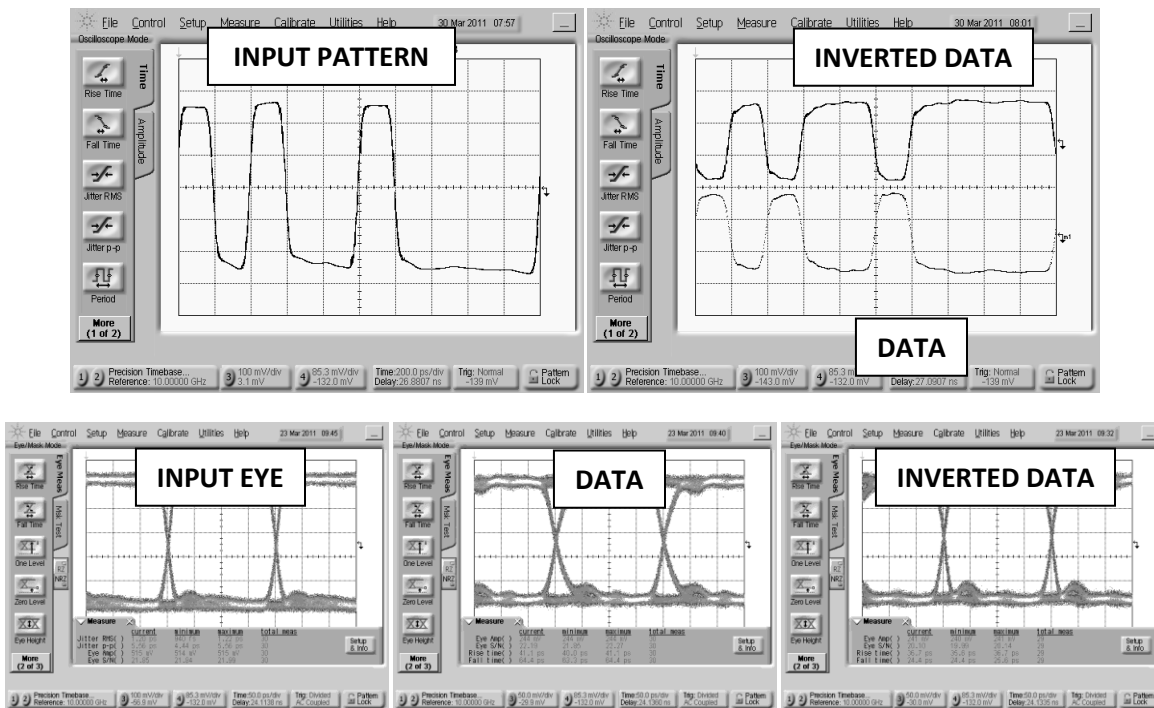


Fig. 6. Oscilloscope measurements of the BAL-0006 with a 5 Gb/s PRBS pattern. Bit pattern is measured with a  $2^7-1$  PRBS input demonstrating extremely good pulse fidelity for both inverted and non-inverted output. Eye diagrams are taken with a  $2^{31}-1$  PRBS input demonstrating minimal eye distortion/closure afforded by the extremely low frequency operation of the balun (<200 kHz).

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