

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
- BAL-0006.s3p



Electrical Specifications - Specifications guaranteed from -55 to +100 $^{\circ}$ C, measured in a 50 Ω system.

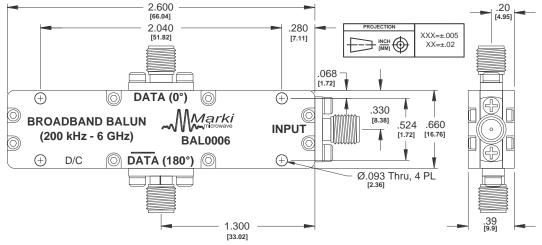
Parameter	Frequency Range	Min	Тур	Max
Nominal Insertion Loss (dB)			6	
Nominal Phase Shift (Degrees)			180	
Amplitude Balance (dB)			±0.05	±0.5
Phase Balance (Degrees)			±1	±5
Common Mode Rejection (dB)	200 kHz to 6 GHz	30	40	
Excess Insertion Loss (dB) ¹	200 KHZ 10 6 GHZ		1.5	3
Isolation (dB)			9	
VSWR (Input)			1.35	
VSWR (Output)			1.7	
Risetime /Falltime (ps) ²			40	
Total Input Power (W)				1
Weight (g)			27	

¹Excess Insertion Loss = (Common Port to Output Port Insertion Loss) – 6 dB.

²Specified 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 ¹	

¹Default is SMA female connectors. Consult factory for other connector options.

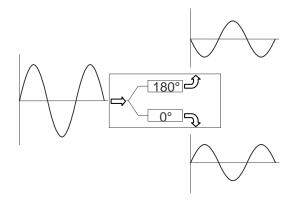




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Block Diagram

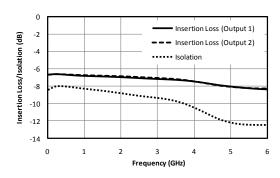


180°¢

Single ended to differential

Differential to single ended

Typical Performance



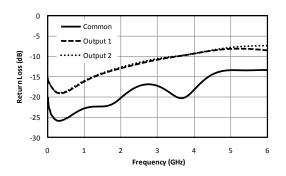
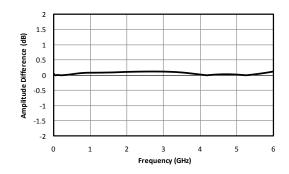


Fig. 1. Common to output port insertion loss and output to output port Isolation.

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



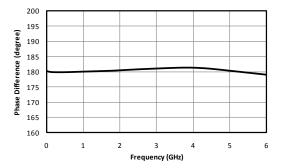


Fig. 3. Amplitude balance between output ports.

Fig. 4. Phase balance between output ports.



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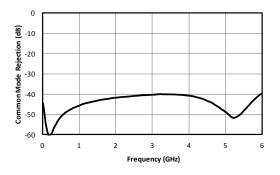
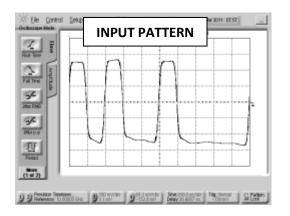
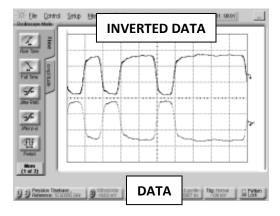


Fig. 5. Common mode rejection.





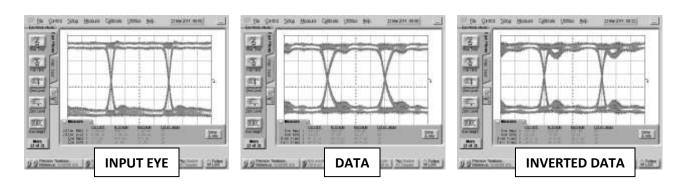


Fig. 6. Oscilloscope measurements of the BAL-0006 with a 5 Gb/s PRBS pattern. Bit pattern is measured with a 2^7 -1 PRBS input demonstrating extremely good pulse fidelity for both inverted and non-inverted output. Eye diagrams are taken with a 2^{31} -1 PRBS input demonstrating minimal eye distortion/closure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



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DC Interface

Port	Description	DC Interface Schematic	
Common Port / In (Unbalanced)	The common port is DC short to ground.	Common Port + (Unbalanced)	
Out 1 / 0° Port (Balanced)	The 0° port is DC short to ground.	0° Port (Balanced)	
Out 2 / 180° Port (Balanced)	The 180° port is DC short to ground.	180° Port (Balanced)	

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