



LEAD-FREE / RoHS-COMPLIANT

SURFACE-MOUNT BROADBAND BALUN

BAL-0620SMG

The BAL-0620SMG is a Surface Mount Microlithic™ balun. As with all Microlithic™ baluns, it features excellent amplitude balance, phase balance, and common mode rejection across a broad bandwidth and in a miniaturized form factor. It has significant isolation, reducing the reflection of unwanted common mode signals. The BAL-0620SMG is a lead free, RoHS compliant package compatible with standard leaded and lead-free solder reflows. SMA connectorized evaluation packages are available. The BAL-0620SMG is an excellent choice for balanced amplifiers, clock distribution, and higher order Nyquist sampling in analog to digital converters



Features

- 6 GHz to 20 GHz 1:2 Balun (Balanced to Unbalanced Transformer)
- Transforms 50 Ω Input to 100 Ω Differential (50 Ohm Single) Output
- Tuned for Optimal Phase/Amplitude Balance
- Applications: Analog to Digital Converters, Balanced Receivers, Balanced Amplifiers, Mixers, Clock Distribution, Signal Integrity
- [BAL-0620SMG.s3p](#)

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

Parameter	Frequency Range	Min	Typ	Max
Nominal Insertion Loss (dB)	6 GHz to 20 GHz		3	
Nominal Phase Shift (Degrees)			180	
Amplitude Balance (dB)			±0.2	±0.6
Phase Balance (Degrees)	6 GHz to 18 GHz		±1	±3
	18 GHz to 20 GHz		±4	± 15
Common Mode Rejection (dB)	6 GHz to 18 GHz	28	34	
	18 GHz to 20 GHz	20	31	
Excess Insertion Loss (dB) ^{1,2}	6 GHz to 20 GHz		2.6	4
Isolation (dB)			14	
VSWR			1.9	4.5
Total Input Power (W)				1

¹Excess Insertion Loss = (Common Port to Output Port Insertion Loss) – 3 dB.

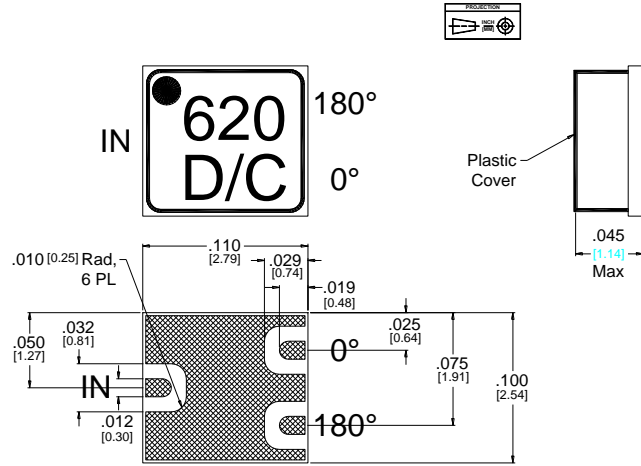
²Includes fixture losses.

Model Number	Description
BAL-0620SMG	6 GHz to 20 GHz Balun, Surface Mount, LEAD-FREE/RoHS COMPLIANT

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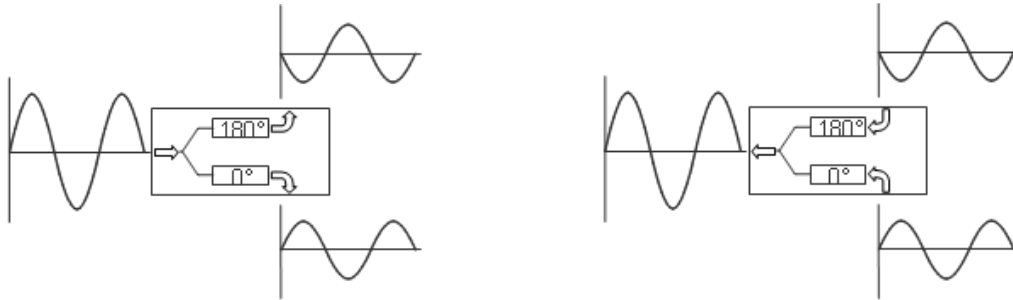
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I/O traces and ground plane finish is TiW/NiAu, 0.5 microns Au max over 0.15 microns Ni.
See [BALSM-ML-PCB](#) for suggested PCB layout.

Block Diagram



Single ended to differential

Differential to single ended

Typical Performance

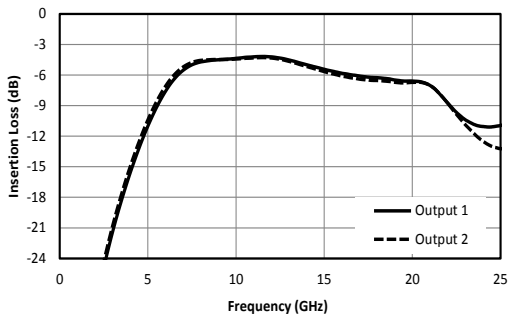


Fig. 1. Common to balanced port insertion loss¹

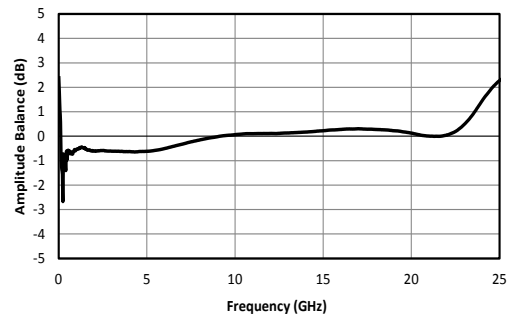


Fig. 2. Amplitude balance between balanced ports.

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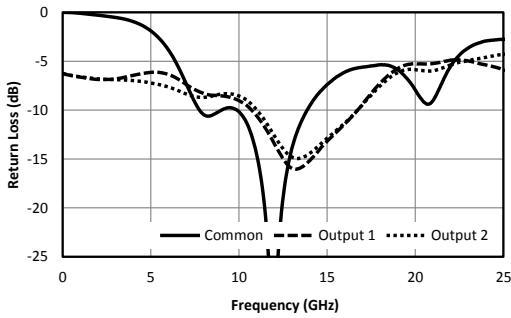


Fig. 3. Return loss for common port and balanced ports.

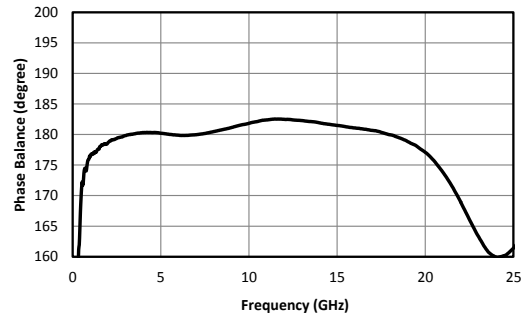


Fig. 4. Phase balance between balanced ports.

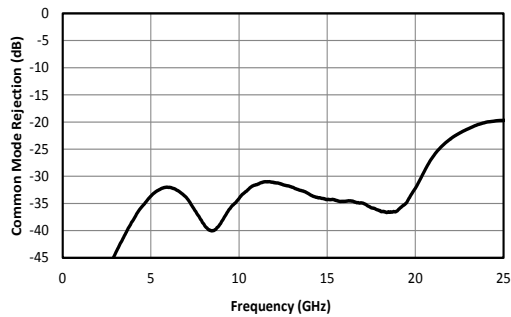


Fig. 5. Common mode rejection

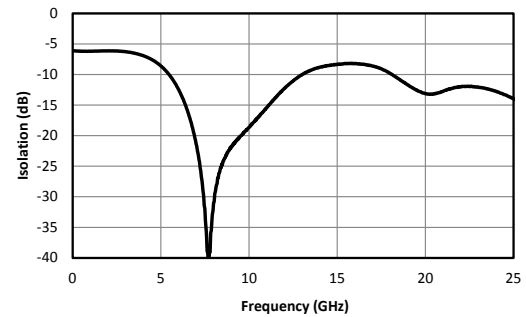
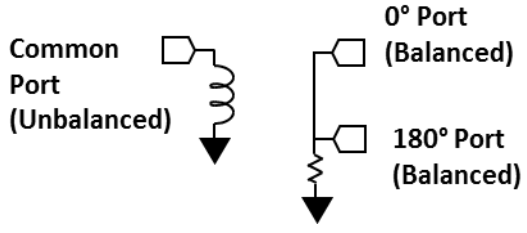


Fig. 6. Balanced port to balanced port isolation

¹Includes test fixture loss. Results are not de-embedded.

DC Interface

Port	Description	DC Interface Schematic
Common Port (Unbalanced)	The common port is DC short to ground.	
0° Port (Balanced)	The 0° port is DC short to the 180° port and passes through a resistor to ground.	
180° Port (Balanced)	The 180° port is DC short to the 0° port and passes through a resistor to ground.	

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