

BAL-0050

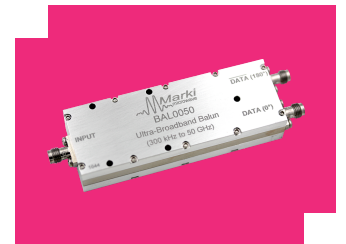
Broadband Isolation Balun (300KHz to 50 GHz)

DEVICE OVERVIEW

General Description

The BAL-0050 is a broadband balun, featuring high isolation and is hand-tuned for optimal phase and amplitude balance over a 300 kHz to 50 GHz bandwidth. It serves as an excellent choice for analog to digital converters, balanced receivers, baseband digital modulations, and signal integrity enhancement.

[Download s-parameters here](#)



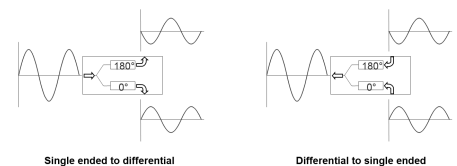
Features

- 300 kHz to 50 GHz Balun (Balanced to Unbalanced Transformer)
- 1:2 Transformer (50 Ω unbalanced, 100 Ω differential/50 Ω balanced port)
- Termination insensitive: Particularly suited to testing poorly matched or non 50 Ω devices or for extending 2 port VNAs for differential testing

Applications

- Analog to Digital Converters
- Balanced Receivers
- Baseband Digital Modulation
- Signal Integrity

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
BAL-0050	Broadband Isolation Balun (300KHz to 50 GHz)	-	-	RoHS	Released	EAR99

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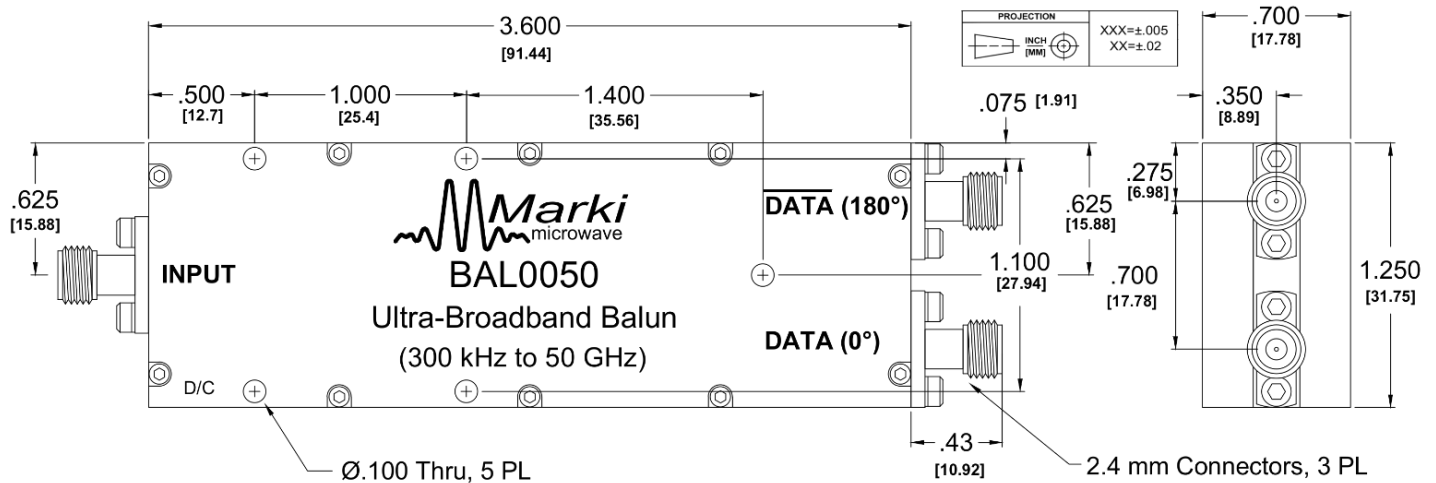
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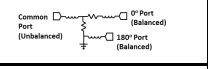
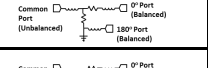
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Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Description	Equivalent Circuit for Package
0° Port (Balanced)	0° Port	The 0 port is DC connected to the common port through a resistor and to ground through a resistor.	
180° Port (Balanced)	180° Port	The 180 port is DC shorted to ground.	
Common Port (Unbalanced)	RF Input	The common port is DC connected to the 0 port through a resistor and to ground through a resistor.	

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Specifications

Package Information

Parameter	Details	Rating
Weight	-	125g
Dimensions	-	91.44x27.94 mm

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Electrical Specifications

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

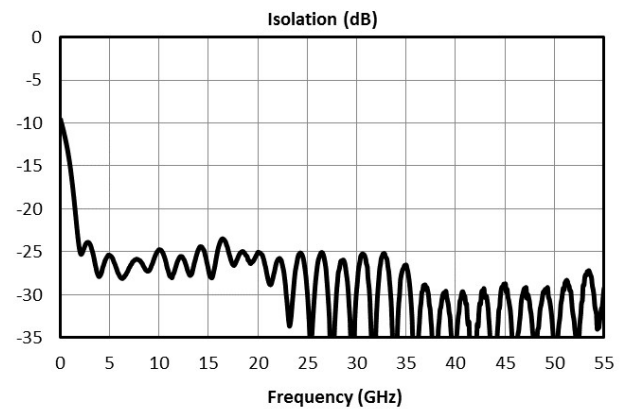
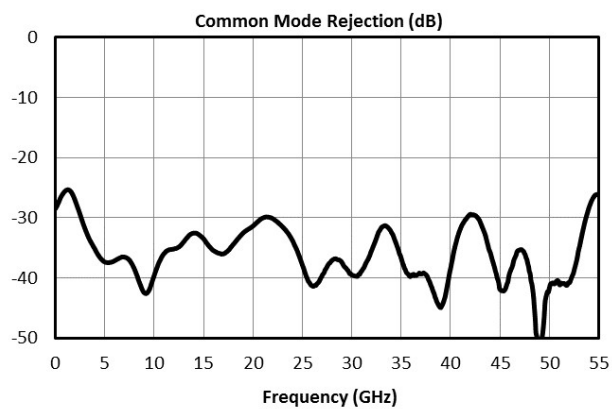
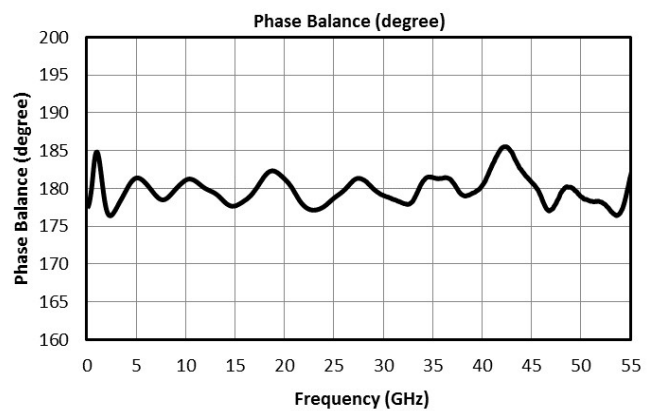
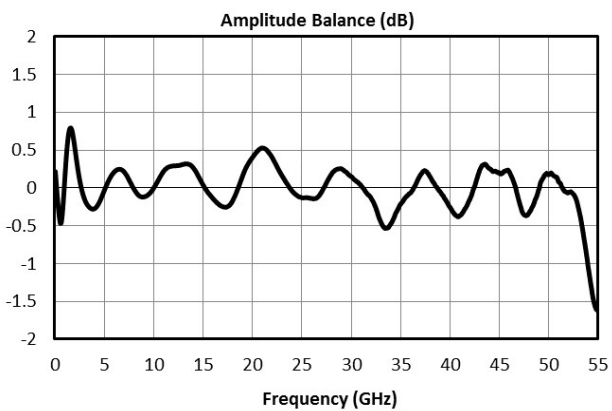
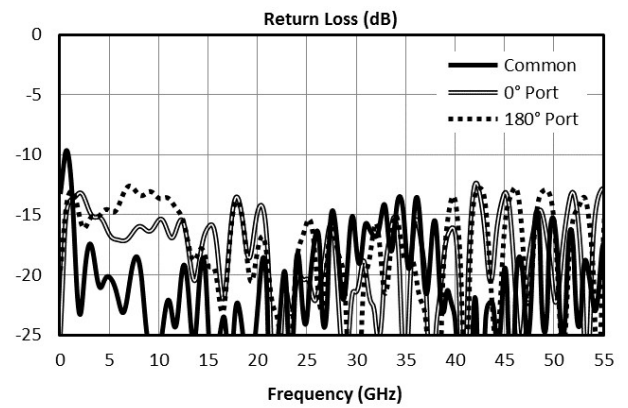
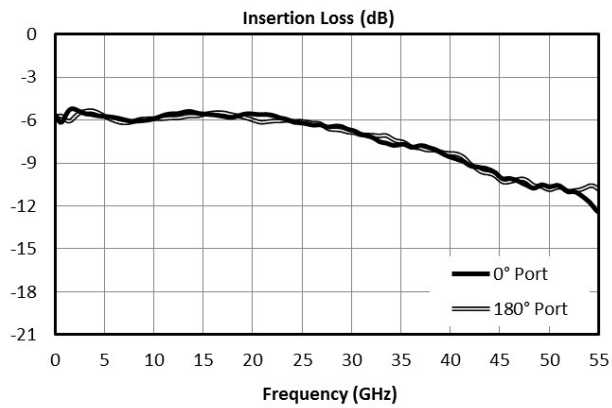
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Insertion Loss as a Mode Converter	-	0.0003	35	-	3	6	dB
Insertion Loss as a Mode Converter	-	35	50	-	7	-	dB
Nominal Phase Shift	-	0.0003	50	-	180	-	°
Amplitude Balance	-	0.0003	50	-	0.7	1.4	dB
Phase Balance	-	0.0003	50	-	4	10	°
Common Mode Rejection	-	0.0003	50	20	28	-	dB
Isolation	-	1	50	-	25	-	dB
Group Delay	-	0.0003	50	-	520	-	ps
RMS Group Delay Ripple	-	0.0003	50	-	8	-	ps
Risetime/Falltime ¹	-	0.0003	50	-	5	-	ps
Total Input Power	-	0.0003	50	-	-	1	W
VSWR (Common)	-	0.0003	50	-	1.5	-	-
VSWR (Output)	-	0.0003	50	-	1.6	-	-
Weight	-	0.0003	50	-	125	-	g

^[1] Default is 2.40 mm female connectors. Consult factory for other connector options.

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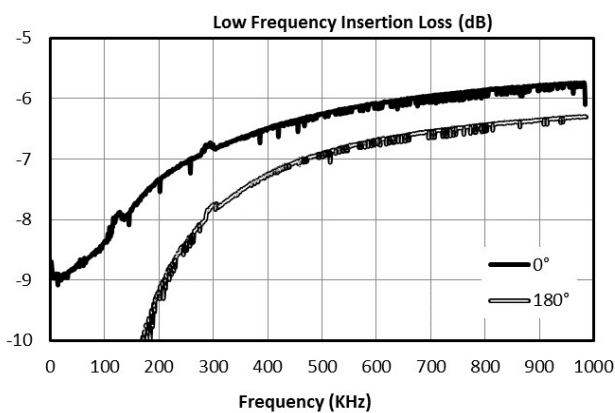
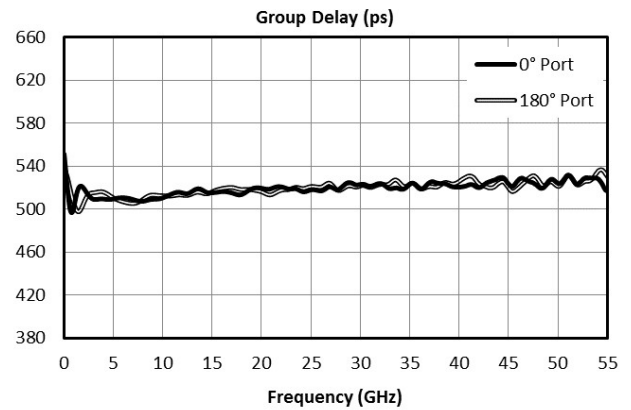
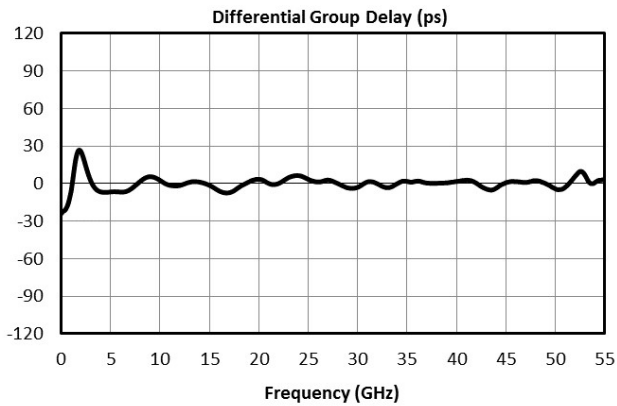
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Typical Performance

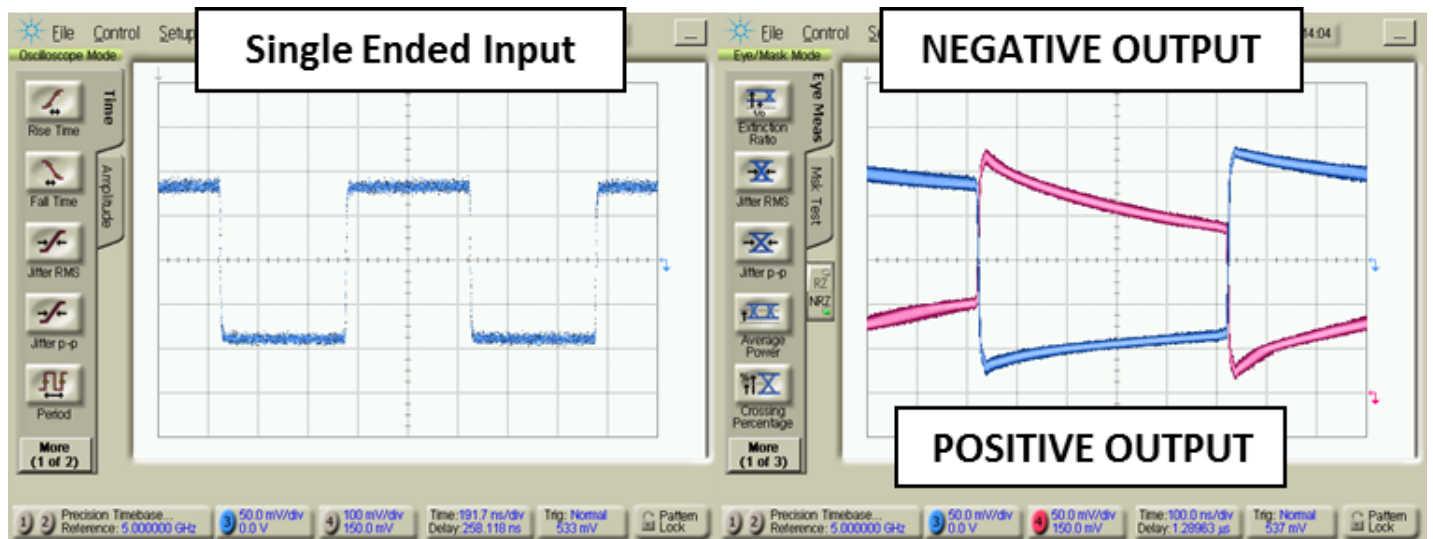


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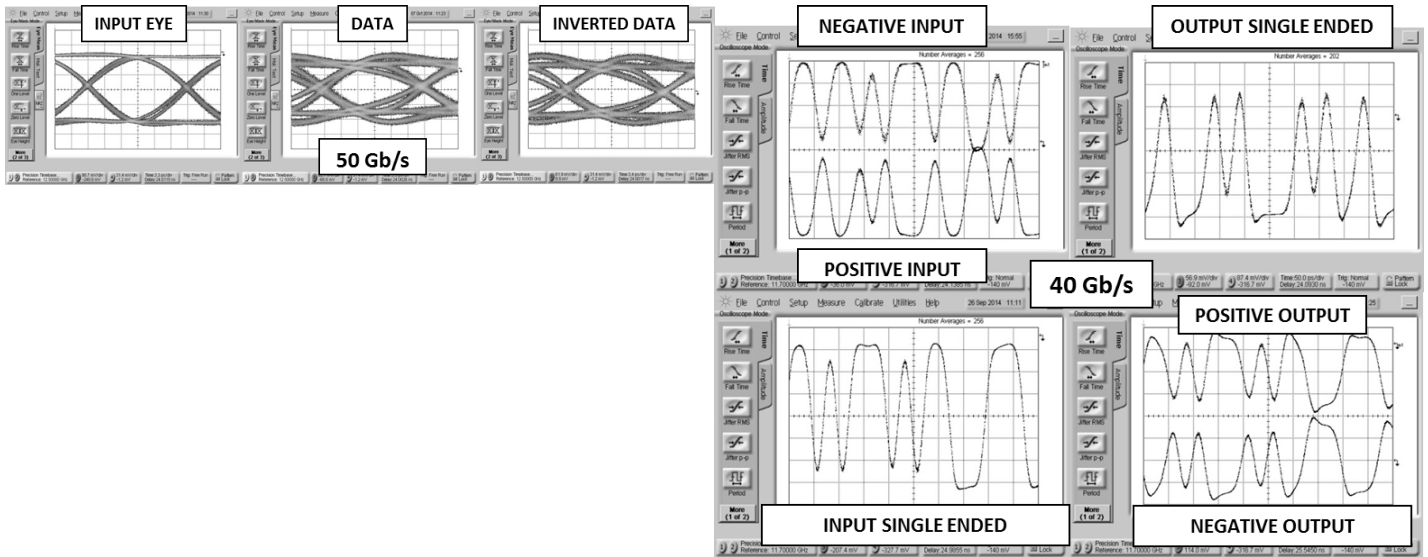


Time Domain Plot



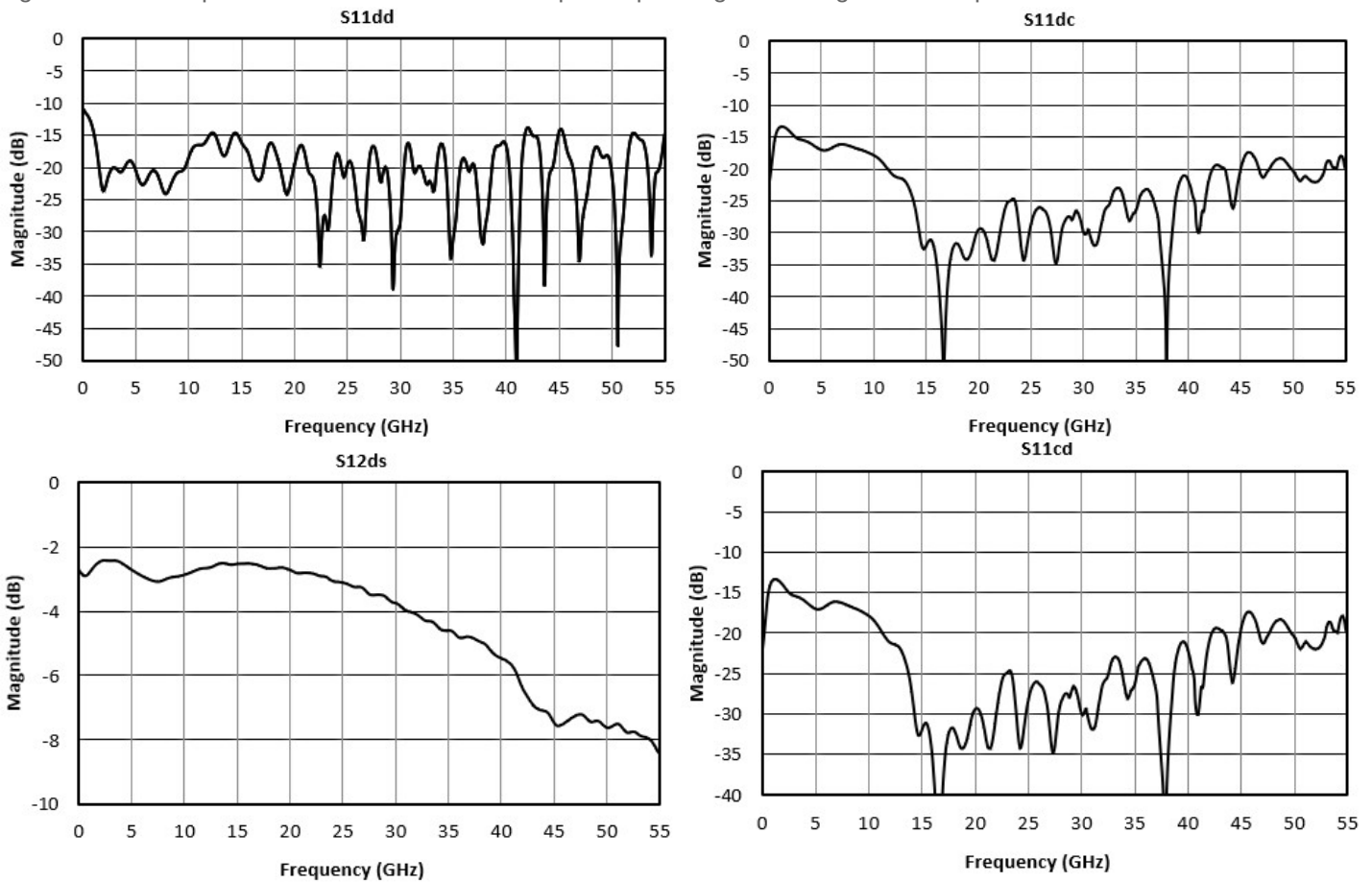
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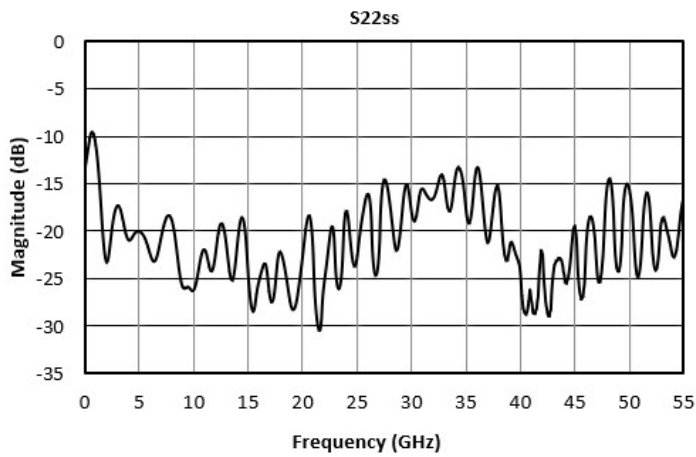
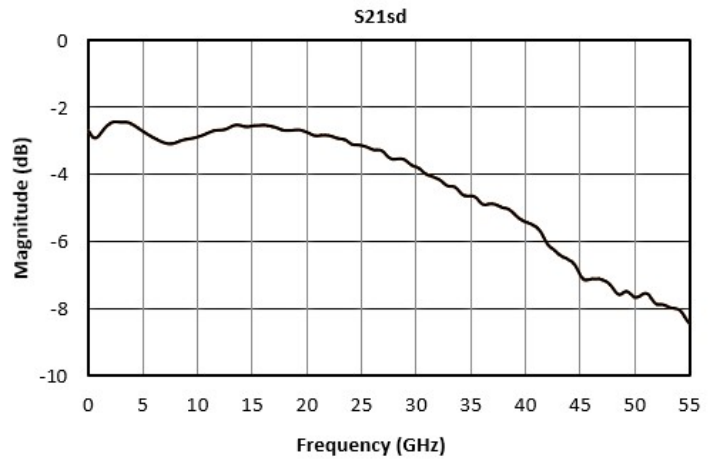
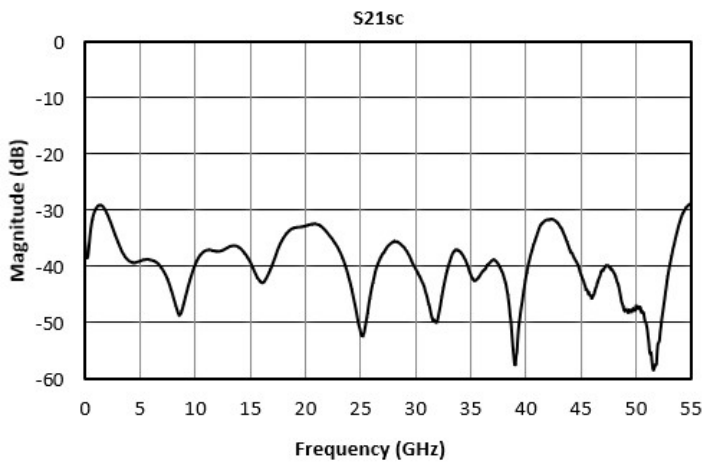
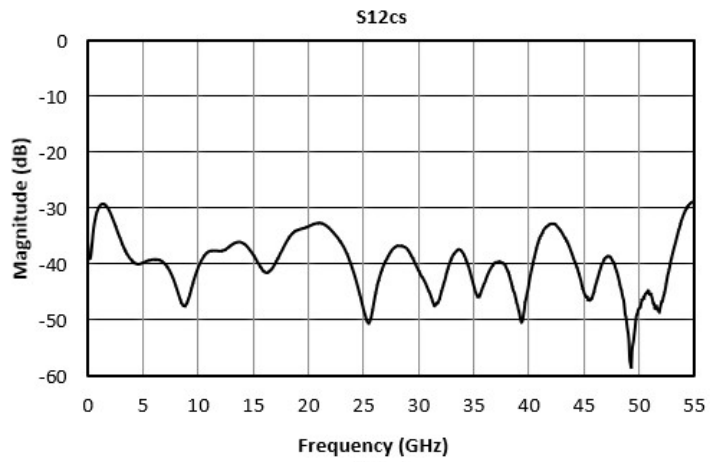
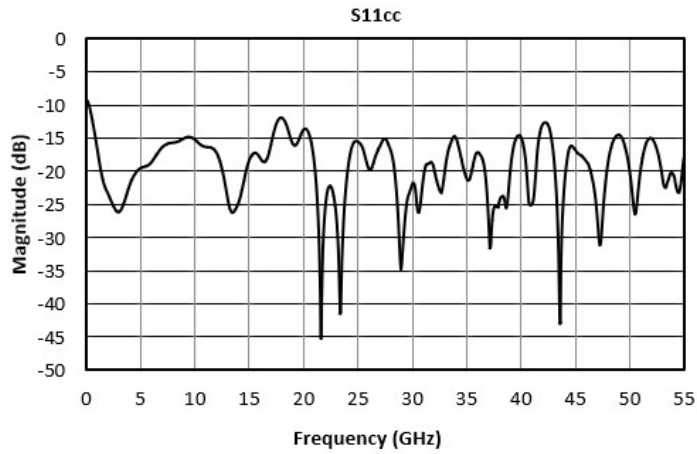
Mixed Mode Scattering Parameters

Mixed mode scattering parameters are used to characterize differential circuits. For baluns, this means that the 0° and 180° ports become a single 100Ω differential port and the common port remains the same 50Ω common port. The two-port s-parameters of the balun are then characterized based on differential (d), common mode (c), or single-ended (s) signals. For example: S12ds is the differential output response given a single ended input.



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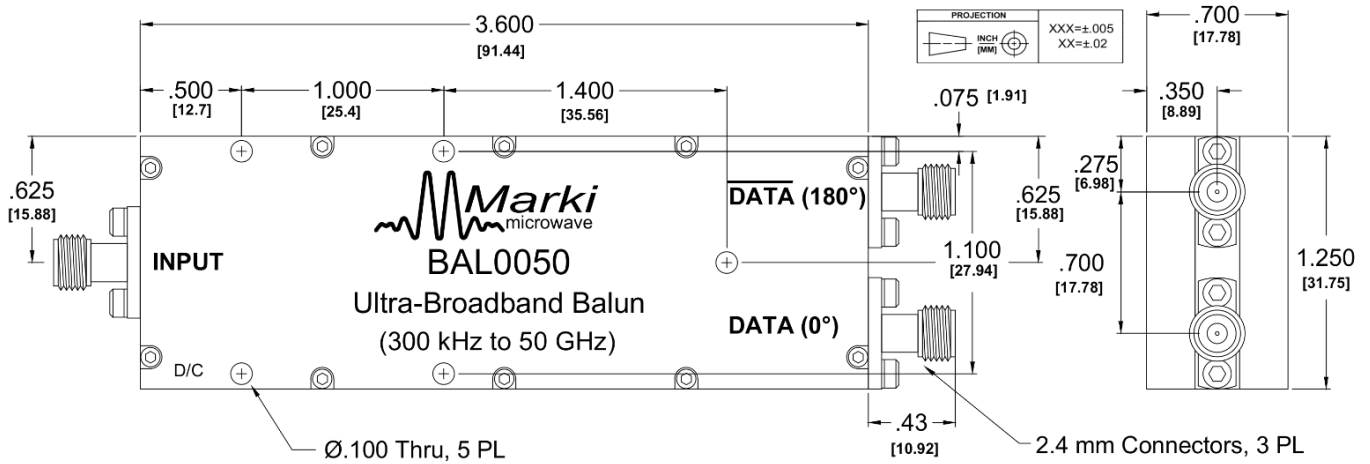


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Mechanical Data

Outline Drawing



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