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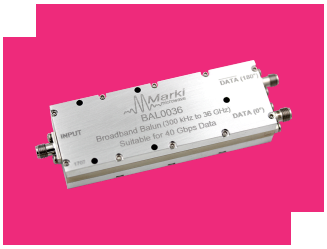
BAL-0036

Broadband Isolation Balun (300KHz to 36GHz)

DEVICE OVERVIEW

General Description

The BAL-0036 is a broadband balun, featuring high isolation and is hand-tuned for optimal phase and amplitude balance over a 300 kHz to 36 GHz bandwidth. It serves as an excellent choice for analog to digital converters, balanced receivers, baseband digital modulations, and signal integrity enhancement.



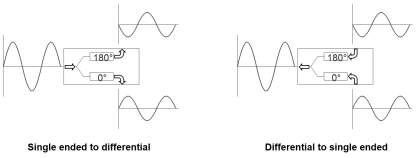
Features

- 2:1 Impedance Ratio
- 300 kHz to 36 GHz Balun (Balanced to Unbalanced Transformer)
- Termination insensitive: Particularly suited to testing poorly matched or non50 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	Connectors	Green Status	Product Lifecycle	Export Classification
BAL-0036	Broadband Isolation Balun (300KHz to 36GHz)	Standard	REACH RoHS	Released	EAR99

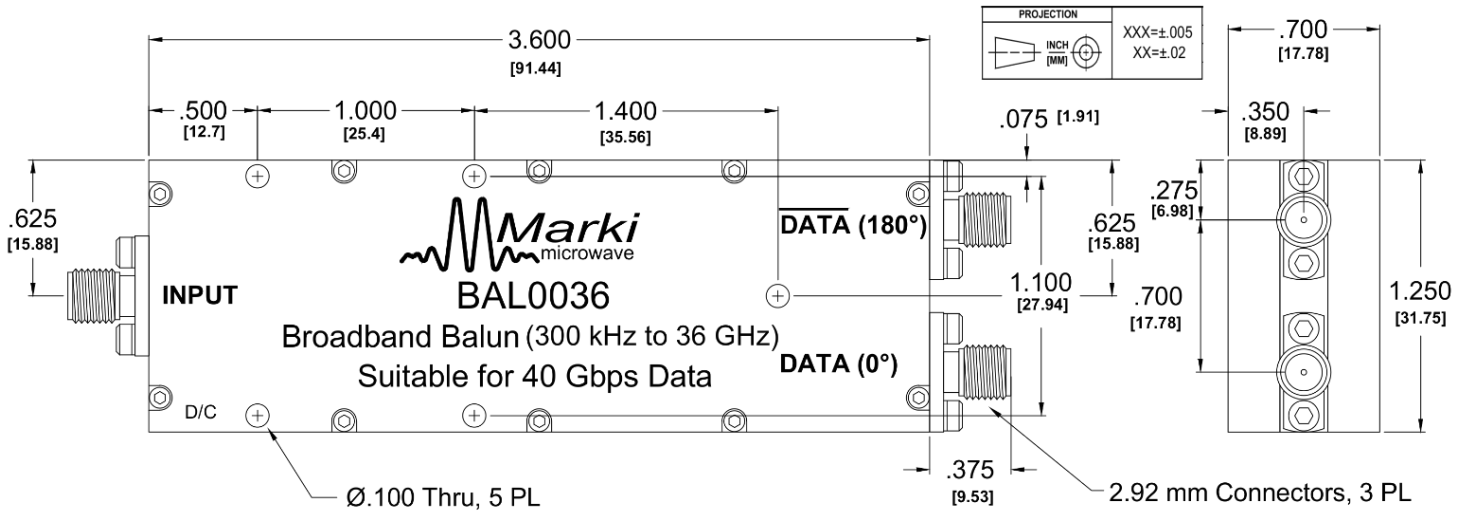
Table Of Contents

Revision History

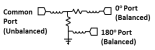
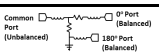
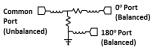
Revision Code	Revision Date	Comment
-	2014-01-01	Datasheet initial Release
A	2016-01-01	Typical Performance Plots Updated
B	2019-10-01	Mixed Mode Scattering Parameters added
C	2019-11-01	RoHS Compliant assembly
D	2020-07-01	Specs Table Update
E	2020-10-01	Specs Table Update

Port Configuration and Functions

Port Diagram



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
0° Port (Balanced)	0° Port	2.92F	The 0 (degrees) port is DC connected to the common port through a resistor and to ground through a resistor.	
180° Port (Balanced)	180° Port	2.92F	The 180 (degrees) port is DC shorted to ground.	
Common Port (Unbalanced)	RF Input	2.92F	The common port is DC connected to the 0o port through a resistor and to ground through a resistor.	

Specifications

Absolute Maximum Ratings

Parameter	Maximum Rating	Unit
RF Power Handling	1	W

Package Information

Parameter	Details	Rating
Weight	-	125g
Dimensions	-	91.44 x 27.94 mm

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
Amplitude Balance	-	0.0003	36	-	0.5	1.2	dB
Common Mode Rejection	-	0.0003	36	22	30	-	dB
Group Delay	-	0.0003	36	-	520	-	ps
Impedance Ratio	-	-	-	-	2:1	-	
Insertion Loss as a Mode Converter	-	0.0003	36	-	3	6	dB
Isolation	-	1	36	-	24	-	dB
Nominal Phase Shift	-	0.0003	36	-	180	-	°
Phase Balance	-	0.0003	36	-	3	10	°
Risetime/Falltime [1]	-	0.0003	36	-	7.5	-	ps
RMS Group Delay Ripple	-	0.0003	36	-	8.6	-	ps
VSWR (Input)	-	0.0003	36	-	1.5	-	
VSWR (Output)	-	0.0003	10	-	1.6	-	

[1] Specified as 90%/10%.

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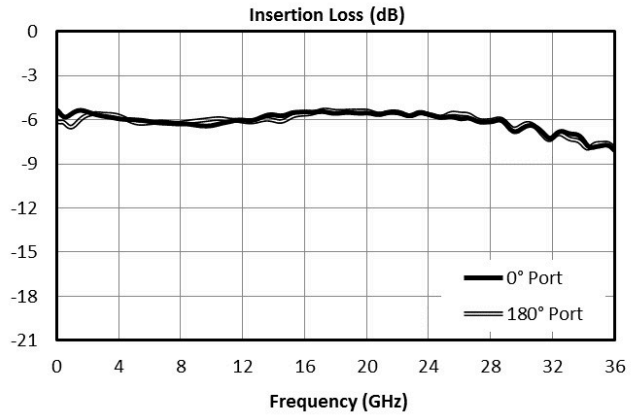
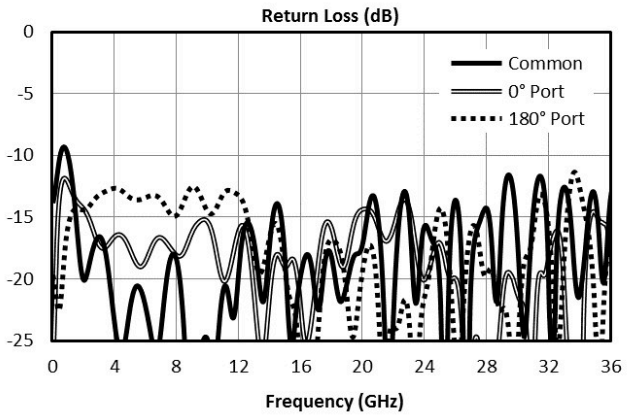
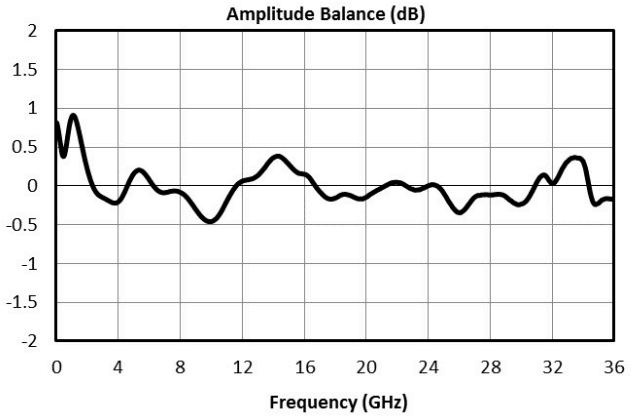
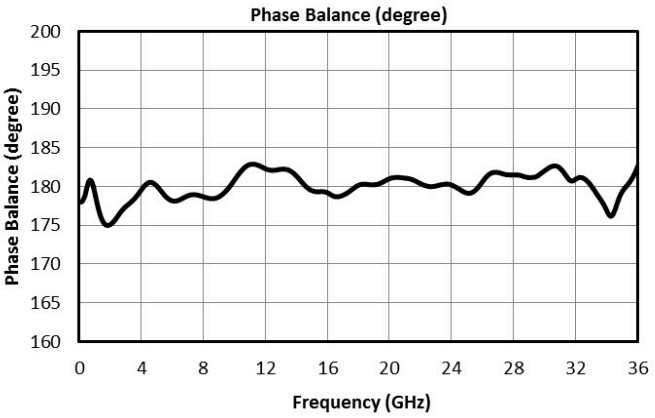
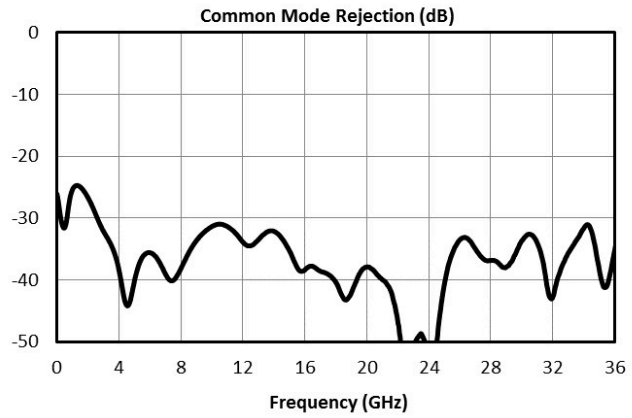
Typical Performance

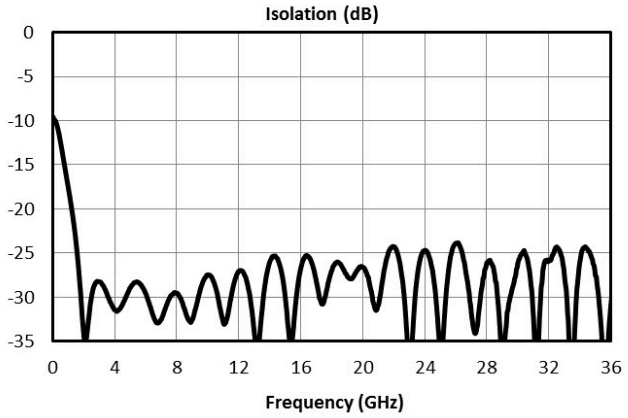


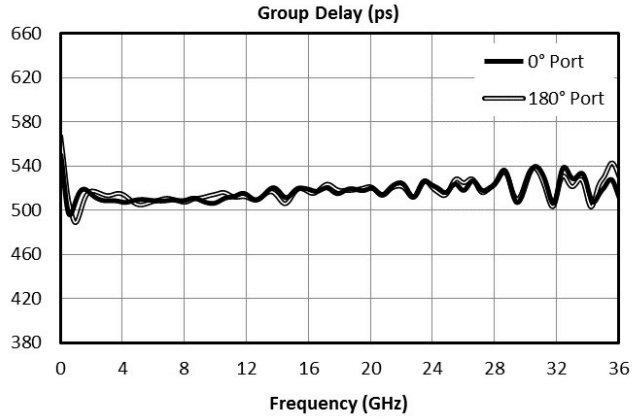


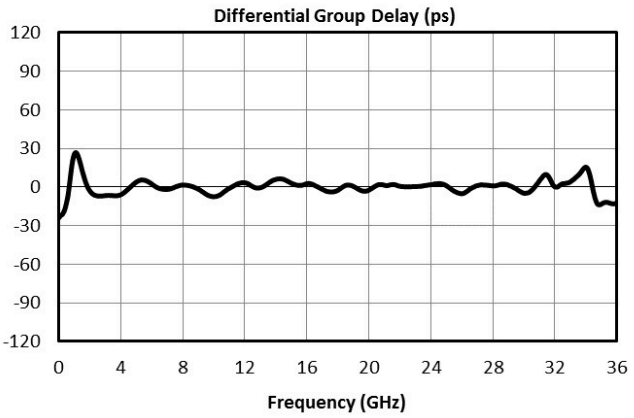












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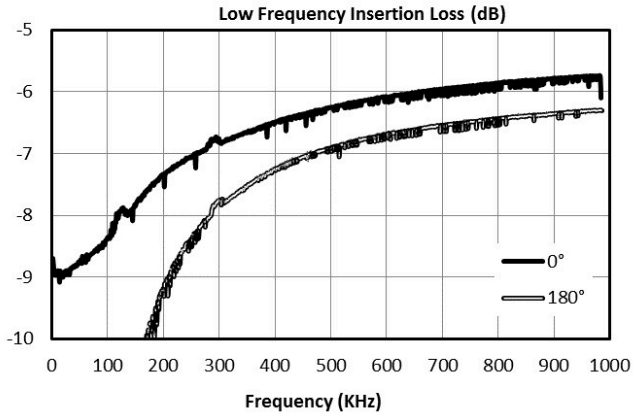
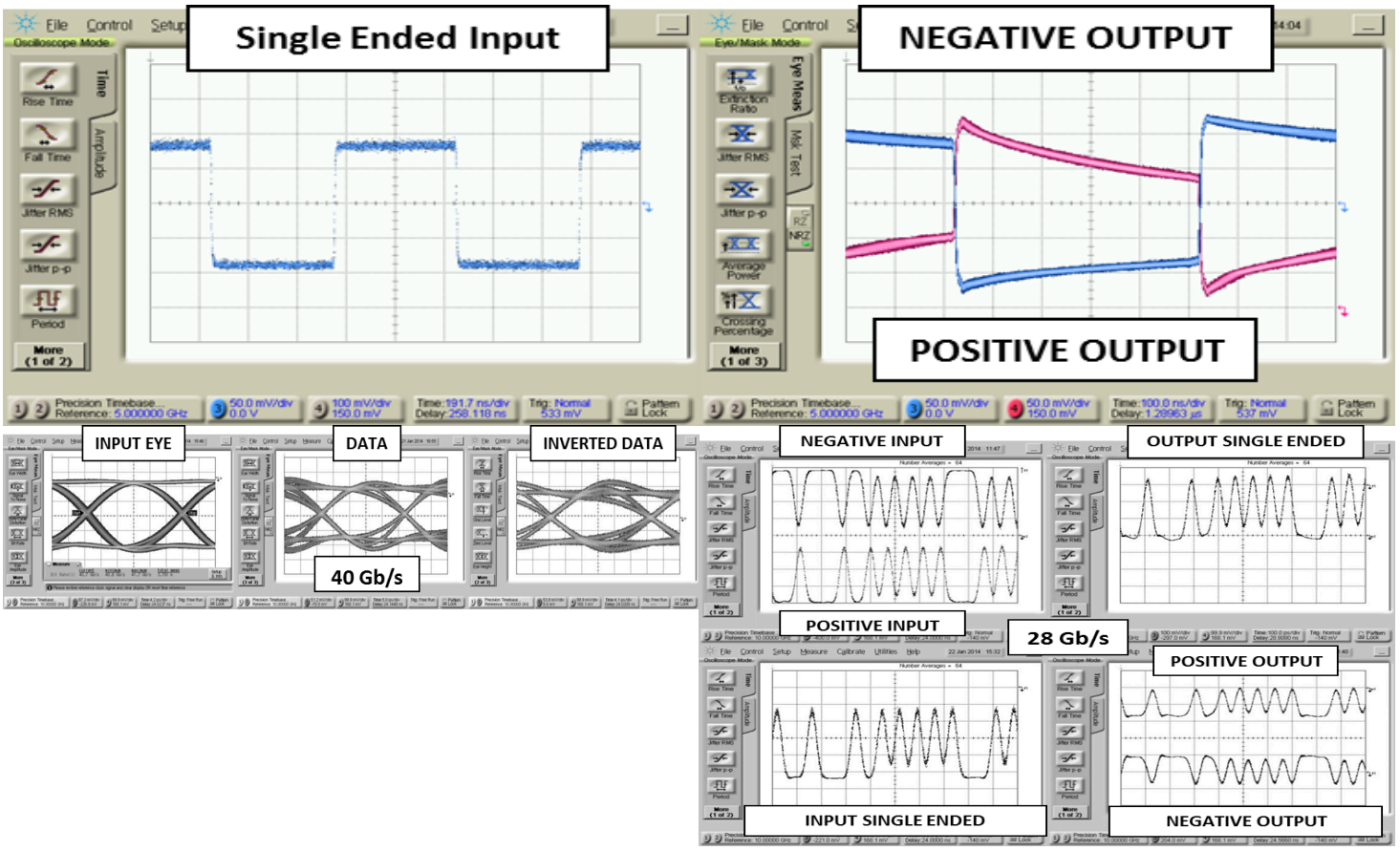
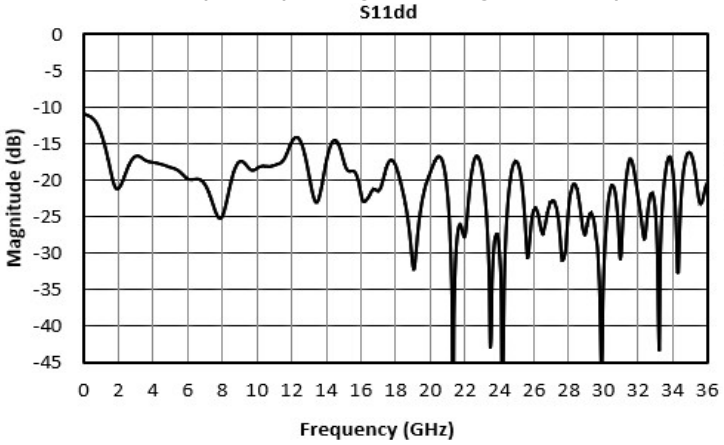


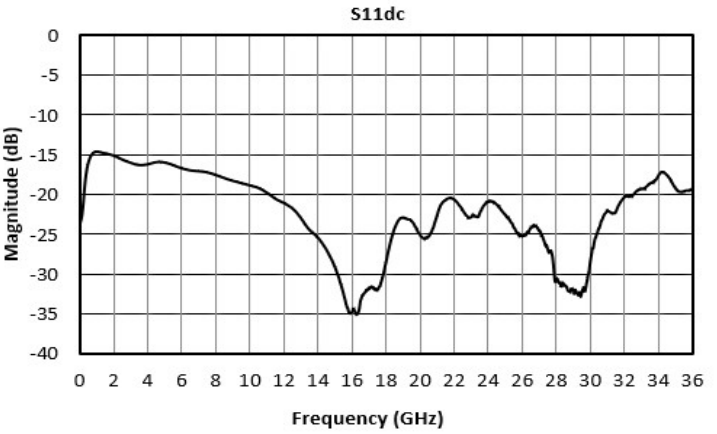
Time Domain Plot

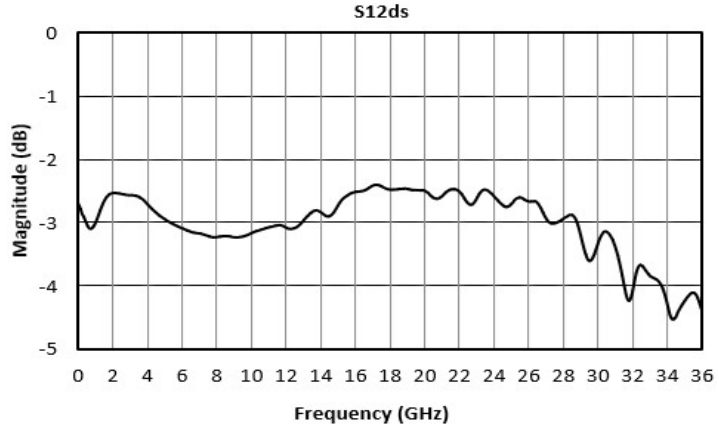


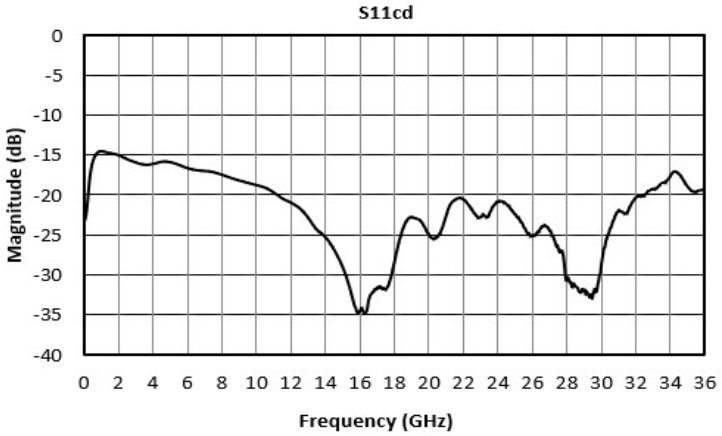
Mixed Mode Scattering Parameters

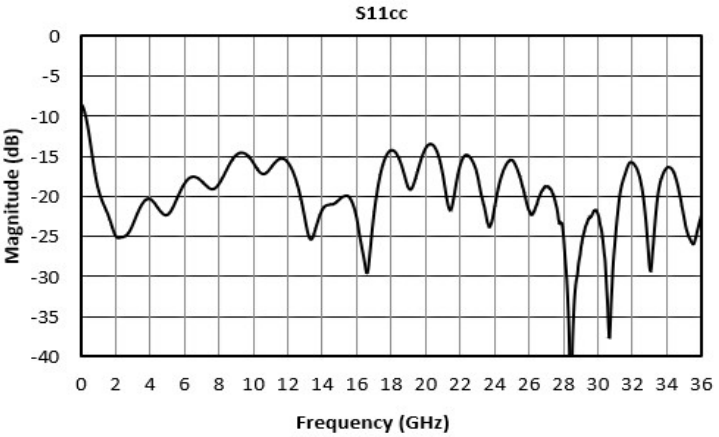
Mixed mode scattering parameters are used to characterize differential circuits. For baluns, this means that the 0° and 180° ports become a single 100Ω differential port and the common port remains the same 50Ω common port. The two-port s-parameters of the balun are then characterized based on differential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

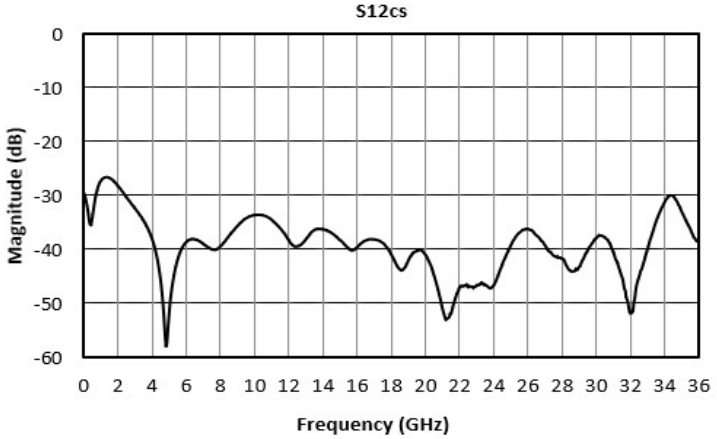












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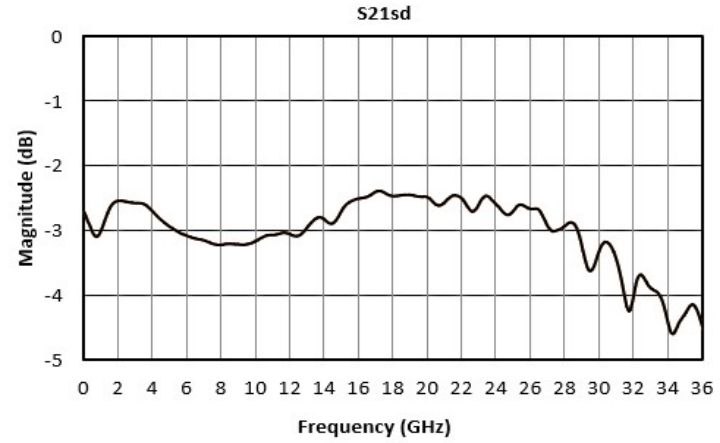
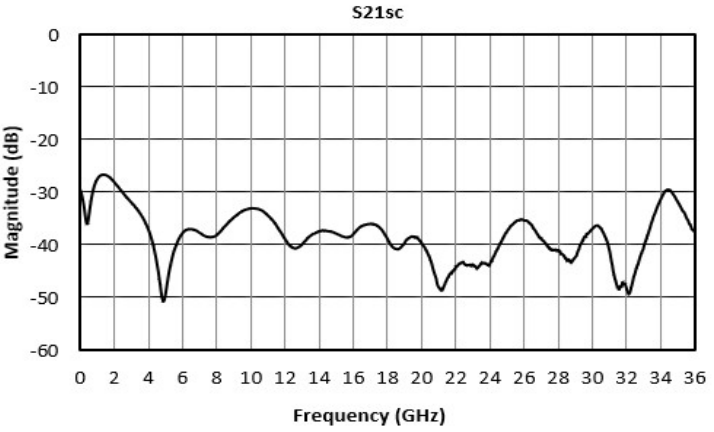
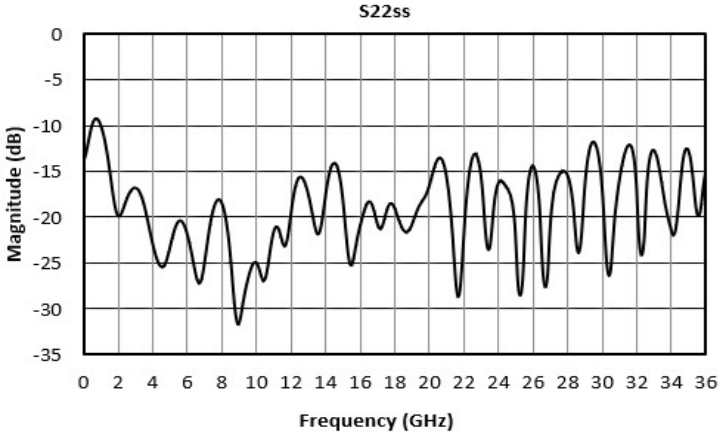


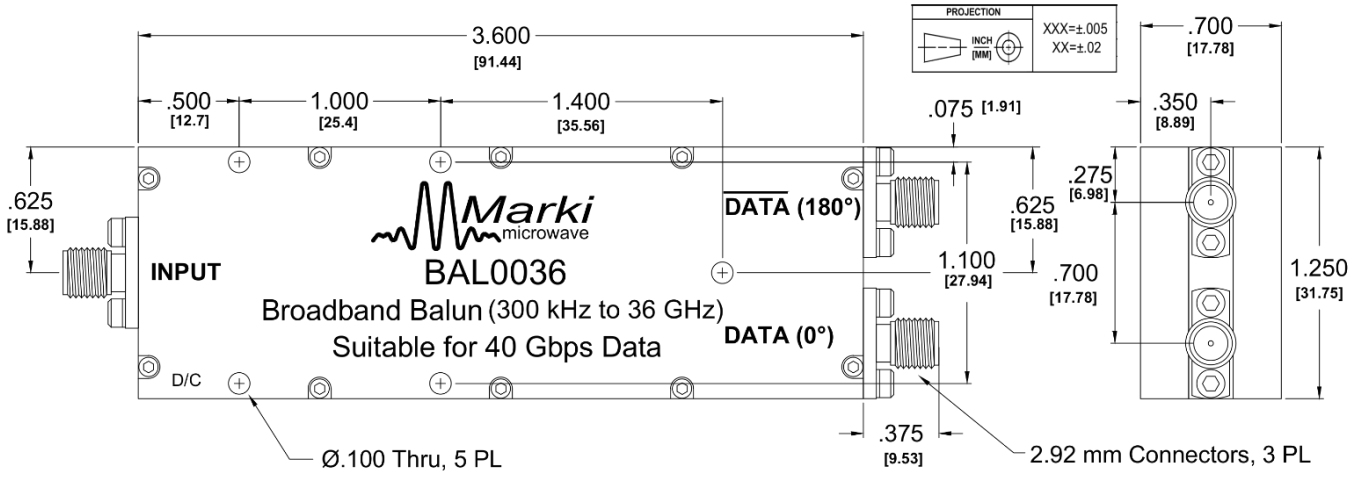




Mechanical Data

Outline Drawing

Download : Outline 2D Drawing | Outline 3D Drawing | Outline 3D STP



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