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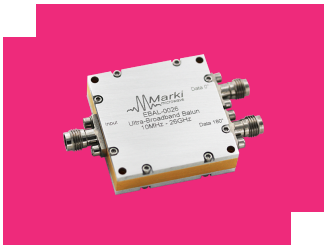
EBAL-0026

10 MHz to 26 GHz Broadband Balun

DEVICE OVERVIEW

General Description

The EBAL-0026 is an ultra-broadband 2:1 balun (unbalanced to balanced transformer), hand-tuned for optimal amplitude and phase balance. The EBAL-0026 transforms between a 50Ω common input and a 100Ω differential output. It operates over a 10 MHz to 26 GHz bandwidth, with typical 0.5 dB amplitude and 5° phase balance, low 3 dB insertion loss as a mode converter. The EBAL-0026 can be used for performing measurements on high frequency differential devices, including cables, microchips, and communication systems. It is an excellent choice for test & measurement benches, high speed analog-to-digital converters, balanced receivers, baseband digital modulations, and signal integrity. For accurate simulations, use the provided S3P file taken from measured production units. The EBAL-0026 is in a 1.5 x 1.5 inch connectorized package and features 2.92 mm Female connectors on the common input and differential output ports.



Download s-parameters here

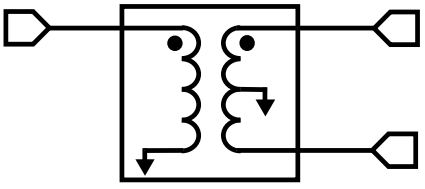
Features

- 2:1 Impedance Ratio
- 10MHz to 26GHz Balun (Unbalanced to Balanced Transformer)
- Transforms 50Ω to 100Ω Differential Output
- Designed for Optimal Phase/Amplitude Balance

Applications

N/A

Functional Block Diagram



Part Ordering Options

Part Number	Description	Connectors	Green Status	Product Lifecycle	Export Classification
EBAL-0026	10 MHz to 26 GHz Broadband Balun	Standard	REACH RoHS	Released	EAR99

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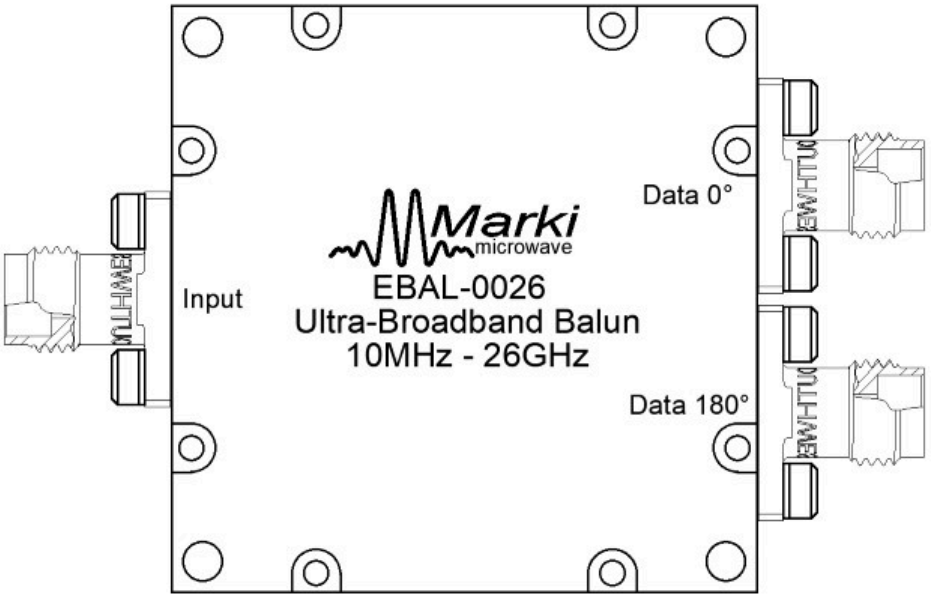
Revision History

Revision Code	Revision Date	Comment
-	2023-06-01	Datasheet Initial Release

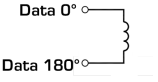
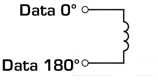
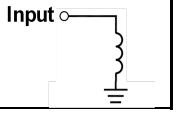
Port Configuration and Functions

Port Diagram

A top-down view of the EBAL-0026 package outline drawing is shown below. Marki baluns are passive reciprocal devices allowing either single ended to differential or differential to single ended conversion.



Port Functions

Port	Function	Connector Type	Description	DC Equivalent Circuit
Data 0°	D+ / 0° Port (Balanced)	2.92F	The 0° port is DC short to the 180° port and DC open to ground and common.	
Data 180°	D- / 180° Port (Balanced)	2.92F	The 180° port is DC short to the 0° port and DC open to ground and common.	
Input	Common Port / SE (Unbalanced)	2.92F	The common port is DC short to ground	

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. If these limits are exceeded, the device may be inoperable or have a reduced lifetime.

Parameter	Maximum Rating	Unit
Maximum Operating Temperature	100	°C
Maximum Storage Temperature	125	°C
Minimum Operating Temperature	-55	°C
Minimum Storage Temperature	-65	°C

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	38.10x38.10 mm

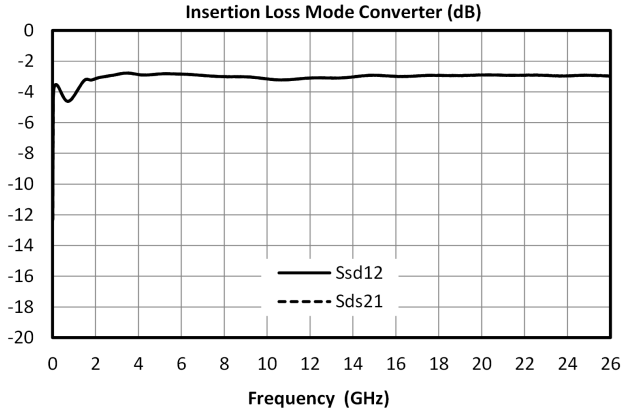
Electrical Specifications

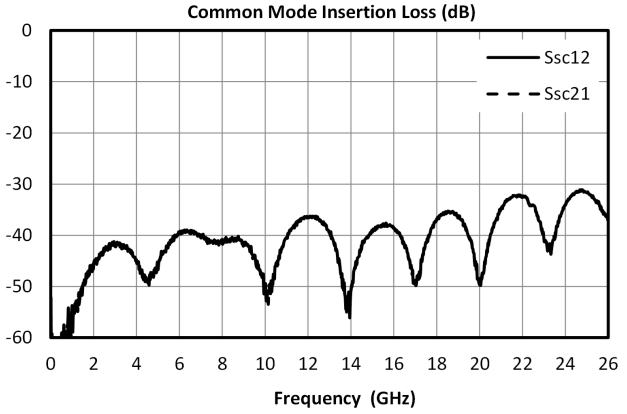
The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C.

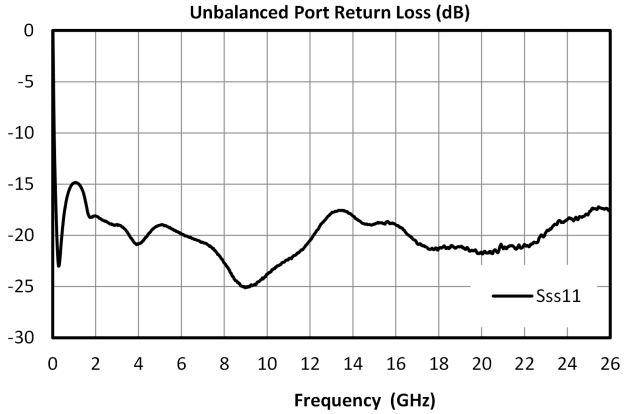
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Amplitude Balance	-	0.01	26	-	0.5	1	dB
Common Mode Rejection	-	0.01	26	20	31	-	dB
Impedance	-	-	-	-	50	-	Ω
Insertion Loss as a Mode Converter	-	0.01	26	-	3	6	dB
Isolation	-	0.01	26	-	3	-	dB
Nominal Phase Shift	-	0.01	26	-	180	-	°
Phase Balance	-	0.01	26	-	5	10	°
Return Loss (Common)	-	0.01	26	-	15	-	dB
Return Loss (Output)	-	0.01	26	-	10	-	dB
Impedance Ratio	-	-	-	-	2:1	-	

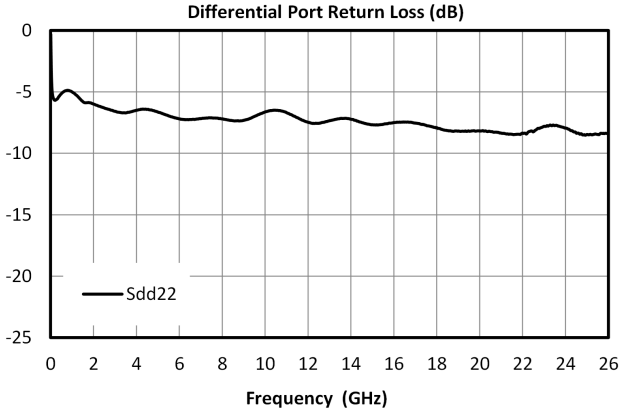
Typical Mixed Mode Performance Plots

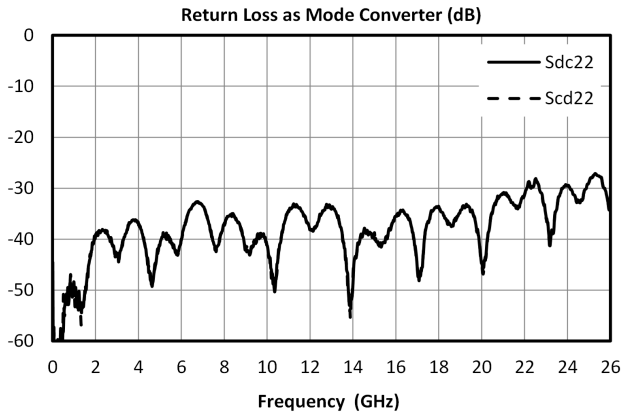
Mixed mode scattering parameters are used to characterize differential circuits. For baluns, this means that the 0° and 180° ports become a single 100Ω differential port and the common port remains the same 50Ω common port. The two-port s-parameters of the balun are then characterized based on differential (d), common mode (c), or single-ended (s) signals. For example: Sds21 is the differential output response given a single ended input.

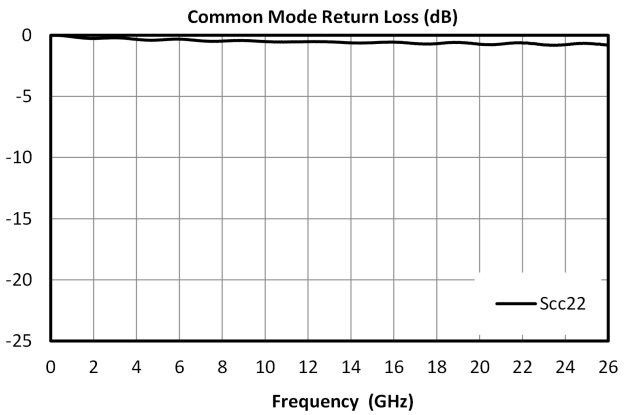




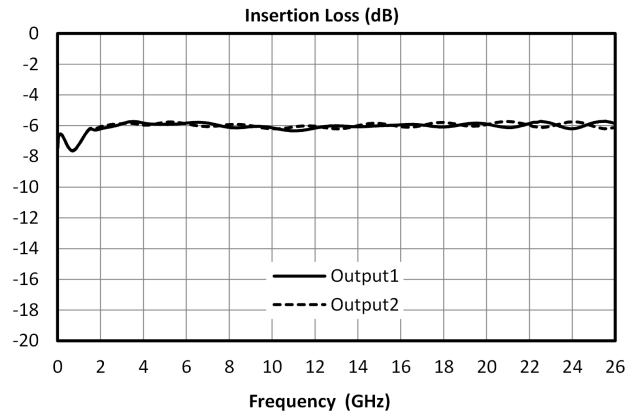


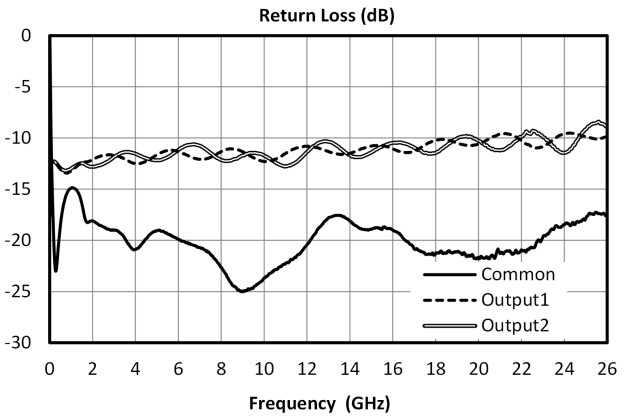


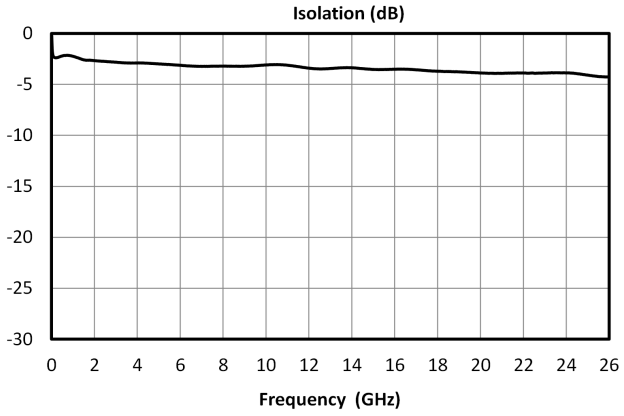


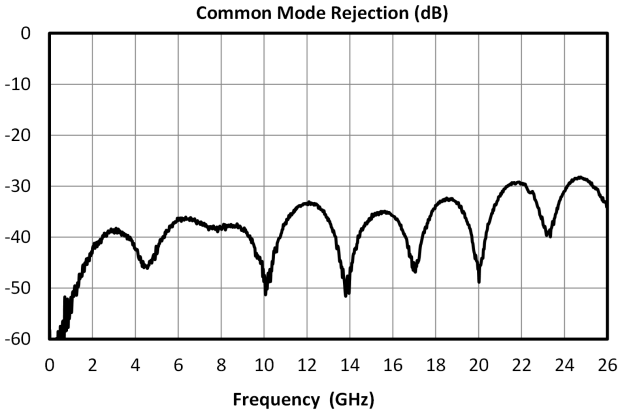


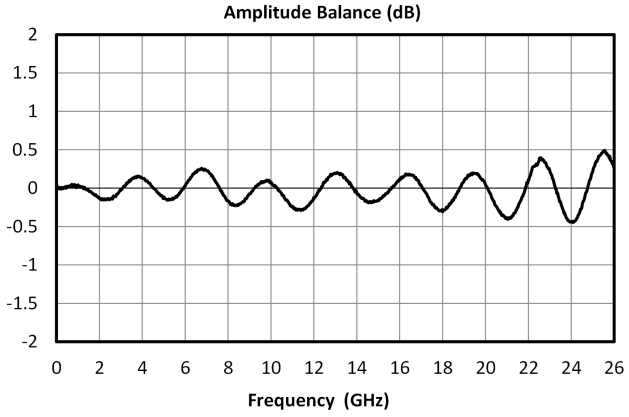
Typical Performance Plots

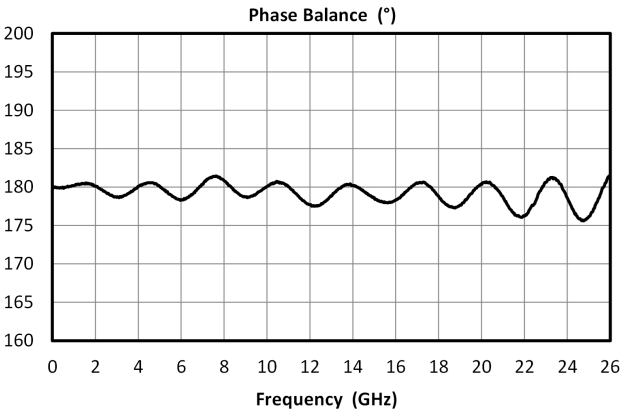










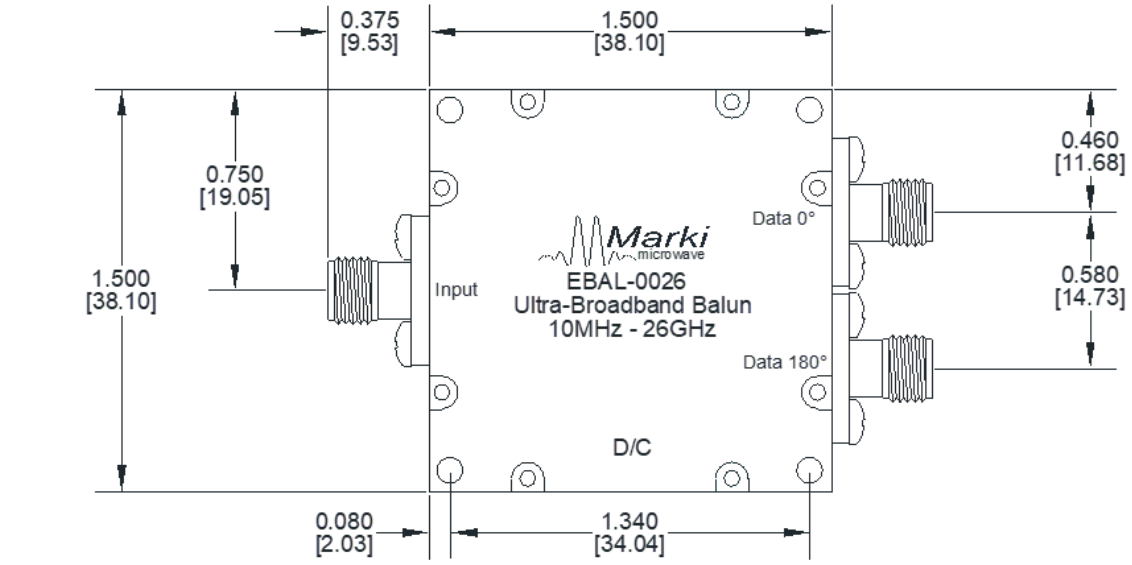


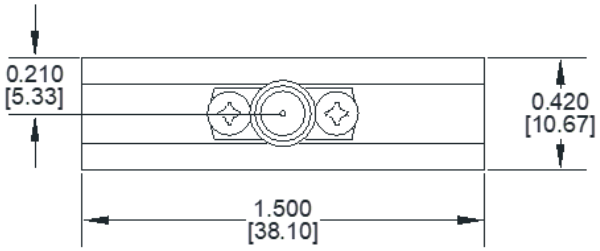
Mechanical Data

Outline Drawing

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

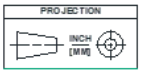
All measurements are typical





Note: Connectors are not removeable. Do not attempt replacing.

Port	Connector Type
1,2,3	2.92 mm Female



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