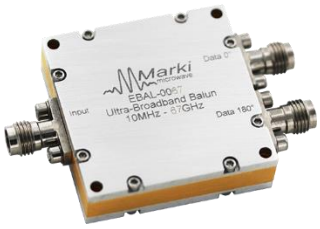
10MHz to 67GHz BROADBAND BALUN EBAL-0067

1 Device Overview



Module

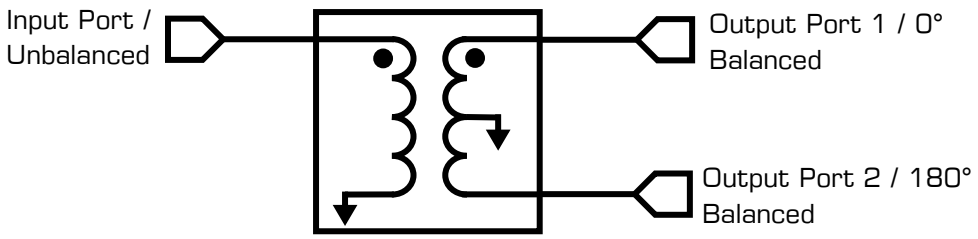
1.1 General Description

The EBAL-0067 is an ultra-broadband balun, hand-tuned for optimal phase and amplitude balance over a 10 MHz to 67 GHz bandwidth. The EBAL-0067 operates as an excellent choice for analog to digital converters, balanced receivers, baseband digital modulations, and signal integrity

1.2 Features

- 10MHz to 67GHz 1:2 Balun (Balanced to Unbalanced Transformer)
- Transforms 50Ω to 100Ω Differential Output
- Designed for Optimal Phase/Amplitude Balance
- S3P Data EBAL-0067.zip

1.3 Functional Block Diagram



1.4 Part Ordering Options[1]

Part Number	Description	Green Status	Product Lifecycle	Export Classification
EBAL-0067	Connectorized Module	RoHS	Active	EAR99

[1] Refer to our website for a list of definitions for terminology presented in this table.

Table of Contents

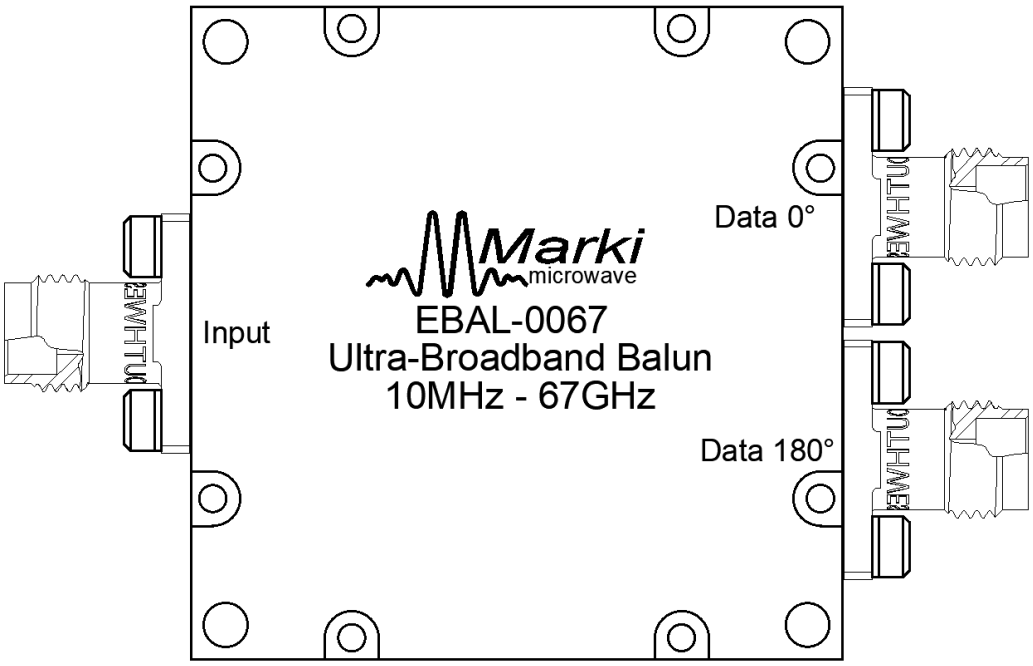
Revision History

Revision Code	Revision Date	Comment
-	June 2023	Datasheet Initial Release

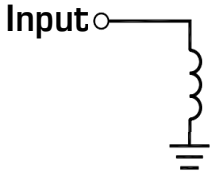
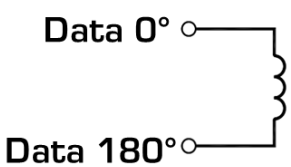
2 Port Configurations and Functions

2.1 Port Diagram

A top-down view of the EBAL-0067 package outline drawing is shown below. Marki baluns are passive reciprocal devices allowing either single ended to differential or differential to single ended conversion.



2.2 Port Functions

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

3 Specifications

3.1 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	Units
Operating Temperature	-55 to +100	°C
Storage Temperature	-65 to +125	°C

3.2 Package Information

Parameter	Details	Rating
ESD	Human Body Model (HBM), per MIL-STD-750, Method 1020	1A

3.3 Electrical Specifications

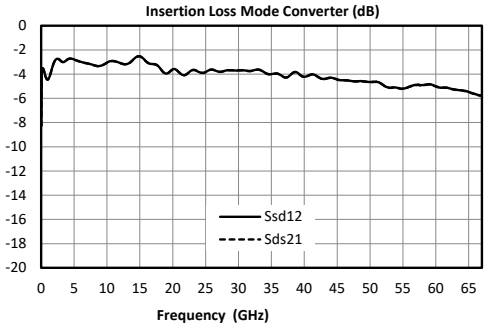
The electrical specifications apply at T_A=+25°C in a 50Ω system.

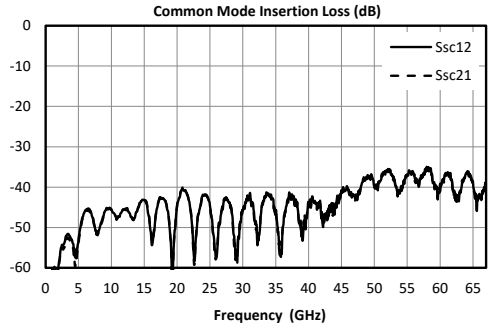
Min and Max limits are guaranteed at T_A=+25°C.

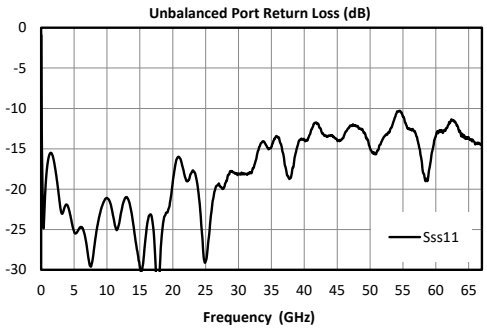
Parameter	Frequency (GHz)	Min	Typ.	Max	Units
Insertion Loss as a mode converter	10MHz – 67GHz		4	8	dB
Nominal Phase Shift			180		°
Isolation			5		dB
Return Loss (Common)			17		dB
Return Loss (Output)			10		dB
Common Mode Rejection	10MHz – 40GHz	25	45		dB
	40GHz – 67GHz	20	37		
Amplitude Balance	10MHz – 40GHz		0.1	1.0	dB
	40GHz – 67GHz		0.2	1.5	
Phase Balance	10MHz – 40GHz		1	10	°
	40GHz – 67GHz		2	15	
Impedance			50		Ω

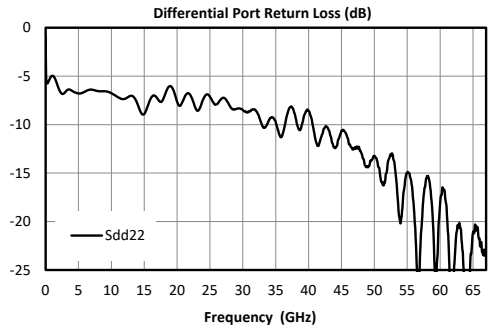
3.4 Typical Mixed Mode Performance Plots

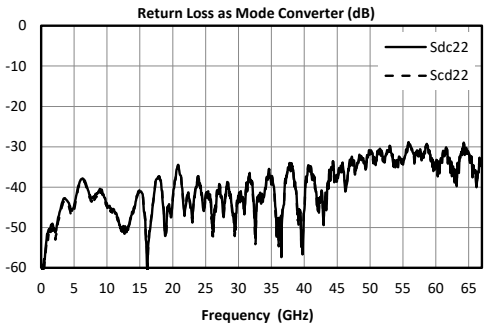
Mixed mode scattering parameters are used to characterize differential circuits. For baluns, this means that the 0° and 180° ports become a single 100Ω differential port and the common port remains the same 50Ω common port. The two-port s-parameters of the balun are then characterized based on differential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

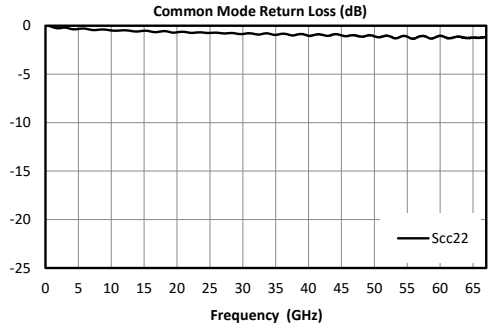






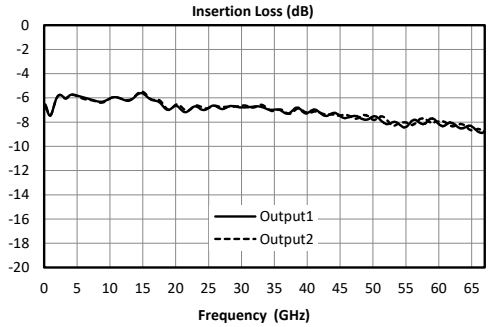


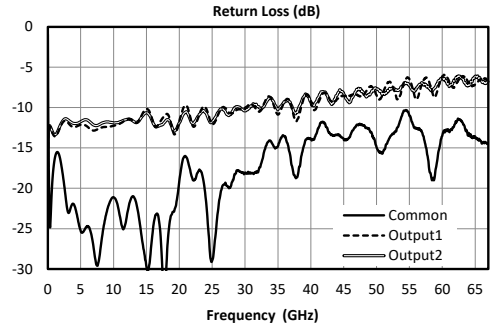


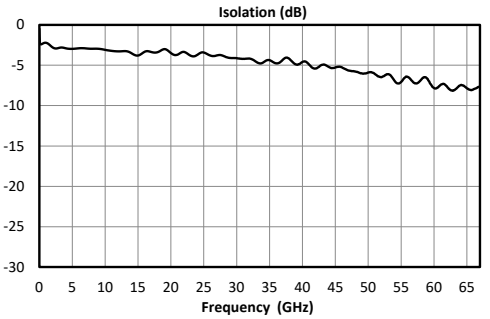


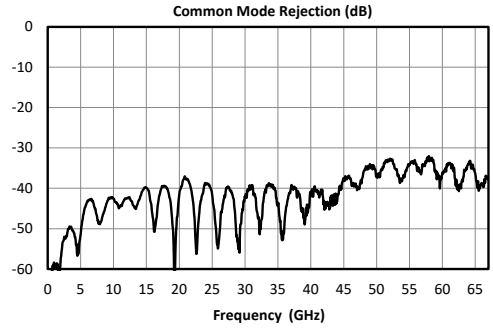
3.5 Typical Performance Plots

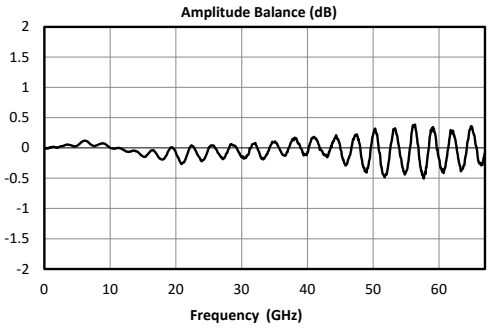
Three port scattering parameters measured as three single-ended 50Ω ports showing relationship between any two ports.

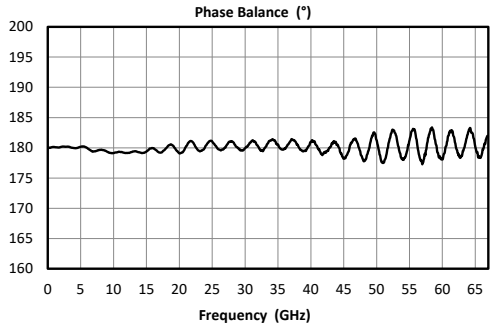






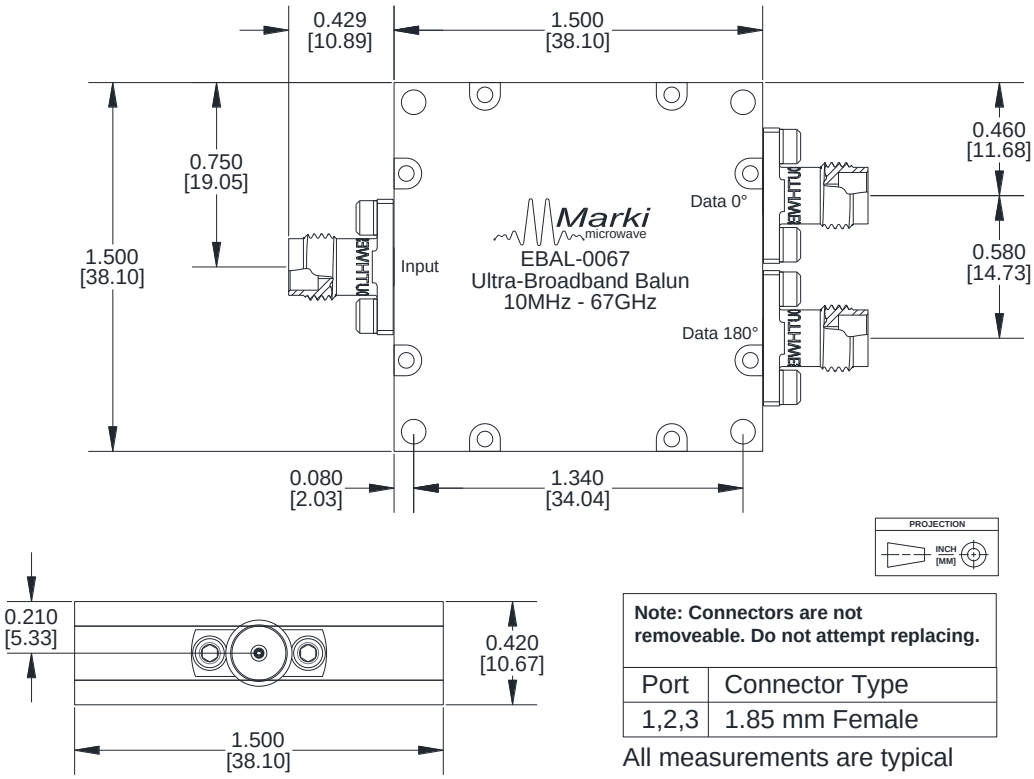






4 Mechanical Data

4.1 Outline Drawing



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

Port	Connector Type
1,2,3	1.85 mm Female

All measurements are typical