

MBAL-0208SMG

2 - 8 GHz MMIC Isolation Balun

DEVICE OVERVIEW

General Description

The MBAL-0208SMG is a MMIC surface mount high isolation balun. This balun features excellent amplitude and phase balance across its 2 to 8 GHz frequency range and offers a 2:1 impedance ratio. It has significant isolation, reducing the reflection of unwanted common mode signals. The MBAL-0208SMG is form-fit-function compatible with the BAL-0208SMG and is intended for customers supporting existing designs. For new designs, we recommend the MBAL-0214PSM, which offers improved performance in a compact 1.3 x 2mm DFN package.



[Download s-parameters here](#)

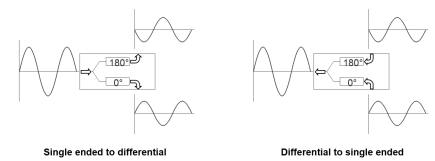
Features

- 2:1 Impedance Ratio
- Broadband 2 to 8 GHz Balun (Balanced to Unbalanced Transformer)
- High Isolation, 18dB Typical
- Insertion Loss as a Mode Converter, 1.9 dB Typical
- Common Mode Rejection, 32 dB Typical

Applications

- Test Equipment
- Electronic Warfare
- Radar and satellite communications
- High Channel Count Systems

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MBAL-0208SMG	2 - 8 GHz MMIC Isolation Balun	DFN	REACH RoHS	Released	EAR99
EVB-MBAL-0208S	Evaluation Board, 2-8 GHz Passive MMIC FFF Package Balun	EVB	REACH RoHS	Released	EAR99

Table Of Contents

- **Device Overview**
 - General Description
 - Features
 - Applications
 - Functional Block Diagram
- **Port Configuration and Functions**
 - Port Diagram
 - Port Functions
- **Revision History**
- **Specifications**
 - Absolute Maximum Ratings
 - Package Information
 - Electrical Specifications
 - Mixed Mode Scattering Parameters
 - Typical Performance Scattering Parameters
- **Mechanical Data**
 - Outline Drawing
- **Footprint Image**
- **Evaluation Board**
 - Evaluation Board Outline Drawing

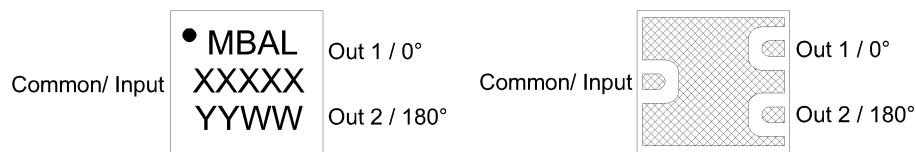
Revision History

Revision Code	Revision Date	Comment
-	2026-02-24	Initial Release

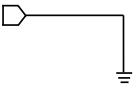

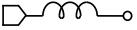
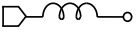
Port Configuration and Functions

Port Diagram

An X-ray top-down view of the MBAL-0208SMG package outline drawing is shown below. The MMIC Baluns are passive reciprocal devices allowing either signal splitting or combining.



Port Functions

Port	Function	Description	DC Equivalent Circuit
Ground Paddle	Gnd	Ground paddle should be connected to RF ground	
Pin 1	Common/Input	Pin 1 is DC open.	
Pin 2	Out 1 / 0° Port (Balanced)	Pin 2 is DC open.	
Pin 3	Out 2 / 180° Port (Balanced)	Pin 3 is DC open.	

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

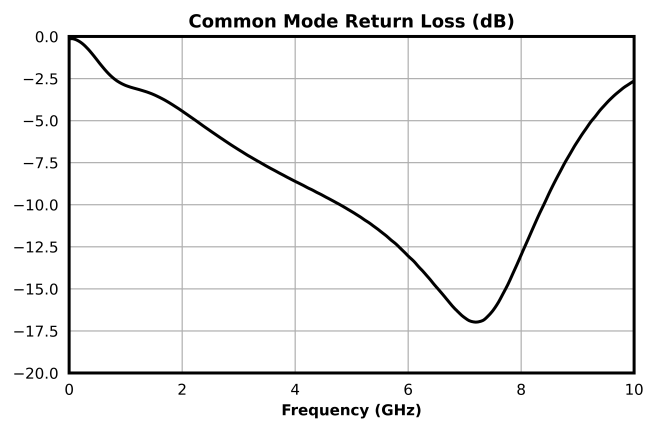
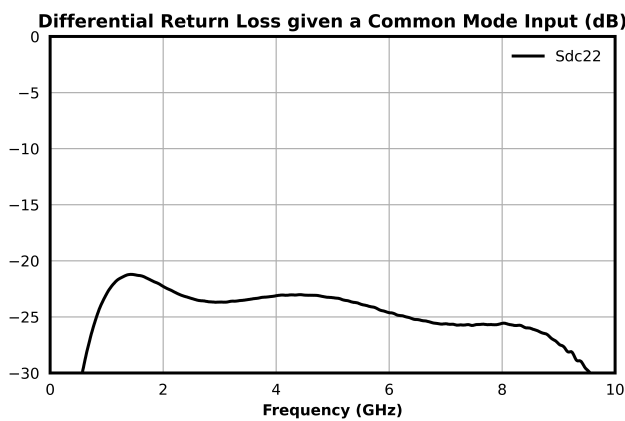
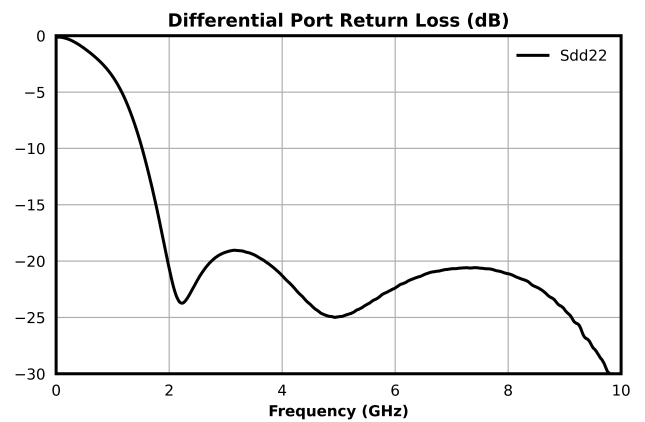
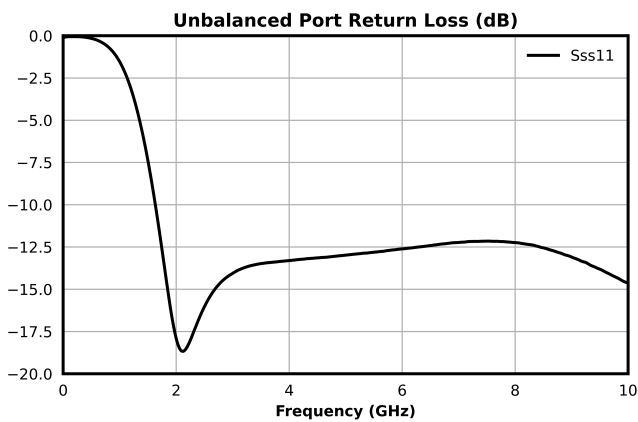
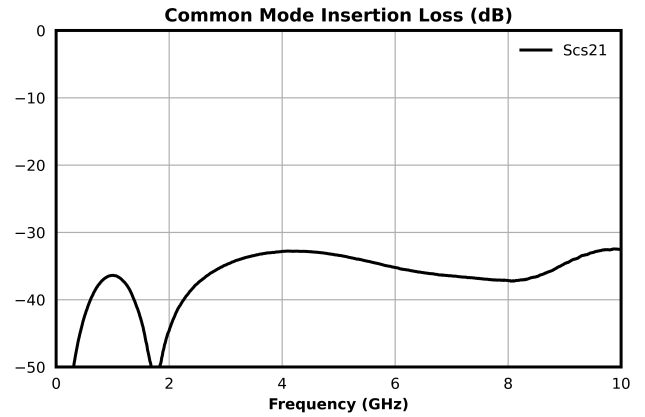
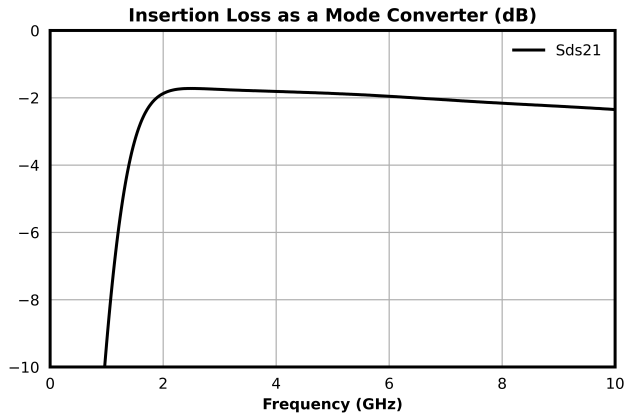
Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Dimensions	-	2.69 x 2.90 mm
Moisture Sensitivity Level	-	MSL 1

Electrical Specifications

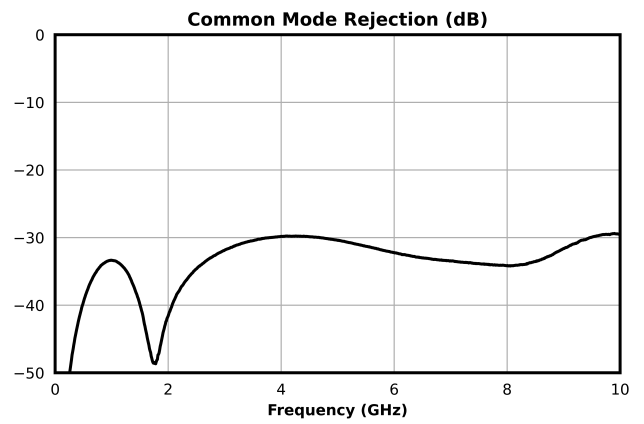
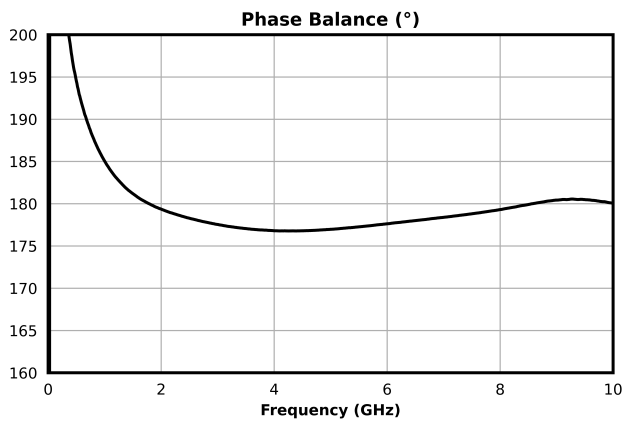
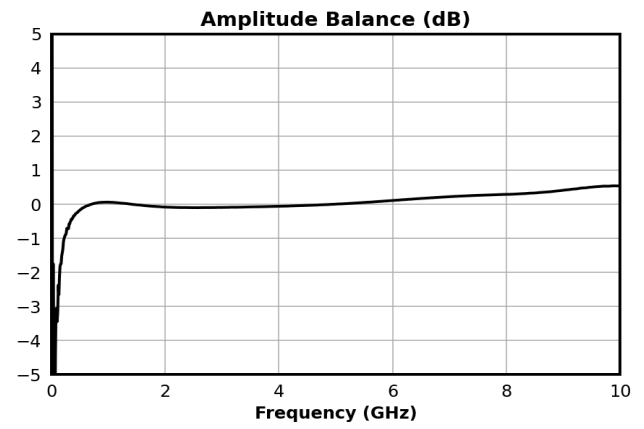
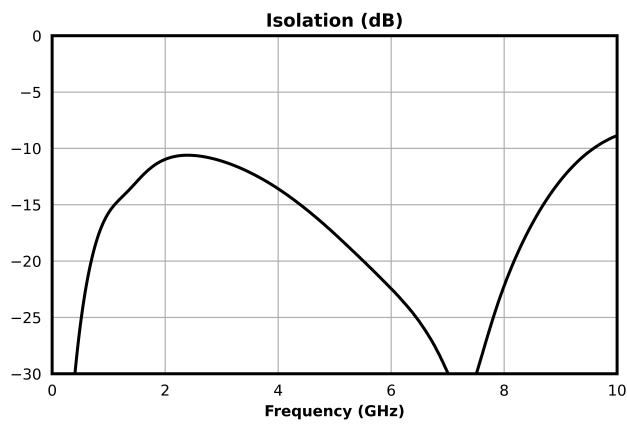
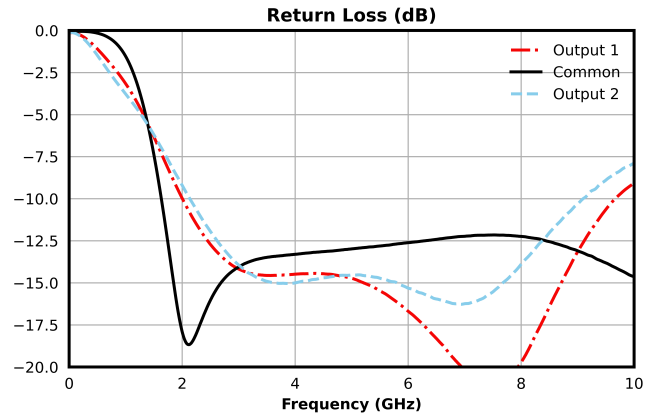
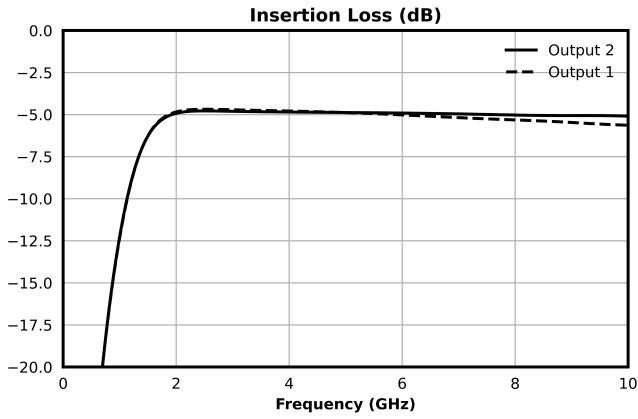
The electrical specifications apply at TA=+25°C in a 50Ω system. Min and Max limits are guaranteed at TA=+25°C.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Insertion Loss as a Mode Converter	Configuration A, Temp = 25°C	2	8	-	1.9	-	dB
Nominal Phase Shift	Configuration A, Temp = 25°C	-	-	-	180	-	°
Common Port Return Loss	Configuration A, Temp = 25°C	2	8	-	13	-	dB
Common Mode Return Loss	Configuration A, Temp = 25°C	2	8	-	10	-	dB
Output Return Loss	Configuration A, Temp = 25°C	2	8	-	15	-	dB
Isolation	Configuration A, Temp = 25°C	2	8	-	18	-	dB
Amplitude Balance	Configuration A, Temp = 25°C	2	8	-	0.1	-	dB
Phase Balance	Configuration A, Temp = 25°C	2	8	-	2.4	-	°
Common Mode Rejection	Configuration A, Temp = 25°C	2	8	-	32	-	dB
Impedance	Configuration A, Temp = 25°C	-	-	-	50	-	Ω
Impedance Ratio	-	2	8	-	2:1	-	

Mixed Mode Scattering Parameters



Typical Performance Scattering Parameters

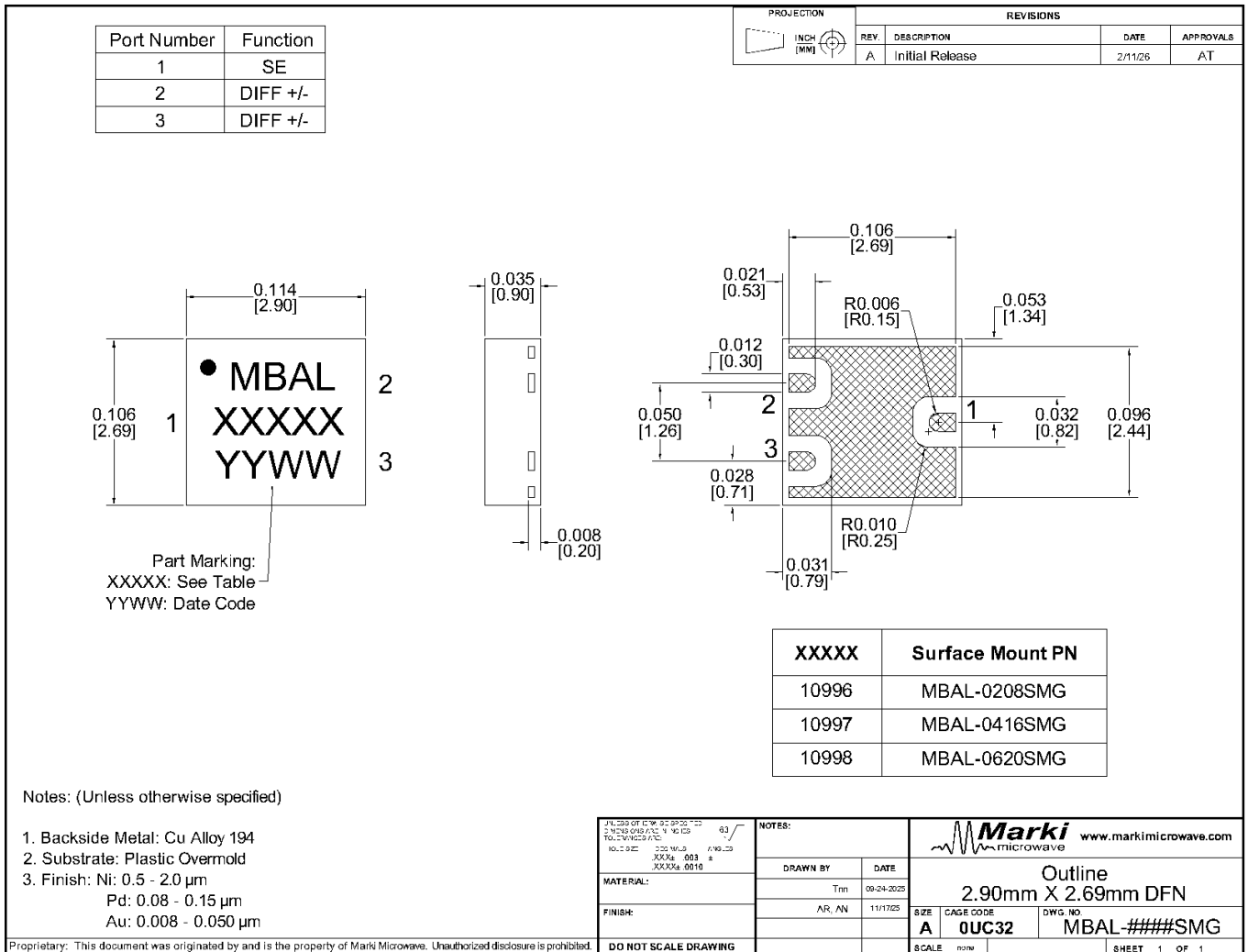


Measured data is de-embedded from fixture using AFR.

Mechanical Data

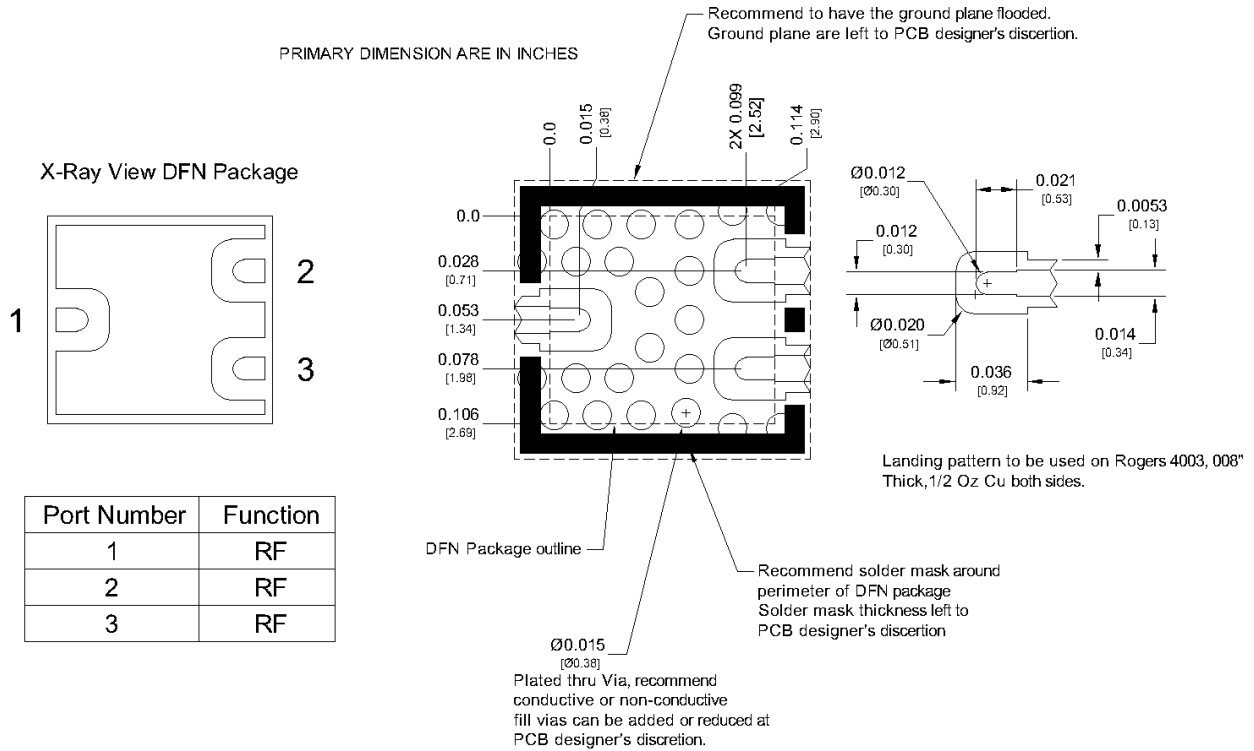
Outline Drawing

Download : [Outline 2D Drawing](#) | [Outline 3D STP](#)



Footprint Image

Download : [Footprint Drawing](#)



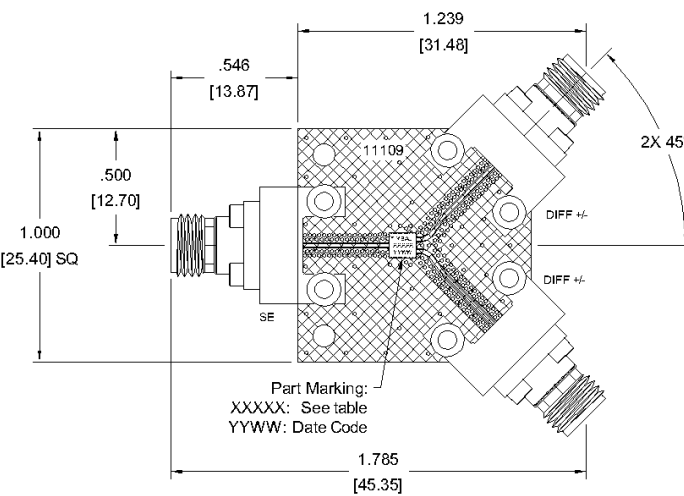
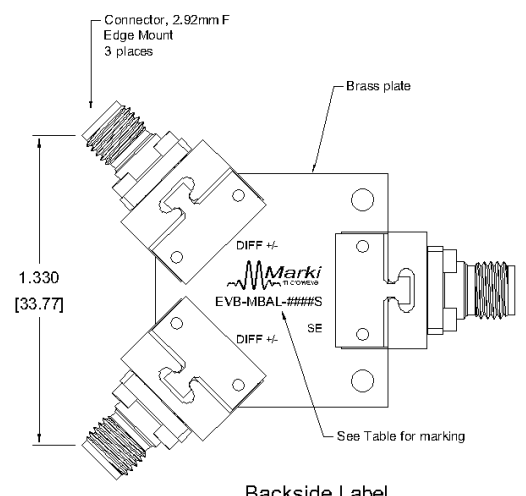
Port Number	Function
1	RF
2	RF
3	RF

Evaluation Board - Outline Drawing

All measurements are typical

Port	Connector Type
SE	2.92 mm F Edge Mount
DIFF +/-	2.92 mm F Edge Mount
DIFF +/-	2.92 mm F Edge Mount

Connectors are not removable

PROJECTION		REVISIONS			
INCH	(MM)	REV	DESCRIPTION	DATE	APPROVALS
		A	Initial Release	2/18/26	AT

XXXXX	EVB-MBAL-####S	Surface Mount PN
10996	EVB-MBAL-0208S	MBAL-0208SMG
10997	EVB-MBAL-0416S	MBAL-0416SMG
10998	EVB-MBAL-0620S	MBAL-0620SMG

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.

2. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

3. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

4. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

5. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

6. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

7. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

8. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

9. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

10. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

11. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

12. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

13. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

14. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

15. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

16. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

17. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

18. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

19. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

20. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

21. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

22. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

23. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

24. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

25. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

26. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

27. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

28. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

29. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

30. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

31. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

32. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

33. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

34. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

35. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

36. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

37. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

38. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

39. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

40. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

41. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

42. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

43. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

44. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

45. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

46. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

47. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

48. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

49. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

50. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

51. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

52. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

53. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

54. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

55. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

56. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

57. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

58. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

59. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

60. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

61. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

62. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

63. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

64. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

65. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

66. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

67. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

68. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

69. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

70. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

71. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

72. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

73. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

74. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

75. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

76. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

77. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

78. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

79. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

80. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

81. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

82. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

83. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

84. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

85. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

86. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

87. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

88. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

89. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

90. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

91. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

92. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

93. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

94. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

95. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

96. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

97. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

98. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

99. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

100. DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED.

Marki microwave www.markimicrowave.com

Outline, MBAL SMG Eval Board

SIZE	CAGE CODE	DWG. NO.
A	0UC32	EVB-MBAL-####S

SHEET 1 OF 1

Proprietary: This document was originated by and is the property of Marki Microwave. Unauthorized disclosure is prohibited.

DO NOT SCALE DRAWING

DISCLAIMER

MARKI MICROWAVE, LLC., ("MARKI") PROVIDES TECHNICAL SPECIFICATIONS AND DATA (INCLUDING DATASHEETS), APPLICATION OR OTHER DESIGN ADVICE, WEB TOOLS, AND OTHER INFORMATION AND RESOURCES "AS IS" AND WITH ALL FAULTS. MARKI DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT.

These resources are intended for developers skilled in the art designing with Marki products. You are solely responsible for (1) selecting the appropriate products for your application, (2) designing, validating, and testing your application, and (3) ensuring your application meets applicable standards and other requirements. Marki makes no guarantee regarding the suitability of its products for any particular purpose, nor does Marki assume any liability whatsoever arising out of your use or application of any Marki product.

Marki grants you permission to use these resources only for development of an application that uses Marki products. Other reproduction or use of these resources is strictly prohibited. No license is granted to any other Marki intellectual property or to any third-party intellectual property. Marki reserves the right to make changes to the product(s) or information contained herein without notice.

MARKI MICROWAVE and T3 MIXER are trademarks or registered trademarks of Marki Microwave, LLC. All other trademarks used are the property of their respective owners.

© 2026, Marki Microwave, LLC