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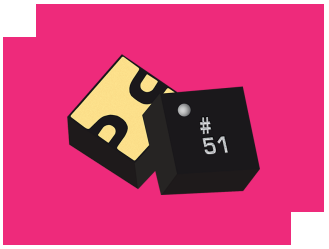
MEQ6-67CSP1

Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

DEVICE OVERVIEW

General Description

The MEQ6-67CSP1 is a passive MMIC equalizer in our compact 1.5mm CSP1 chip scale surface mount package. The MEQ6-67CSP1 provides a positive slope equalization from DC-67 GHz with a DC attenuation of 6 dB, and achieves a 19 dB return loss all in a compact form factor. The chip scale package allows for extreme miniaturization of the SMT footprint while maintaining standard solder reflow processes. Designed for RF systems that prioritize SWAP, this equalizer compensates for frequency-dependent losses and improves gain flatness across broadband signal chains. Common applications include compensating for high frequency amplifier gain roll off, equalizing filter passbands, and improving the eye diagram in high-speed digital systems.



Download s-parameters here

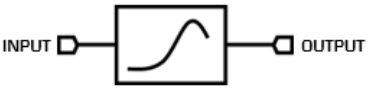
Features

- Compact 1.5 x 1.5 mm package size
- DC Attenuation of 6 dB
- Typical Insertion Loss 1 dB at 67 GHz
- Typical Return Loss of 25 dB over operating band
- Low SWaP
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

Applications

- RF Transceivers
- High-Speed Data
- Telecom
- Amplifier Compensation
- Frequency-Dependent Loss Compensation

Functional Block Diagram



Part Ordering Options

Part Number	Description	Package	Green Status	Product Lifecycle	Export Classification
MEQ6-67CSP1	Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer	CSP1	REACH RoHS	Released	EAR99
EVB-MEQ6-67	Evaluation Board, Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer	EVB	REACH RoHS	Released	EAR99

MEQ6-67CSP1

Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

Table Of Contents

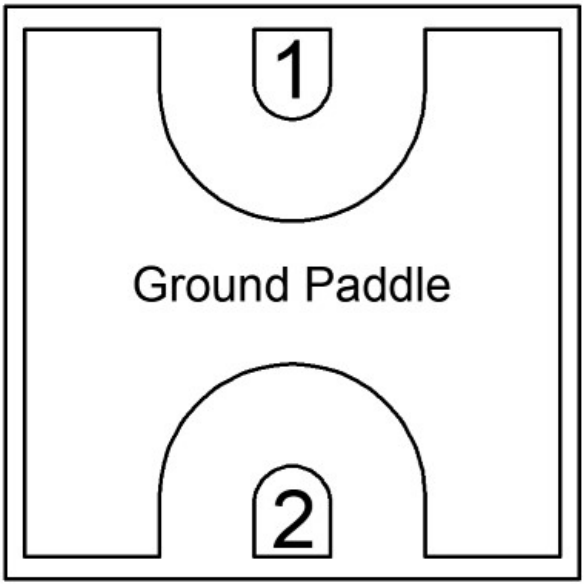
Revision History

Revision Code	Revision Date	Comment
-	2025-11-18	Initial Release

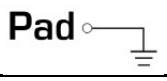
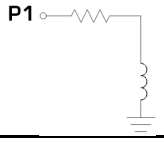
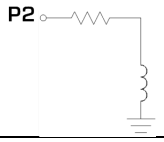
Port Configuration and Functions

Port Diagram

An x-ray view of the MEQ6-67CSP1 package outline drawing is shown below. The MEQ equalizers are symmetrical allowing Port 1 or Port 2 to be used as the input.



Port Functions

Port	Function	Description	DC Equivalent Circuit
GND	Ground	SM package ground path is provided through the ground paddle.	
Pin 1	Input/Output	Pin 1 is DC connected to ground through a resistor. DC block is required if voltage present.	
Pin 2	Input/Output	Pin 2 is DC connected to ground through a resistor. DC block is required if voltage present.	

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
Port 1 DC Current	25	mA
Port 2 DC Current	25	mA
Power Handling, at any Port (25°C)	30	dBm

Package Information

Parameter	Details	Rating
ESD	250 to < 500 Volts	HBM Class 1A
Weight	Package name: CSP1	0.04g
Dimensions	-	1.50 x 1.50 mm
Moisture Sensitivity Level	-	MSL 3

Electrical Specifications

The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the equalizer in a CSP1 package with a sine wave input applied to port 1. Min and Max limits are guaranteed at TA=+25°C.

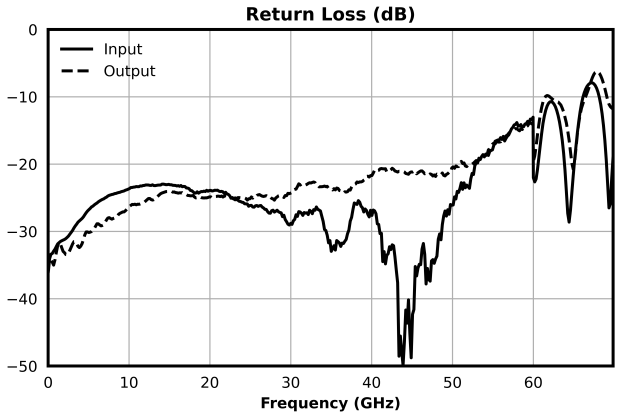
Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Insertion Loss at DC	Configuration A, Temp = 25°C	0	0	-	6.0	-	dB
Insertion Loss	Configuration A, Temp = 25°C	33.5	33.5	-	3.0	-	dB
Insertion Loss	Configuration A, Temp = 25°C	67	67	-	1.0	-	dB
Equalization Value	Configuration A, Temp = 25°C	0	67	-	5.5	-	dB
Return Loss	Configuration A, Temp = 25°C	0	67	-	25	-	dB
Group Delay	Configuration A, Temp = 25°C	0	67	-	15	-	ps

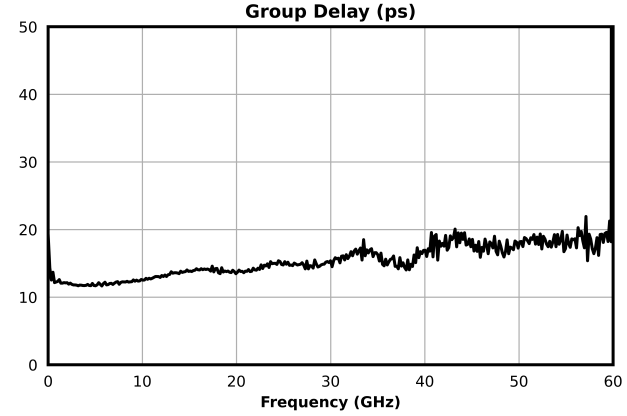
Equalizer is symmetrical. Reverse measurement is equivalent to forward measurement. All measurements taken in EVB package and de-embedded to the CSP1 pad interface.

MEQ6-67CSP1

Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

Typical Performance Plot





MEQ6-67CSP1

Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

Mechanical Data

Outline Drawing

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

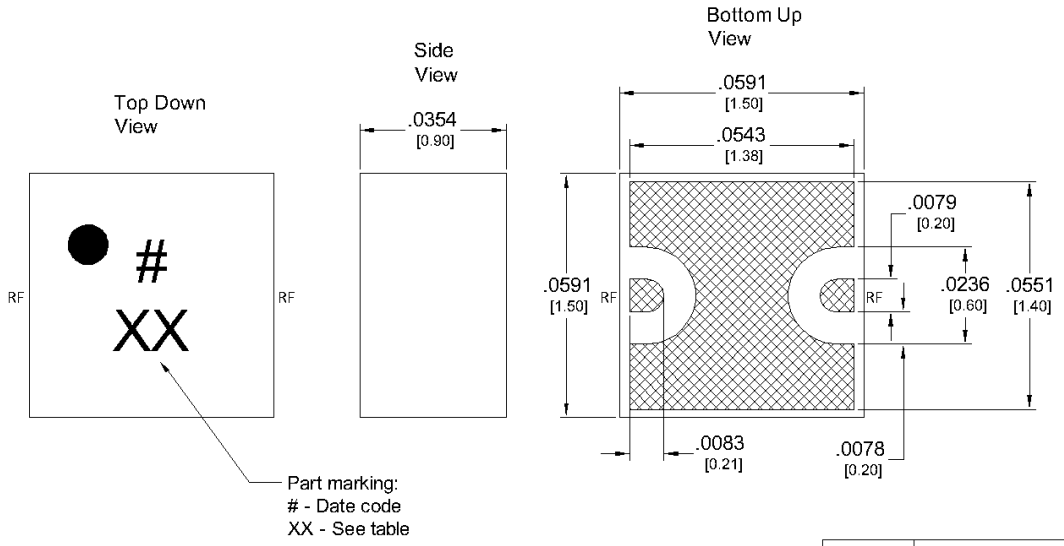
*All measurements are typical
units in inch +/-.004" [millimeter +/-0.1]

PROJECTION: INCH [MM]

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVALS
A	Initial Release	9/3/25	AT

DFN 1.5mm by 1.5mm date code

Code	Year	QTR
A	2021	Q1
B	2021	Q2
C	2021	Q3
D	2021	Q4
E	2022	Q1
F	2022	Q2
G	2022	Q3
H	2022	Q4
I	2023	Q1
J	2023	Q2
K	2023	Q3
L	2023	Q4
M	2024	Q1
N	2024	Q2
O	2024	Q3
P	2024	Q4
Q	2025	Q1
R	2025	Q2
S	2025	Q3
T	2025	Q4
U	2026	Q1
V	2026	Q2
W	2026	Q3
X	2026	Q4
Y	2027	Q1
Z	2027	Q2
0	2027	Q3
1	2027	Q4
2	2028	Q1
3	2028	Q2
4	2028	Q3
5	2028	Q4
6	2029	Q1
7	2029	Q2
8	2029	Q3
9	2029	Q4



XX	MEQ#-67CSP1
51	MEQ6-67CSP1
52	MEQ9-67CSP1

Notes: (Unless otherwise specified)

1. Shaded areas are metalized.
2. Finish: Ni: 0.5 - 2.0 µm
   Pd: 0.08 - 0.15 µm
   Au: 0.008 - 0.050 µm

MATERIAL:

FINISH:

DO NOT SCALE DRAWING

NOTES:	
DRAWN BY	DATE
AVC	8/5/25
AN	8/20/25
AR	9/3/25

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Outline
CSP1 Equalizer

SIZE	CAGE CODE	DWG. NO.
A	0UC32	MEQ#-67CSP1

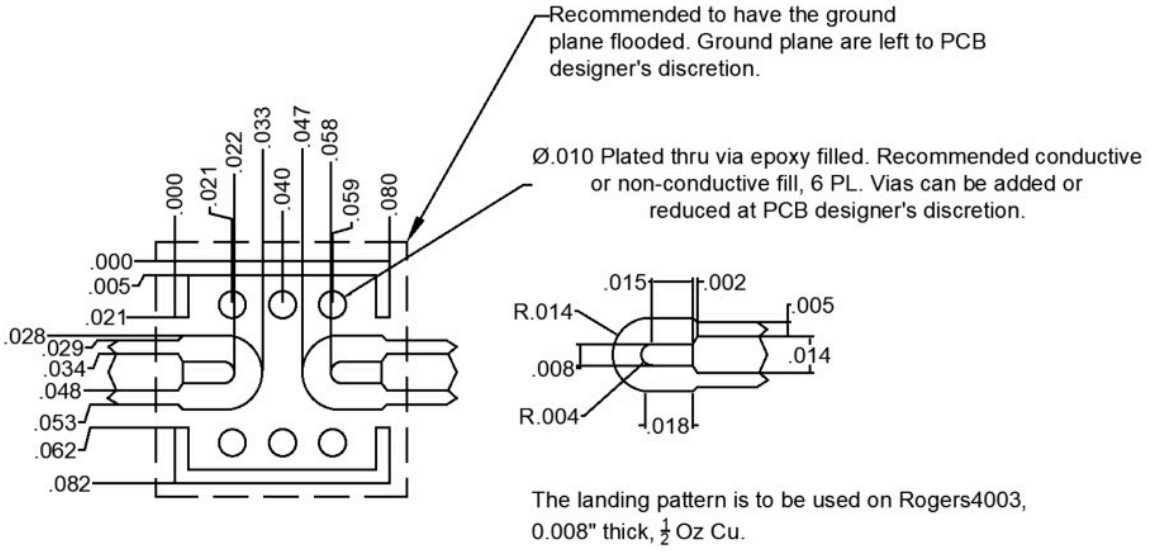
SHEET 1 OF 1

MEQ6-67CSP1

Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

Footprint Image

Download : Footprint Drawing



MEQ6-67CSP1

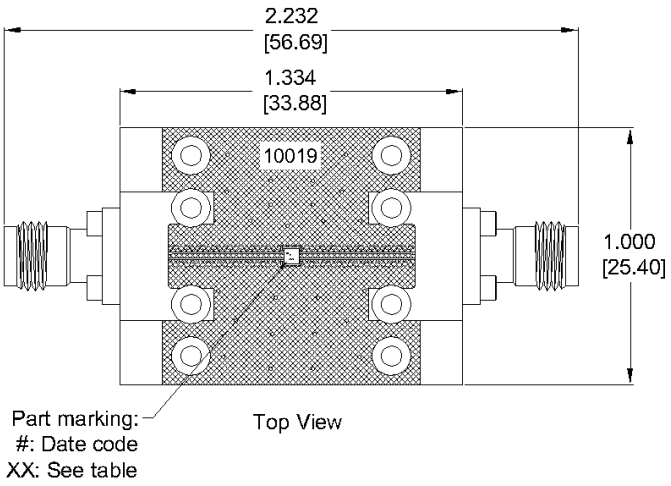
Chip Scale Package MMIC DC-67 GHz 6 dB Equalizer

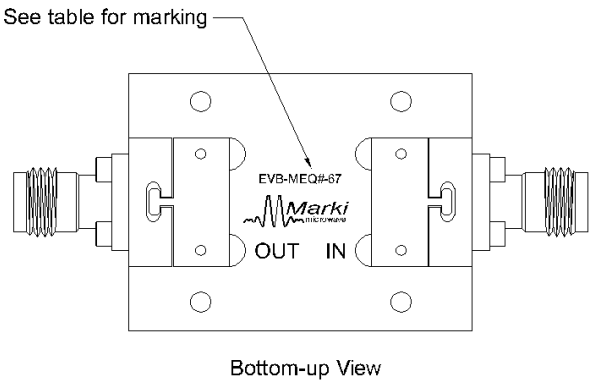
Evaluation Board - Outline Drawing

All measurements are typical

PROJECTION: INCH [MM]

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVALS
A	Initial Release	9/3/25	AT





XX	Surface Mount P/N	EVB P/N
51	MEQ6-67CSP1	EVB-MEQ6-67
52	MEQ9-67CSP1	EVB-MEQ9-67

Port	Connector Type
1, 2	1.85mm Female
Note: Connectors are not removeable.	

RoHS Compliant (SN96.5/AG3.5) Components/Assembly

NOTES:

DRAWN BY	DATE
AVC	8/5/25
AN	8/20/25
AR	9/3/25

MATERIAL:

FINISH:

DO NOT SCALE DRAWING

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Outline
MEQ Eval Board CSP1

SIZE	CAGE CODE	DWG. NO.
A	0UC32	EVB-MEQ#-67

SHEET 1 OF 1

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