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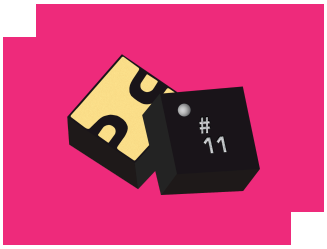
MEQ10-45CSP1

Chip Scale Package MMIC 45 GHz Equalizer

DEVICE OVERVIEW

General Description

The MEQ10-45CSP1 is a passive MMIC equalizer CSP ideal for compensating for low pass filtering effects in RF/microwave and high speed digital systems. The MEQ10-45CSP1 provides positive slope from DC to 45GHz with a DC attenuation of 10dB. The new chip scale package allows for extreme miniaturization of the SMT footprint. The unique design offers superior return loss to competitors in an extremely small footprint. GaAs MMIC technology provides consistent unit-to-unit performance in a small, low cost form factor.



Download s-parameters here

Features

- Small 1.5 x 1.5 mm package size
- DC attenuation of 10dB
- Typical Insertion Loss 0.7 dB at 45GHz
- Typical VSWR of 1.5 Over Operating Band
- Low SWaP
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

Applications

- RF Transceivers
- High-Speed Data
- Telecom
- Cable Loss Compensation
- Amplifier Compensation

Functional Block Diagram

Part Ordering Options

Part Number	Description	Package	Packing Size	Green Status	Product Lifecycle	Export Classification
MEQ10-45CSP1	Chip Scale Package MMIC 45 GHz Equalizer	CSP1	-	REACH RoHS	Released	EAR99
EVB-MEQ10-45	Evaluation Board, Chip Scale Package MMIC 45 GHz Equalizer	EVB	-	REACH RoHS	Released	EAR99
MEQ10-45CSP1-TR	Tape and Reel, Chip Scale Package MMIC 45 GHz Equalizer	CSP1	13"	REACH RoHS	Released	EAR99

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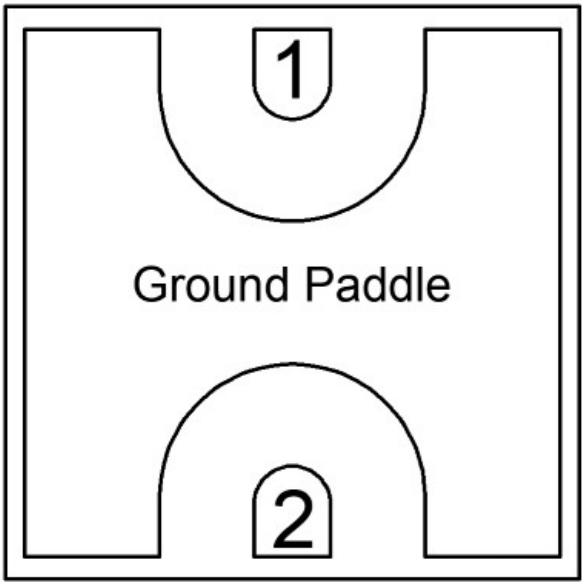
Revision History

Revision Code	Revision Date	Comment
-	2022-03-01	Datasheet Initial Release
A	2022-06-01	Outline Drawing and evaluation board name updated
B	2023-02-01	Package Description Updated
C	2026-03-05	ESD Class Added

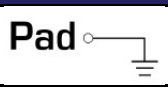
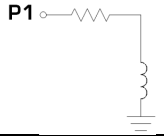
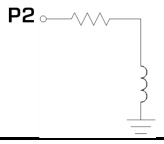
Port Configuration and Functions

Port Diagram

An x-ray view of the MEQ10-45CSP1 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

Package Information

Parameter	Details	Rating
ESD	1000 to < 2000 Volts	HBM Class 1C
Dimensions	-	1.5 x 1.5 mm
Moisture Sensitivity Level	-	MSL 3

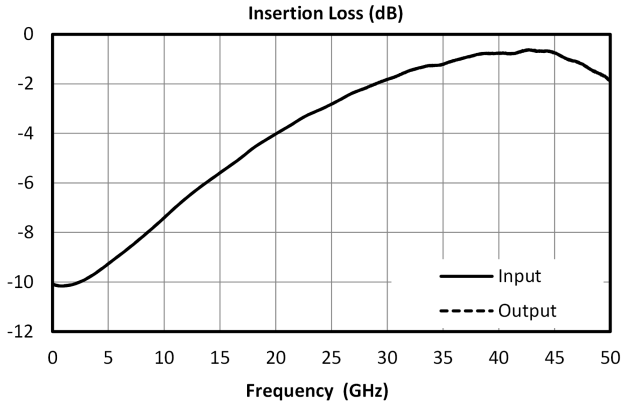
Electrical Specifications

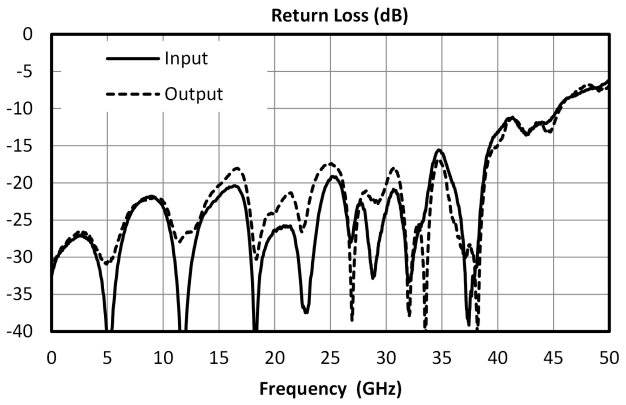
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the equalizer in a SM package with a sine wave input applied to port 1. Min and Max limits are guaranteed at TA=+25°C. All bare die are 100% DC tested and visually inspected.

Parameter	Test Conditions	Minimum Frequency (GHz)	Maximum Frequency (GHz)	Min	Typ	Max	Unit
Impedance	-	0	45	-	50	-	Ω
Insertion Loss	-	45	45	-	0.7	-	dB
Insertion Loss at DC	-	0	0	-	10	-	dB
Return Loss	-	0	45	-	13	-	dB

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

Typical Performance Plots

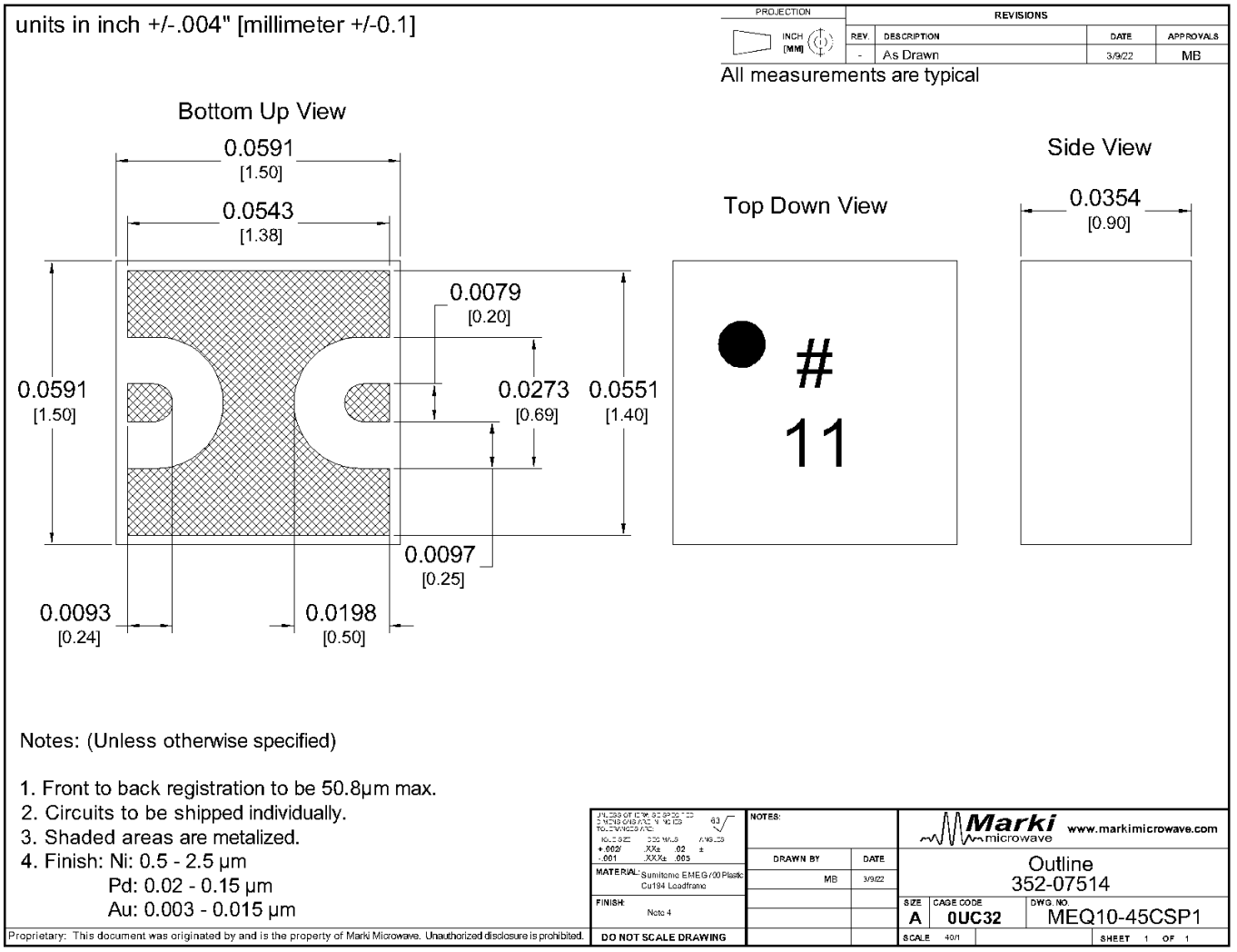




Mechanical Data

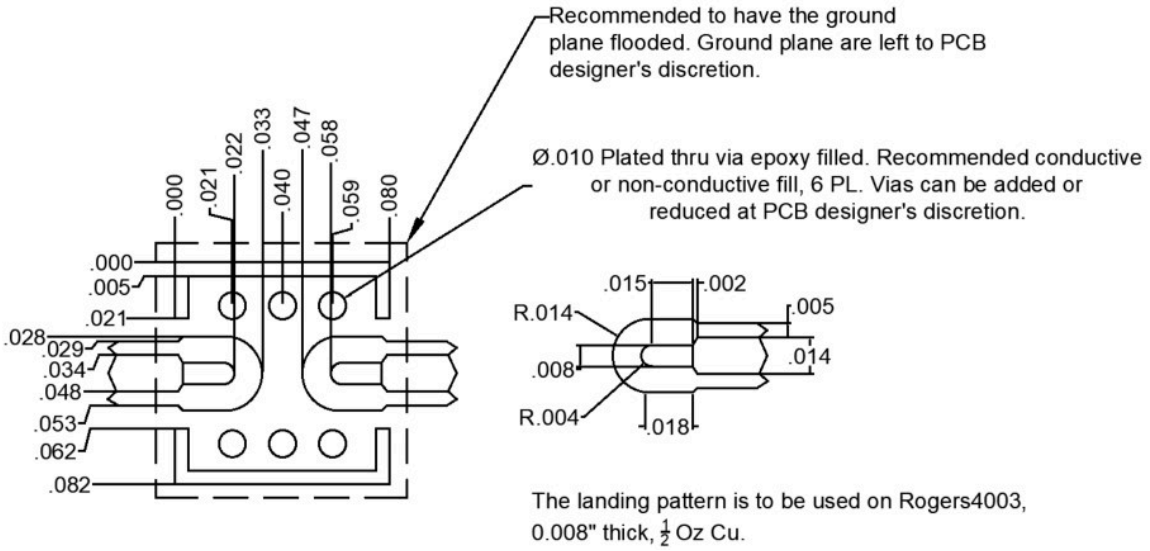
Outline Drawing

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

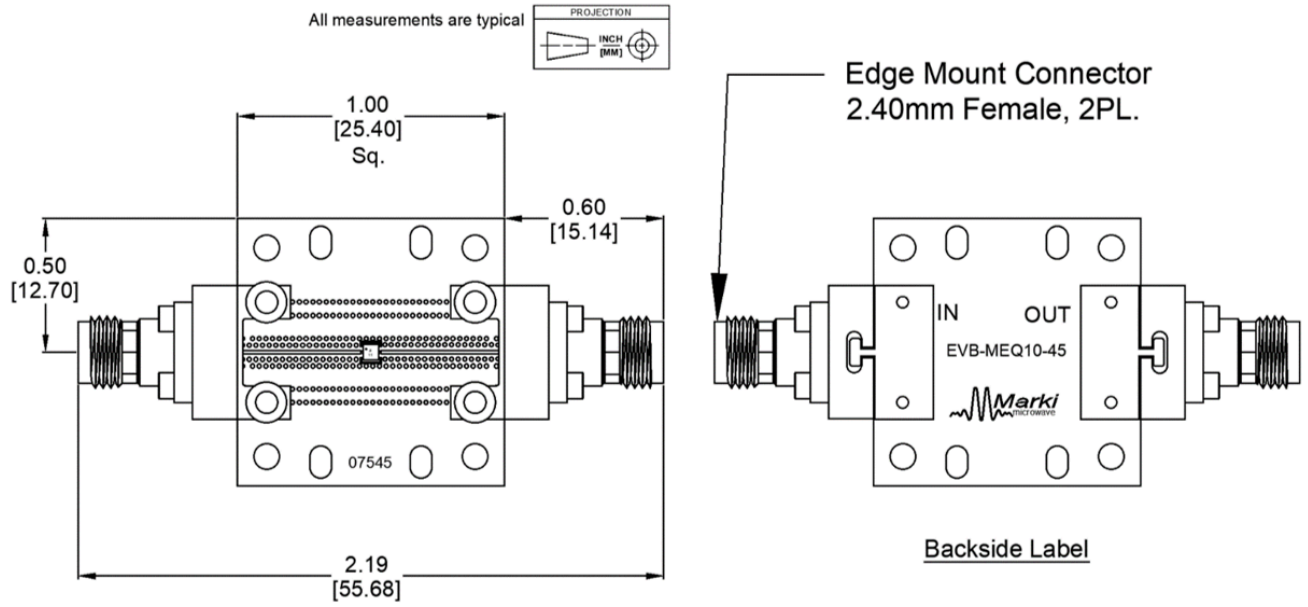


Footprint Image

Download : Footprint Drawing



Evaluation Board - Outline Drawing



Unless otherwise specified, dimensions are in inches. Tolerances are:

.XX	±.02
.XXX	±.005

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