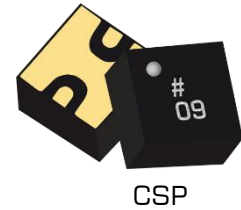


1 MEQ Device Overview

1.1 General Description

The MEQ6-45CSP1 is a passive MMIC equalizer CSP ideal for compensating for low pass filtering effects in RF/microwave and high speed digital systems. The MEQ6-45CSP1 provides positive slope from DC to 45GHz with a DC attenuation of 6dB. The 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.



1.2 Features

- Small 1.5 x 1.5 mm package size
- 2W RF Power Handling
- DC attenuation of 6dB
- Typical Insertion Loss 0.85 dB at 45GHz
- Typical VSWR of 1.33 Over Operating Band
- Low SWaP
- S2P data: [MEQ6-45CSP1.s2p](#)

1.3 Applications

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

1.4 Functional Block Diagram



1.5 Part Ordering Options¹

Part Number	Loss at DC (dB)	Description	Package	Green Status	Product Lifecycle	Export Classification
MEQ6-45CSP1	6	1.5 x 1.5 mm QFN	CSP1	RoHS	Active	EAR99
EVB-MEQ6-45	6	Connectorized Evaluation Module	Module			

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

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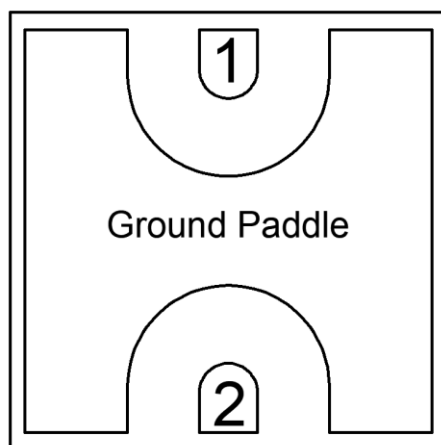
Revision History

Revision Code	Revision Date	Comment
-	June 2022	Datasheet Initial Release

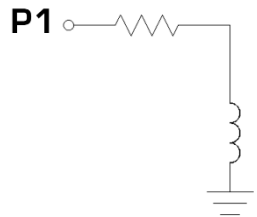
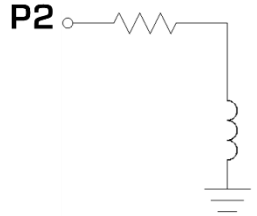
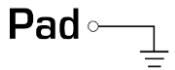
2 Port Configurations and Functions

2.1 Port Diagram

An x-ray view of the MEQ6-45CSP1 package outline drawing is shown below. The MEQ equalizers are symmetrical allowing Port 1 or Port 2 to be used as the input.



2.2 Port Functions

Port	Function	Description	Equivalent Circuit
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.	
GND	Ground	SM package ground path is provided through the ground paddle.	

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
Power Handling at any port	2	W

3.2 Package Information

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

3.3 Electrical Specifications²

The electrical specifications apply at $T_A = +25^\circ\text{C}$ in a 50Ω system. Typical data shown is for the equalizer in a CSP package with a sine wave input applied to port 1.

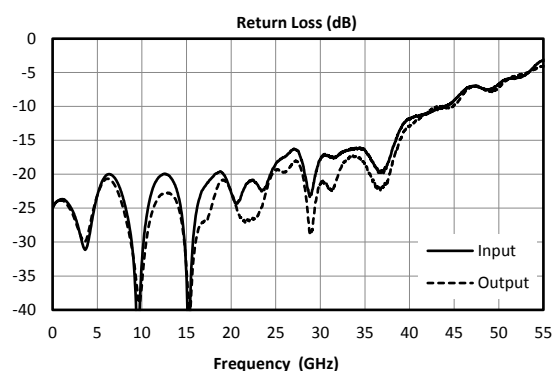
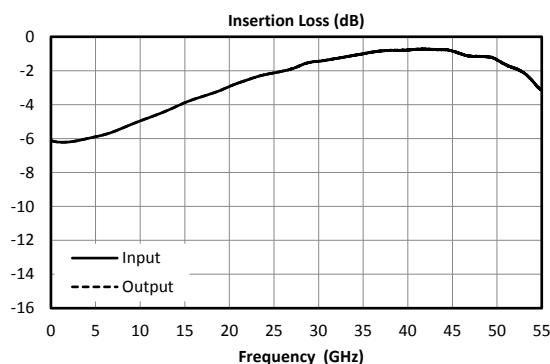
Min and Max limits are guaranteed at $T_A = +25^\circ\text{C}$. All CSP packages are 100% DC tested and visually inspected.

Parameter	Frequency Range (GHz)	Min	Typ	Max
Insertion Loss (dB)	DC		6	
	45		0.85	
Return Loss (dB)	DC to 40	10	17	
	40 to 45		10	
Impedance (Ω)	DC to 45		50	

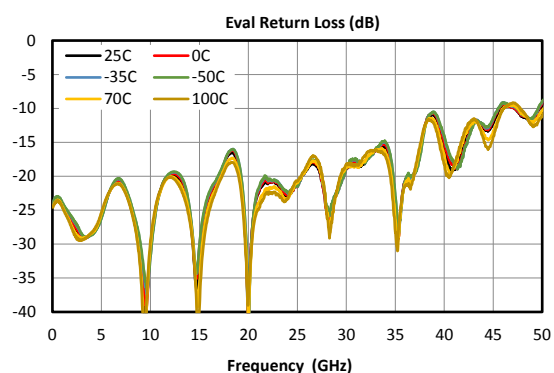
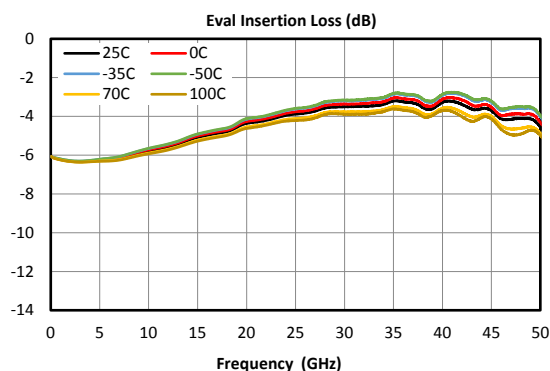
² Equalizer is symmetrical. Reverse measurement is equivalent to forward measurement. All measurements taken in EVB package and de-embedded to the CSP1 pad interface.

3.4 Typical Performance Plots

3.4.1 Electrical Performance³



3.4.2 Electrical Performance Over Temperature⁴

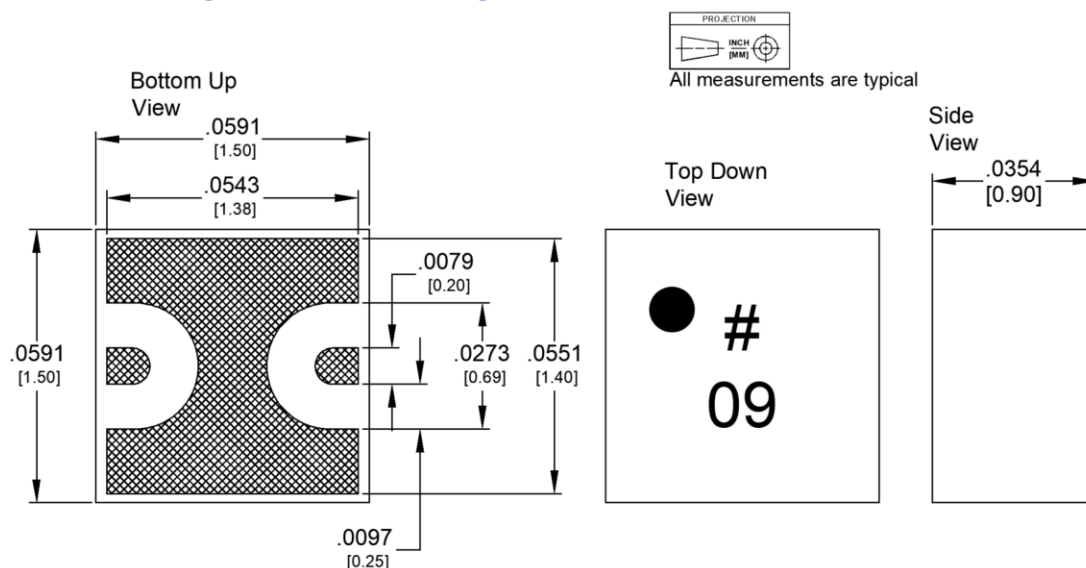


³ Electrical Performance Plots are de-embedded to the CSP package ports

⁴ Evaluation board performance is shown as a proxy for device performance due to fixturing variability over temperature

4 Mechanical Data

4.1 CSP1 Package Outline Drawing

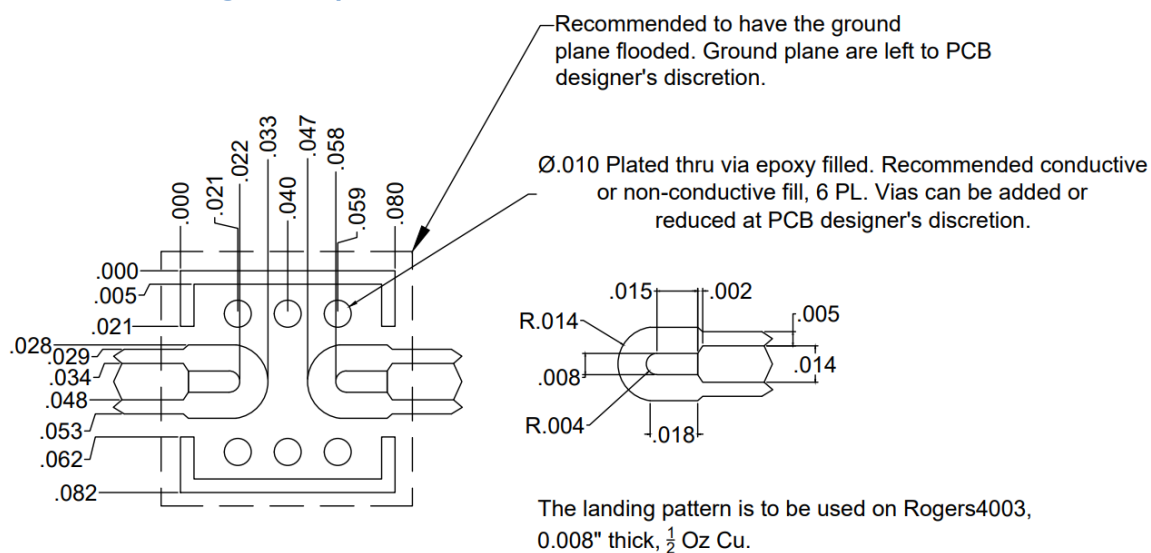


Unless otherwise specified, dimensions are in inches. Tolerances are:

.X ±.1
.XXX ±.004

1. Front to back registration to be 50.8µm max.
2. Circuits to be shipped individually.
3. Shaded areas are metalized.
4. Finish: Ni: 0.5 - 2.5 µm
Pd: 0.02 - 0.15 µm
Au: 0.003 - 0.015 µm

4.2 CSP1 Package Footprint

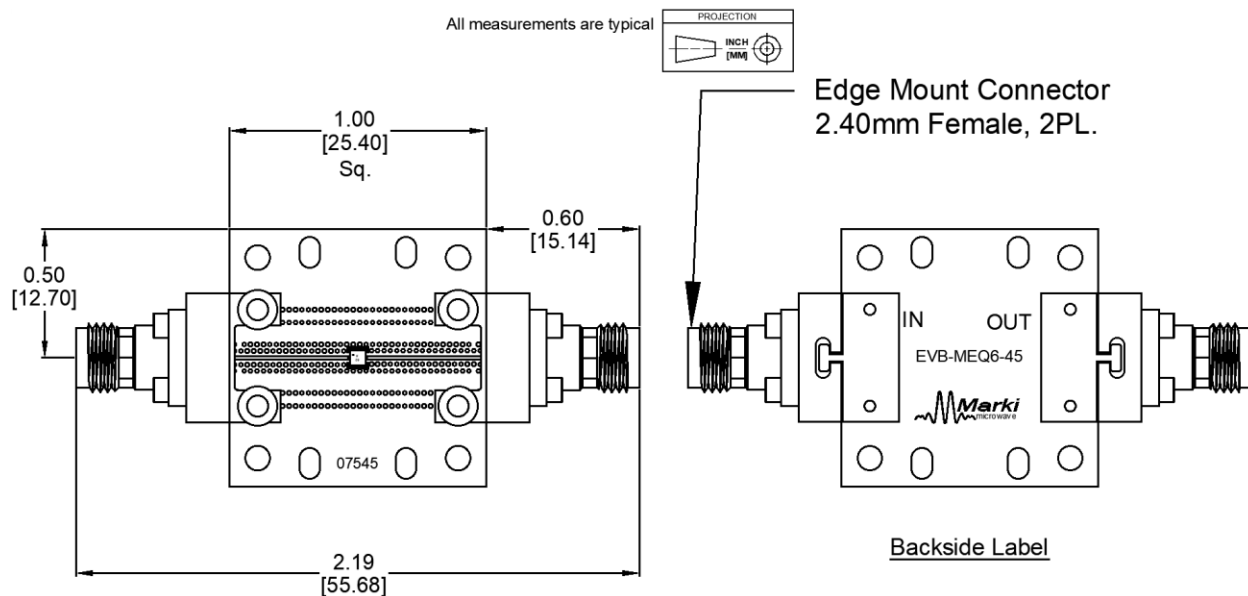


SM-Package Surface-Mount Landing Pattern

[Click here for a DXF of the above layout.](#)

[Click here for leaded solder reflow.](#) [Click here for lead-free solder reflow](#)

4.3 EVB Package Outline Drawing



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

.XX	±.02
.XXX	±.005

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