

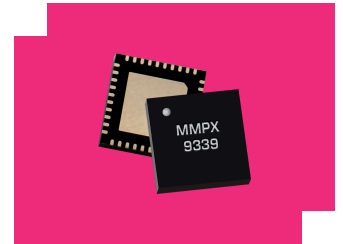
MMPX-00001PSM

Passive MMIC DC-16 GHz Quadplexer

DEVICE OVERVIEW

General Description

The MMPX-00001PSM is a MMIC surface mount quadplexer capable of multiplexing DC-4 GHz / 6-8 GHz / 10-12 GHz / 14-16 GHz signals. Passive GaAs MMIC technology allows production of smaller filter constructions that replace larger form factor circuit board constructions. Tight fabrication tolerances allow for less unit-to-unit variation than traditional filter technologies. The MMPX-00001PSM is available as a 6x6mm QFN. Low unit to unit variation allows for accurate simulations using the provided SnP files taken from measured production units.



[Download s-parameters here](#)

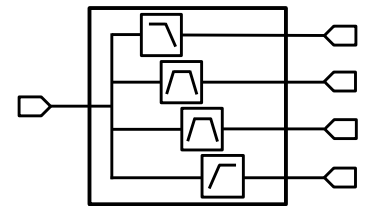
Features

- Excellent Return Loss
- 9 GHz crossover frequency
- High Band-Band Isolation

Applications

- Satellite Communications
- Reflectionless Filter Applications
- Electronic Warfare

Functional Block Diagram



Part Ordering Options

| Part Number | Description | Package | Green Status | Product Lifecycle | Export Classification |
|-----------------|--|---------|--------------|-------------------|-----------------------|
| MMPX-00001PSM | Passive MMIC DC-16 GHz Quadplexer | QFN | RoHS REACH | Released | EAR99 |
| EVB-MMPX-00001P | Evaluation Board, Passive MMIC 2-16 GHz Quadplexer | EVB | RoHS REACH | Released | EAR99 |

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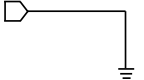
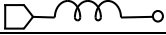
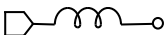
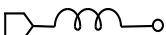
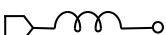
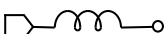
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Revision History

| Revision Code | Revision Date | Comment |
|---------------|---------------|---------------------------|
| - | 2024-07-09 | Datasheet Initial Release |

Port Configuration and Functions

Port Functions

| Port | Function | Description | DC Equivalent Circuit |
|---------------|------------------------|---|---|
| Ground Paddle | Ground | PSM package ground path is provided through the substrate and ground bond pads. |  |
| Pin 15 | Input/common | Pin 15 is DC short to Pin 29 and open to all other ports and ground. |  |
| Pin 2 | Band 4 Input/Output | Pin 2 is DC open to all other ports and ground. |  |
| Pin 29 | Band 1 Input/Output | Pin 29 is DC short to Pin 15 and open to all other ports and ground. |  |
| Pin 33 | Band 2 Input/Output | Pin 33 is DC open to all other ports and ground. |  |
| Pin 37 | Band 3 Input/Output | Pin 37 is DC open to all other ports and ground. |  |

Specifications

Absolute Maximum Ratings

The Absolute Maximum Ratings indicate limits beyond which damage may occur to the device. All Absolute Maximum Ratings are individual and should not be met in parallel. 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 |
| RF Power Handling | 30 | dBm |

Package Information

| Parameter | Details | Rating |
|----------------------------|------------|----------|
| ESD | < 50 Volts | HBM 0Z |
| Dimensions | - | 6 x 6 mm |
| Moisture Sensitivity Level | - | MSL 1 |

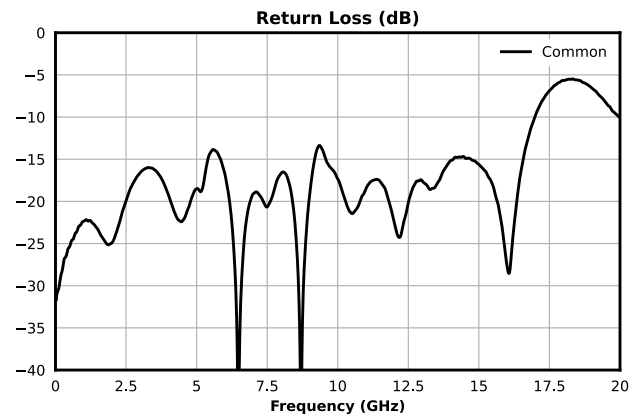
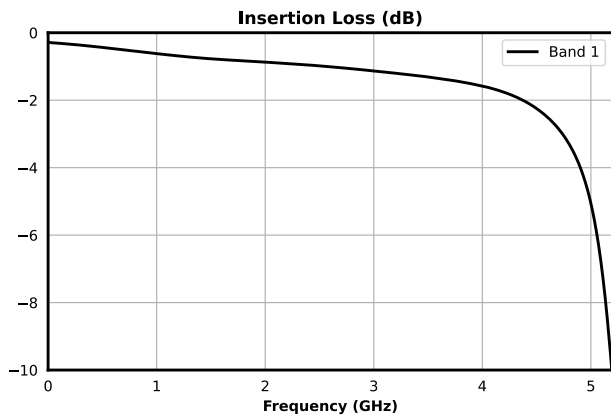
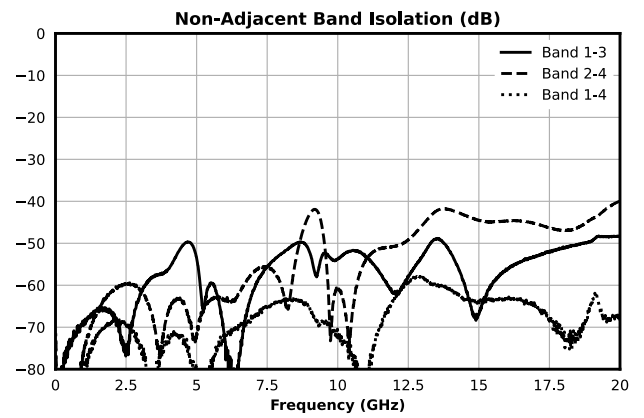
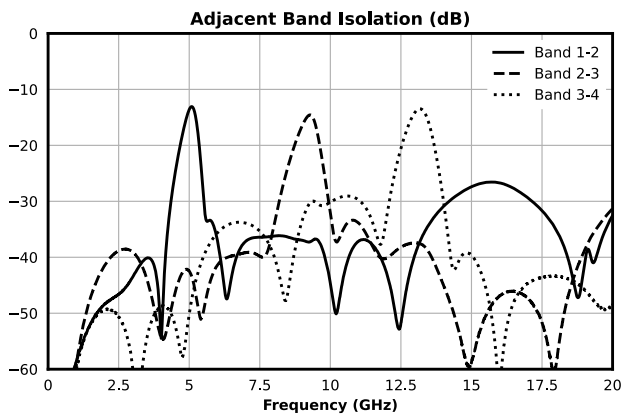
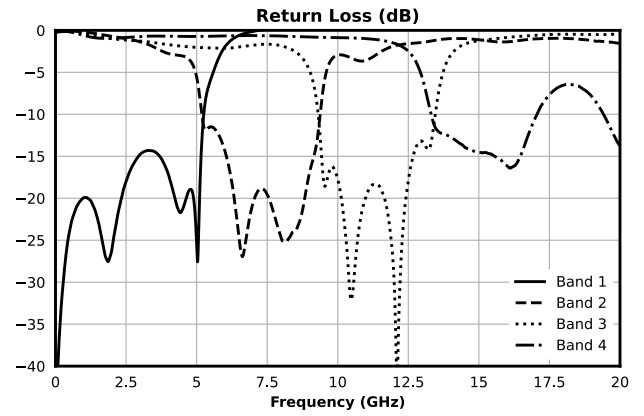
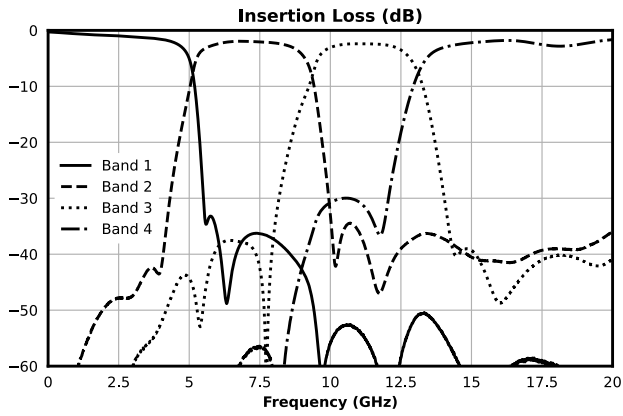
Electrical Specifications

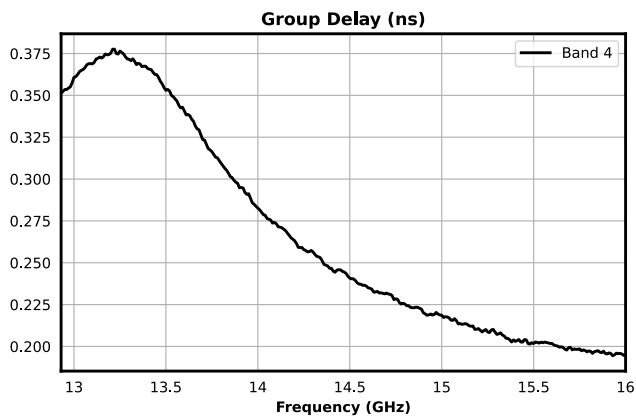
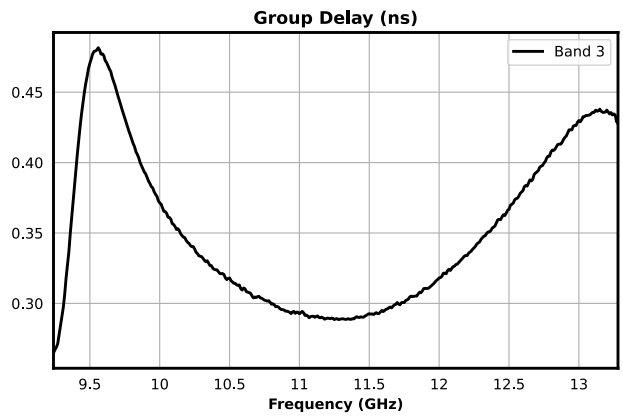
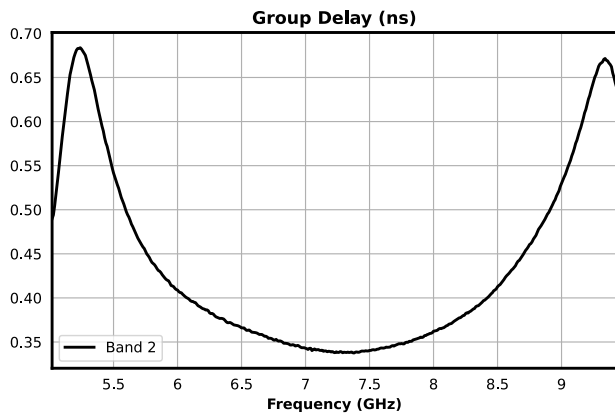
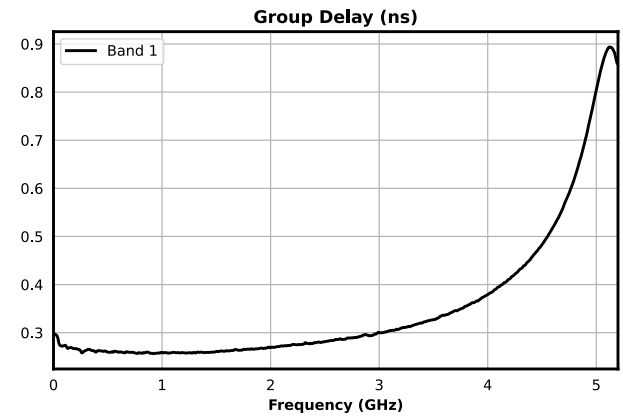
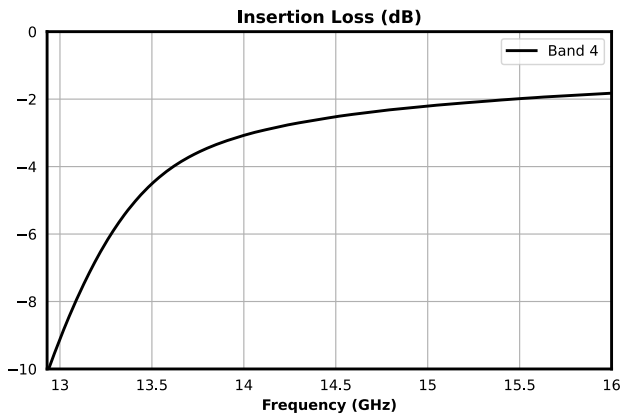
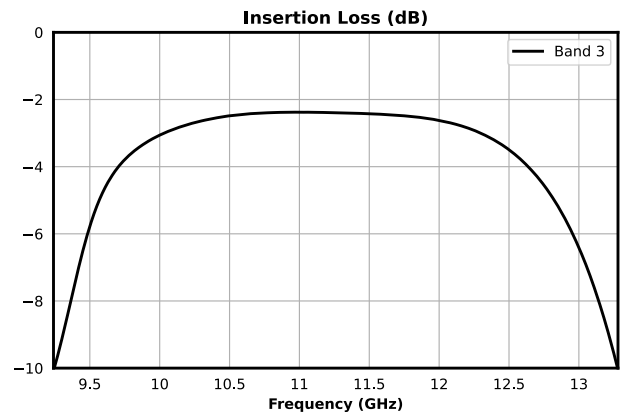
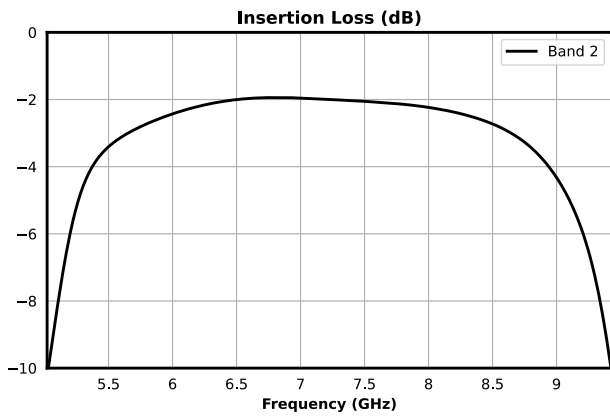
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the filter in a PSM package with a sine wave input applied to Pin 15. Min and Max limits are guaranteed at TA=+25°C.

| Parameter | Test Conditions | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ | Max | Unit |
|----------------------|------------------|-------------------------|-------------------------|-----|------|-----|------|
| Band 1 | - | - | - | 0 | - | 4 | GHz |
| Band 2 | - | - | - | 6 | - | 8 | GHz |
| Band 3 | - | - | - | 10 | - | 12 | GHz |
| Band 4 | - | - | - | 14 | - | 16 | GHz |
| Center Frequency | Band 1 | 0 | 4 | - | 2 | - | GHz |
| Center Frequency | Band 2 | 6 | 8 | - | 7 | - | GHz |
| Center Frequency | Band 3 | 10 | 12 | - | 11.1 | - | GHz |
| Center Frequency | Band 4 | 14 | 16 | - | 15 | - | GHz |
| Cross Over Frequency | Band 1 to Band 2 | - | - | - | 5.1 | - | GHz |
| Cross Over Frequency | Band 2 to Band 3 | - | - | - | 9.3 | - | GHz |
| Cross Over Frequency | Band 3 to Band 4 | - | - | - | 13.1 | - | GHz |
| Group Delay | Band 1 | 0 | 4 | - | 267 | - | ps |
| Group Delay | Band 2 | 6 | 8 | - | 363 | - | ps |
| Group Delay | Band 3 | 10 | 12 | - | 311 | - | ps |
| Group Delay | Band 4 | 14 | 16 | - | 149 | - | ps |
| Insertion Loss @ fc | Band 1 | 0 | 4 | - | 0.8 | - | dB |
| Insertion Loss @ fc | Band 2 | 6 | 8 | - | 2 | - | dB |
| Insertion Loss @ fc | Band 3 | 10 | 12 | - | 2.4 | - | dB |
| Insertion Loss @ fc | Band 4 | 14 | 16 | - | 2.1 | - | dB |
| Return Loss | Band 1 | 0 | 4 | - | 21 | - | dB |
| Return Loss | Band 2 | 6 | 8 | - | 19 | - | dB |
| Return Loss | Band 3 | 10 | 12 | - | 19 | - | dB |
| Return Loss | Band 4 | 14 | 16 | - | 8 | - | dB |

Typical Performance Plots

Typical performance plots are evaluation board measurements with fixturing to the device pads de-embedded.

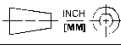



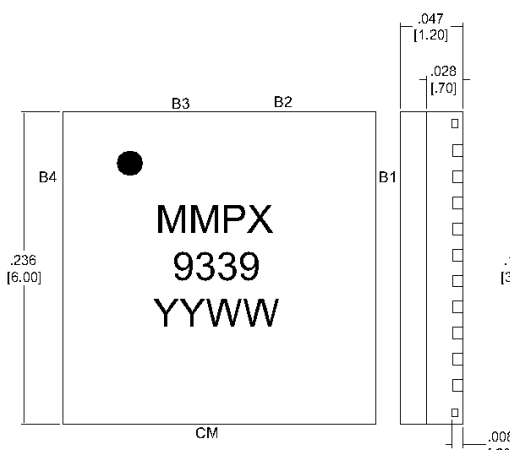


Mechanical Data

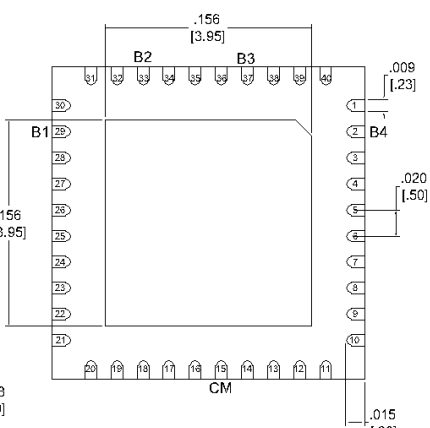
Outline Drawing

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

| PROJECTION | | REVISIONS | | | |
|--|---|-----------|-----------------|------------|-----------|
|  INCH [MM] |  | REV. | DESCRIPTION | DATE | APPROVALS |
| | | A | Initial Release | 08/20/2024 | |




Bottom-up view:



| Pin # | Config A |
|-------|----------|
| 1 | NIC |
| 2 | B4 |
| 3 | NIC |
| 4 | NIC |
| 5 | NIC |
| 6 | NIC |
| 7 | NIC |
| 8 | NIC |
| 9 | NIC |
| 10 | NIC |
| 11 | NIC |
| 12 | NIC |
| 13 | NIC |
| 14 | NIC |
| 15 | CM |
| 16 | NIC |
| 17 | NIC |
| 18 | NIC |
| 19 | NIC |
| 20 | NIC |
| 21 | NIC |
| 22 | NIC |
| 23 | NIC |
| 24 | NIC |
| 25 | NIC |
| 26 | NIC |
| 27 | NIC |
| 28 | NIC |
| 29 | B1 |
| 30 | NIC |
| 31 | NIC |
| 32 | NIC |
| 33 | B2 |
| 34 | NIC |
| 35 | NIC |
| 36 | NIC |
| 37 | B3 |
| 38 | NIC |
| 39 | NIC |
| 40 | NIC |

Notes (unless otherwise specified):

- Substrate material is LCP.
- I/O Leads and Die Paddle is (from base to finish):
 - Ni: 0.5um - 2.0um
 - Pd: 0.08um - 0.15um
 - Au: 0.003um MIN
- All unconnected pins should be connected to PCB RF ground.

| <p>UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES ARE: FRACTIONS DECIMALS ANGLES + .002 / .004 / .01 .002 / .004 / .01 .01</p> <p>MATERIAL:</p> <p>FINISH:</p> | <p>NOTES:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>DRAWN BY</th> <th>DATE</th> </tr> <tr> <td>AR</td> <td>1/5/24</td> </tr> <tr> <th>MB</th> <th>1/5/24</th> </tr> </table> | DRAWN BY | DATE | AR | 1/5/24 | MB | 1/5/24 |  <p>www.markimicrowave.com</p> <p>Outline 6mm QFN 9GHz 4Plexer</p> <p>CAGE CODE DWG. NO. 0UC32 MMPX-00001PSM</p> <p>SIZE SHEET 1 OF 1 A</p> |
|---|--|----------|------|----|--------|----|--------|--|
| DRAWN BY | DATE | | | | | | | |
| AR | 1/5/24 | | | | | | | |
| MB | 1/5/24 | | | | | | | |

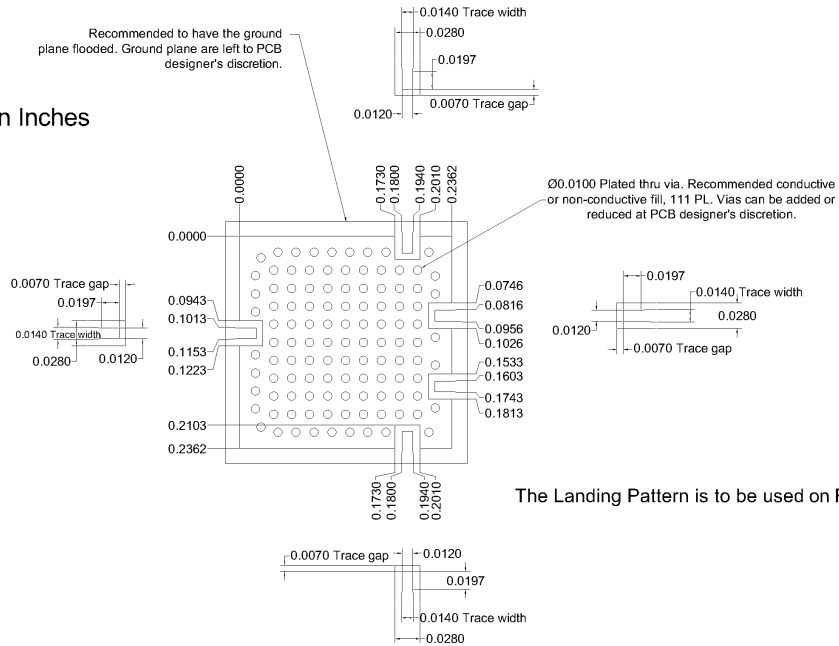
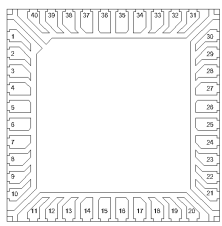
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Footprint Image

Download : [Footprint Drawing](#)

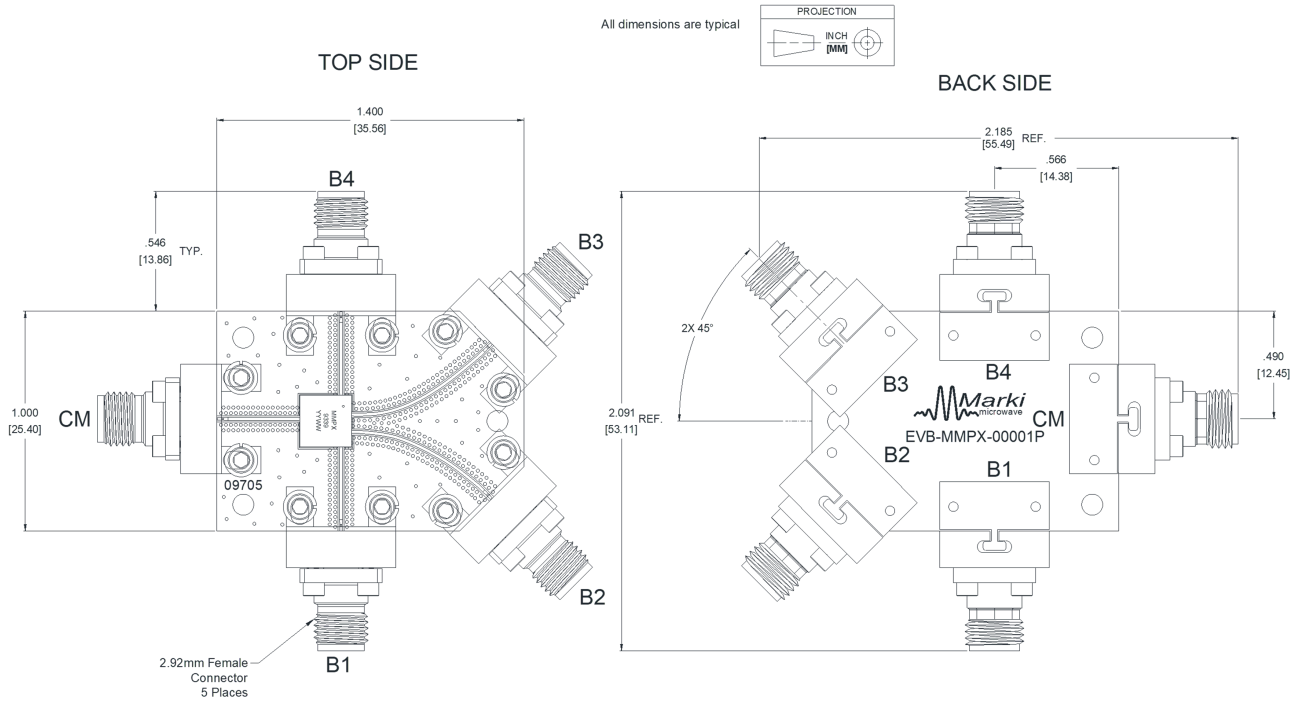
*Units are in Inches

QFN 6mm Sample Drawing X-Ray view



The Landing Pattern is to be used on Rogers 4003, 0.008" thick 1/2 Oz Cu.

Evaluation Board - Outline Drawing



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

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