

# MFBP-00086CSP3

## Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter

### DEVICE OVERVIEW

#### General Description

The MFBP-00086CSP3 passive MMIC surface mount bandpass filter is an ideal solution for small form factor, high rejection filtering. The MFBP-00086CSP3 features a 12.7-17.9GHz 1dBc passband and 1.9dB center frequency insertion loss. 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 MFBP-00086CSP3 is available in our 3.5 x 3.5mm CSP3 chip scale package. Low unit to unit variation allows for accurate simulations using the provided S2P file taken from measured production units.



[Download s-parameters here](#)

#### Features

- 20 dB Return Loss
- 1.9 dB Insertion Loss @ Fc
- High Stop Band Suppression
- Wide Stop Band with Fast Roll-Off
- This product embodies Marki Microwave's U.S. Pat. 11,869,858.

#### Applications

N/A

#### Functional Block Diagram



#### Part Ordering Options

| Part Number           | Description                                                         | Package | Green Status | Product Lifecycle | Export Classification |
|-----------------------|---------------------------------------------------------------------|---------|--------------|-------------------|-----------------------|
| MFBP-00086CSP3        | Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter                   | CSP3    | RoHS REACH   | Released          | EAR99                 |
| <u>EVB-MFBP-00086</u> | Evaluation Board, Passive GaAs 12.7 - 17.9 GHz MMIC Bandpass Filter | EVB     | RoHS REACH   | Released          | EAR99                 |

### Table Of Contents

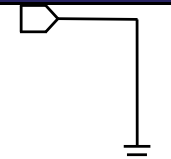
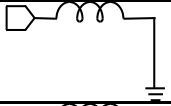
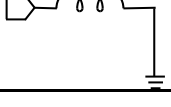
|                                           |                                  |
|-------------------------------------------|----------------------------------|
| ■ <b>Device Overview</b>                  | ■ <b>Specifications</b>          |
| General Description                       | Absolute Maximum Ratings         |
| Features                                  | Package Information              |
| Applications                              | Electrical Specifications        |
| Functional Block Diagram                  | Typical Performance Plot         |
| ■ <b>Port Configuration and Functions</b> | ■ <b>Mechanical Data</b>         |
| Port Functions                            | Outline Drawing                  |
| ■ <b>Revision History</b>                 | ■ <b>Footprint Image</b>         |
|                                           | ■ <b>Evaluation Board</b>        |
|                                           | Evaluation Board Outline Drawing |

### Revision History

| Revision Code | Revision Date | Comment         |
|---------------|---------------|-----------------|
| -             | 2025-05-29    | Initial Release |

## Port Configuration and Functions

### Port Functions

| Port          | Function     | Description                                                                                          | Equivalent Circuit for Package                                                      |
|---------------|--------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Ground Paddle | Ground       | CSP3 package ground path is provided through the ground paddle and should be connected to RF ground. |  |
| Pin 1         | Input/Output | Pin 1 is DC short to ground for the CSP3 package.                                                    |  |
| Pin 4         | Input/Output | Pin 4 is DC short to ground for the CSP3 package.                                                    |  |

## 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 Volts | HBM Class 0    |
| Dimensions                 | -           | 3.50 x 3.50 mm |
| Moisture Sensitivity Level | -           | MSL 1          |

## MFBP-00086CSP3

### Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter

#### Electrical Specifications

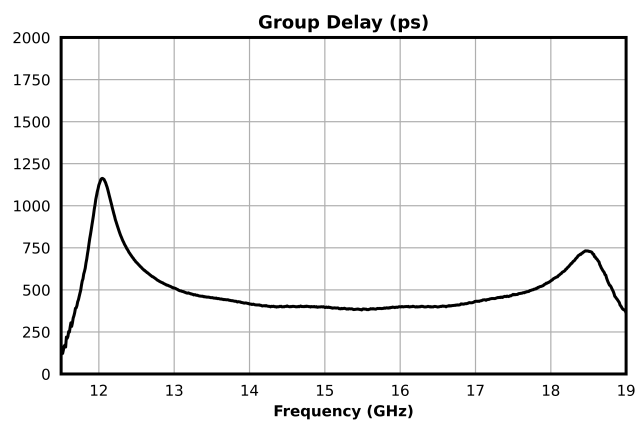
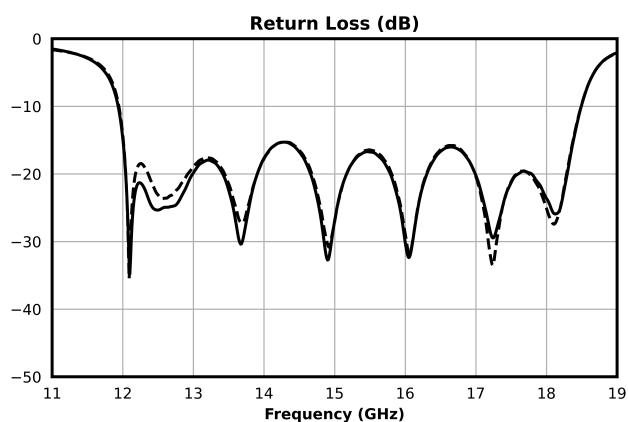
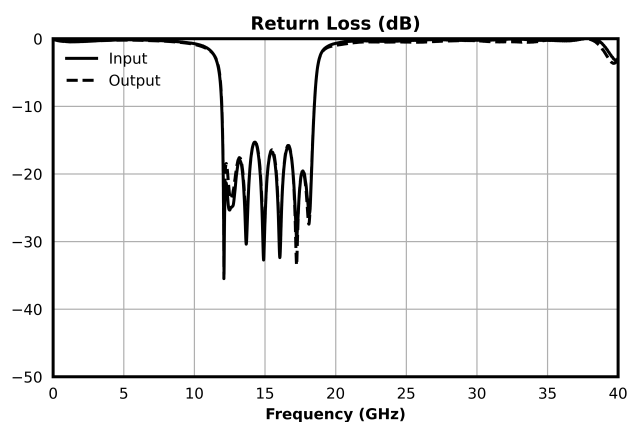
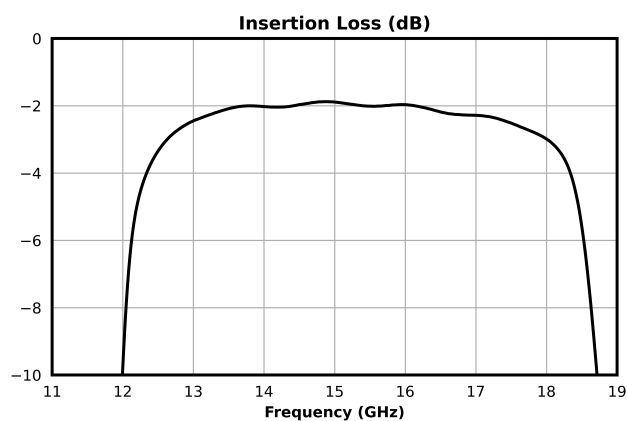
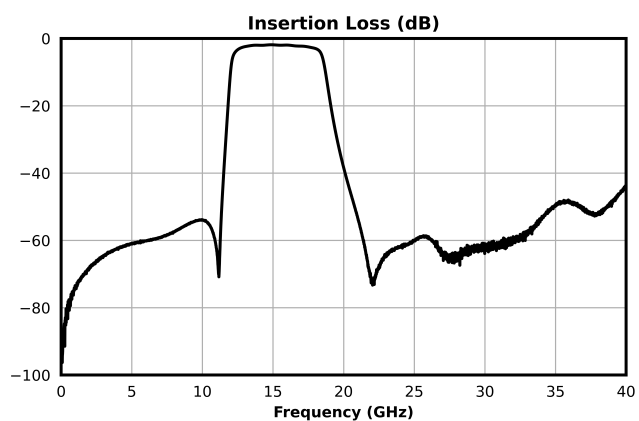
The electrical specifications apply at TA=+25°C in a 50Ω system. Typical data shown is for the filter in a CSP3 package with a sine wave input applied to Pin 1. Min and Max limits are guaranteed at TA=+25°C.

| Parameter              | Test Conditions              | Minimum Frequency (GHz) | Maximum Frequency (GHz) | Min | Typ   | Max | Unit |
|------------------------|------------------------------|-------------------------|-------------------------|-----|-------|-----|------|
| 1 dBc Passband         | Configuration A, Temp = 25°C | 12.69                   | 17.9                    | -   | -     | -   | GHz  |
| 30 dBc Rejection Point | Configuration A, Temp = 25°C | 11.64                   | 19.63                   | -   | -     | -   | GHz  |
| 3 dBc Passband         | Configuration A, Temp = 25°C | 12.22                   | 18.44                   | -   | -     | -   | GHz  |
| Center Freq            | Configuration A, Temp = 25°C | -                       | -                       | -   | 15.07 | -   | GHz  |
| Group Delay            | Configuration A, Temp = 25°C | -                       | -                       | -   | 409   | -   | ps   |
| Impedance              | Configuration A, Temp = 25°C | -                       | -                       | -   | 50    | -   | Ω    |
| Insertion Loss @ fc    | Configuration A, Temp = 25°C | -                       | -                       | -   | 1.9   | -   | dB   |
| Passband Return Loss   | Configuration A, Temp = 25°C | -                       | -                       | -   | 20    | -   | dB   |

## MFBP-00086CSP3

Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter

### Typical Performance Plot



Measured data is de-embedded from fixture using automatic fixture removal (AFR).

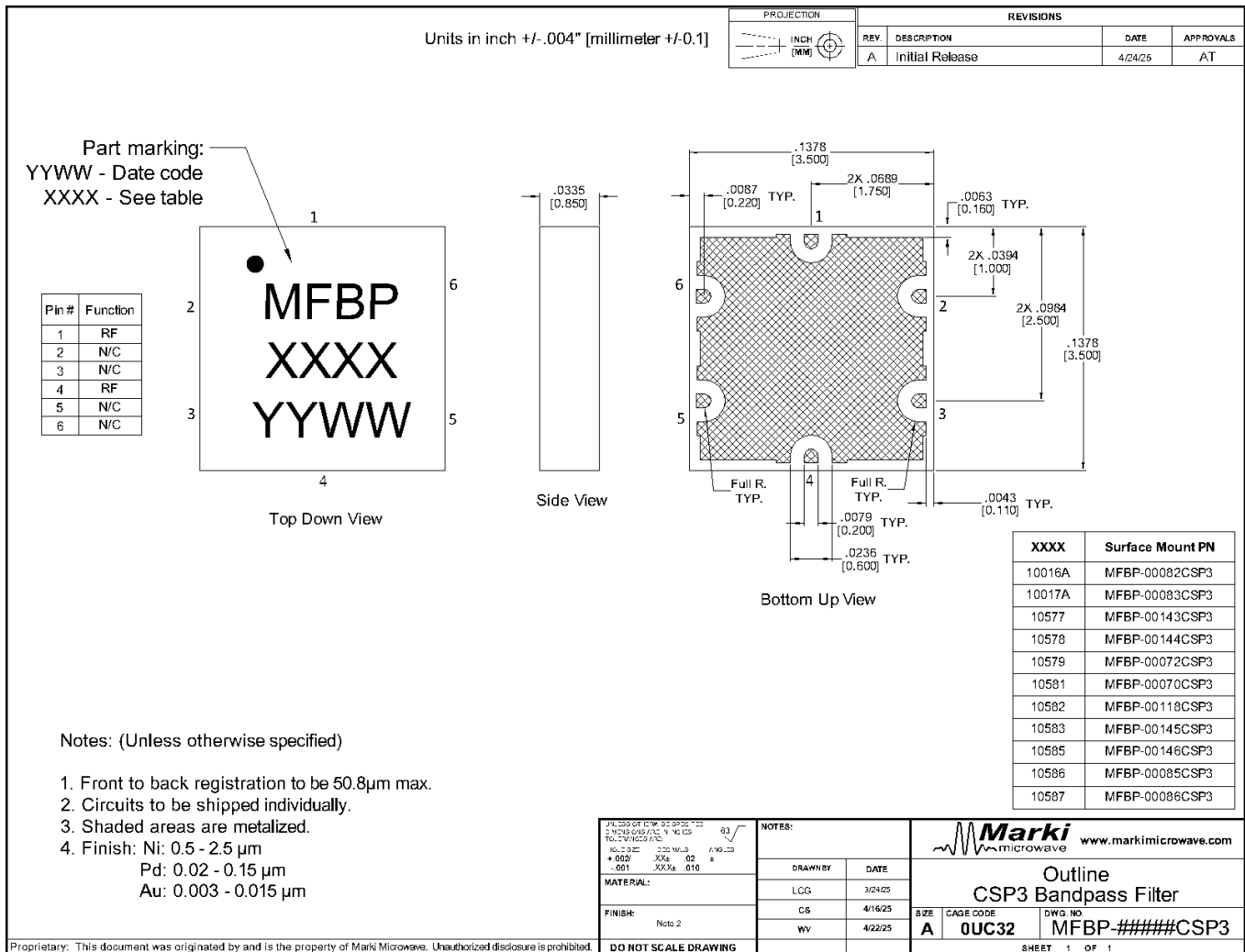
## MFBP-00086CSP3

Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter

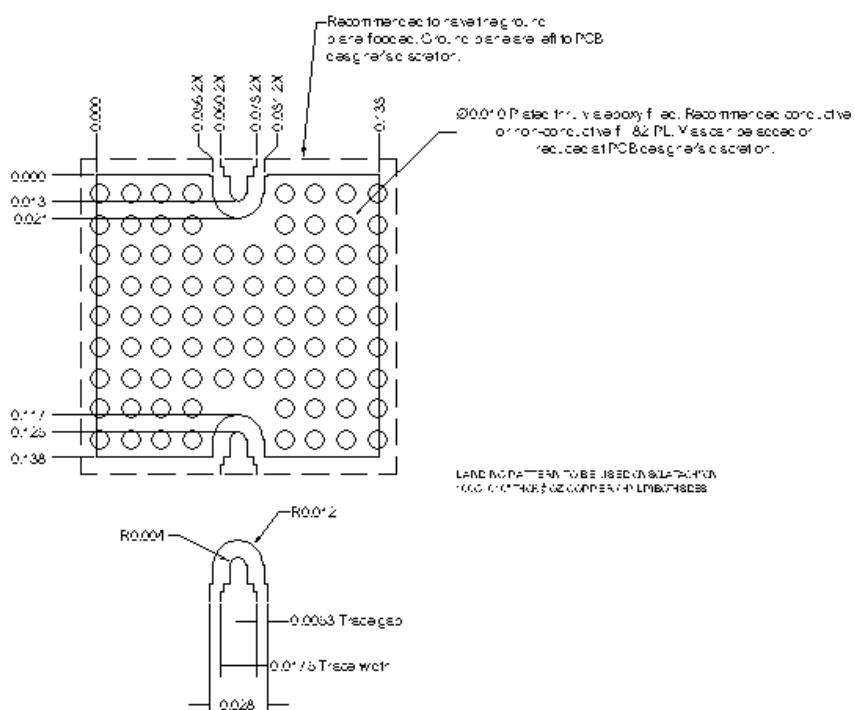
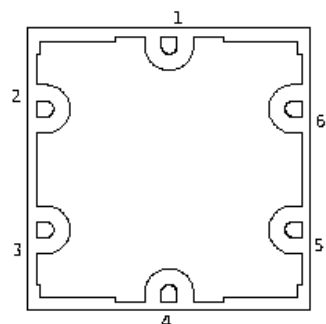
### Mechanical Data

### Outline Drawing

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



Download : [Footprint Drawing](#)

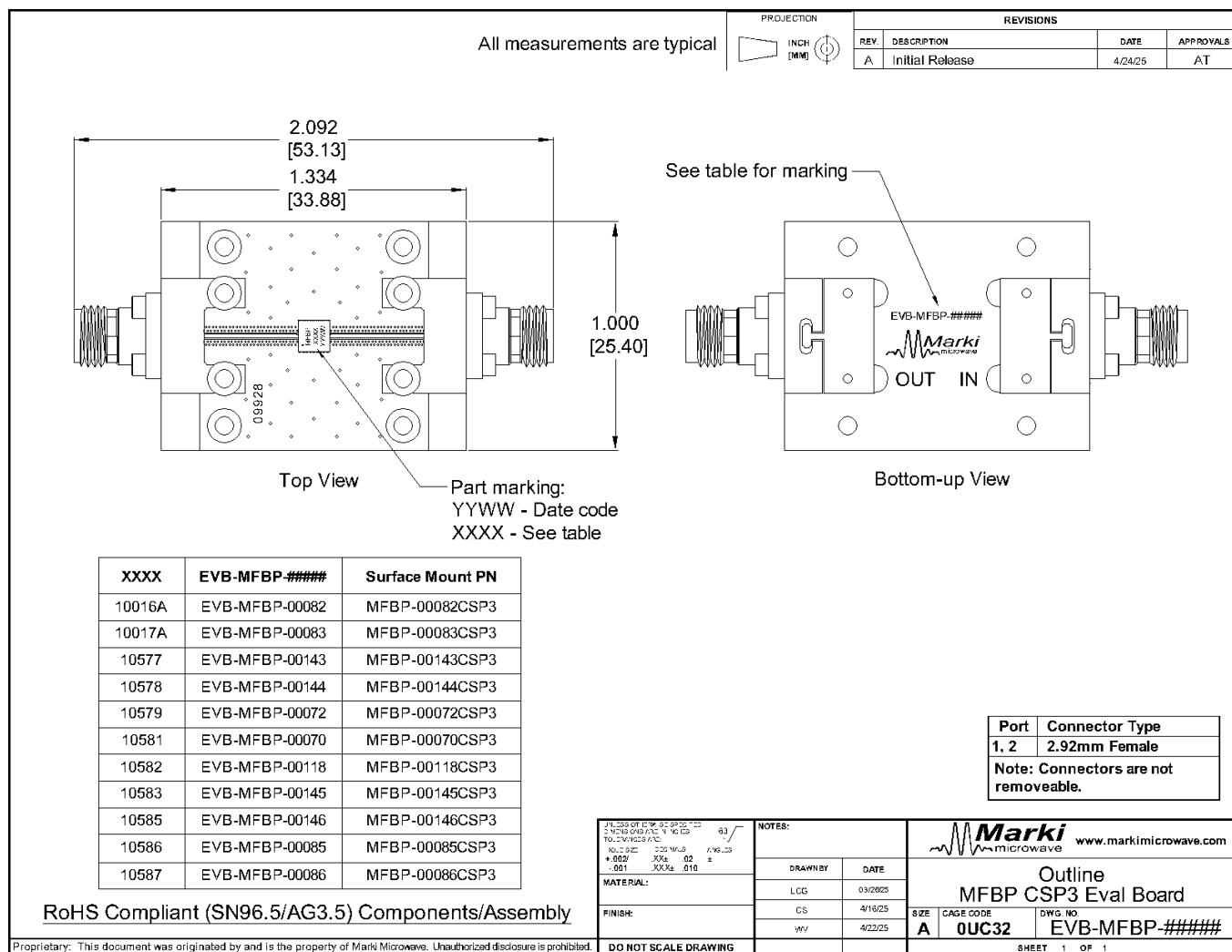




## MFBP-00086CSP3

Passive GaAs MMIC 12.7 - 17.9 GHz Bandpass Filter

### Evaluation Board - Outline Drawing



**DISCLAIMER**

MARKI MICROWAVE, INC., ("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, Inc. All other trademarks used are the property of their respective owners.

© 2025, Marki Microwave, Inc