CERAMIC RESONATOR COAXIAL

# Band Stop Filter

# ZCBS4-632-S+

50Ω 622 to 642 MHz SMA-Male/Female

## KEY FEATURES

- Low Insertion Loss, 1.3 dB Typ.
- Fast Roll-off
- Connectorized Package

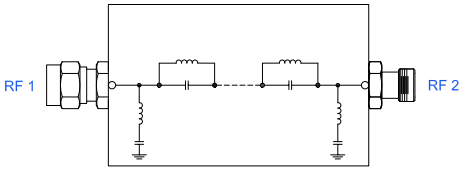


*Generic photo used for illustration purposes only*

## APPLICATIONS

- Radio Astronomy

## FUNCTIONAL DIAGRAM




## PRODUCT OVERVIEW

Mini-Circuits' ZCBS4-632-S+ is a Ceramic resonator band stop filter that offer a good insertion loss and high rejection. This band stop filter rejects from 622 to 642 MHz. While passing 400 - 610 MHz and 655 - 800 MHz, this filter has high Q capacitors and inductors to achieve a low insertion loss. It has repeatable performance across production lots.

## ELECTRICAL SPECIFICATIONS AT +25°C

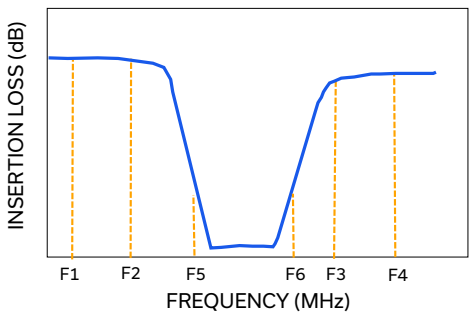
| Parameter | | F# | Frequency (MHz) | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|---|
| Passband, Lower | Insertion Loss | F1-F2 | 400 - 610 | — | 1.3 | 2 | dB |
| | Return Loss | F1-F2 | 400 - 610 | 10 | 14 | — | dB |
| Stopband | Rejection | F5-F6 | 622 - 642 | 12 | 16 | — | dB |
| Passband, Upper | Insertion Loss | F3-F4 | 655 - 800 | — | 1.3 | 2 | dB |
| | Return Loss | F3-F4 | 655 - 800 | 10 | 14 | — | |

## ABSOLUTE MAXIMUM RATINGS[1]

| | |
|---|---|
| **Operating Temperature** | -40°C to +85°C |
| **Storage Temperature** | -55°C to +100°C |
| Input Power[2] | 5 W at +25°C |

1. Permanent damage may occur if any of these limits are exceeded.
2. Power rating applies only to signals within the passband. Power rating above +25°C operating temperature decreases linearly to 1 W at +85°C.

## TYPICAL FREQUENCY RESPONSE



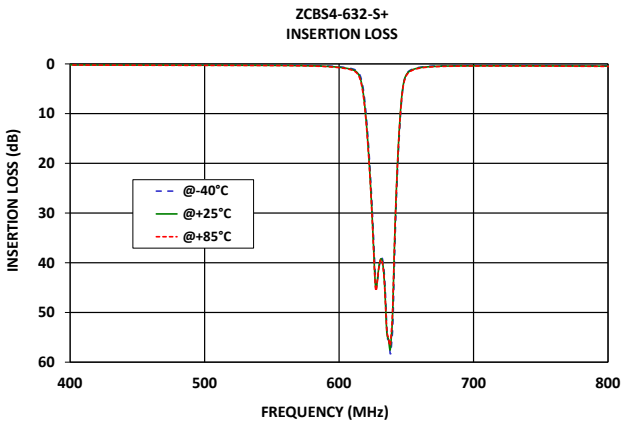

REV. OR
ECO-030757
ZCBS4-632-S+
EDU5510
URJ
260818

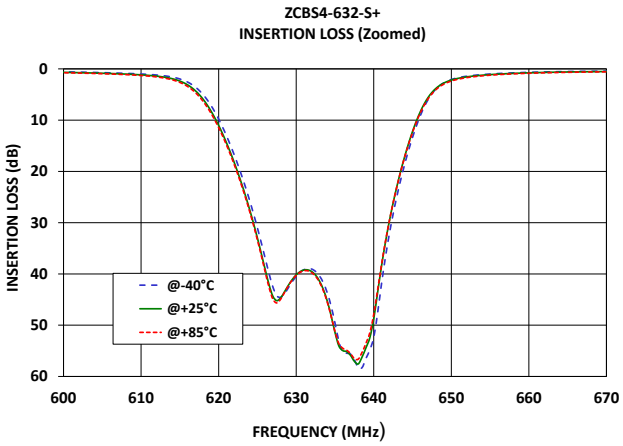
# Band Stop Filter

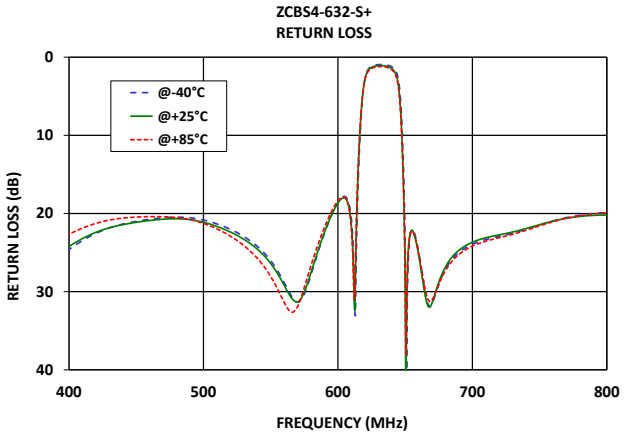
## ZCBS4-632-S+

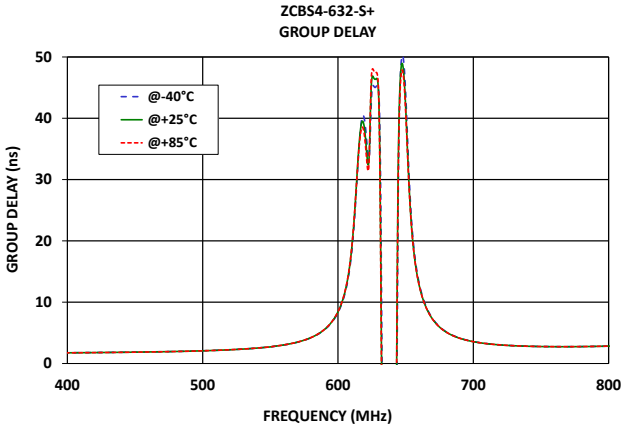
50Ω 622 to 642 MHz SMA-Male/Female

### TYPICAL PERFORMANCE GRAPHS



# Band Stop Filter

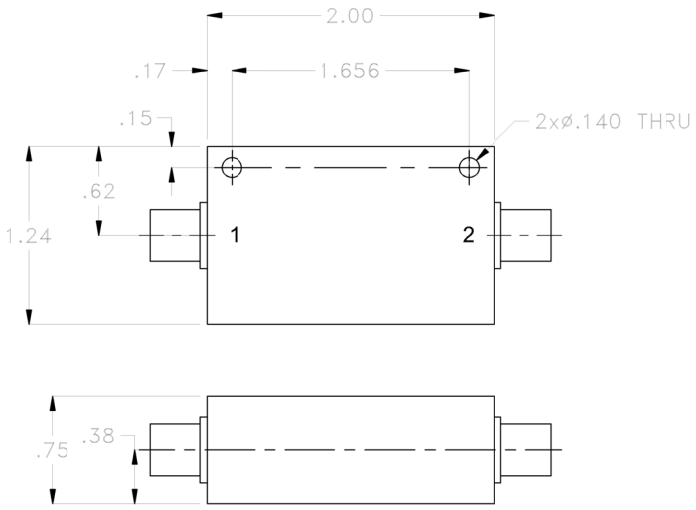
# ZCBS4-632-S+

50Ω 622 to 642 MHz SMA-Male/Female

## CONNECTOR DESCRIPTION

| Function | Connector |
|---|---|
| RF1 | SMA-Male |
| RF2 | SMA-Female |

## CASE STYLE DRAWING




**Weight: 57 gram**
**Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015**

## PRODUCT MARKING*: ZCBS4-632-S+

*Marking may contain other features or characters for internal lot control.

# Band Stop Filter

## ZCBS4-632-S+

50Ω 622 to 642 MHz SMA-Male/Female

**ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD** CLICK HERE

| | |
|---|---|
| **Performance Data & Graphs** | Data<br>Graphs<br>S-Parameter (S2P Files) Data Set (.zip file) |
| **Case Style** | FM587-1 |
| **RoHS Status** | Compliant |
| **Environmental Ratings** | ENV46 |

NOTES

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits' standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/terms/viewterm.html

# Coaxial Band Stop Filter ZCBS4-632-S+

*Typical Performance Data*

| FREQ. | INSERTION LOSS | | | INPUT RETURN LOSS | | | OUTPUT RETURN LOSS | | |
|---|---|---|---|---|---|---|---|---|---|
| (MHz) | (dB) | | | (dB) | | | (dB) | | |
| | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C |
| 400 | 0.15 | 0.20 | 0.23 | 24.62 | 24.22 | 22.65 | 24.27 | 23.95 | 22.51 |
| 405 | 0.16 | 0.20 | 0.23 | 24.01 | 23.69 | 22.24 | 23.73 | 23.46 | 22.12 |
| 410 | 0.16 | 0.20 | 0.24 | 23.47 | 23.21 | 21.87 | 23.24 | 23.03 | 21.77 |
| 415 | 0.17 | 0.21 | 0.24 | 22.97 | 22.79 | 21.55 | 22.81 | 22.66 | 21.48 |
| 420 | 0.17 | 0.21 | 0.25 | 22.53 | 22.41 | 21.26 | 22.44 | 22.34 | 21.24 |
| 425 | 0.18 | 0.22 | 0.25 | 22.16 | 22.10 | 21.03 | 22.13 | 22.08 | 21.05 |
| 430 | 0.18 | 0.22 | 0.25 | 21.84 | 21.83 | 20.84 | 21.85 | 21.85 | 20.89 |
| 435 | 0.18 | 0.22 | 0.26 | 21.58 | 21.61 | 20.70 | 21.61 | 21.65 | 20.77 |
| 440 | 0.19 | 0.23 | 0.26 | 21.36 | 21.43 | 20.59 | 21.39 | 21.47 | 20.66 |
| 445 | 0.19 | 0.23 | 0.26 | 21.17 | 21.27 | 20.52 | 21.19 | 21.30 | 20.57 |
| 450 | 0.19 | 0.24 | 0.27 | 21.01 | 21.13 | 20.46 | 21.02 | 21.16 | 20.51 |
| 455 | 0.20 | 0.24 | 0.27 | 20.86 | 21.00 | 20.42 | 20.86 | 21.02 | 20.45 |
| 460 | 0.20 | 0.24 | 0.28 | 20.75 | 20.90 | 20.41 | 20.73 | 20.91 | 20.43 |
| 470 | 0.21 | 0.25 | 0.28 | 20.56 | 20.73 | 20.42 | 20.56 | 20.76 | 20.45 |
| 475 | 0.21 | 0.25 | 0.28 | 20.50 | 20.69 | 20.46 | 20.52 | 20.74 | 20.50 |
| 480 | 0.21 | 0.26 | 0.29 | 20.47 | 20.68 | 20.52 | 20.52 | 20.75 | 20.60 |
| 485 | 0.21 | 0.26 | 0.29 | 20.49 | 20.71 | 20.63 | 20.57 | 20.83 | 20.75 |
| 490 | 0.22 | 0.26 | 0.29 | 20.55 | 20.80 | 20.79 | 20.67 | 20.95 | 20.95 |
| 495 | 0.22 | 0.26 | 0.29 | 20.67 | 20.93 | 21.00 | 20.82 | 21.12 | 21.20 |
| 500 | 0.22 | 0.27 | 0.30 | 20.84 | 21.13 | 21.27 | 21.02 | 21.35 | 21.51 |
| 505 | 0.22 | 0.27 | 0.30 | 21.06 | 21.37 | 21.59 | 21.26 | 21.61 | 21.85 |
| 510 | 0.22 | 0.27 | 0.30 | 21.34 | 21.66 | 21.97 | 21.56 | 21.93 | 22.27 |
| 515 | 0.22 | 0.27 | 0.30 | 21.65 | 21.99 | 22.41 | 21.88 | 22.27 | 22.72 |
| 520 | 0.22 | 0.27 | 0.30 | 22.02 | 22.37 | 22.90 | 22.26 | 22.67 | 23.24 |
| 525 | 0.23 | 0.28 | 0.30 | 22.45 | 22.80 | 23.46 | 22.68 | 23.12 | 23.82 |
| 530 | 0.23 | 0.28 | 0.31 | 22.95 | 23.30 | 24.11 | 23.20 | 23.64 | 24.51 |
| 535 | 0.23 | 0.28 | 0.31 | 23.53 | 23.88 | 24.86 | 23.81 | 24.26 | 25.32 |
| 540 | 0.23 | 0.29 | 0.32 | 24.20 | 24.55 | 25.72 | 24.54 | 25.01 | 26.30 |
| 545 | 0.24 | 0.29 | 0.32 | 25.03 | 25.38 | 26.78 | 25.44 | 25.93 | 27.52 |
| 550 | 0.24 | 0.30 | 0.33 | 26.05 | 26.41 | 28.07 | 26.52 | 27.05 | 28.99 |
| 555 | 0.25 | 0.30 | 0.34 | 27.30 | 27.66 | 29.62 | 27.88 | 28.46 | 30.83 |
| 560 | 0.25 | 0.31 | 0.35 | 28.83 | 29.19 | 31.38 | 29.46 | 30.11 | 32.81 |
| 656 | 0.92 | 1.03 | 1.13 | 22.18 | 22.35 | 22.41 | 22.12 | 22.34 | 22.43 |
| 570 | 0.28 | 0.34 | 0.38 | 31.32 | 31.30 | 31.90 | 31.72 | 32.04 | 32.42 |
| 575 | 0.29 | 0.36 | 0.40 | 30.30 | 30.02 | 29.45 | 30.39 | 30.36 | 29.53 |
| 580 | 0.32 | 0.39 | 0.43 | 27.81 | 27.53 | 26.65 | 27.81 | 27.64 | 26.62 |
| 585 | 0.35 | 0.42 | 0.48 | 25.06 | 24.86 | 24.06 | 25.06 | 24.91 | 24.03 |
| 590 | 0.40 | 0.48 | 0.54 | 22.53 | 22.41 | 21.77 | 22.53 | 22.43 | 21.75 |
| 595 | 0.47 | 0.56 | 0.62 | 20.34 | 20.30 | 19.84 | 20.32 | 20.29 | 19.79 |
| 600 | 0.58 | 0.68 | 0.75 | 18.61 | 18.66 | 18.37 | 18.53 | 18.58 | 18.25 |
| 605 | 0.74 | 0.86 | 0.94 | 17.82 | 18.03 | 17.94 | 17.59 | 17.76 | 17.62 |
| 610 | 1.00 | 1.17 | 1.29 | 20.69 | 21.61 | 22.00 | 19.40 | 19.88 | 19.88 |
| 615 | 1.97 | 2.38 | 2.64 | 16.20 | 14.68 | 14.19 | 15.28 | 13.99 | 13.46 |
| 620 | 9.79 | 11.02 | 11.46 | 2.90 | 2.87 | 2.99 | 3.26 | 3.28 | 3.41 |
| 622 | 16.74 | 18.22 | 18.62 | 1.72 | 1.82 | 1.96 | 2.20 | 2.37 | 2.54 |
| 624 | 25.69 | 27.46 | 27.83 | 1.28 | 1.41 | 1.55 | 1.91 | 2.13 | 2.32 |
| 628 | 44.57 | 44.66 | 44.92 | 1.00 | 1.14 | 1.26 | 2.18 | 2.54 | 2.80 |
| 630 | 40.48 | 40.19 | 40.29 | 0.96 | 1.09 | 1.21 | 2.74 | 3.23 | 3.57 |
| 632 | 39.06 | 39.54 | 39.74 | 0.94 | 1.08 | 1.20 | 3.73 | 4.40 | 4.83 |
| 634 | 43.67 | 45.27 | 45.47 | 0.95 | 1.10 | 1.23 | 4.61 | 5.22 | 5.64 |
| 636 | 55.26 | 54.95 | 54.50 | 1.00 | 1.16 | 1.29 | 4.07 | 4.38 | 4.69 |
| 638 | 58.29 | 57.56 | 56.62 | 1.08 | 1.26 | 1.40 | 3.00 | 3.23 | 3.49 |
| 642 | 32.27 | 29.79 | 29.73 | 1.51 | 1.81 | 2.00 | 2.20 | 2.49 | 2.73 |
| 650 | 2.08 | 2.18 | 2.38 | 23.81 | 28.78 | 28.34 | 17.10 | 18.21 | 18.28 |
| 655 | 1.00 | 1.12 | 1.23 | 22.09 | 22.13 | 22.24 | 21.71 | 21.83 | 21.96 |
| 670 | 0.44 | 0.52 | 0.58 | 31.57 | 31.43 | 31.08 | 35.19 | 35.22 | 35.11 |
| 680 | 0.36 | 0.43 | 0.48 | 27.12 | 26.83 | 27.30 | 28.31 | 28.06 | 28.84 |
| 700 | 0.31 | 0.38 | 0.43 | 23.93 | 23.67 | 24.18 | 25.03 | 24.76 | 25.48 |
| 750 | 0.32 | 0.39 | 0.44 | 21.47 | 21.43 | 21.58 | 22.09 | 22.03 | 22.23 |
| 800 | 0.37 | 0.45 | 0.50 | 19.89 | 20.20 | 19.93 | 20.35 | 20.66 | 20.39 |

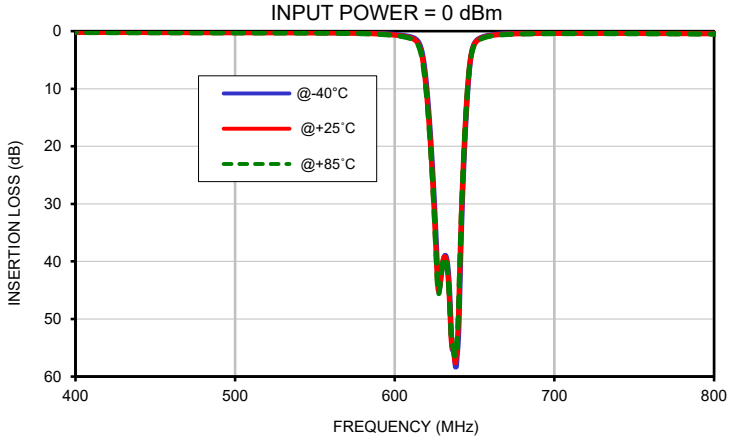
## *Typical Performance Data*

| FREQ. | GROUP DELAY-1 | | |
|---|---|---|---|
| (MHz) | (ns) | | |
| | @-40°C | @+25°C | @+85°C |
| 400 | 1.75 | 1.75 | 1.74 |
| 405 | 1.76 | 1.76 | 1.75 |
| 410 | 1.77 | 1.76 | 1.76 |
| 415 | 1.78 | 1.77 | 1.77 |
| 420 | 1.79 | 1.78 | 1.78 |
| 425 | 1.80 | 1.79 | 1.79 |
| 430 | 1.81 | 1.80 | 1.80 |
| 435 | 1.82 | 1.82 | 1.81 |
| 440 | 1.83 | 1.83 | 1.82 |
| 445 | 1.84 | 1.84 | 1.84 |
| 450 | 1.86 | 1.85 | 1.85 |
| 455 | 1.87 | 1.87 | 1.87 |
| 460 | 1.89 | 1.89 | 1.88 |
| 465 | 1.91 | 1.90 | 1.90 |
| 470 | 1.93 | 1.92 | 1.92 |
| 475 | 1.94 | 1.94 | 1.94 |
| 480 | 1.97 | 1.96 | 1.96 |
| 485 | 1.99 | 1.99 | 1.98 |
| 490 | 2.02 | 2.01 | 2.01 |
| 495 | 2.04 | 2.04 | 2.04 |
| 500 | 2.08 | 2.07 | 2.07 |
| 505 | 2.11 | 2.11 | 2.11 |
| 510 | 2.15 | 2.15 | 2.15 |
| 515 | 2.20 | 2.19 | 2.19 |
| 520 | 2.24 | 2.24 | 2.24 |
| 525 | 2.30 | 2.30 | 2.30 |
| 530 | 2.36 | 2.36 | 2.36 |
| 535 | 2.43 | 2.43 | 2.44 |
| 540 | 2.52 | 2.52 | 2.52 |
| 545 | 2.61 | 2.61 | 2.62 |
| 550 | 2.70 | 2.71 | 2.71 |
| 555 | 2.86 | 2.87 | 2.87 |
| 560 | 3.02 | 3.03 | 3.04 |
| 565 | 3.23 | 3.23 | 3.24 |
| 570 | 3.48 | 3.49 | 3.49 |
| 575 | 3.79 | 3.81 | 3.81 |
| 580 | 4.20 | 4.22 | 4.23 |
| 585 | 4.74 | 4.78 | 4.79 |
| 590 | 5.50 | 5.55 | 5.56 |
| 600 | 8.30 | 8.43 | 8.46 |
| 610 | 17.84 | 18.46 | 18.59 |

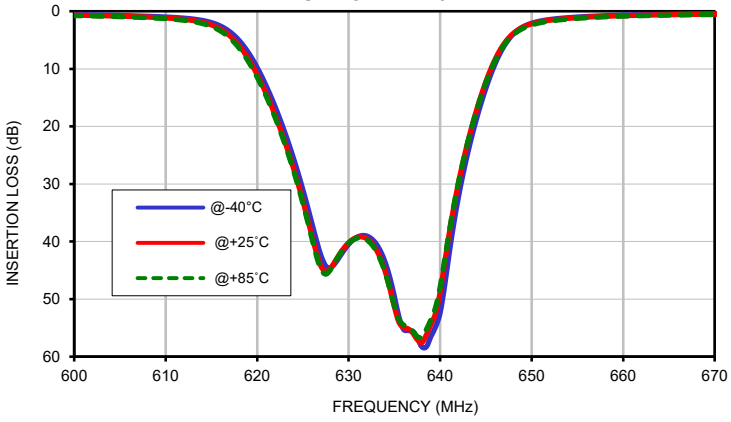
| FREQ. | GROUP DELAY-2 | | |
|---|---|---|---|
| (MHz) | (ns) | | |
| | @-40°C | @+25°C | @+85°C |
| 655 | 21.50 | 20.59 | 20.52 |
| 656 | 19.07 | 18.36 | 18.31 |
| 657 | 17.13 | 16.55 | 16.51 |
| 658 | 15.54 | 15.07 | 15.04 |
| 660 | 13.10 | 12.77 | 12.75 |
| 662 | 11.32 | 11.06 | 11.05 |
| 668 | 8.01 | 7.89 | 7.88 |
| 670 | 7.31 | 7.20 | 7.20 |
| 680 | 5.17 | 5.12 | 5.12 |
| 690 | 4.15 | 4.12 | 4.12 |
| 700 | 3.58 | 3.56 | 3.57 |
| 701 | 3.54 | 3.53 | 3.53 |
| 702 | 3.50 | 3.48 | 3.49 |
| 704 | 3.43 | 3.41 | 3.42 |
| 705 | 3.39 | 3.38 | 3.38 |
| 706 | 3.36 | 3.35 | 3.35 |
| 707 | 3.33 | 3.32 | 3.32 |
| 708 | 3.30 | 3.29 | 3.29 |
| 709 | 3.27 | 3.26 | 3.26 |
| 710 | 3.25 | 3.23 | 3.24 |
| 711 | 3.22 | 3.21 | 3.21 |
| 712 | 3.20 | 3.19 | 3.19 |
| 713 | 3.17 | 3.16 | 3.17 |
| 714 | 3.15 | 3.14 | 3.14 |
| 715 | 3.13 | 3.12 | 3.12 |
| 716 | 3.11 | 3.10 | 3.10 |
| 717 | 3.09 | 3.08 | 3.08 |
| 718 | 3.07 | 3.06 | 3.07 |
| 719 | 3.05 | 3.04 | 3.05 |
| 720 | 3.04 | 3.03 | 3.03 |
| 722 | 3.01 | 3.00 | 3.00 |
| 724 | 2.98 | 2.97 | 2.97 |
| 726 | 2.95 | 2.94 | 2.95 |
| 728 | 2.93 | 2.92 | 2.92 |
| 730 | 2.91 | 2.90 | 2.90 |
| 740 | 2.82 | 2.82 | 2.82 |
| 750 | 2.77 | 2.77 | 2.77 |
| 760 | 2.75 | 2.75 | 2.75 |
| 770 | 2.75 | 2.74 | 2.75 |
| 780 | 2.76 | 2.76 | 2.76 |
| 800 | 2.83 | 2.84 | 2.84 |

## *Typical Performance Curves*

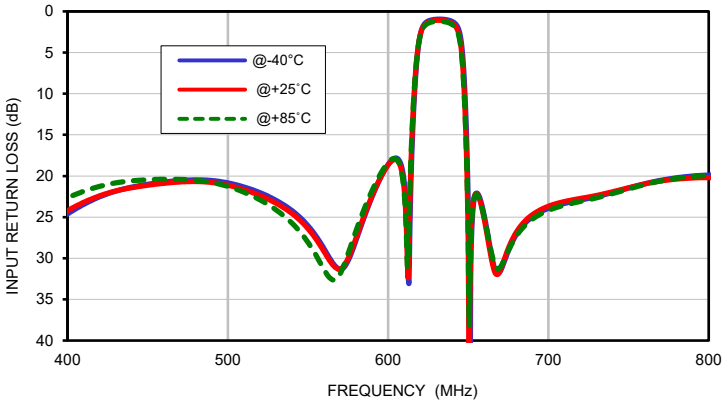
**INSERTION LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm



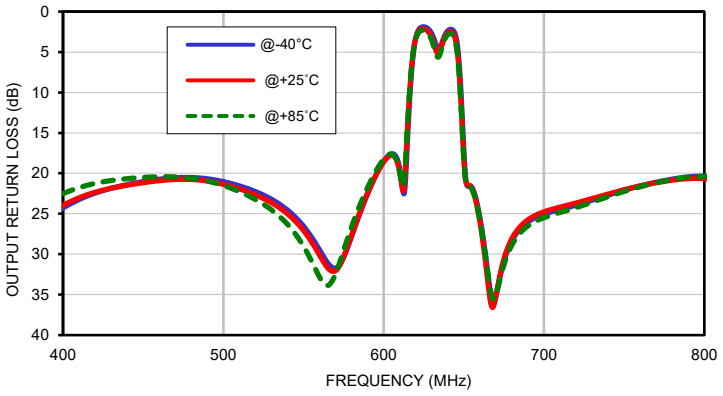

**INSERTION LOSS vs. TEMPERATURE (Stop Band)**
INPUT POWER = 0 dBm



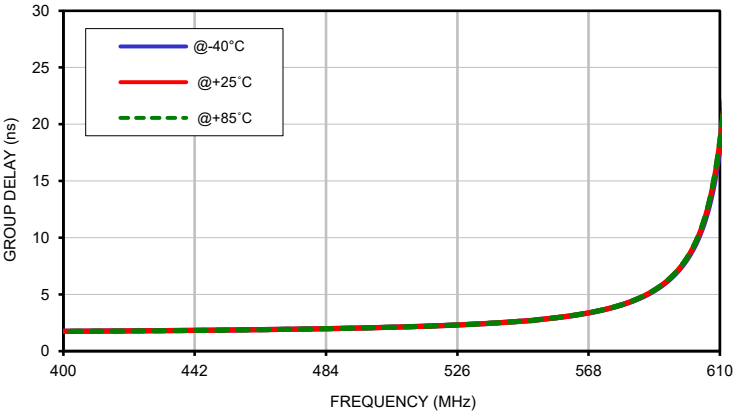

**INPUT RETURN LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm



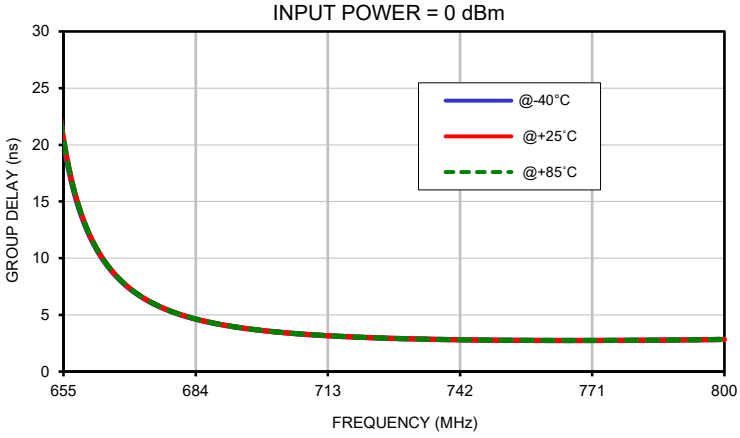

**OUTPUT RETURN LOSS vs. TEMPERATURE**
INPUT POWER = 0 dBm




**GROUP DELAY-1 vs. TEMPERATURE**
INPUT POWER = 0 dBm



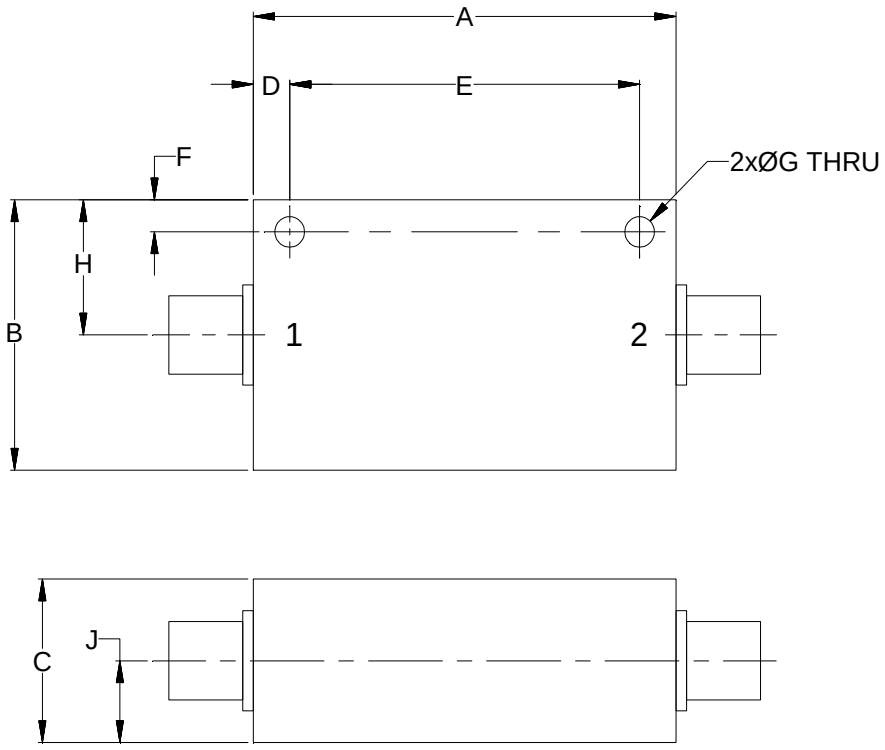

**GROUP DELAY-2 vs. TEMPERATURE**
INPUT POWER = 0 dBm



# Case Style FM

## Outline Dimensions

**FM587-1**




| CASE #. | A | B | C | D | E | F | G | H | J | WT, GRAM |
|---|---|---|---|---|---|---|---|---|---|---|
| FM587-1 | 2.00 (50.80) | 1.24 (31.50) | .75 (19.05) | .17 (4.32) | 1.656 (42.06) | .15 (3.81) | .140 (3.56) | .62 (15.75) | .38 (9.65) | 57 |

**Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015**

**Notes:**

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Refer to the individual model datasheet for the type of connectors available.

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RF/IF MICROWAVE COMPONENTS


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Mini-Circuits

# Environmental Specifications ENV46

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|---|---|---|
| Operating Temperature | -55° to 100°C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Humidity | 90 to 95% RH, 40°C, 96 hours;<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103, Condintion B |
| Thermal Shock | -55° to 100°C, 100 cycles | MIL-STD-202, Method 107, Condition A-3, except +100°C |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | 50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition A |


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