

Coaxial Bandpass Filter

BBP-27R5+

50Ω 24 to 31 MHz



Generic photo used for illustration purposes only
CASE STYLE: FF55

The Big Deal

- Good VSWR 1.3:1 typ in passband
- Good rejection, 30 dB typical
- Connectorized package

Product Overview

BBP-27R5+ is a 50Ω bandpass filter in a connectorized package. The bandpass filter covers from 24 to 31 MHz, offering good matching within the passband. It uses miniature high Q capacitors and wire welded inductors for high reliability. It has repeatable performance across production lots and consistent performance across temperature.

Key Features

| Feature | Advantages |
|--|--|
| Good rejection, 30 dB typical | Rejects unwanted spurious signals. |
| Good VSWR, 1.3:1 typical over passband | This provides well matched input and output ports. |
| Connectorized package | Connectorized package is easy to interface with other devices and well suited for test setups. |

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-Circuit's 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/MCLStore/terms.jsp



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| Connectors | Model |
|------------|-----------|
| BNC | BBP-27R5+ |

Features

- Good VSWR, 1.3:1 typical over passband
- Good rejection, 30 dB typical
- Connectorized package

Applications

- Transmitters / Receivers
- Harmonic rejection
- Test equipment
- Military communication

Electrical Specifications at 25°C

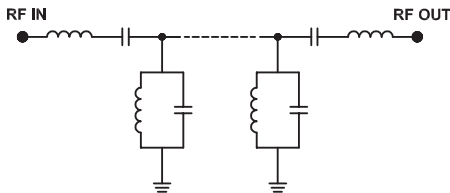
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit | |
|------------------|----------------|-----------------|----------|------|------|------|----|
| Pass Band | Insertion Loss | F1-F2 | 24 - 31 | - | 1.3 | 2.5 | dB |
| | VSWR | F1-F2 | 24 - 31 | - | 1.3 | 1.7 | :1 |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC - 19 | 20 | 30 | - | dB |
| Stop Band, Upper | Insertion Loss | F4-F5 | 39 - 900 | 20 | 30 | - | dB |

Maximum Ratings

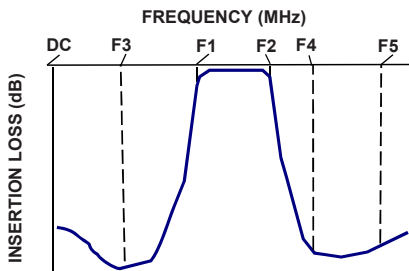
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 0.25 W max. |

Permanent damage may occur if any of these limits are exceeded.

Functional Schematic



Typical Frequency Response

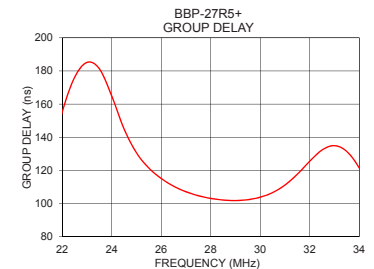
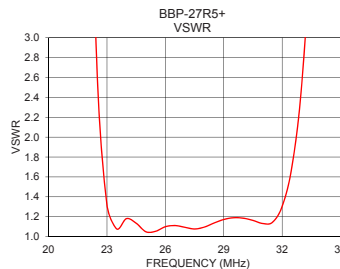
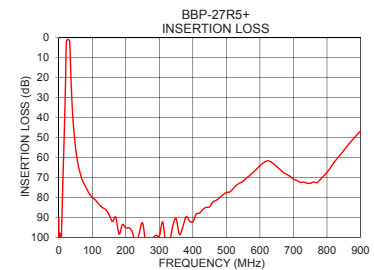
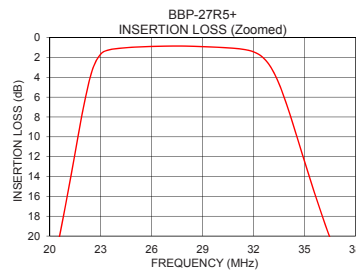


+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (ns) |
|-----------------|---------------------|-----------|-----------------|------------------|
| 1.0 | 104.19 | 37593.12 | 24.0 | 164.82 |
| 10.0 | 87.04 | 2190.78 | 24.5 | 144.89 |
| 15.0 | 56.93 | 504.06 | 25.0 | 130.56 |
| 19.0 | 32.30 | 106.83 | 25.5 | 121.41 |
| 20.5 | 20.66 | 41.05 | 26.0 | 115.12 |
| 22.5 | 3.28 | 2.62 | 26.5 | 110.49 |
| 24.0 | 1.11 | 1.18 | 27.0 | 107.12 |
| 26.0 | 0.90 | 1.10 | 27.5 | 104.72 |
| 27.5 | 0.85 | 1.08 | 28.0 | 103.11 |
| 29.0 | 0.91 | 1.17 | 28.5 | 102.15 |
| 31.0 | 1.10 | 1.13 | 29.0 | 101.84 |
| 33.0 | 2.95 | 2.51 | 29.5 | 102.34 |
| 36.5 | 20.20 | 33.03 | 30.0 | 103.85 |
| 39.0 | 30.39 | 61.18 | 30.5 | 106.65 |
| 100.0 | 79.99 | 236.30 | 31.0 | 111.20 |
| 200.0 | 95.36 | 203.72 | 31.5 | 117.71 |
| 500.0 | 77.51 | 78.33 | 32.0 | 125.53 |
| 600.0 | 64.14 | 54.02 | 32.5 | 132.35 |
| 700.0 | 70.84 | 37.23 | 33.0 | 134.95 |
| 900.0 | 46.79 | 4.96 | 33.5 | 131.43 |



Notes

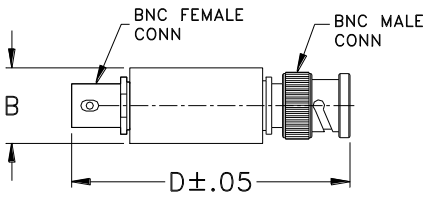
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Coaxial Connections

| | |
|----------|------------|
| PORT - 1 | BNC-Male |
| PORT - 2 | BNC-Female |

Outline Drawing



Outline Dimensions (inch / mm)

| A | B | C | D | E | Wt. |
|----|-------|----|-------|----|-------|
| -- | 0.57 | -- | 2.59 | -- | grams |
| -- | 14.47 | -- | 65.79 | -- | 40 |

Note: Please refer to case style drawing for details

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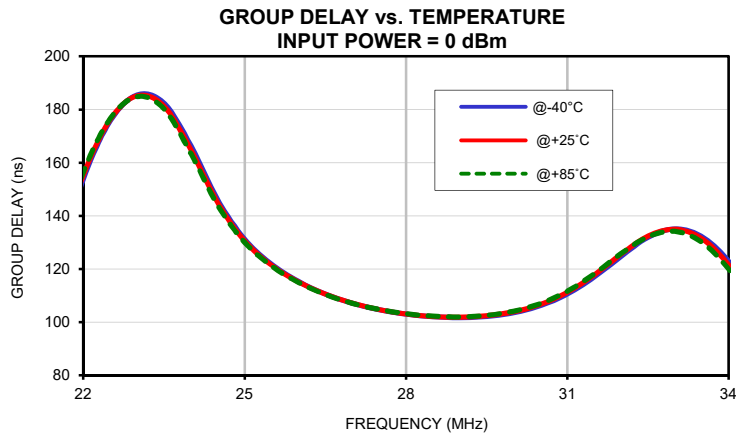
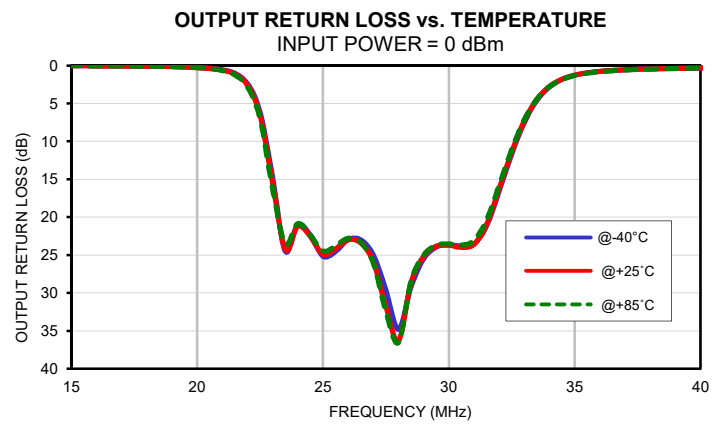
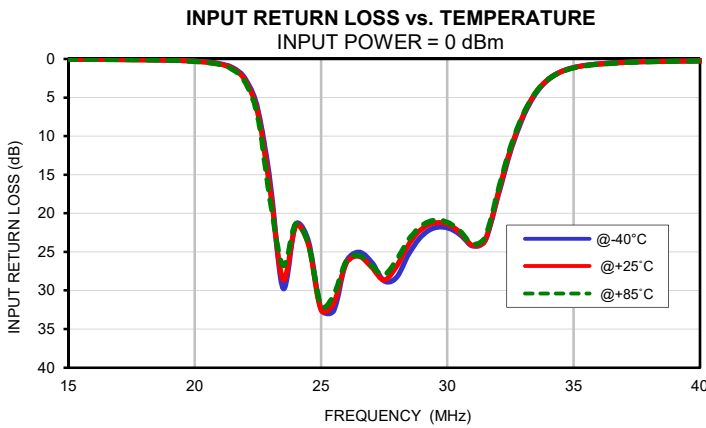
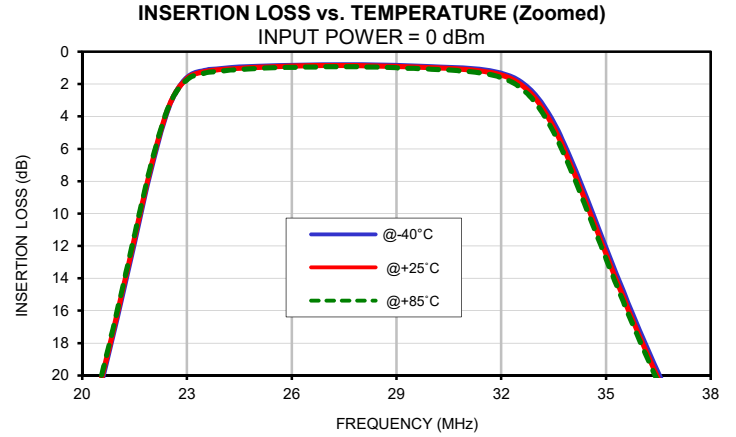
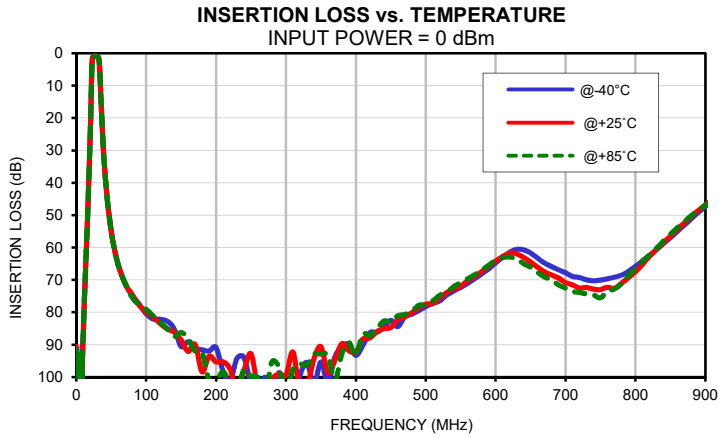
Typical Performance Data

| FREQ. (MHz) | INSERTION LOSS | | | INPUT RETURN LOSS | | | OUTPUT RETURN LOSS | | |
|----------------|----------------|--------|--------|-------------------|--------|--------|--------------------|--------|--------|
| | (dB) | | | (dB) | | | (dB) | | |
| | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C |
| 1.0 | 95.09 | 104.19 | 92.66 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.0 | 87.52 | 87.04 | 85.80 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 | 0.01 |
| 15.0 | 57.14 | 56.93 | 56.86 | 0.03 | 0.03 | 0.04 | 0.03 | 0.03 | 0.03 |
| 16.0 | 51.40 | 51.25 | 51.17 | 0.04 | 0.05 | 0.05 | 0.04 | 0.05 | 0.05 |
| 17.0 | 45.47 | 45.33 | 45.22 | 0.06 | 0.07 | 0.07 | 0.06 | 0.06 | 0.07 |
| 18.0 | 39.25 | 39.07 | 38.96 | 0.09 | 0.10 | 0.11 | 0.09 | 0.10 | 0.10 |
| 18.5 | 35.94 | 35.77 | 35.64 | 0.12 | 0.13 | 0.14 | 0.11 | 0.12 | 0.13 |
| 19.0 | 32.50 | 32.30 | 32.17 | 0.15 | 0.16 | 0.17 | 0.14 | 0.15 | 0.16 |
| 20.0 | 25.02 | 24.79 | 24.63 | 0.26 | 0.29 | 0.32 | 0.25 | 0.27 | 0.29 |
| 20.5 | 20.89 | 20.66 | 20.48 | 0.38 | 0.42 | 0.46 | 0.35 | 0.39 | 0.41 |
| 21.0 | 16.47 | 16.21 | 16.03 | 0.61 | 0.67 | 0.73 | 0.56 | 0.62 | 0.66 |
| 22.0 | 7.05 | 6.86 | 6.72 | 2.53 | 2.78 | 3.02 | 2.38 | 2.59 | 2.80 |
| 22.5 | 3.33 | 3.28 | 3.26 | 6.47 | 6.98 | 7.51 | 6.10 | 6.55 | 7.00 |
| 24.0 | 1.04 | 1.11 | 1.19 | 21.42 | 21.62 | 21.36 | 21.00 | 21.16 | 20.86 |
| 26.0 | 0.85 | 0.90 | 0.97 | 26.29 | 26.47 | 26.19 | 22.97 | 22.99 | 22.78 |
| 27.0 | 0.81 | 0.86 | 0.93 | 26.30 | 26.98 | 26.79 | 24.99 | 25.88 | 26.02 |
| 27.5 | 0.80 | 0.85 | 0.92 | 28.77 | 28.65 | 27.96 | 29.64 | 31.80 | 32.42 |
| 28.0 | 0.81 | 0.86 | 0.94 | 28.27 | 26.84 | 26.00 | 34.80 | 36.30 | 36.53 |
| 29.0 | 0.85 | 0.91 | 1.00 | 22.91 | 22.01 | 21.57 | 25.49 | 25.18 | 25.02 |
| 31.0 | 1.03 | 1.10 | 1.22 | 24.24 | 24.16 | 24.00 | 23.54 | 23.58 | 23.06 |
| 32.0 | 1.33 | 1.44 | 1.60 | 17.85 | 17.58 | 17.15 | 16.57 | 16.29 | 15.80 |
| 33.0 | 2.72 | 2.95 | 3.21 | 7.53 | 7.31 | 7.17 | 7.51 | 7.30 | 7.15 |
| 36.5 | 19.87 | 20.20 | 20.44 | 0.51 | 0.53 | 0.56 | 0.64 | 0.65 | 0.68 |
| 39.0 | 30.12 | 30.39 | 30.56 | 0.27 | 0.28 | 0.30 | 0.36 | 0.37 | 0.39 |
| 50.0 | 54.83 | 54.89 | 54.99 | 0.11 | 0.12 | 0.12 | 0.15 | 0.16 | 0.16 |
| 60.0 | 65.50 | 65.34 | 65.41 | 0.08 | 0.09 | 0.10 | 0.11 | 0.12 | 0.13 |
| 70.0 | 71.20 | 71.24 | 70.99 | 0.07 | 0.08 | 0.09 | 0.10 | 0.11 | 0.11 |
| 80.0 | 74.90 | 74.52 | 75.44 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 | 0.11 |
| 90.0 | 77.52 | 77.83 | 77.74 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 |
| 100.0 | 80.44 | 79.99 | 79.12 | 0.06 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 |
| 130.0 | 82.77 | 85.09 | 85.09 | 0.06 | 0.07 | 0.08 | 0.07 | 0.09 | 0.10 |
| 150.0 | 90.58 | 88.58 | 86.26 | 0.06 | 0.08 | 0.08 | 0.07 | 0.09 | 0.10 |
| 200.0 | 90.88 | 95.36 | 101.43 | 0.06 | 0.09 | 0.10 | 0.07 | 0.09 | 0.10 |
| 240.0 | 93.96 | 97.88 | 97.77 | 0.06 | 0.09 | 0.11 | 0.07 | 0.10 | 0.11 |
| 250.0 | 102.75 | 92.82 | 99.77 | 0.06 | 0.10 | 0.11 | 0.07 | 0.10 | 0.11 |
| 300.0 | 104.60 | 99.43 | 105.87 | 0.08 | 0.12 | 0.13 | 0.07 | 0.11 | 0.12 |
| 320.0 | 99.67 | 104.12 | 95.97 | 0.08 | 0.12 | 0.14 | 0.07 | 0.11 | 0.13 |
| 370.0 | 93.73 | 94.86 | 100.99 | 0.10 | 0.14 | 0.16 | 0.08 | 0.12 | 0.14 |
| 400.0 | 93.31 | 92.22 | 93.53 | 0.11 | 0.16 | 0.18 | 0.08 | 0.13 | 0.15 |
| 410.0 | 90.27 | 88.31 | 86.75 | 0.11 | 0.16 | 0.18 | 0.08 | 0.13 | 0.15 |
| 480.0 | 80.62 | 80.15 | 79.71 | 0.14 | 0.21 | 0.23 | 0.09 | 0.15 | 0.17 |
| 500.0 | 78.24 | 77.51 | 77.68 | 0.15 | 0.22 | 0.25 | 0.10 | 0.16 | 0.18 |
| 520.0 | 76.47 | 75.70 | 74.77 | 0.16 | 0.24 | 0.26 | 0.10 | 0.17 | 0.19 |
| 550.0 | 72.32 | 71.96 | 70.82 | 0.18 | 0.26 | 0.29 | 0.11 | 0.18 | 0.20 |
| 600.0 | 64.73 | 64.14 | 64.00 | 0.23 | 0.32 | 0.35 | 0.12 | 0.21 | 0.22 |
| 620.0 | 61.44 | 61.75 | 62.93 | 0.26 | 0.36 | 0.39 | 0.13 | 0.22 | 0.24 |
| 640.0 | 60.73 | 63.04 | 64.98 | 0.29 | 0.38 | 0.41 | 0.14 | 0.23 | 0.25 |
| 680.0 | 65.87 | 68.47 | 70.10 | 0.32 | 0.43 | 0.47 | 0.15 | 0.25 | 0.27 |
| 700.0 | 67.78 | 70.84 | 72.56 | 0.35 | 0.47 | 0.51 | 0.16 | 0.27 | 0.28 |
| 720.0 | 69.28 | 72.51 | 73.87 | 0.39 | 0.51 | 0.56 | 0.17 | 0.28 | 0.30 |
| 740.0 | 70.28 | 72.86 | 74.68 | 0.44 | 0.57 | 0.62 | 0.18 | 0.30 | 0.32 |
| 760.0 | 69.67 | 72.30 | 73.49 | 0.51 | 0.65 | 0.70 | 0.19 | 0.32 | 0.33 |
| 780.0 | 68.55 | 71.06 | 71.18 | 0.59 | 0.74 | 0.80 | 0.21 | 0.34 | 0.35 |
| 800.0 | 65.79 | 67.55 | 66.66 | 0.70 | 0.88 | 0.95 | 0.23 | 0.36 | 0.38 |
| 820.0 | 62.47 | 62.71 | 62.31 | 0.86 | 1.06 | 1.16 | 0.25 | 0.39 | 0.42 |
| 840.0 | 58.91 | 58.60 | 57.98 | 1.10 | 1.34 | 1.46 | 0.28 | 0.43 | 0.45 |
| 860.0 | 55.00 | 54.35 | 53.90 | 1.47 | 1.76 | 1.92 | 0.32 | 0.48 | 0.51 |
| 880.0 | 51.12 | 50.38 | 50.12 | 2.07 | 2.45 | 2.64 | 0.37 | 0.55 | 0.56 |
| 890.0 | 49.17 | 48.52 | 48.48 | 2.50 | 2.93 | 3.14 | 0.40 | 0.58 | 0.59 |
| 900.0 | 47.28 | 46.79 | 47.06 | 3.06 | 3.55 | 3.78 | 0.44 | 0.61 | 0.61 |

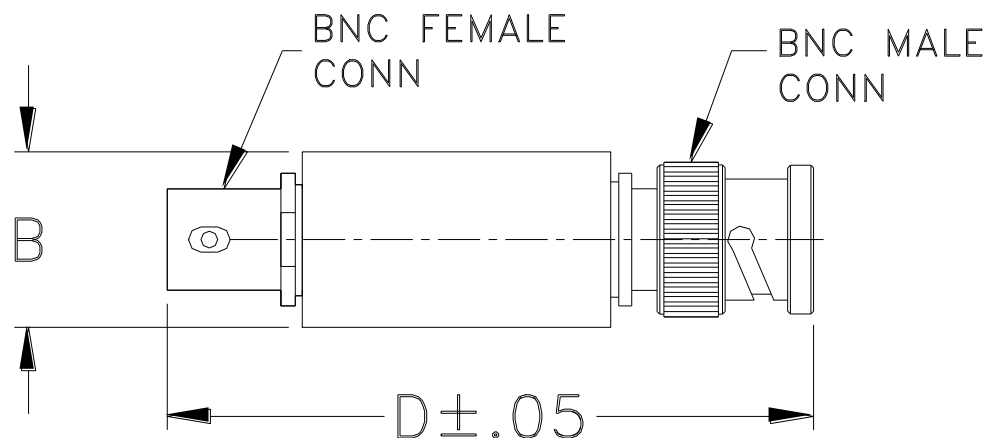
Typical Performance Data

| FREQ. (MHz) | GROUP DELAY | | |
|--------------------|-------------|--------|--------|
| | (nsec) | | |
| | @-40°C | @+25°C | @+85°C |
| 17.00 | 21.68 | 21.95 | 22.11 |
| 17.50 | 24.28 | 24.66 | 24.83 |
| 18.00 | 27.47 | 27.64 | 27.84 |
| 18.50 | 31.10 | 31.71 | 32.03 |
| 19.00 | 36.30 | 36.97 | 37.35 |
| 19.50 | 43.20 | 44.05 | 44.47 |
| 20.00 | 52.92 | 53.97 | 54.78 |
| 20.50 | 67.44 | 68.97 | 70.11 |
| 21.00 | 89.95 | 92.02 | 93.71 |
| 21.50 | 121.71 | 123.95 | 125.73 |
| 22.00 | 153.87 | 155.31 | 156.48 |
| 22.50 | 175.71 | 176.23 | 176.61 |
| 23.00 | 185.48 | 185.17 | 184.84 |
| 23.50 | 182.45 | 181.27 | 180.26 |
| 24.00 | 166.40 | 164.82 | 163.46 |
| 24.50 | 146.02 | 144.89 | 143.92 |
| 25.00 | 131.19 | 130.56 | 130.02 |
| 25.50 | 121.80 | 121.41 | 121.13 |
| 26.00 | 115.34 | 115.12 | 114.93 |
| 26.50 | 110.59 | 110.49 | 110.39 |
| 27.00 | 107.11 | 107.12 | 107.08 |
| 27.50 | 104.65 | 104.72 | 104.75 |
| 28.00 | 102.99 | 103.11 | 103.15 |
| 28.50 | 101.99 | 102.15 | 102.22 |
| 29.00 | 101.66 | 101.84 | 101.96 |
| 29.50 | 102.10 | 102.34 | 102.52 |
| 30.00 | 103.51 | 103.85 | 104.09 |
| 30.50 | 106.18 | 106.65 | 106.98 |
| 31.00 | 110.55 | 111.20 | 111.60 |
| 31.50 | 116.90 | 117.71 | 118.12 |
| 32.00 | 124.74 | 125.53 | 125.76 |
| 32.50 | 131.86 | 132.35 | 132.10 |
| 33.00 | 135.07 | 134.95 | 134.15 |
| 33.50 | 132.21 | 131.43 | 130.13 |
| 34.00 | 122.95 | 121.54 | 119.95 |
| 39.50 | 22.02 | 21.81 | 21.64 |
| 40.00 | 19.92 | 19.66 | 19.60 |
| 10.50 | 13.64 | 23.91 | 1.41 |
| 41.00 | 16.58 | 16.36 | 16.38 |
| 41.50 | 15.16 | 15.16 | 15.04 |
| 42.00 | 14.06 | 13.93 | 13.92 |

Typical Performance Curves



Outline Dimensions



| CASE #. | A | B | C | D | E | WT GRAMS |
|---------|----|----------------|----|-----------------|----|----------|
| FF55 | -- | .57 (14.47) | -- | 2.59 (65.79) | -- | 40.0 |

Dimensions are in inches (mm). Tolerances: 2Pl. +.03/-.04; 3Pl. ± .015

Note:

1. Case material: Stainless steel.



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 | -40° to 85° C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Thermal Shock | -55° to 100°C, 100 cycles | MIL-STD-202, Method 107, Condition A-3, except +100°C |