

Surface Mount

Bandpass Filter

BPF-A600+

50Ω

500 to 700 MHz

The Big Deal

- Sharp roll-off
- High rejection (50 dB typical)
- Miniature shielded package



CASE STYLE: HQ1157

Product Overview

The BPF-A600+ is a band pass filter in a shielded package (size of 0.365" x 1.360" x .35") fabricated using SMT technology. Covering 600 MHz ± 100 MHz bandwidth, these units offer good matching within the passband and high rejection. This unit uses a miniature high Q capacitors and wire welded inductors for high reliability. In addition it has repeatable performance across production lots and consistent performance across temperature.

Key Features

| Feature | Advantages |
|---|---|
| More than 40dB rejection up to 1800 MHz | This enables the filter to attenuate spurious signals and reject harmonics for broad band of frequency. |
| Sharp shape factor of 1.2 | Sharp shape factor helps in adjacent channel rejection and hence increased selectivity. |
| Shielded case | Reduced interference with and from the surrounding components. |

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



Bandpass Filter

BPF-A600+

50Ω 500 to 700 MHz



CASE STYLE: HQ1157

Features

- Sharp roll-off
- High rejection, 50 dB typical
- Shielded case
- Aqueous washable

Applications

- Broad band wireless 4G system (UHF Wimax)
- Harmonic rejection
- Transmitters / receivers

Electrical Specifications at 25°C

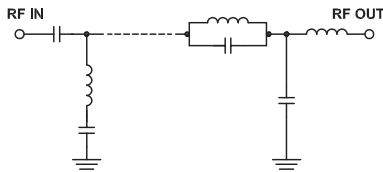
| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit | |
|------------------|------------------|-----------------|----------|------|------|------|----|
| Pass Band | Center Frequency | — | — | 600 | — | MHz | |
| | Insertion Loss | F1-F2 | 500-700 | — | 1.6 | 2.5 | dB |
| | VSWR | F1-F2 | 500-700 | — | 1.6 | 2.2 | :1 |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC-380 | 20 | 32 | — | dB |
| | VSWR | DC-F3 | DC-380 | — | 14 | — | :1 |
| Stop Band, Upper | Insertion Loss | F4-F5 | 795-1800 | 20 | 36 | — | dB |
| | VSWR | F4-F5 | 795-1800 | — | 13 | — | :1 |

Maximum Ratings

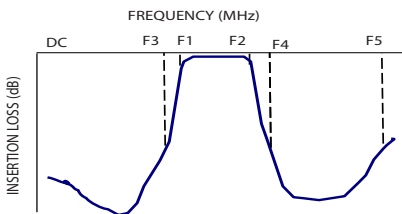
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 1W max. |

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

Functional Schematic



Typical Frequency Response

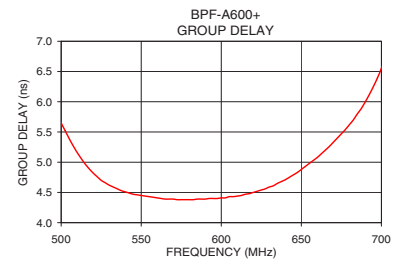
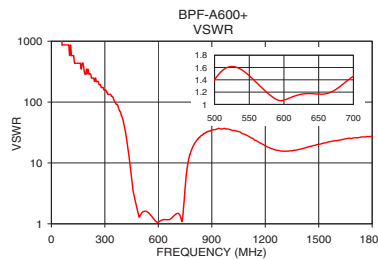
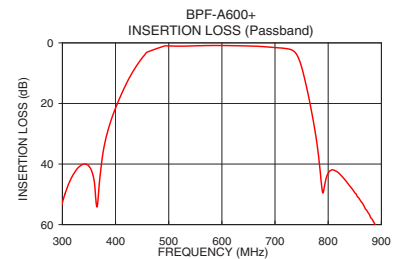
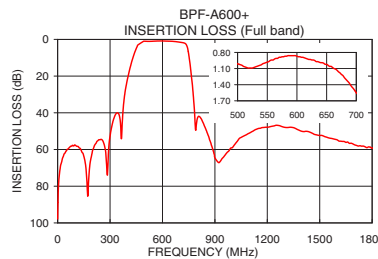


Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 0.5 | 97.89 | 5790.59 | 500.0 | 5.65 |
| 150.0 | 63.66 | 434.30 | 510.0 | 5.16 |
| 300.0 | 52.69 | 157.93 | 520.0 | 4.82 |
| 380.0 | 32.96 | 75.53 | 530.0 | 4.62 |
| 402.5 | 20.44 | 49.64 | 540.0 | 4.51 |
| 430.0 | 10.28 | 16.89 | 550.0 | 4.45 |
| 450.0 | 4.99 | 5.70 | 560.0 | 4.41 |
| 460.0 | 3.01 | 3.27 | 570.0 | 4.39 |
| 500.0 | 1.01 | 1.40 | 580.0 | 4.38 |
| 600.0 | 0.87 | 1.07 | 600.0 | 4.41 |
| 700.0 | 1.55 | 1.45 | 610.0 | 4.44 |
| 740.0 | 3.63 | 1.61 | 620.0 | 4.50 |
| 750.0 | 7.97 | 3.76 | 630.0 | 4.59 |
| 760.0 | 15.14 | 7.53 | 640.0 | 4.71 |
| 780.0 | 34.74 | 14.50 | 650.0 | 4.88 |
| 795.0 | 45.55 | 18.70 | 660.0 | 5.08 |
| 890.0 | 60.57 | 33.42 | 670.0 | 5.33 |
| 1000.0 | 58.98 | 35.46 | 680.0 | 5.62 |
| 1500.0 | 52.38 | 20.22 | 690.0 | 6.00 |
| 1800.0 | 59.23 | 27.59 | 700.0 | 6.55 |

+RoHS Compliant

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



Notes

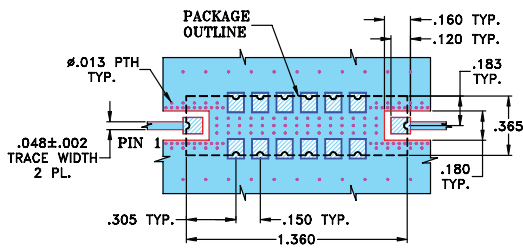
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
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Pad Connections

| | |
|--------|------------------------------|
| INPUT | 1 |
| OUTPUT | 8 |
| GROUND | 2,3,4,5,6,7,9,10,11,12,13,14 |

Demo Board MCL P/N: TB-363+
Suggested PCB Layout (PL-227)

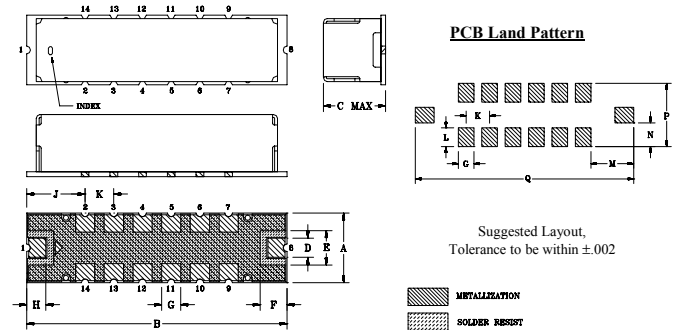


NOTE:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025"±.002". COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

Outline Drawing



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H |
|------|-------|------|------|------|-------|-------|-------|
| .365 | 1.360 | .35 | .100 | .180 | .140 | .100 | .100 |
| 9.27 | 34.54 | 8.89 | 2.54 | 4.57 | 3.56 | 2.54 | 2.54 |
| J | K | L | M | N | P | Q | wt |
| .305 | .150 | .120 | .275 | .152 | .405 | 1.400 | grams |
| 7.75 | 3.81 | 3.05 | 6.99 | 3.86 | 10.29 | 35.56 | 4.0 |

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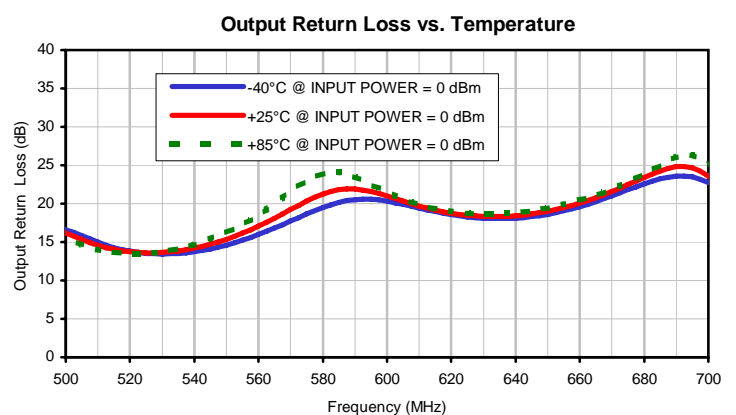
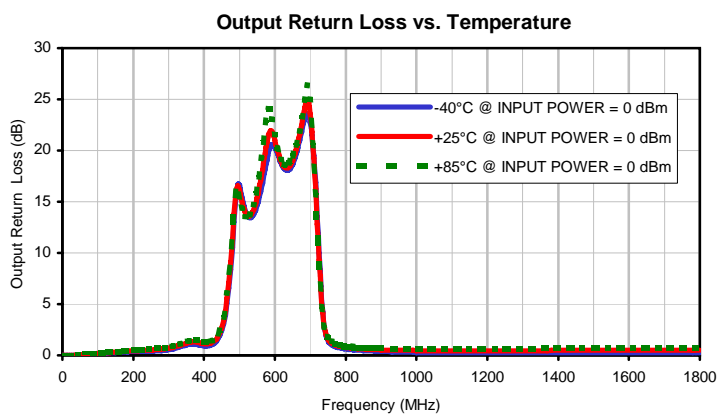
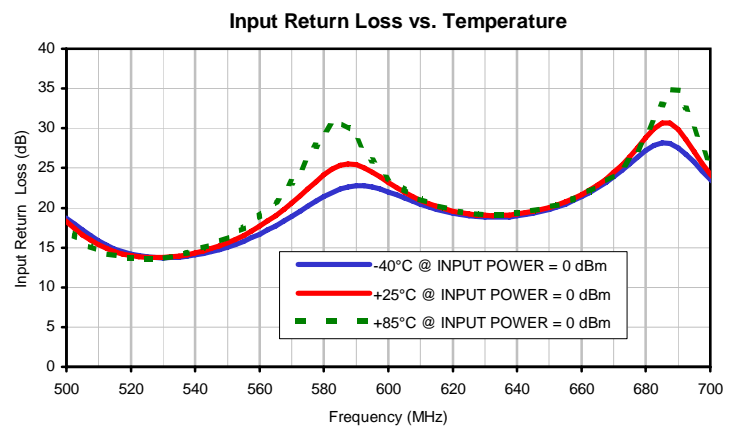
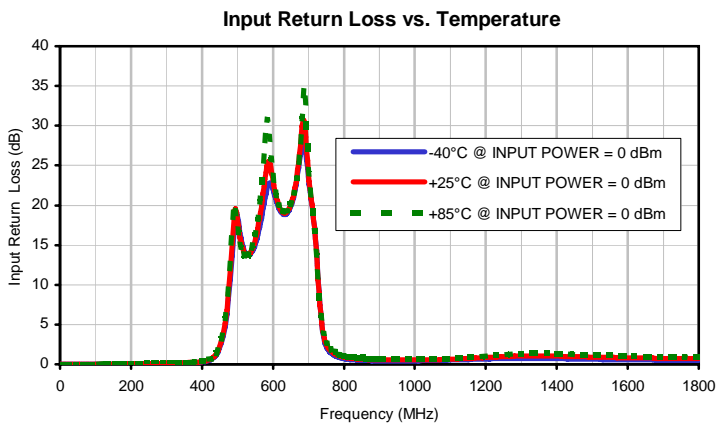
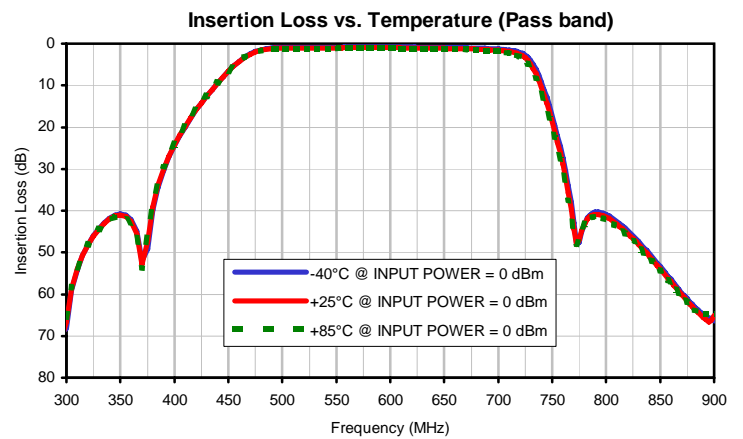
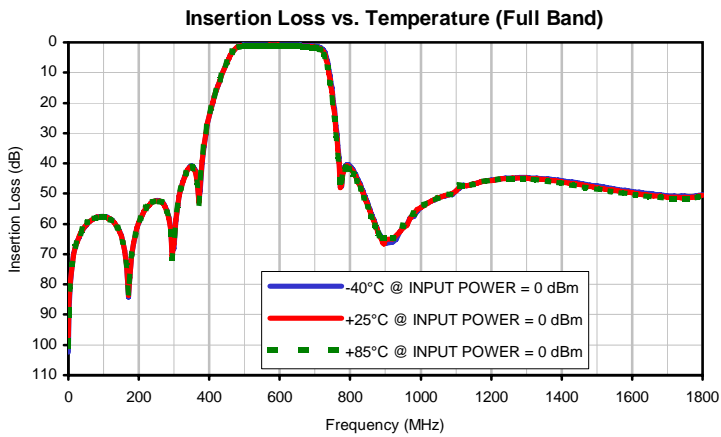
Typical Performance Data

| 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 |
| 0.5 | 102.45 | 97.17 | 100.30 | 0.00 | 0.00 | 0.01 | 0.01 | 0.00 | 0.01 |
| 50.0 | 60.44 | 60.37 | 60.34 | 0.00 | 0.01 | 0.02 | 0.03 | 0.05 | 0.07 |
| 100.0 | 57.57 | 57.61 | 57.72 | 0.01 | 0.02 | 0.04 | 0.14 | 0.17 | 0.20 |
| 150.0 | 63.96 | 64.09 | 64.09 | 0.02 | 0.04 | 0.07 | 0.28 | 0.33 | 0.37 |
| 200.0 | 59.55 | 59.50 | 59.47 | 0.04 | 0.07 | 0.10 | 0.36 | 0.44 | 0.50 |
| 220.0 | 55.04 | 54.98 | 54.89 | 0.05 | 0.08 | 0.11 | 0.37 | 0.47 | 0.55 |
| 240.0 | 52.76 | 52.77 | 52.70 | 0.06 | 0.09 | 0.13 | 0.39 | 0.50 | 0.60 |
| 250.0 | 52.32 | 52.36 | 52.38 | 0.06 | 0.09 | 0.13 | 0.39 | 0.52 | 0.62 |
| 260.0 | 52.43 | 52.54 | 52.57 | 0.07 | 0.10 | 0.14 | 0.41 | 0.54 | 0.65 |
| 280.0 | 55.60 | 55.91 | 56.15 | 0.08 | 0.12 | 0.16 | 0.46 | 0.60 | 0.71 |
| 300.0 | 68.18 | 66.64 | 65.66 | 0.10 | 0.13 | 0.17 | 0.54 | 0.70 | 0.81 |
| 340.0 | 41.79 | 41.98 | 42.16 | 0.14 | 0.18 | 0.22 | 0.91 | 1.08 | 1.21 |
| 350.0 | 40.77 | 41.05 | 41.31 | 0.15 | 0.19 | 0.23 | 1.01 | 1.19 | 1.33 |
| 360.0 | 42.16 | 42.59 | 43.09 | 0.17 | 0.21 | 0.25 | 1.08 | 1.28 | 1.44 |
| 380.0 | 39.88 | 39.12 | 38.29 | 0.21 | 0.25 | 0.29 | 1.05 | 1.29 | 1.48 |
| 400.0 | 24.44 | 24.25 | 23.99 | 0.29 | 0.33 | 0.38 | 0.91 | 1.15 | 1.34 |
| 460.0 | 4.24 | 4.24 | 4.18 | 3.52 | 3.86 | 4.23 | 3.93 | 4.33 | 4.71 |
| 480.0 | 1.47 | 1.58 | 1.64 | 10.65 | 11.76 | 13.21 | 10.57 | 11.40 | 12.29 |
| 500.0 | 0.90 | 1.09 | 1.24 | 18.66 | 18.27 | 17.36 | 16.61 | 16.13 | 15.39 |
| 550.0 | 0.87 | 1.03 | 1.15 | 15.05 | 15.61 | 16.28 | 14.62 | 15.37 | 16.28 |
| 555.0 | 0.85 | 1.00 | 1.12 | 15.79 | 16.53 | 17.48 | 15.24 | 16.16 | 17.35 |
| 560.0 | 0.82 | 0.98 | 1.10 | 16.69 | 17.67 | 18.98 | 15.97 | 17.08 | 18.60 |
| 565.0 | 0.80 | 0.96 | 1.08 | 17.74 | 19.01 | 20.83 | 16.80 | 18.11 | 20.01 |
| 570.0 | 0.79 | 0.95 | 1.07 | 18.93 | 20.60 | 23.18 | 17.71 | 19.22 | 21.52 |
| 575.0 | 0.77 | 0.94 | 1.07 | 20.20 | 22.39 | 26.12 | 18.63 | 20.31 | 22.93 |
| 580.0 | 0.77 | 0.93 | 1.07 | 21.41 | 24.12 | 29.38 | 19.48 | 21.24 | 23.89 |
| 585.0 | 0.76 | 0.93 | 1.08 | 22.36 | 25.34 | 30.76 | 20.17 | 21.84 | 24.06 |
| 590.0 | 0.76 | 0.94 | 1.09 | 22.77 | 25.40 | 28.62 | 20.54 | 21.92 | 23.46 |
| 595.0 | 0.77 | 0.95 | 1.10 | 22.60 | 24.48 | 25.95 | 20.58 | 21.58 | 22.50 |
| 600.0 | 0.78 | 0.96 | 1.11 | 22.01 | 23.21 | 23.85 | 20.33 | 20.99 | 21.51 |
| 650.0 | 0.92 | 1.14 | 1.32 | 19.79 | 20.06 | 20.10 | 18.62 | 19.00 | 19.44 |
| 655.0 | 0.93 | 1.16 | 1.35 | 20.48 | 20.76 | 20.73 | 19.07 | 19.49 | 19.92 |
| 660.0 | 0.95 | 1.18 | 1.37 | 21.37 | 21.68 | 21.54 | 19.62 | 20.07 | 20.47 |
| 665.0 | 0.97 | 1.21 | 1.41 | 22.50 | 22.87 | 22.62 | 20.27 | 20.78 | 21.12 |
| 670.0 | 0.99 | 1.24 | 1.44 | 23.92 | 24.44 | 24.07 | 21.01 | 21.58 | 21.87 |
| 675.0 | 1.02 | 1.27 | 1.49 | 25.54 | 26.41 | 26.04 | 21.80 | 22.48 | 22.77 |
| 680.0 | 1.06 | 1.32 | 1.53 | 27.19 | 28.78 | 28.88 | 22.57 | 23.41 | 23.82 |
| 685.0 | 1.10 | 1.37 | 1.59 | 28.15 | 30.67 | 32.99 | 23.21 | 24.26 | 24.99 |
| 690.0 | 1.15 | 1.43 | 1.67 | 27.56 | 29.87 | 34.73 | 23.58 | 24.80 | 26.06 |
| 695.0 | 1.21 | 1.50 | 1.76 | 25.72 | 27.02 | 29.85 | 23.49 | 24.68 | 26.33 |
| 700.0 | 1.29 | 1.60 | 1.87 | 23.58 | 24.21 | 25.56 | 22.76 | 23.61 | 24.97 |
| 750.0 | 17.29 | 18.71 | 20.19 | 2.28 | 2.56 | 2.77 | 1.42 | 1.59 | 1.68 |
| 755.0 | 22.09 | 23.54 | 25.08 | 1.85 | 2.12 | 2.34 | 1.18 | 1.36 | 1.46 |
| 760.0 | 27.49 | 29.00 | 30.65 | 1.56 | 1.82 | 2.03 | 1.03 | 1.21 | 1.32 |
| 765.0 | 34.00 | 35.64 | 37.48 | 1.35 | 1.60 | 1.80 | 0.93 | 1.10 | 1.21 |
| 770.0 | 42.88 | 44.49 | 46.15 | 1.20 | 1.43 | 1.63 | 0.86 | 1.03 | 1.13 |
| 775.0 | 47.67 | 47.08 | 46.50 | 1.07 | 1.30 | 1.49 | 0.80 | 0.96 | 1.07 |
| 780.0 | 42.99 | 43.12 | 43.19 | 0.98 | 1.19 | 1.38 | 0.75 | 0.91 | 1.01 |
| 790.0 | 40.35 | 40.90 | 41.43 | 0.83 | 1.03 | 1.20 | 0.68 | 0.83 | 0.93 |
| 795.0 | 40.41 | 41.04 | 41.58 | 0.77 | 0.96 | 1.13 | 0.65 | 0.80 | 0.90 |
| 800.0 | 40.88 | 41.53 | 42.15 | 0.72 | 0.91 | 1.08 | 0.62 | 0.77 | 0.87 |
| 850.0 | 53.35 | 54.00 | 54.47 | 0.48 | 0.64 | 0.78 | 0.46 | 0.61 | 0.72 |
| 890.0 | 64.80 | 65.62 | 64.67 | 0.43 | 0.57 | 0.69 | 0.39 | 0.54 | 0.67 |
| 900.0 | 66.36 | 65.18 | 64.80 | 0.42 | 0.56 | 0.68 | 0.38 | 0.53 | 0.66 |
| 1000.0 | 54.62 | 54.65 | 54.28 | 0.43 | 0.54 | 0.64 | 0.28 | 0.46 | 0.62 |
| 1100.0 | 48.99 | 49.11 | 48.34 | 0.53 | 0.64 | 0.76 | 0.24 | 0.44 | 0.62 |
| 1200.0 | 45.55 | 45.62 | 45.65 | 0.67 | 0.85 | 1.03 | 0.22 | 0.44 | 0.63 |
| 1300.0 | 44.74 | 44.93 | 45.12 | 0.75 | 1.04 | 1.32 | 0.22 | 0.45 | 0.65 |
| 1400.0 | 45.66 | 46.11 | 46.55 | 0.71 | 1.02 | 1.30 | 0.23 | 0.47 | 0.67 |
| 1500.0 | 47.48 | 48.00 | 48.50 | 0.62 | 0.90 | 1.16 | 0.23 | 0.48 | 0.69 |
| 1600.0 | 49.25 | 49.75 | 50.25 | 0.56 | 0.81 | 1.04 | 0.24 | 0.49 | 0.70 |
| 1700.0 | 50.67 | 51.10 | 51.49 | 0.52 | 0.75 | 0.96 | 0.24 | 0.51 | 0.72 |
| 1800.0 | 50.30 | 50.66 | 50.92 | 0.49 | 0.71 | 0.91 | 0.26 | 0.52 | 0.74 |

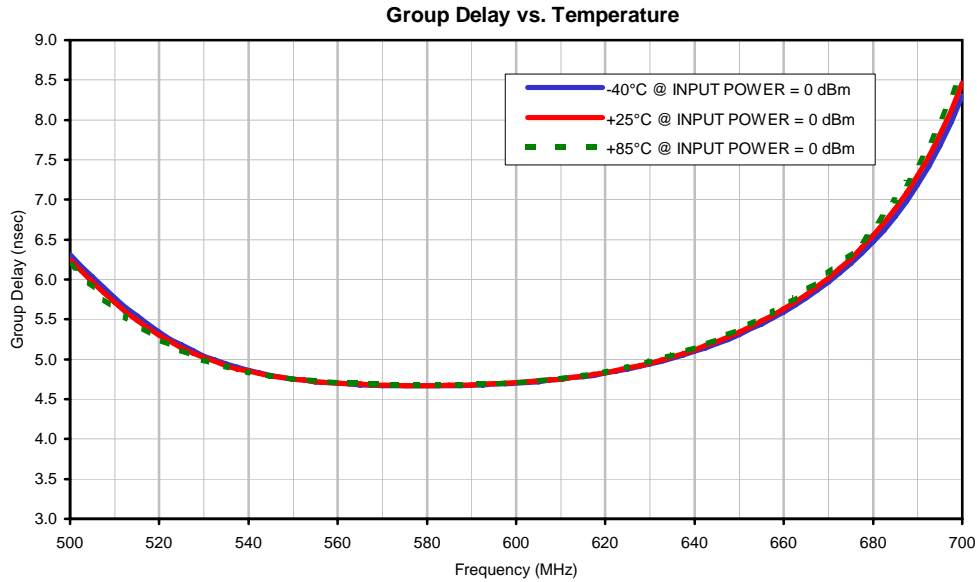
Typical Performance Data

| FREQ. (MHz) | GROUP DELAY | | |
|--------------------|-------------|--------|--------|
| | (nsec) | | |
| | @-40°C | @+25°C | @+85°C |
| 500.0 | 6.31 | 6.25 | 6.18 |
| 505.0 | 6.03 | 5.97 | 5.90 |
| 510.0 | 5.77 | 5.71 | 5.65 |
| 515.0 | 5.54 | 5.49 | 5.43 |
| 530.0 | 5.04 | 5.02 | 4.99 |
| 545.0 | 4.80 | 4.79 | 4.79 |
| 550.0 | 4.75 | 4.75 | 4.75 |
| 555.0 | 4.72 | 4.72 | 4.73 |
| 560.0 | 4.70 | 4.70 | 4.71 |
| 565.0 | 4.68 | 4.69 | 4.70 |
| 570.0 | 4.67 | 4.68 | 4.69 |
| 575.0 | 4.67 | 4.67 | 4.68 |
| 585.0 | 4.67 | 4.68 | 4.68 |
| 590.0 | 4.68 | 4.68 | 4.69 |
| 592.5 | 4.68 | 4.69 | 4.69 |
| 595.0 | 4.69 | 4.69 | 4.69 |
| 600.0 | 4.70 | 4.71 | 4.71 |
| 605.0 | 4.72 | 4.73 | 4.73 |
| 615.0 | 4.78 | 4.79 | 4.80 |
| 630.0 | 4.94 | 4.95 | 4.97 |
| 635.0 | 5.01 | 5.03 | 5.05 |
| 640.0 | 5.10 | 5.12 | 5.14 |
| 645.0 | 5.20 | 5.22 | 5.25 |
| 650.0 | 5.31 | 5.34 | 5.37 |
| 655.0 | 5.44 | 5.48 | 5.51 |
| 660.0 | 5.59 | 5.63 | 5.68 |
| 665.0 | 5.77 | 5.81 | 5.86 |
| 670.0 | 5.97 | 6.02 | 6.08 |
| 675.0 | 6.20 | 6.26 | 6.33 |
| 680.0 | 6.47 | 6.55 | 6.63 |
| 685.0 | 6.79 | 6.88 | 6.99 |
| 690.0 | 7.19 | 7.30 | 7.43 |
| 695.0 | 7.68 | 7.81 | 7.97 |
| 700.0 | 8.30 | 8.46 | 8.65 |

Typical Performance Curves



Typical Performance Curves

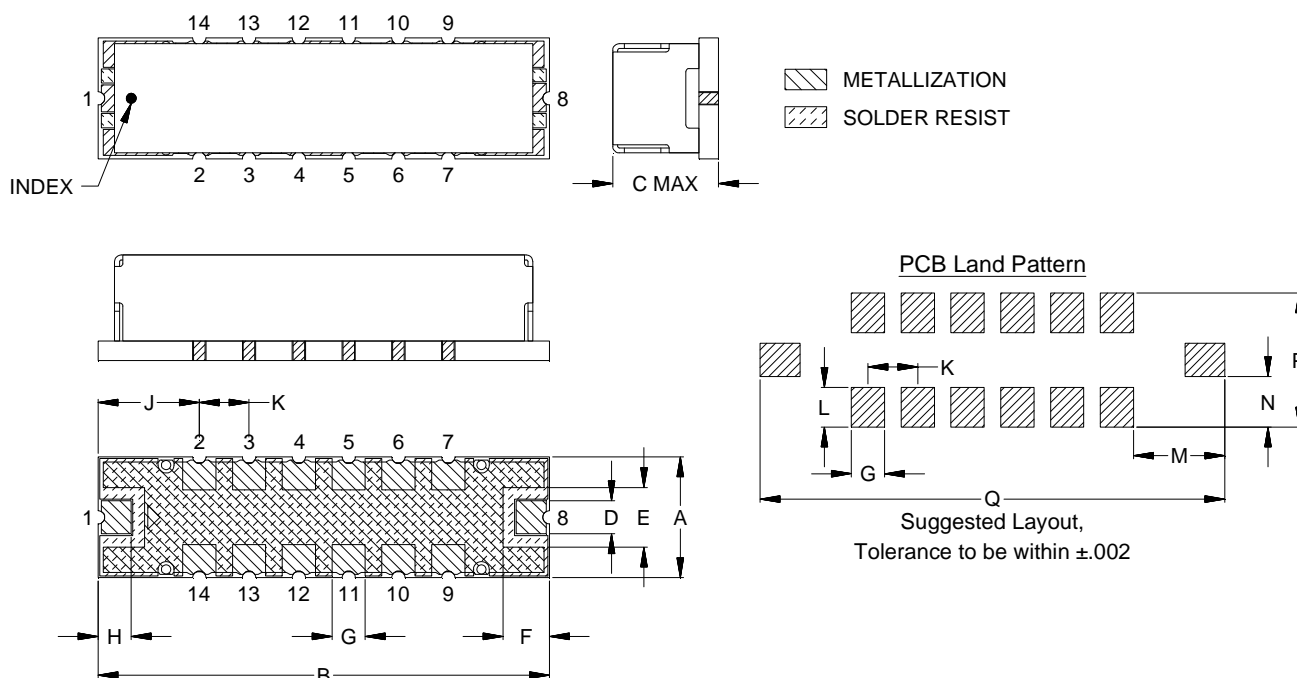


Case Style

HQ

Outline Dimensions

HQ1157



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M |
|--------|----------------|------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| HQ1157 | .365 (9.27) | 1.360 (34.54) | .350 (8.89) | .100 (2.54) | .180 (4.57) | .140 (3.56) | .100 (2.54) | .100 (2.54) | .305 (7.75) | .150 (3.81) | .120 (3.05) | .275 (6.99) |

| CASE# | N | P | Q | WT.GRAM |
|--------|----------------|-----------------|------------------|---------|
| HQ1157 | .152 (3.87) | .405 (10.29) | 1.400 (35.56) | 4.0 |

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

Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
 - For RoHS Case Styles: 3-5 μ inch (.08-.13 microns) Gold over 120-240 μ inch (3.05-6.10 microns) Nickel plate.
 - For RoHS-5 Case Styles: Tin-Lead plate.

Mini-Circuits®
ISO 9001 ISO 14001 CERTIFIED

ALL NEW
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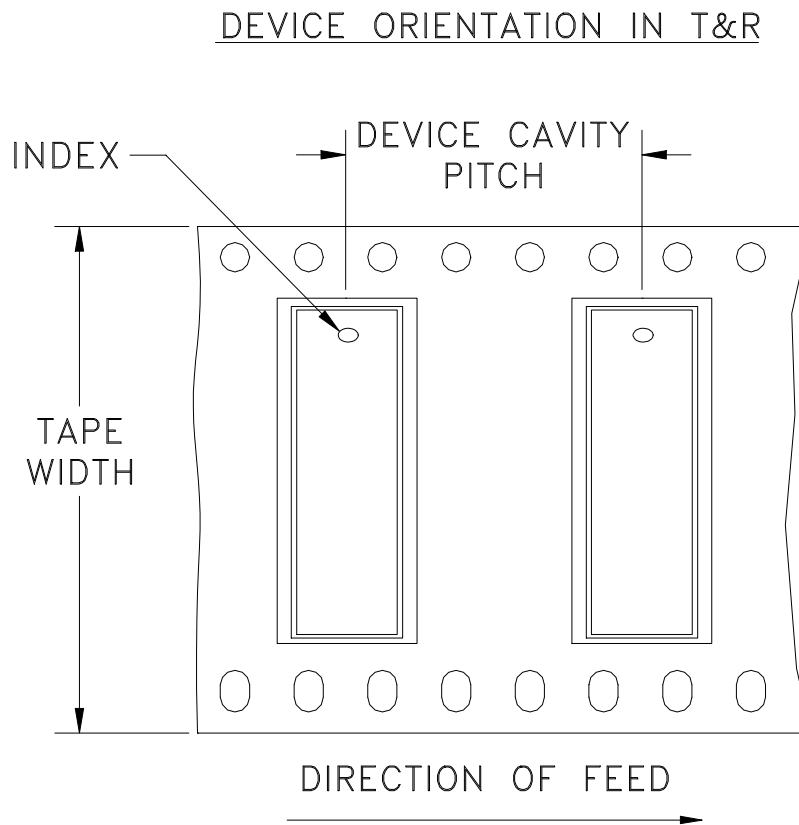
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The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS

Tape & Reel Packaging TR-F83



| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel |
|---------------------------|------------------------------------|------------------------------|-------------------------|
| 56 | 16 | 13 | 100 |

Mini-Circuits carrier tape materials provide protection from ESD (Electro-Static Discharge) during handling and transportation. Tapes are static dissipative and comply with industry standards EIA-481/EIA-541.

Go to: www.minicircuits.com/pages/pdfs/tape.pdf



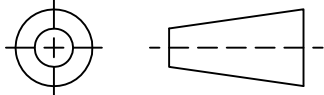
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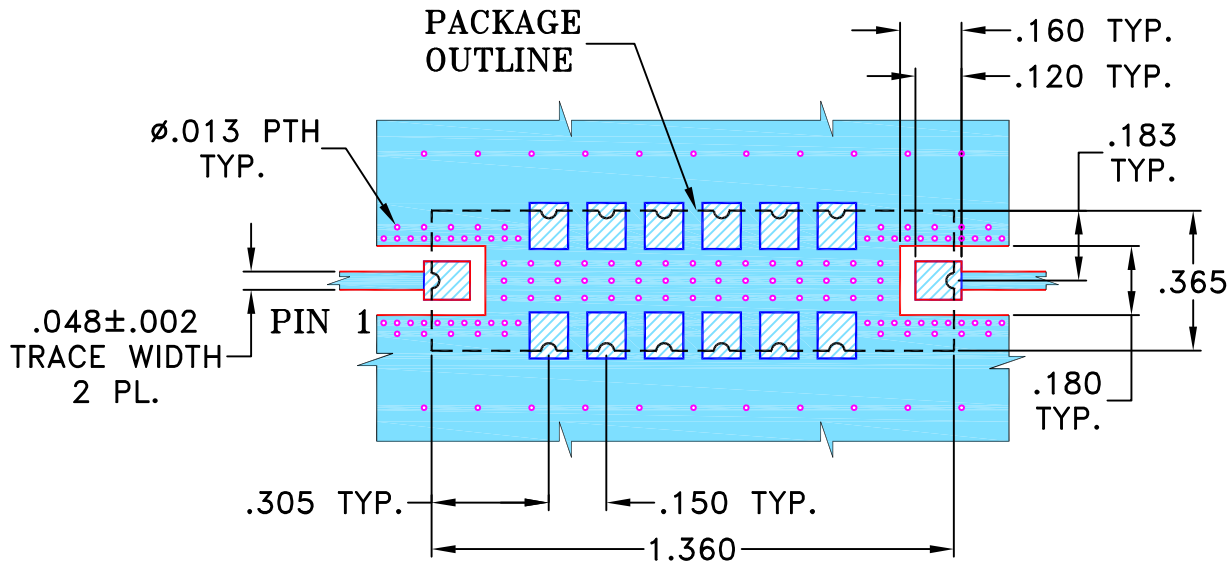
THIRD ANGLE PROJECTION



REVISIONS

| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
|-----|---------|---------------------------------|----------|-----|------|
| OR | M101212 | NEW RELEASE (FROM RAVON) | 11/05 | DK | YB |
| A | M108938 | SWITCH HATCHES | 12/06 | DK | HH |
| B | M118075 | CHANGE LINE PLACES | 06/08 | HB | HH |
| C | M173459 | CORRECTED CASE STYLE & TB PART# | 03/27/19 | ITG | IL |

**SUGGESTED MOUNTING CONFIGURATION
FOR HQ1157 CASE STYLE, rf PIN CONNECTION**



NOTE:

- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS .025" ± .002". COPPER: 1/2 OZ. EACH SIDE.
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
- BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDERMASK

| UNLESS OTHERWISE SPECIFIED | INITIALS | | DATE |
|--|----------|------------|-------------|
| DIMENSIONS ARE IN INCHES TOLERANCES ON: 2 PL DECIMALS ± 3 PL DECIMALS ± .005 ANGLES ± FRACTIONS ± | DRAWN | HB (RAVON) | 12 JUN 2008 |
| | CHECKED | RZ (RAVON) | 12 JUN 2008 |
| | APPROVED | HH (RAVON) | 12 JUN 2008 |

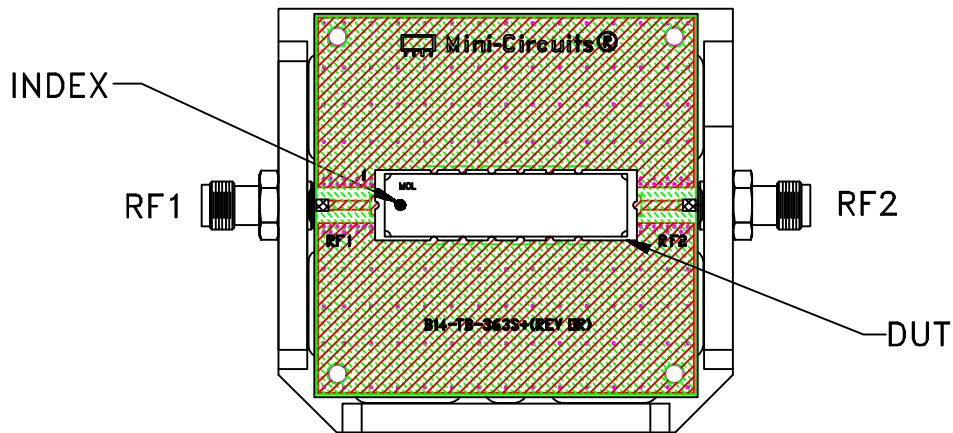
Mini-Circuits® 13 Neptune Avenue
Brooklyn NY 11235

PL, rf, HQ1157, TB-363+, 50 OHM

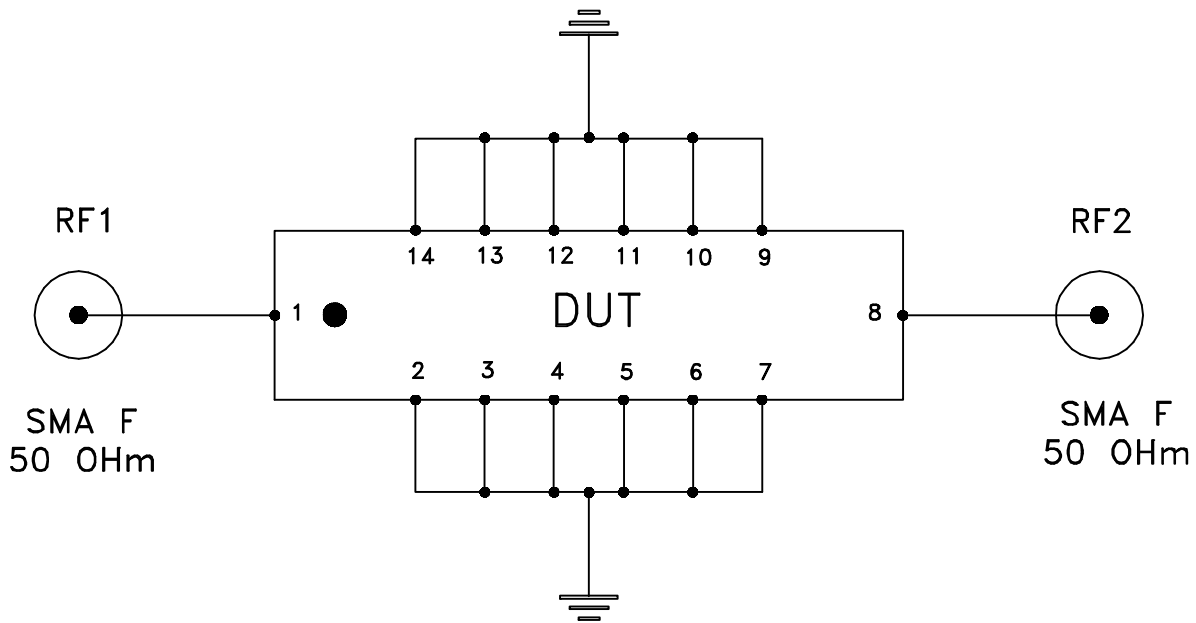
| SIZE | CODE IDENT | DRAWING NO: | REV: |
|-------|------------|-------------|--------|
| A | 15542 | 98-PL-227 | C |
| FILE: | 98PL227 | SCALE: | 2:1 |
| | | SHEET: | 1 OF 1 |

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Evaluation Board and Circuit




TB-363+



Schematic Diagram

Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: ROGERS R04350 or equivalent,
Dielectric Constant=3.48, Thickness=.030 inch.

 **Mini-Circuits®**

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 | -65° to 150° C Ambient Environment | Individual Model Data Sheet |
| Autoclave | 15 psig, 100% RH, 121°C, 96 hours | JESD22-A102-C, Condition C |
| Temperature Cycling | -65° to 150°C, 100 cycles | JESD22-A104 |
| Temperature Humidity | 85°C/ 85% RH, 168 hours | JESD22-113 |
| Solder Reflow Heat | Sn-Pb Eutetic Process: 240°C peak Pb-Free Process: 260°C peak | J-STD-020, Table 4-1, 4-2 and 5-2; Figure 5-1 |
| Moisture Sensitivity: Level 1 | Bake at 125°C for 24 hours Soak at 85°C/85% RH for 168 hours, Reflow 3 cycles at 240°C peak (Non-RoHS) or 260°C (RoHS) | J-STD-020 |
| Solderability | 10X magnification, 95% coverage | JESD22-B102, Method 1: Dip and Look Test |
| Mechanical Shock | 50g, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes | MIL-STD-202, Method 213, Condition A |
| 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 |