

# Surface Mount Low Pass Filter

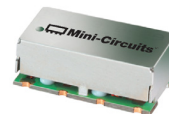
## SXLP-1100+

50Ω

DC to 1100 MHz

### The Big Deal

- Wide stopband Rejection, (>20 dB till 8.5 GHz)
- Good VSWR, 1.3:1 typical
- High rejection, 40 dB typical
- Flat Group delay, 1 ns typical



CASE STYLE: HF1139

### Product Overview

SXLP-1100+ is a 50Ω lowpass filter in a shielded Package (size of 0.44" x 0.74" x 0.27") fabricated using SMT technology. Covering up to 1100 MHz, these units offers low insertion loss, good matching within the passband and high rejection. This units uses a miniature high Q capacitors and air coil inductors for high reliability. In addition it has repeatable performance across production lots and consistent performance across temperature.

### Key Features

| Feature                                         | Advantages                                                                                       |
|-------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Wide stopband (> 20 dB till 8.5 GHz)            | Suitable for application which needs far-frequency attenuation, for e.g. Defense Communications. |
| Good VSWR, 1.3:1 typical over passband          | The model has very good return loss which provides good matching when used with other devices.   |
| High Rejection, 40 dB typical                   | This enables the filter to attenuate harmonics and spurious signals.                             |
| Flat Group delay characteristics (1 ns typical) | The model has a flat group delay of 1 ns which helps in reducing the signal distortion.          |

#### Notes

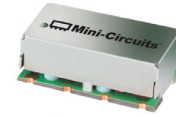
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# Surface Mount Low Pass Filter

50Ω DC to 1100 MHz

## SXLP-1100+



CASE STYLE: HF1139

### Features

- Flat group delay, 1 ns typical over passband
- Wide stopband rejection, (>20dB till 8.5 GHz)
- Good VSWR, 1.3 typical in passband
- High rejection, 40 dB typical
- Shielded case
- Aqueous washable

### Applications

- Cable TV
- Receivers/transmitters
- Defense communications
- Harmonic rejection

### Electrical Specifications at 25°C

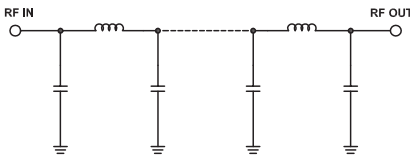
| Parameter | F#             | Frequency (MHz) | Min.        | Typ. | Max. | Unit   |
|-----------|----------------|-----------------|-------------|------|------|--------|
| Pass Band | Insertion Loss | DC-F1           | DC - 1100   | —    | 0.9  | 1.5 dB |
|           | Freq. Cut-Off  | F2              | 1225        | —    | 3.5  | dB     |
|           | VSWR           | DC-F1           | DC - 1100   | —    | 1.3  | :1     |
| Stop Band | Rejection Loss | F3-F4           | 1440 - 8500 | 20   | 35   | dB     |
|           | VSWR           | F3-F4           | 1440 - 8500 | —    | 7    | :1     |

### Maximum Ratings

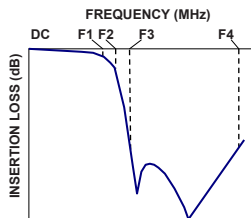
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power Input        | 1W max.        |

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

### Functional Schematic



### Typical Frequency Response

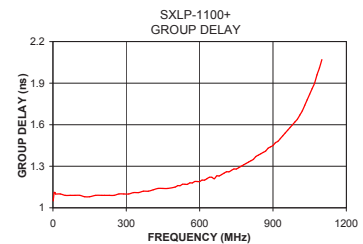
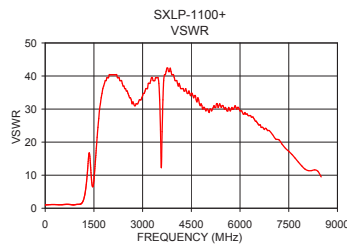
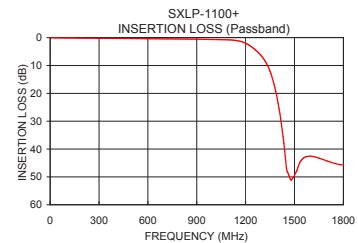
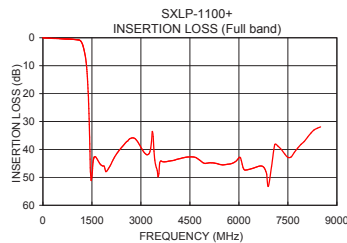


### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 1.0             | 0.02                | 1.00      | 1.00            | 1.05               |
| 30.0            | 0.05                | 1.02      | 5.00            | 1.11               |
| 70.0            | 0.09                | 1.04      | 10.00           | 1.10               |
| 230.0           | 0.20                | 1.12      | 50.00           | 1.09               |
| 650.0           | 0.39                | 1.16      | 70.00           | 1.09               |
| 1100.0          | 0.84                | 1.30      | 150.00          | 1.08               |
| 1180.0          | 2.00                | 2.51      | 200.00          | 1.09               |
| 1225.0          | 3.71                | 4.35      | 250.00          | 1.09               |
| 1250.0          | 5.02                | 5.95      | 350.00          | 1.11               |
| 1290.0          | 7.73                | 9.63      | 410.00          | 1.13               |
| 1350.0          | 15.58               | 16.56     | 450.00          | 1.14               |
| 1400.0          | 28.98               | 12.26     | 500.00          | 1.15               |
| 1420.0          | 36.47               | 9.43      | 550.00          | 1.17               |
| 1440.0          | 44.14               | 7.34      | 600.00          | 1.19               |
| 1550.0          | 38.36               | 14.62     | 700.00          | 1.25               |
| 3000.0          | 39.92               | 34.07     | 800.00          | 1.33               |
| 5000.0          | 45.67               | 29.96     | 900.00          | 1.45               |
| 6500.0          | 46.93               | 26.33     | 1000.00         | 1.64               |
| 7500.0          | 45.97               | 17.22     | 1050.00         | 1.82               |
| 8500.0          | 30.83               | 9.48      | 1100.00         | 2.07               |

### +RoHS Compliant

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



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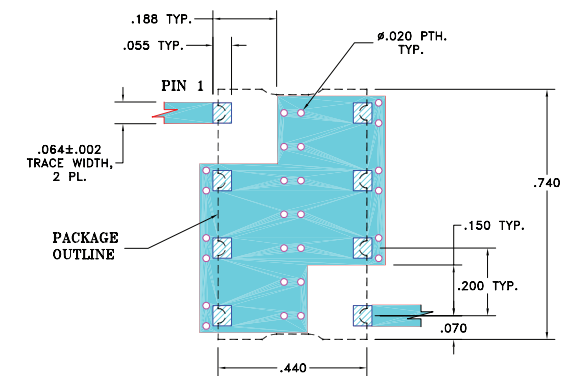
[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 [sales@minicircuits.com](mailto:sales@minicircuits.com)

REV. A  
M160153  
SXLP-1100+  
EDR-10104U  
RAV/URJ/NY  
161230  
Page 2 of 3

Pad Connections

|        |             |
|--------|-------------|
| INPUT  | 1           |
| OUTPUT | 8           |
| GROUND | 2,3,4,5,6,7 |

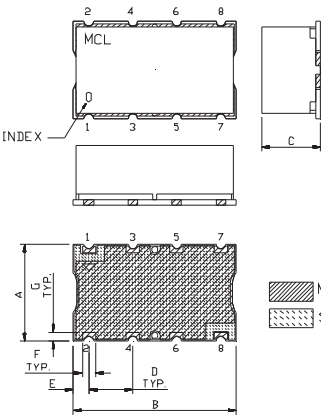
Demo Board MCL P/N: TB-368  
Suggested PCB Layout (PL-230)



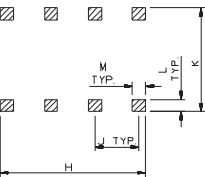
- NOTE:
- TRACE WIDTH IS SHOWN FOR FR4 WITH DIELECTRIC THICKNESS: .025"±.002". COPPER: 1/2 OZ. EACH SIDE.  
FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
  - BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

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

Outline Drawing



PCB Land Pattern



Outline Dimensions ( inch mm )

| A     | B     | C     | D    | E    | F    | G     |
|-------|-------|-------|------|------|------|-------|
| .44   | .74   | .27   | .200 | .07  | .060 | .040  |
| 11.18 | 18.80 | 6.86  | 5.08 | 1.78 | 1.52 | 1.02  |
| H     | J     | K     | L    | M    |      | wt    |
| .660  | .200  | .470  | .055 | .060 |      | grams |
| 16.76 | 5.08  | 11.94 | 1.40 | 1.52 |      | 3.0   |

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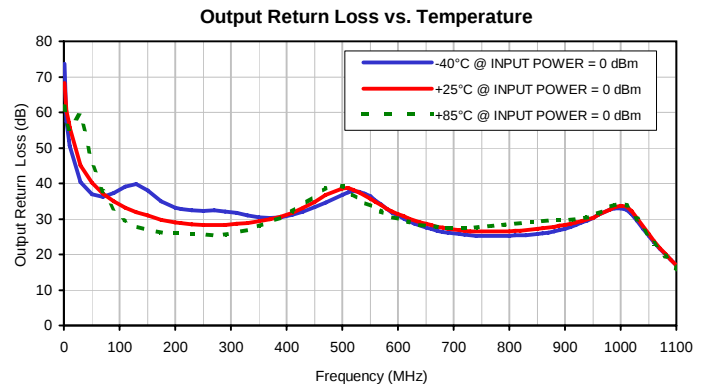
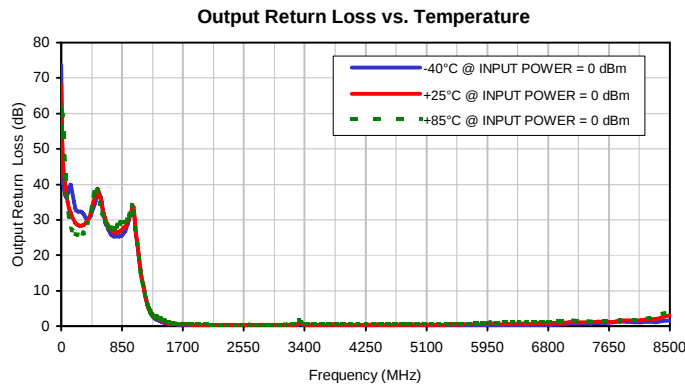
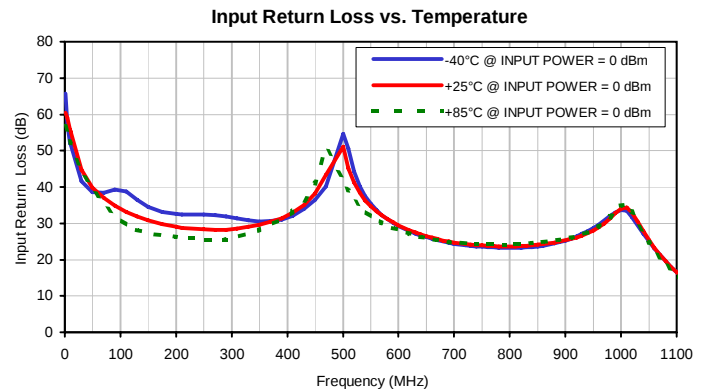
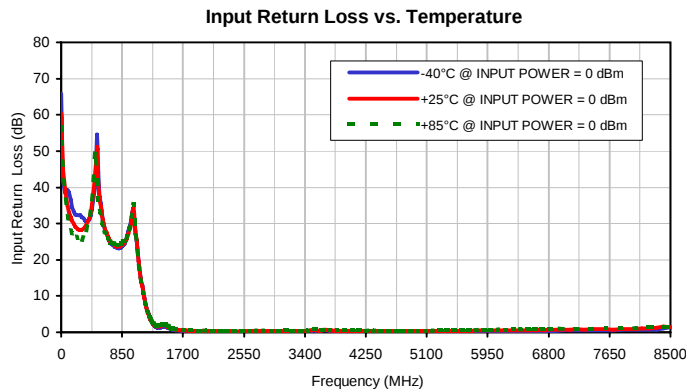
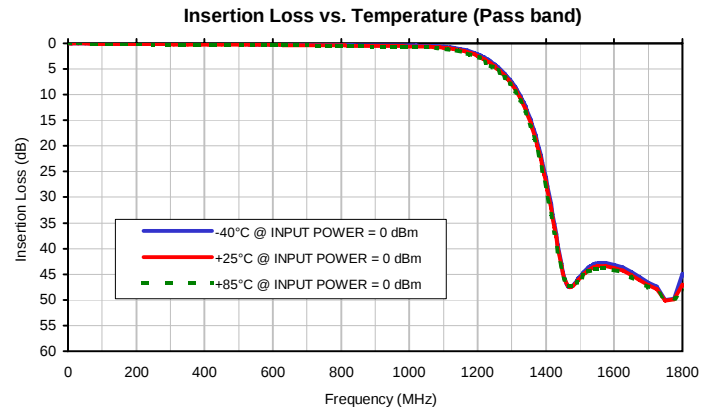
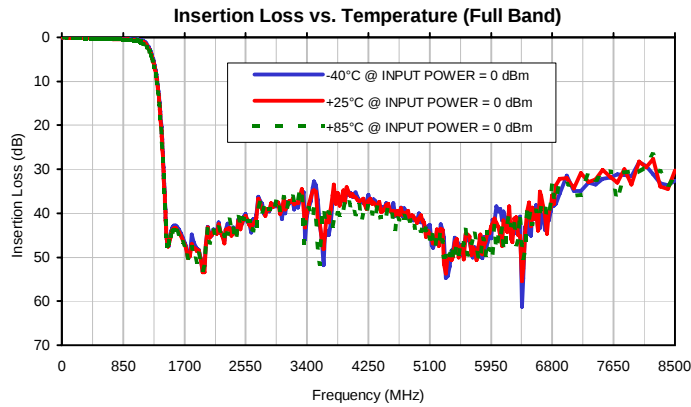
## Typical Performance Data

| FREQ.  | 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    | 0.01           | 0.01   | 0.02   | 65.79             | 60.37  | 56.67  | 73.70              | 68.30  | 61.70  |
| 5.0    | 0.01           | 0.02   | 0.02   | 57.23             | 59.11  | 55.43  | 57.53              | 60.38  | 56.97  |
| 9.0    | 0.01           | 0.02   | 0.02   | 52.18             | 55.89  | 53.01  | 52.09              | 57.06  | 55.56  |
| 10.0   | 0.01           | 0.02   | 0.03   | 51.89             | 55.39  | 51.93  | 50.72              | 55.91  | 55.70  |
| 30.0   | 0.03           | 0.04   | 0.05   | 41.59             | 44.71  | 44.11  | 40.32              | 45.10  | 59.65  |
| 50.0   | 0.04           | 0.06   | 0.06   | 38.57             | 39.81  | 39.08  | 37.00              | 40.20  | 45.71  |
| 70.0   | 0.05           | 0.07   | 0.08   | 38.37             | 37.00  | 35.14  | 36.30              | 37.18  | 37.59  |
| 90.0   | 0.06           | 0.08   | 0.09   | 39.25             | 34.87  | 32.04  | 37.36              | 35.02  | 32.90  |
| 110.0  | 0.07           | 0.09   | 0.10   | 38.71             | 33.16  | 29.73  | 39.18              | 33.22  | 29.81  |
| 150.0  | 0.08           | 0.12   | 0.13   | 34.51             | 30.80  | 27.25  | 38.01              | 30.94  | 26.87  |
| 200.0  | 0.10           | 0.14   | 0.16   | 32.52             | 29.09  | 26.33  | 33.20              | 29.05  | 26.03  |
| 250.0  | 0.12           | 0.16   | 0.19   | 32.39             | 28.30  | 25.58  | 32.30              | 28.34  | 25.57  |
| 310.0  | 0.14           | 0.19   | 0.23   | 31.37             | 28.58  | 26.21  | 31.68              | 28.61  | 26.12  |
| 350.0  | 0.15           | 0.21   | 0.24   | 30.54             | 29.61  | 28.15  | 30.38              | 29.33  | 27.88  |
| 410.0  | 0.16           | 0.23   | 0.26   | 32.13             | 32.87  | 33.23  | 31.14              | 31.78  | 32.11  |
| 450.0  | 0.17           | 0.24   | 0.28   | 36.40             | 38.19  | 40.92  | 33.31              | 34.79  | 36.32  |
| 500.0  | 0.18           | 0.26   | 0.30   | 54.60             | 51.16  | 42.06  | 36.83              | 38.63  | 39.20  |
| 550.0  | 0.19           | 0.28   | 0.33   | 35.41             | 34.75  | 32.15  | 36.32              | 35.70  | 33.77  |
| 600.0  | 0.21           | 0.30   | 0.36   | 29.29             | 29.51  | 28.16  | 30.92              | 31.43  | 30.09  |
| 650.0  | 0.23           | 0.33   | 0.39   | 26.19             | 26.50  | 25.92  | 27.59              | 28.60  | 28.18  |
| 700.0  | 0.25           | 0.36   | 0.42   | 24.40             | 24.73  | 24.71  | 25.88              | 27.06  | 27.54  |
| 750.0  | 0.27           | 0.39   | 0.46   | 23.54             | 23.88  | 24.26  | 25.23              | 26.43  | 27.78  |
| 800.0  | 0.30           | 0.42   | 0.50   | 23.21             | 23.59  | 24.19  | 25.29              | 26.55  | 28.51  |
| 850.0  | 0.32           | 0.46   | 0.53   | 23.62             | 24.08  | 24.70  | 25.69              | 27.19  | 29.28  |
| 900.0  | 0.34           | 0.49   | 0.57   | 25.23             | 25.31  | 25.74  | 27.23              | 28.36  | 29.70  |
| 950.0  | 0.37           | 0.53   | 0.63   | 28.77             | 28.02  | 28.24  | 30.23              | 30.34  | 30.81  |
| 1000.0 | 0.41           | 0.58   | 0.69   | 33.58             | 34.02  | 34.96  | 32.92              | 33.68  | 34.34  |
| 1050.0 | 0.47           | 0.66   | 0.78   | 25.06             | 25.46  | 24.74  | 25.26              | 25.76  | 25.14  |
| 1100.0 | 0.64           | 0.85   | 1.02   | 16.64             | 16.51  | 15.81  | 16.99              | 17.02  | 16.38  |
| 1120.0 | 0.77           | 1.01   | 1.20   | 14.03             | 13.81  | 13.18  | 14.39              | 14.35  | 13.75  |
| 1140.0 | 0.94           | 1.20   | 1.42   | 11.68             | 11.45  | 10.94  | 11.99              | 11.91  | 11.44  |
| 1150.0 | 1.07           | 1.34   | 1.58   | 10.59             | 10.37  | 9.91   | 10.89              | 10.81  | 10.40  |
| 1160.0 | 1.21           | 1.50   | 1.75   | 9.59              | 9.38   | 8.98   | 9.88               | 9.81   | 9.44   |
| 1180.0 | 1.59           | 1.91   | 2.19   | 7.77              | 7.60   | 7.31   | 8.04               | 7.99   | 7.74   |
| 1200.0 | 2.10           | 2.46   | 2.77   | 6.21              | 6.09   | 5.91   | 6.47               | 6.47   | 6.32   |
| 1210.0 | 2.41           | 2.79   | 3.10   | 5.52              | 5.44   | 5.31   | 5.79               | 5.81   | 5.71   |
| 1220.0 | 2.77           | 3.16   | 3.48   | 4.90              | 4.85   | 4.77   | 5.17               | 5.22   | 5.17   |
| 1225.0 | 2.96           | 3.37   | 3.68   | 4.61              | 4.57   | 4.52   | 4.88               | 4.95   | 4.92   |
| 1240.0 | 3.62           | 4.04   | 4.35   | 3.82              | 3.84   | 3.85   | 4.11               | 4.22   | 4.26   |
| 1250.0 | 4.12           | 4.54   | 4.85   | 3.37              | 3.42   | 3.46   | 3.68               | 3.82   | 3.90   |
| 1270.0 | 5.27           | 5.71   | 6.01   | 2.62              | 2.72   | 2.82   | 2.97               | 3.17   | 3.32   |
| 1280.0 | 5.95           | 6.39   | 6.68   | 2.31              | 2.44   | 2.56   | 2.69               | 2.93   | 3.10   |
| 1300.0 | 7.54           | 7.99   | 8.32   | 1.81              | 1.99   | 2.14   | 2.26               | 2.56   | 2.80   |
| 1310.0 | 8.49           | 8.96   | 9.32   | 1.62              | 1.82   | 1.99   | 2.10               | 2.43   | 2.70   |
| 1330.0 | 10.83          | 11.36  | 11.83  | 1.35              | 1.60   | 1.80   | 1.88               | 2.25   | 2.55   |
| 1350.0 | 13.94          | 14.56  | 15.19  | 1.23              | 1.53   | 1.77   | 1.72               | 2.11   | 2.41   |
| 1370.0 | 18.00          | 18.72  | 19.55  | 1.24              | 1.62   | 1.90   | 1.55               | 1.93   | 2.21   |
| 1380.0 | 20.44          | 21.21  | 22.14  | 1.29              | 1.70   | 2.00   | 1.46               | 1.83   | 2.10   |
| 1400.0 | 26.23          | 27.07  | 28.14  | 1.44              | 1.89   | 2.20   | 1.29               | 1.62   | 1.87   |
| 1410.0 | 29.57          | 30.42  | 31.54  | 1.50              | 1.97   | 2.27   | 1.21               | 1.52   | 1.75   |
| 1420.0 | 33.25          | 34.05  | 35.18  | 1.56              | 2.02   | 2.30   | 1.13               | 1.43   | 1.65   |
| 1430.0 | 37.16          | 37.85  | 38.90  | 1.58              | 2.03   | 2.28   | 1.05               | 1.34   | 1.56   |
| 1440.0 | 41.06          | 41.59  | 42.35  | 1.58              | 1.99   | 2.22   | 0.99               | 1.26   | 1.47   |
| 1450.0 | 44.55          | 44.82  | 45.16  | 1.54              | 1.93   | 2.13   | 0.93               | 1.18   | 1.39   |
| 1500.0 | 45.43          | 45.78  | 45.84  | 1.15              | 1.40   | 1.53   | 0.70               | 0.91   | 1.09   |
| 2000.0 | 47.21          | 47.17  | 46.89  | 0.24              | 0.38   | 0.45   | 0.20               | 0.36   | 0.47   |
| 2500.0 | 42.30          | 41.87  | 41.04  | 0.16              | 0.26   | 0.32   | 0.14               | 0.30   | 0.42   |
| 3000.0 | 37.51          | 37.48  | 36.77  | 0.23              | 0.32   | 0.36   | 0.13               | 0.29   | 0.41   |
| 3500.0 | 32.75          | 34.85  | 39.16  | 0.39              | 0.51   | 0.67   | 0.16               | 0.36   | 0.51   |
| 4000.0 | 35.41          | 36.10  | 38.29  | 0.27              | 0.37   | 0.48   | 0.19               | 0.43   | 0.54   |
| 4500.0 | 37.72          | 38.06  | 40.22  | 0.15              | 0.31   | 0.42   | 0.18               | 0.39   | 0.55   |
| 5000.0 | 41.46          | 41.88  | 43.02  | 0.19              | 0.35   | 0.44   | 0.21               | 0.44   | 0.62   |
| 5500.0 | 47.06          | 50.11  | 49.13  | 0.22              | 0.41   | 0.52   | 0.14               | 0.46   | 0.71   |
| 6000.0 | 41.94          | 41.12  | 42.61  | 0.24              | 0.52   | 0.73   | 0.24               | 0.73   | 1.02   |
| 6500.0 | 45.16          | 42.89  | 39.59  | 0.21              | 0.53   | 0.85   | 0.19               | 0.64   | 1.14   |
| 7000.0 | 31.42          | 32.04  | 33.48  | 0.46              | 0.70   | 0.86   | 0.57               | 0.97   | 1.49   |
| 7500.0 | 32.23          | 30.16  | 30.69  | 0.51              | 0.81   | 0.94   | 0.95               | 1.18   | 1.49   |
| 8000.0 | 28.35          | 28.28  | 30.62  | 0.64              | 0.94   | 1.02   | 1.09               | 1.59   | 1.68   |
| 8500.0 | 32.60          | 30.34  | 31.41  | 1.50              | 1.44   | 1.60   | 1.61               | 3.13   | 3.93   |

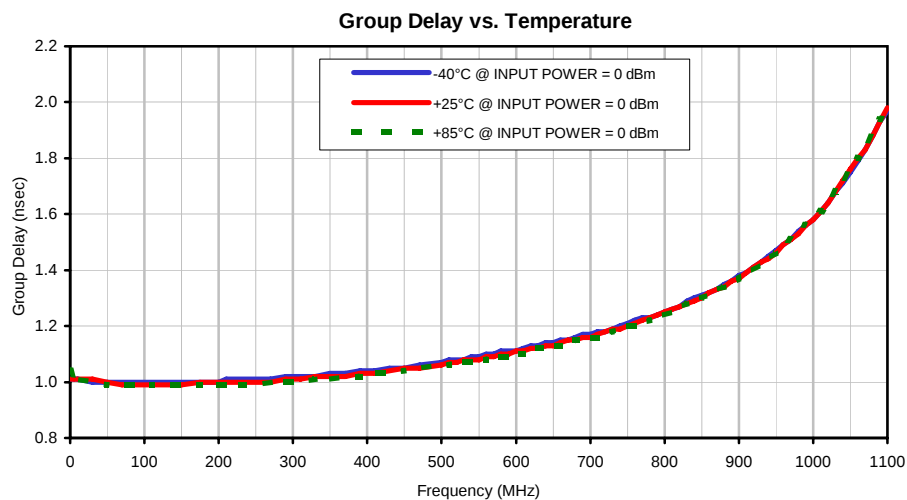
## Typical Performance Data

| FREQ.<br>(MHz) | GROUP DELAY |        |        |
|----------------|-------------|--------|--------|
|                | (nsec)      |        |        |
|                | @-40°C      | @+25°C | @+85°C |
| 1.0            | 1.01        | 1.01   | 1.04   |
| 5.0            | 1.01        | 1.01   | 1.02   |
| 9.0            | 1.01        | 1.01   | 1.01   |
| 10.0           | 1.01        | 1.01   | 1.01   |
| 50.0           | 1.00        | 1.00   | 0.99   |
| 110.0          | 1.00        | 0.99   | 0.99   |
| 150.0          | 1.00        | 0.99   | 0.99   |
| 200.0          | 1.00        | 1.00   | 0.99   |
| 250.0          | 1.01        | 1.00   | 0.99   |
| 310.0          | 1.02        | 1.01   | 1.00   |
| 350.0          | 1.03        | 1.02   | 1.01   |
| 390.0          | 1.04        | 1.03   | 1.02   |
| 410.0          | 1.04        | 1.03   | 1.03   |
| 450.0          | 1.05        | 1.05   | 1.04   |
| 500.0          | 1.07        | 1.06   | 1.06   |
| 520.0          | 1.08        | 1.07   | 1.07   |
| 540.0          | 1.09        | 1.08   | 1.07   |
| 550.0          | 1.09        | 1.08   | 1.08   |
| 560.0          | 1.10        | 1.09   | 1.08   |
| 580.0          | 1.11        | 1.10   | 1.09   |
| 590.0          | 1.11        | 1.10   | 1.09   |
| 600.0          | 1.11        | 1.11   | 1.10   |
| 620.0          | 1.13        | 1.12   | 1.11   |
| 640.0          | 1.14        | 1.13   | 1.12   |
| 650.0          | 1.14        | 1.13   | 1.13   |
| 660.0          | 1.15        | 1.14   | 1.13   |
| 680.0          | 1.16        | 1.15   | 1.15   |
| 700.0          | 1.17        | 1.16   | 1.16   |
| 720.0          | 1.18        | 1.18   | 1.17   |
| 740.0          | 1.20        | 1.19   | 1.19   |
| 750.0          | 1.21        | 1.20   | 1.20   |
| 760.0          | 1.22        | 1.21   | 1.20   |
| 780.0          | 1.23        | 1.23   | 1.22   |
| 800.0          | 1.25        | 1.25   | 1.24   |
| 810.0          | 1.26        | 1.26   | 1.25   |
| 820.0          | 1.27        | 1.27   | 1.27   |
| 830.0          | 1.29        | 1.28   | 1.28   |
| 840.0          | 1.30        | 1.29   | 1.29   |
| 850.0          | 1.31        | 1.30   | 1.30   |
| 860.0          | 1.32        | 1.32   | 1.31   |
| 870.0          | 1.33        | 1.33   | 1.33   |
| 880.0          | 1.35        | 1.34   | 1.34   |
| 890.0          | 1.36        | 1.36   | 1.35   |
| 900.0          | 1.38        | 1.37   | 1.37   |
| 910.0          | 1.39        | 1.39   | 1.39   |
| 920.0          | 1.41        | 1.41   | 1.40   |
| 930.0          | 1.43        | 1.43   | 1.42   |
| 940.0          | 1.45        | 1.44   | 1.44   |
| 950.0          | 1.47        | 1.46   | 1.46   |
| 960.0          | 1.49        | 1.49   | 1.48   |
| 970.0          | 1.51        | 1.51   | 1.51   |
| 980.0          | 1.54        | 1.53   | 1.53   |
| 990.0          | 1.56        | 1.56   | 1.56   |
| 1000.0         | 1.58        | 1.58   | 1.58   |
| 1010.0         | 1.61        | 1.61   | 1.61   |
| 1020.0         | 1.64        | 1.64   | 1.64   |
| 1030.0         | 1.68        | 1.68   | 1.68   |
| 1040.0         | 1.71        | 1.72   | 1.72   |
| 1050.0         | 1.75        | 1.76   | 1.76   |
| 1060.0         | 1.79        | 1.80   | 1.80   |
| 1070.0         | 1.83        | 1.83   | 1.84   |
| 1080.0         | 1.88        | 1.88   | 1.89   |
| 1090.0         | 1.93        | 1.93   | 1.94   |
| 1100.0         | 1.97        | 1.98   | 1.99   |

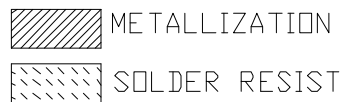
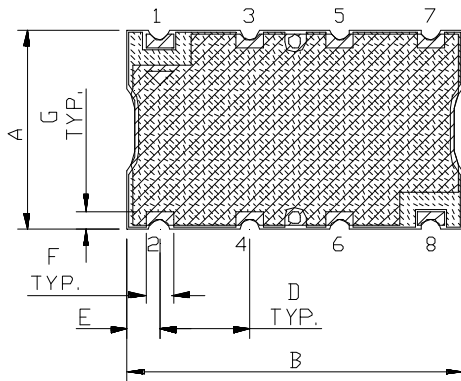
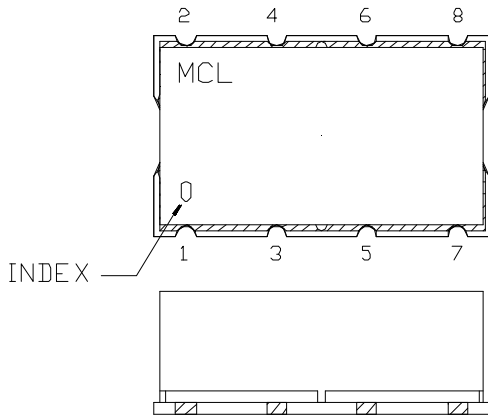
## Typical Performance Curves



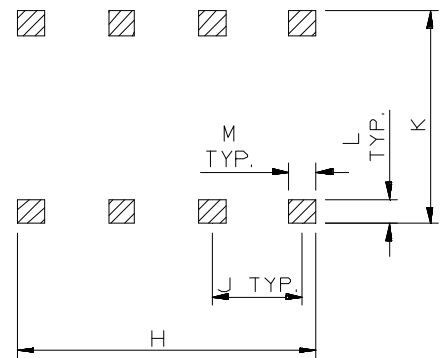
## Typical Performance Curves



### Outline Dimensions



### PCB Land Pattern



| CASE # | A              | B              | C             | D              | E             | F              | G              | H               | J              | K               | L              | M              | WT. GRAMS |
|--------|----------------|----------------|---------------|----------------|---------------|----------------|----------------|-----------------|----------------|-----------------|----------------|----------------|-----------|
| HF1139 | .44<br>(11.18) | .74<br>(18.80) | .27<br>(6.86) | .200<br>(5.08) | .07<br>(1.78) | .060<br>(1.52) | .040<br>(1.02) | .660<br>(16.76) | .200<br>(5.08) | .470<br>(11.94) | .055<br>(1.40) | .060<br>(1.52) | 3.0       |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm 0.015$ "; 3 Pl.  $\pm 0.01$ "

#### Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:
  - For RoHS Case Styles: 2-5  $\mu$  inch (.05-.13 microns) Gold over 120-240  $\mu$  inch (3.05-6.10 microns) Nickel plate.
  - For RoHS-5 Case Styles: Tin-Lead plate.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site

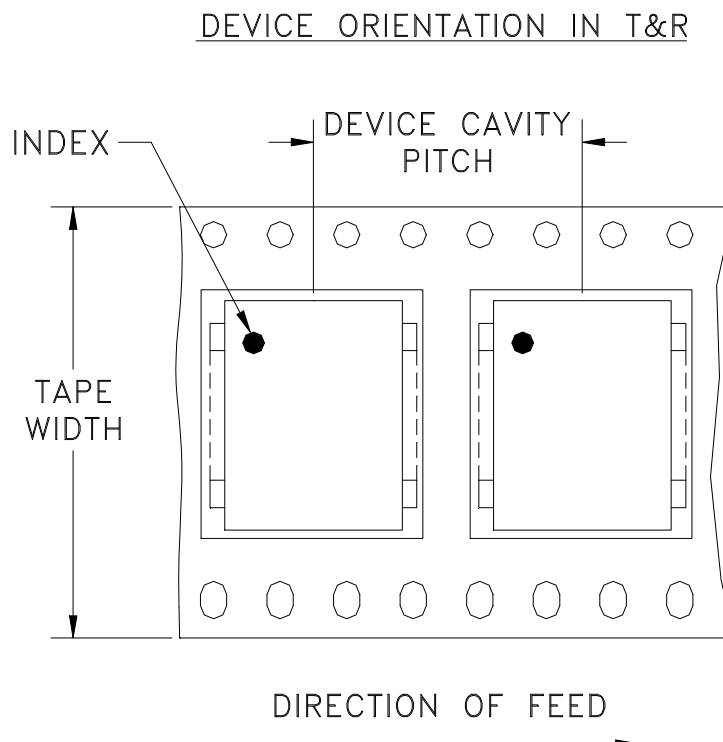


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RF/IF MICROWAVE COMPONENTS



# Tape & Reel Packaging TR-F5



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel |
|-------------------|----------------------------|----------------------|------------------|
| 32                | 16                         | 13                   | 500              |

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](http://www.minicircuits.com/pages/pdfs/tape.pdf)



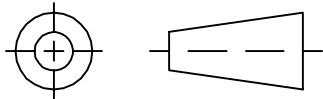
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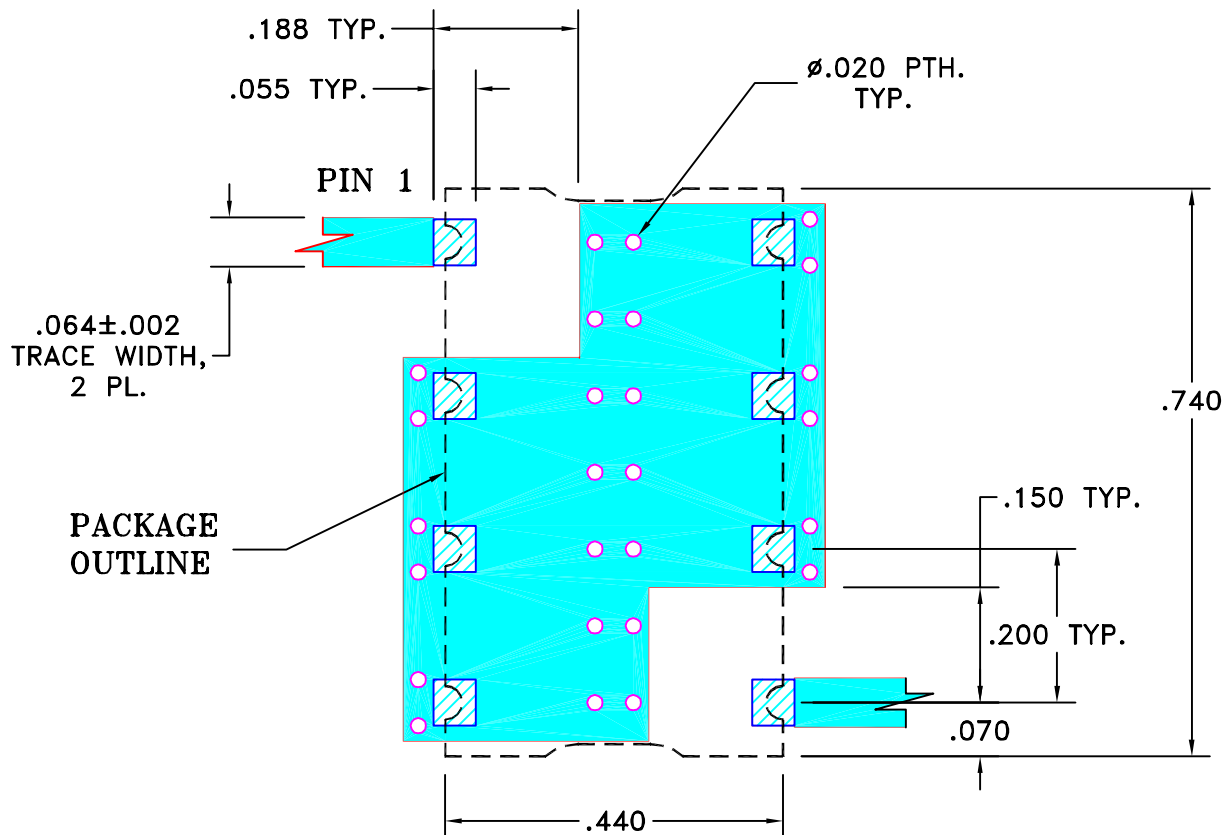
## THIRD ANGLE PROJECTION



## REVISIONS

| REV | ECN No. | DESCRIPTION              | DATE  | DR | AUTH |
|-----|---------|--------------------------|-------|----|------|
| OR  | M101757 | NEW RELEASE (FROM RAVON) | 11/05 | DK | HH   |
| OR  | R62293  | NEW RELEASE (FROM RAVON) | 11/05 | DK | HH   |
|     |         |                          |       |    |      |
|     |         |                          |       |    |      |

**SUGGESTED MOUNTING CONFIGURATION**  
**FOR HF1139 CASE STYLE, cr PIN CONNECTION, 50 OHM.**

**NOTE:**

1. 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.
2. 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 SOLDER MASK

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

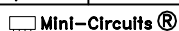
TOLERANCES ON:

2 PL DECIMALS ± .005

3 PL DECIMALS ± .005

ANGLES ±

FRACTIONS ±



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ASHEETA1.DWG REV:A DATE:01/12/95



Mini-Circuits®

13 Neptune Avenue  
Brooklyn NY 11235

PL, cr, HF1139, SCLF, TB-368

SIZE  
ACODE IDENT  
15542DRAWING NO:  
98-PL-230REV:  
OR

FILE: 98PL230

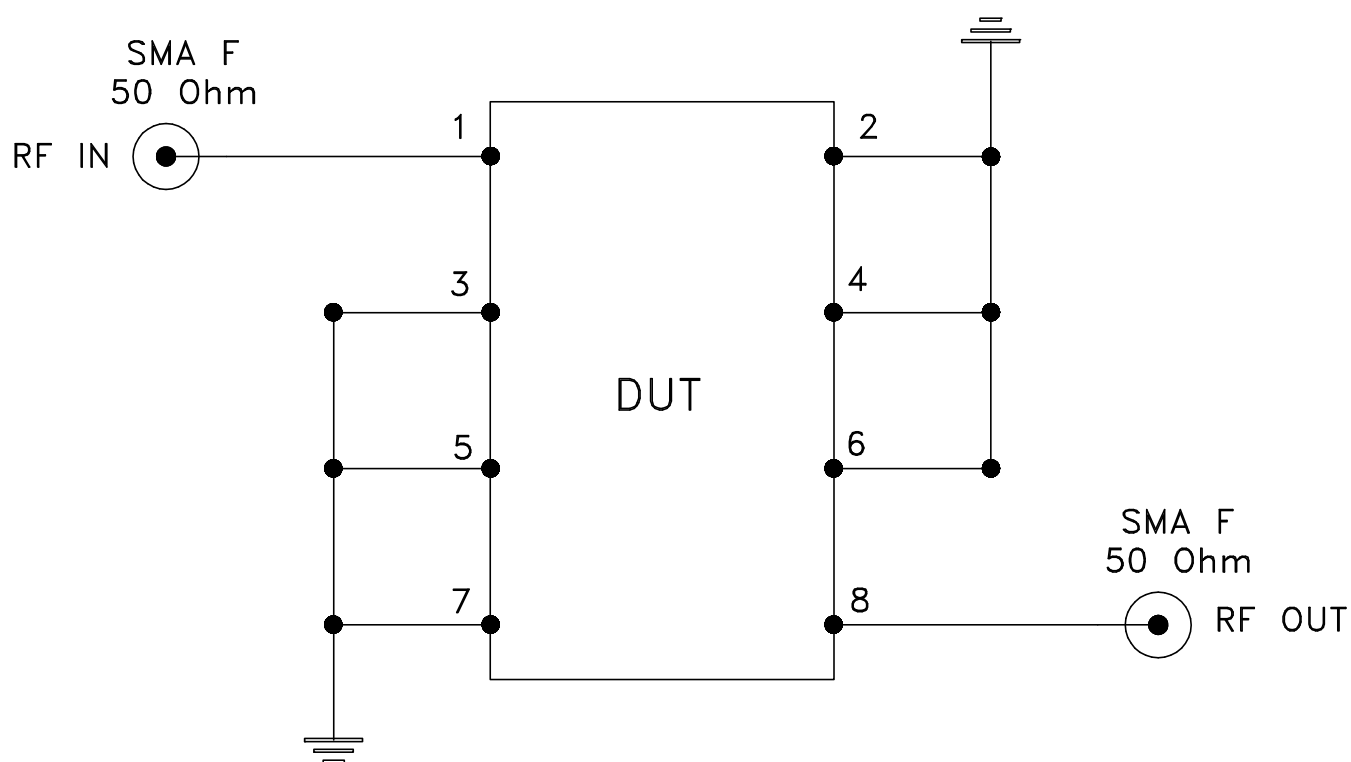
SCALE: 4:1

SHEET: 1 OF 1

# Evaluation Board and Circuit



TB-368



Schematic Diagram

## Notes:

1. SMA Female connectors.
2. PCB Material: ROGERS R04350B or equivalent, Dielectric Constant=3.5, 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<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, 240 hours, 50°C                                                                                                                                   | MIL-STD-202, Method 103, Condition A, Except 50°C and end-point electrical test done within 12 hours |
| Thermal Shock                  | -55° to 100°C, 100 cycles                                                                                                                                       | MIL-STD-202, Method 107, Condition A-3, except +100°C                                                |
| Solder Reflow Heat             | Sn-Pb Eutetic Process: 225°C peak<br>Pb-Free Process 245° - 250°C peak                                                                                          | J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1                                                        |
| Solderability                  | 10X Magnification                                                                                                                                               | J-STD-002, 95% Coverage                                                                              |
| 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, 11 ms, 1/2-sine, 18 shocks: 3 each direction, each of 3 axes                                                                                               | MIL-STD-202, Method 213, Condition A                                                                 |
| Marking Resistance to Solvents | Isopropyl alcohol + mineral spirits at 25°C; terpene defluxer at 25°C;<br>distilled water + proylene glycol monomethyl ether + monoethanolamine at 63°C to 70°C | MIL-STD-202, Method 215                                                                              |