

# Surface Mount Bandpass Filter

## CBP-1120F+

50Ω 1020 to 1220 MHz

### The Big Deal

- High Q
- Good selectivity
- Low VSWR, 1.4:1 typical
- Miniature shielded package



Generic photo used for illustration purposes only  
CASE STYLE: KV1710

### Product Overview

CBP-1120F+ is a coaxial-ceramic-resonator based bandpass filter in a shielded package fabricated using SMT technology. This filter has wider bandwidth and offers low insertion loss with high rejection, low VSWR and high power handling for use in L-band application.

### Key Features

| Feature             | Advantages                                                                                                                                                                 |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| High Q              | The CBP-1120F+ filter incorporates High-Q ceramic resonators that enables low insertion loss.                                                                              |
| Good selectivity    | This filter designed with six pole. So this providing good selectivity in the stopband performance.                                                                        |
| Low VSWR            | This filter maintains 1.4:1 typical VSWR over a passband frequency range.                                                                                                  |
| Rugged construction | The CBP-1120F+ has been qualified over wide range of thermal, mechanical and environmental conditions including withstanding the stress of extensive solder reflow cycles. |

#### 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Surface Mount Bandpass Filter

50Ω 1020 to 1220 MHz

## CBP-1120F+



Generic photo used for illustration purposes only  
CASE STYLE: KV1710

### Features

- High Q
- Good selectivity
- Low VSWR
- Miniature shielded package

### Applications

- L-band application
- Aviation/Aeronautical
- Cellular & Distance measurement equipment (DCE)

### Electrical Specifications at 25°C

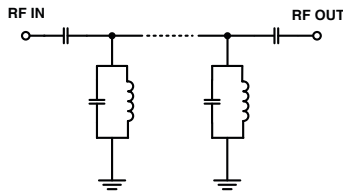
| Parameter        | F#               | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|------|------|------|------|
| Pass Band        | Center Frequency | -               | -    | 1120 | -    | MHz  |
|                  | Insertion Loss   | F1-F2           | -    | 0.8  | 1.6  | dB   |
|                  | VSWR             | F1-F2           | -    | 1.4  | 1.8  | :1   |
| Stop Band, Lower | Insertion Loss   | DC-F3           | 26   | 36.3 | -    | dB   |
|                  | VSWR             | DC-F3           | -    | 20   | -    | :1   |
| Stop Band, Upper | Insertion Loss   | F4-F5           | 28   | 35.8 | -    | dB   |
|                  | VSWR             | F4-F5           | -    | 20   | -    | :1   |

### Maximum Ratings

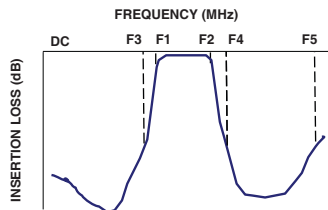
|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power Input        | 10 W max.      |

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

### Functional Schematic



### Typical Frequency Response

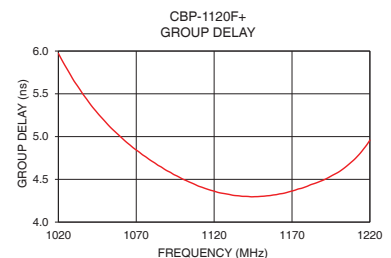
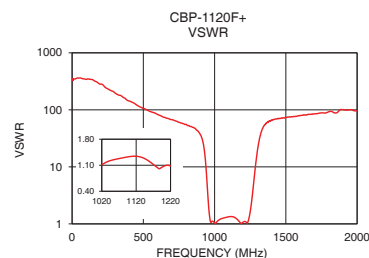
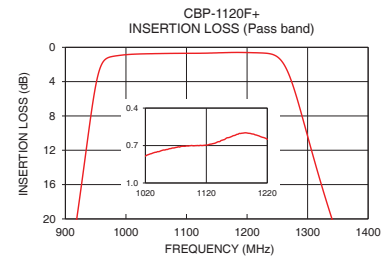
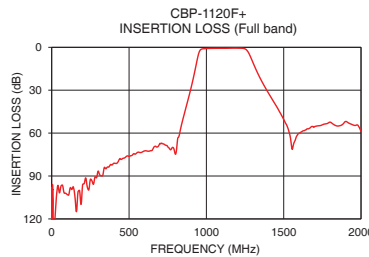


### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 1               | 120.69              | 349.30    | 1020            | 5.97               |
| 100             | 102.91              | 341.20    | 1030            | 5.65               |
| 250             | 92.32               | 234.33    | 1040            | 5.39               |
| 750             | 69.50               | 60.42     | 1050            | 5.18               |
| 880             | 37.24               | 43.36     | 1060            | 5.00               |
| 896             | 30.52               | 38.25     | 1070            | 4.84               |
| 918             | 20.36               | 27.42     | 1080            | 4.71               |
| 952             | 3.79                | 3.35      | 1090            | 4.60               |
| 956             | 2.70                | 2.39      | 1100            | 4.50               |
| 1020            | 0.78                | 1.11      | 1110            | 4.42               |
| 1120            | 0.70                | 1.34      | 1120            | 4.36               |
| 1220            | 0.65                | 1.08      | 1130            | 4.32               |
| 1266            | 2.67                | 3.35      | 1140            | 4.30               |
| 1272            | 3.69                | 4.63      | 1150            | 4.30               |
| 1342            | 20.38               | 50.35     | 1160            | 4.32               |
| 1392            | 30.30               | 64.52     | 1170            | 4.36               |
| 1420            | 35.36               | 67.94     | 1180            | 4.42               |
| 1500            | 50.46               | 73.62     | 1190            | 4.49               |
| 1800            | 52.35               | 92.32     | 1200            | 4.59               |
| 2000            | 58.85               | 96.88     | 1220            | 4.96               |

### +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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
- 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](http://www.minicircuits.com/MCLStore/terms.jsp)



[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  
M174392  
CBP-1120F+  
EDU2305\_1  
URJ  
200806  
Page 2 of 3

|        |                                      |
|--------|--------------------------------------|
| INPUT  | 1                                    |
| OUTPUT | 12                                   |
| GROUND | 2,3,4,5,6,7,8,9,10,11,13,14,15,16,17 |

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

| A     | B     | C     | D     | E     | F     | G     | H    | J     | K    | L     | M    | N         |
|-------|-------|-------|-------|-------|-------|-------|------|-------|------|-------|------|-----------|
| 1.050 | .875  | .239  | .125  | .160  | .160  | .278  | .205 | .160  | .070 | .180  | .090 | .130      |
| 26.67 | 22.23 | 6.07  | 3.18  | 4.06  | 4.06  | 7.06  | 5.21 | 4.06  | 1.78 | 3.51  | 2.29 | 3.30      |
| P     | Q     | R     | S     | T     | U     | V     | W    | X     | Y    | Z     |      | Wt. grams |
| 1.090 | .870  | .915  | .625  | .710  | .695  | .870  | .390 | 1.10  | .070 | .458  |      |           |
| 27.69 | 22.10 | 23.24 | 15.88 | 18.03 | 17.65 | 22.10 | 9.91 | 27.79 | 1.78 | 11.63 |      | 8.5       |

*Note: Please refer to case style drawing for details*

**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.** Technical specifications and performance data contained in this specification document are based on Mini-Circuits'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](http://www.minicircuits.com/MCLStore/terms.jsp)

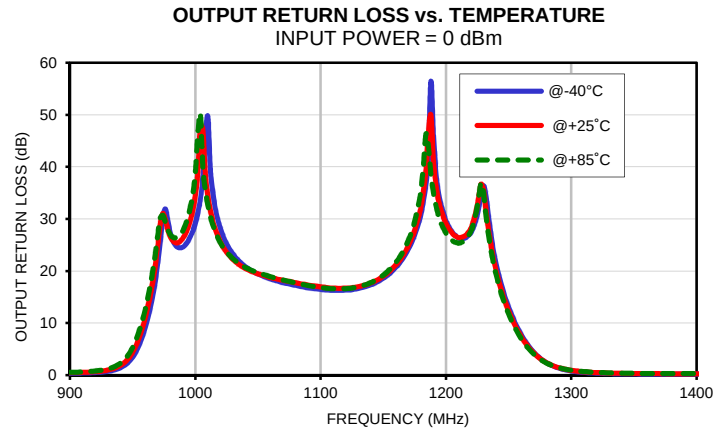
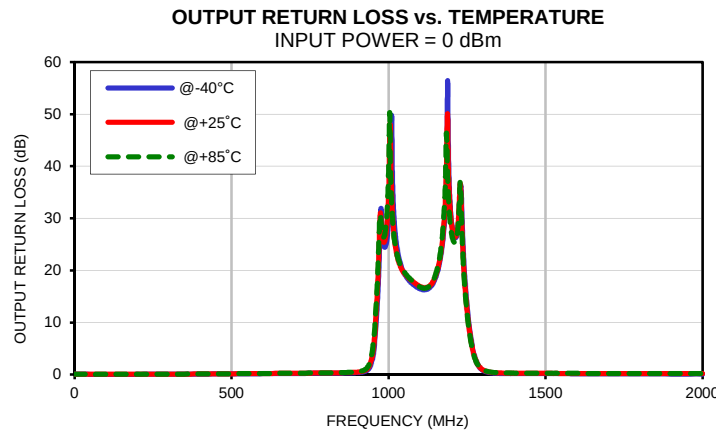
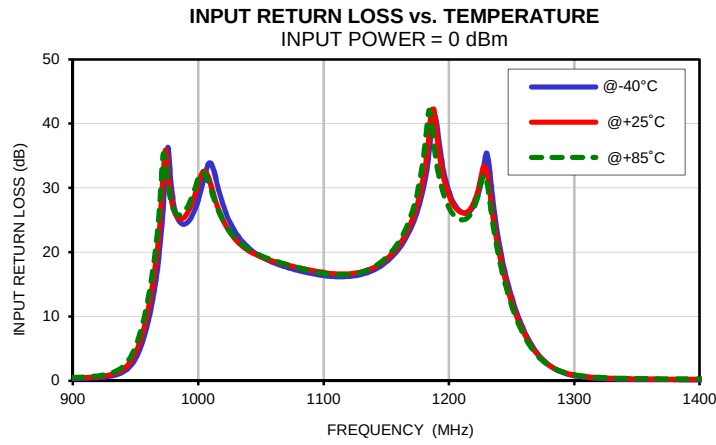
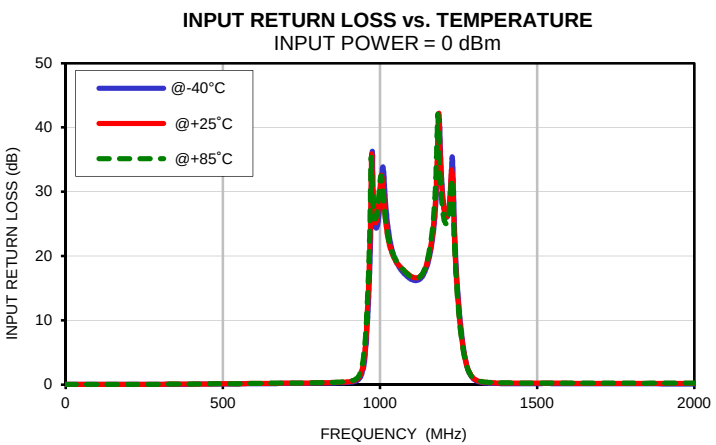
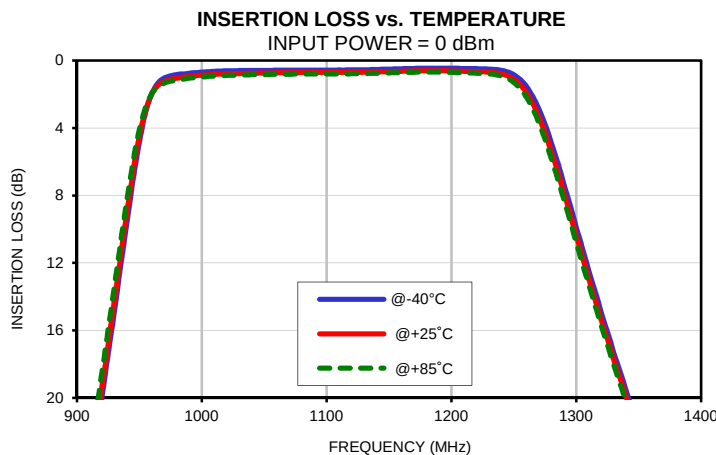
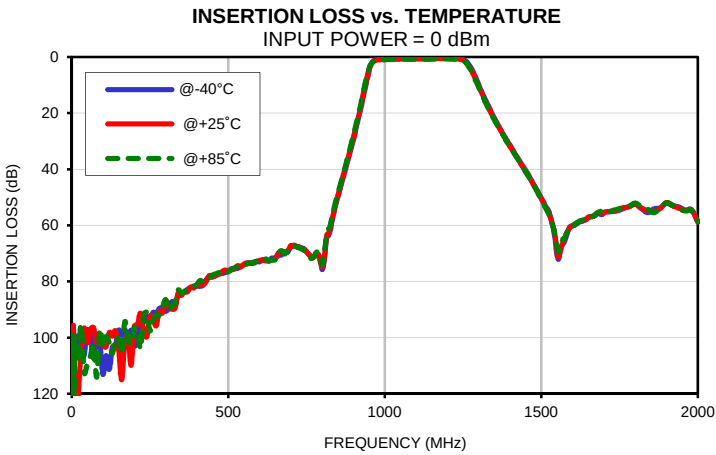
## Typical Performance Data

| 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 |
| 1     | 103.32         | 120.69 | 104.14 | 0.05              | 0.05   | 0.05   | 0.05               | 0.05   | 0.05   |
| 60    | 99.10          | 97.08  | 106.53 | 0.04              | 0.04   | 0.04   | 0.05               | 0.05   | 0.05   |
| 100   | 113.09         | 102.91 | 103.36 | 0.03              | 0.04   | 0.04   | 0.04               | 0.05   | 0.05   |
| 230   | 94.49          | 97.61  | 91.92  | 0.03              | 0.05   | 0.05   | 0.05               | 0.07   | 0.07   |
| 310   | 89.56          | 89.13  | 90.13  | 0.04              | 0.07   | 0.07   | 0.07               | 0.09   | 0.09   |
| 440   | 78.25          | 77.86  | 78.80  | 0.08              | 0.11   | 0.11   | 0.11               | 0.14   | 0.14   |
| 570   | 73.47          | 73.59  | 73.33  | 0.12              | 0.16   | 0.17   | 0.16               | 0.19   | 0.20   |
| 640   | 71.64          | 72.27  | 72.18  | 0.15              | 0.20   | 0.21   | 0.19               | 0.23   | 0.24   |
| 715   | 67.38          | 67.33  | 67.49  | 0.18              | 0.23   | 0.24   | 0.22               | 0.27   | 0.28   |
| 720   | 67.72          | 67.57  | 67.76  | 0.18              | 0.23   | 0.25   | 0.22               | 0.27   | 0.28   |
| 755   | 69.87          | 70.12  | 70.32  | 0.20              | 0.25   | 0.27   | 0.24               | 0.29   | 0.30   |
| 775   | 71.13          | 70.82  | 71.18  | 0.21              | 0.26   | 0.28   | 0.25               | 0.30   | 0.32   |
| 800   | 75.74          | 74.84  | 74.03  | 0.22              | 0.28   | 0.30   | 0.26               | 0.31   | 0.33   |
| 815   | 64.15          | 63.48  | 62.90  | 0.23              | 0.29   | 0.32   | 0.27               | 0.33   | 0.35   |
| 820   | 63.71          | 62.90  | 61.32  | 0.23              | 0.30   | 0.32   | 0.27               | 0.33   | 0.35   |
| 865   | 43.85          | 43.38  | 42.62  | 0.26              | 0.34   | 0.38   | 0.30               | 0.37   | 0.41   |
| 880   | 37.71          | 37.24  | 36.47  | 0.29              | 0.37   | 0.42   | 0.32               | 0.40   | 0.45   |
| 890   | 33.58          | 33.09  | 32.30  | 0.31              | 0.40   | 0.46   | 0.34               | 0.43   | 0.49   |
| 898   | 30.15          | 29.64  | 28.83  | 0.33              | 0.43   | 0.50   | 0.36               | 0.46   | 0.53   |
| 918   | 20.92          | 20.36  | 19.48  | 0.46              | 0.60   | 0.72   | 0.48               | 0.63   | 0.75   |
| 920   | 19.93          | 19.36  | 18.49  | 0.49              | 0.64   | 0.76   | 0.51               | 0.67   | 0.79   |
| 948   | 5.68           | 5.26   | 4.78   | 2.83              | 3.62   | 4.46   | 2.87               | 3.66   | 4.49   |
| 954   | 3.38           | 3.19   | 2.98   | 5.16              | 6.41   | 7.67   | 5.19               | 6.45   | 7.67   |
| 956   | 2.80           | 2.70   | 2.56   | 6.28              | 7.72   | 9.13   | 6.32               | 7.75   | 9.11   |
| 960   | 1.94           | 1.97   | 1.96   | 9.16              | 11.03  | 12.75  | 9.18               | 11.02  | 12.64  |
| 974   | 0.92           | 1.12   | 1.24   | 33.22             | 35.91  | 34.00  | 30.08              | 31.04  | 30.70  |
| 986   | 0.78           | 0.98   | 1.09   | 24.55             | 25.17  | 25.81  | 24.55              | 25.42  | 26.52  |
| 1000  | 0.68           | 0.86   | 0.97   | 28.11             | 30.62  | 31.44  | 29.25              | 34.64  | 38.84  |
| 1002  | 0.67           | 0.85   | 0.96   | 29.44             | 31.81  | 32.25  | 31.22              | 39.07  | 46.48  |
| 1004  | 0.66           | 0.84   | 0.95   | 30.96             | 32.55  | 32.46  | 33.77              | 48.02  | 50.08  |
| 1016  | 0.62           | 0.80   | 0.89   | 29.89             | 26.76  | 26.49  | 31.92              | 27.96  | 27.47  |
| 1020  | 0.61           | 0.78   | 0.88   | 27.24             | 24.92  | 24.84  | 28.13              | 25.61  | 25.43  |
| 1054  | 0.57           | 0.73   | 0.82   | 18.90             | 18.97  | 19.14  | 19.01              | 19.16  | 19.36  |
| 1090  | 0.56           | 0.70   | 0.79   | 16.69             | 17.18  | 17.08  | 16.78              | 17.30  | 17.21  |
| 1120  | 0.55           | 0.70   | 0.78   | 16.22             | 16.63  | 16.54  | 16.33              | 16.72  | 16.62  |
| 1170  | 0.46           | 0.61   | 0.69   | 23.92             | 24.71  | 25.84  | 24.18              | 24.86  | 25.92  |
| 1184  | 0.44           | 0.60   | 0.68   | 35.20             | 38.05  | 42.05  | 36.57              | 39.23  | 46.28  |
| 1188  | 0.44           | 0.60   | 0.68   | 41.33             | 42.20  | 36.81  | 56.41              | 49.92  | 38.53  |
| 1190  | 0.44           | 0.60   | 0.69   | 40.30             | 38.71  | 34.01  | 46.00              | 41.09  | 35.01  |
| 1206  | 0.46           | 0.62   | 0.71   | 26.98             | 26.71  | 25.36  | 27.15              | 26.99  | 25.68  |
| 1220  | 0.48           | 0.65   | 0.75   | 27.29             | 27.78  | 26.98  | 27.40              | 28.26  | 27.67  |
| 1228  | 0.49           | 0.68   | 0.78   | 33.69             | 33.39  | 32.04  | 34.43              | 36.68  | 36.90  |
| 1234  | 0.52           | 0.71   | 0.82   | 30.05             | 27.14  | 25.86  | 30.30              | 27.87  | 26.88  |
| 1246  | 0.70           | 0.94   | 1.09   | 15.86             | 14.91  | 14.23  | 15.87              | 14.98  | 14.34  |
| 1272  | 3.21           | 3.69   | 4.06   | 3.91              | 3.79   | 3.62   | 3.93               | 3.81   | 3.65   |
| 1338  | 19.12          | 19.50  | 19.79  | 0.23              | 0.34   | 0.38   | 0.26               | 0.36   | 0.40   |
| 1340  | 19.57          | 19.94  | 20.23  | 0.23              | 0.33   | 0.37   | 0.26               | 0.36   | 0.39   |
| 1342  | 20.01          | 20.38  | 20.66  | 0.22              | 0.32   | 0.37   | 0.25               | 0.35   | 0.38   |
| 1388  | 29.28          | 29.56  | 29.73  | 0.16              | 0.25   | 0.28   | 0.20               | 0.28   | 0.31   |
| 1392  | 30.03          | 30.30  | 30.47  | 0.16              | 0.25   | 0.28   | 0.19               | 0.27   | 0.29   |
| 1420  | 35.14          | 35.36  | 35.50  | 0.15              | 0.23   | 0.26   | 0.19               | 0.26   | 0.28   |
| 1480  | 46.21          | 46.37  | 46.44  | 0.16              | 0.22   | 0.25   | 0.18               | 0.24   | 0.26   |
| 1505  | 51.29          | 51.48  | 51.65  | 0.16              | 0.23   | 0.25   | 0.18               | 0.24   | 0.25   |
| 1535  | 59.39          | 59.39  | 59.31  | 0.17              | 0.24   | 0.26   | 0.18               | 0.23   | 0.25   |
| 1555  | 72.08          | 71.40  | 69.35  | 0.16              | 0.22   | 0.25   | 0.18               | 0.23   | 0.25   |
| 1580  | 63.75          | 63.02  | 63.06  | 0.15              | 0.22   | 0.24   | 0.17               | 0.22   | 0.24   |
| 1685  | 55.60          | 55.34  | 55.16  | 0.14              | 0.21   | 0.23   | 0.15               | 0.21   | 0.22   |
| 1780  | 53.34          | 53.38  | 53.19  | 0.13              | 0.20   | 0.22   | 0.14               | 0.20   | 0.22   |
| 1900  | 52.09          | 51.86  | 51.98  | 0.11              | 0.19   | 0.22   | 0.11               | 0.17   | 0.20   |
| 2000  | 58.76          | 58.85  | 58.42  | 0.11              | 0.19   | 0.22   | 0.10               | 0.18   | 0.22   |

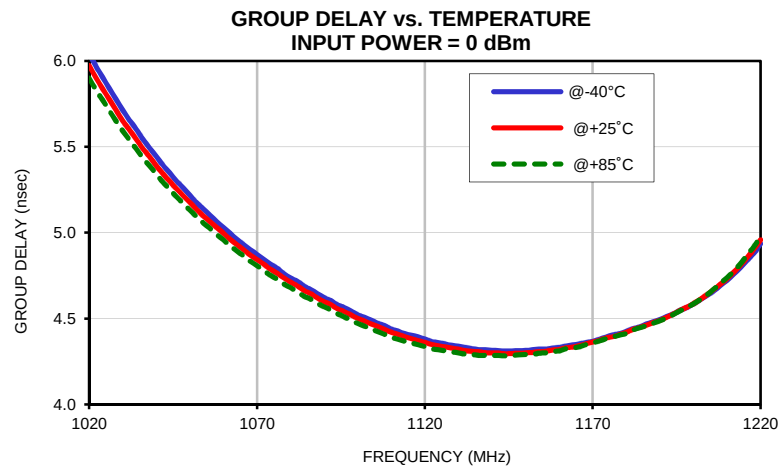
## Typical Performance Data

| FREQ. | GROUP DELAY |        |        |
|-------|-------------|--------|--------|
| (MHz) | (nsec)      |        |        |
|       | @-40°C      | @+25°C | @+85°C |
| 1020  | 6.04        | 5.97   | 5.90   |
| 1024  | 5.91        | 5.84   | 5.77   |
| 1028  | 5.78        | 5.71   | 5.65   |
| 1032  | 5.66        | 5.60   | 5.54   |
| 1036  | 5.54        | 5.49   | 5.44   |
| 1040  | 5.44        | 5.39   | 5.34   |
| 1044  | 5.35        | 5.30   | 5.25   |
| 1048  | 5.26        | 5.22   | 5.17   |
| 1052  | 5.17        | 5.14   | 5.09   |
| 1056  | 5.10        | 5.06   | 5.02   |
| 1060  | 5.03        | 5.00   | 4.96   |
| 1064  | 4.96        | 4.93   | 4.89   |
| 1068  | 4.90        | 4.87   | 4.83   |
| 1072  | 4.85        | 4.82   | 4.78   |
| 1076  | 4.79        | 4.76   | 4.73   |
| 1080  | 4.74        | 4.71   | 4.68   |
| 1084  | 4.69        | 4.66   | 4.63   |
| 1088  | 4.65        | 4.62   | 4.59   |
| 1092  | 4.60        | 4.58   | 4.55   |
| 1096  | 4.56        | 4.54   | 4.51   |
| 1100  | 4.52        | 4.50   | 4.47   |
| 1104  | 4.49        | 4.47   | 4.44   |
| 1108  | 4.46        | 4.44   | 4.41   |
| 1112  | 4.43        | 4.41   | 4.38   |
| 1116  | 4.40        | 4.38   | 4.36   |
| 1120  | 4.38        | 4.36   | 4.34   |
| 1124  | 4.36        | 4.34   | 4.32   |
| 1128  | 4.34        | 4.33   | 4.31   |
| 1132  | 4.33        | 4.31   | 4.29   |
| 1136  | 4.32        | 4.31   | 4.29   |
| 1140  | 4.32        | 4.30   | 4.29   |
| 1144  | 4.31        | 4.30   | 4.28   |
| 1148  | 4.31        | 4.30   | 4.29   |
| 1150  | 4.31        | 4.30   | 4.29   |
| 1152  | 4.32        | 4.30   | 4.29   |
| 1154  | 4.32        | 4.31   | 4.30   |
| 1156  | 4.32        | 4.31   | 4.30   |
| 1160  | 4.33        | 4.32   | 4.31   |
| 1162  | 4.34        | 4.33   | 4.32   |
| 1164  | 4.35        | 4.33   | 4.33   |
| 1166  | 4.35        | 4.34   | 4.34   |
| 1168  | 4.36        | 4.35   | 4.35   |
| 1170  | 4.37        | 4.36   | 4.36   |
| 1172  | 4.38        | 4.37   | 4.37   |
| 1174  | 4.39        | 4.39   | 4.38   |
| 1176  | 4.41        | 4.39   | 4.39   |
| 1178  | 4.41        | 4.41   | 4.40   |
| 1180  | 4.43        | 4.42   | 4.41   |
| 1182  | 4.44        | 4.44   | 4.43   |
| 1184  | 4.45        | 4.45   | 4.45   |
| 1186  | 4.47        | 4.46   | 4.46   |
| 1188  | 4.48        | 4.48   | 4.47   |
| 1190  | 4.50        | 4.49   | 4.49   |
| 1192  | 4.51        | 4.51   | 4.50   |
| 1194  | 4.53        | 4.53   | 4.52   |
| 1200  | 4.59        | 4.59   | 4.59   |
| 1204  | 4.63        | 4.64   | 4.64   |
| 1208  | 4.69        | 4.70   | 4.70   |
| 1216  | 4.84        | 4.86   | 4.87   |
| 1220  | 4.94        | 4.96   | 4.98   |

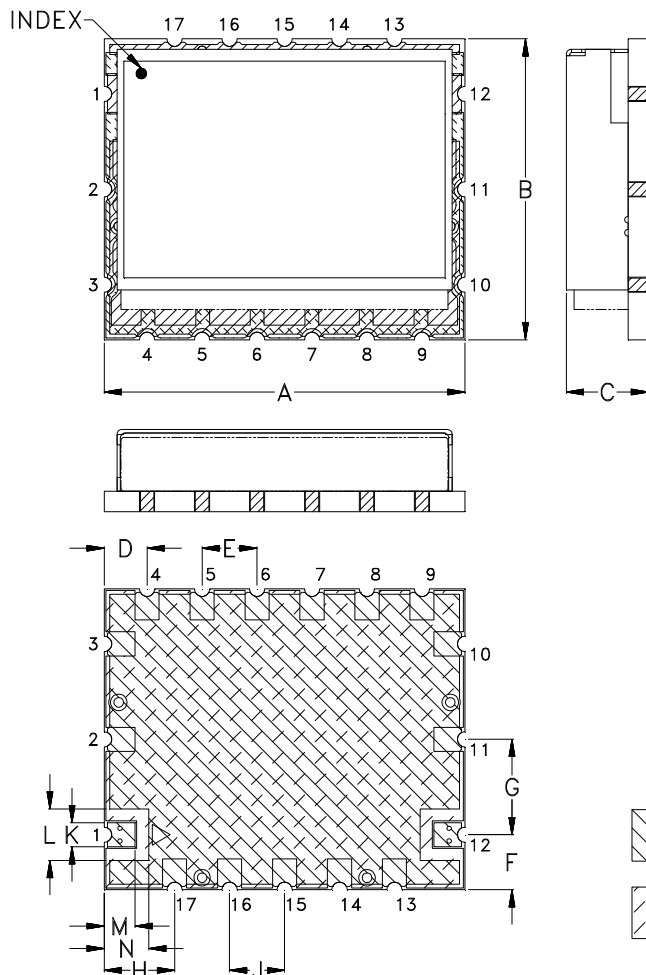
Typical Performance Curves



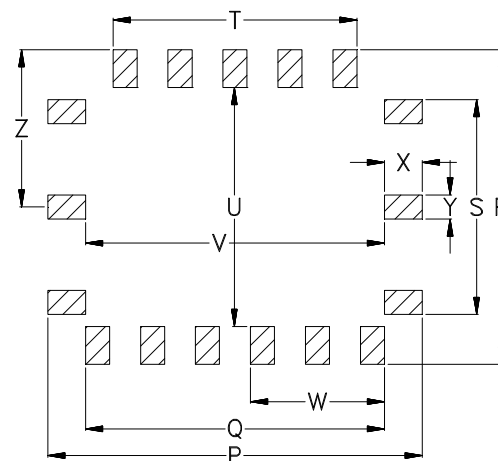
## Typical Performance Curves



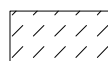
## Outline Dimensions



SUGGESTED PCB LAND PATTERN



METALLIZATION



SOLDER RESIST

| CASE#  | A                | B               | C              | D              | E              | F              | G              | H              | J              | K              | L              | M              | N              |
|--------|------------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| KV1710 | 1.050<br>(26.67) | .875<br>(22.23) | .239<br>(6.07) | .125<br>(3.18) | .160<br>(4.06) | .160<br>(4.06) | .278<br>(7.06) | .205<br>(5.21) | .160<br>(4.06) | .070<br>(1.78) | .150<br>(3.81) | .090<br>(2.29) | .130<br>(3.30) |

| CASE#  | P                | Q               | R               | S               | T               | U               | V               | W              | X              | Y              | Z               | WT, GRAMS |
|--------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|-----------------|-----------|
| KV1710 | 1.090<br>(27.69) | .870<br>(22.10) | .915<br>(23.24) | .625<br>(15.88) | .710<br>(18.03) | .695<br>(17.65) | .870<br>(22.10) | .390<br>(9.91) | .110<br>(2.79) | .070<br>(1.78) | .458<br>(11.63) | 8.5       |

Dimensions are in inches (mm). Tolerances: 2PL.  $\pm .03$ ; 3PL.  $\pm .015$

### Notes:

1. Case material: Nickel-Silver alloy.
2. Base: Printed wiring laminate.
3. 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.  
All models, (+) suffix.



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



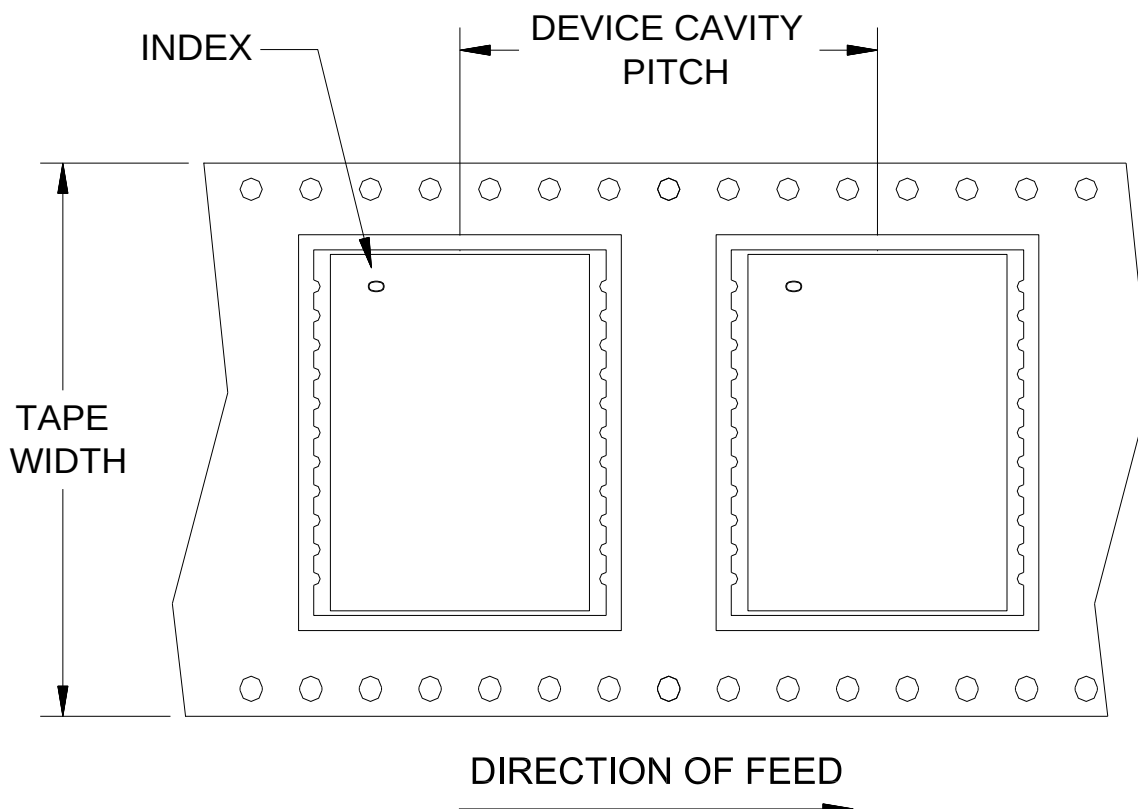
The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)

RF/IF MICROWAVE COMPONENTS



# Tape & Reel Packaging TR-F97

## DEVICE ORIENTATION IN T&R



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel                             |     |
|-------------------|----------------------------|----------------------|----------------------------------------------|-----|
| 44                | 32                         | 13                   | Small<br>quantity<br>standards<br>(see note) | 20  |
|                   |                            |                      |                                              | 50  |
|                   |                            |                      |                                              | 100 |
|                   |                            |                      | Standard                                     | 200 |

Note: Please consult individual model data sheet to determine device per reel availability.

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)

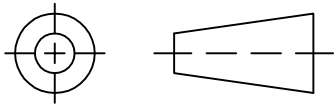


**Mini-Circuits®**  
 Distribution Centers NORTH AMERICA 800-654-7949 • 417-335-5935 • Fax 417-335-5945 • EUROPE 44-1252-832600 • Fax 44-1252-837010  
 Mini-Circuits ISO 9001 & ISO 14001 Certified

INTERNET <http://www.minicircuits.com>

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

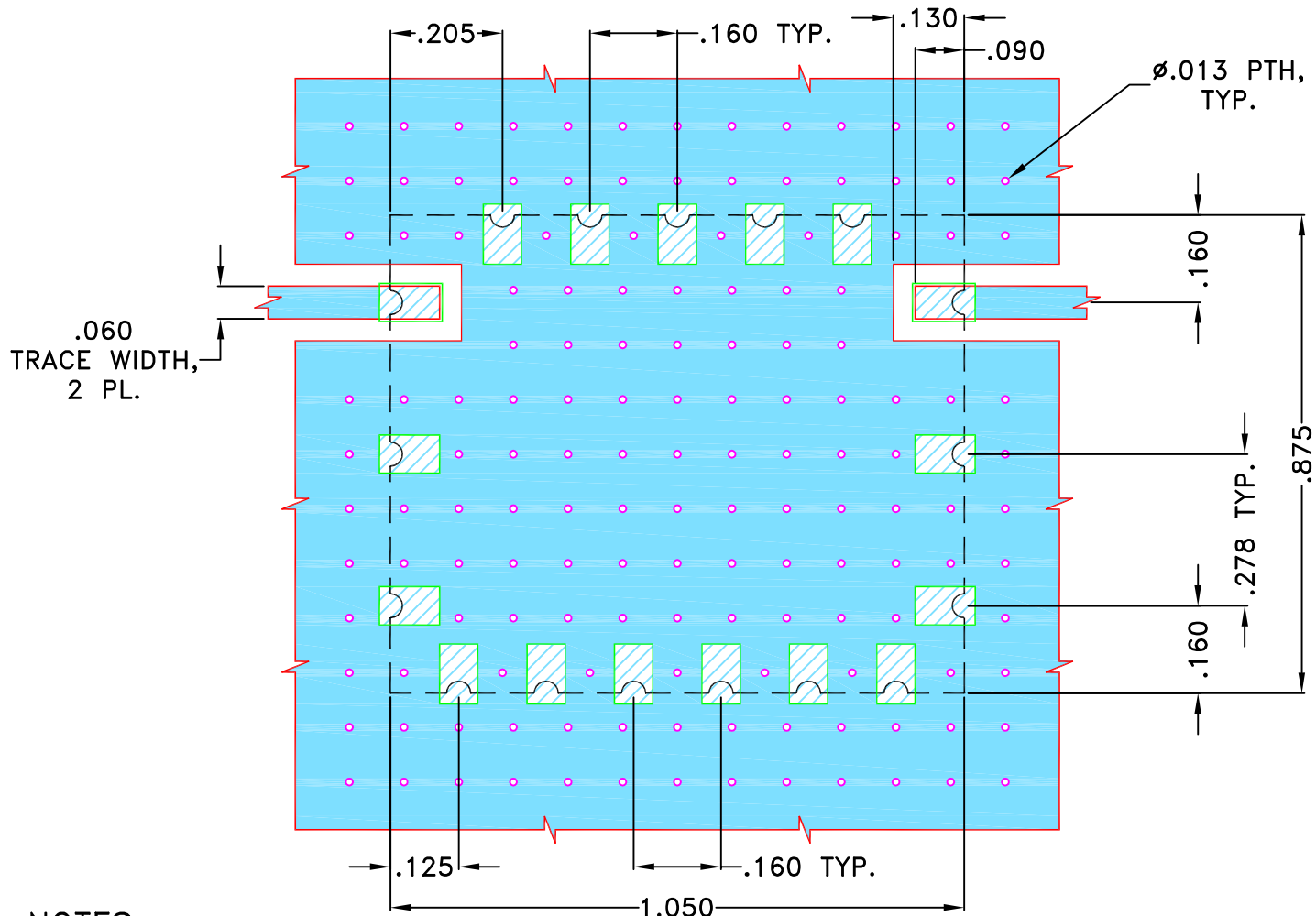
## THIRD ANGLE PROJECTION



## REVISIONS

| REV OR | ECN No. | DESCRIPTION | DATE   | DR  | AUTH |
|--------|---------|-------------|--------|-----|------|
|        | M138032 | NEW RELEASE | JUL 12 | DDR | KG   |
|        |         |             |        |     |      |
|        |         |             |        |     |      |
|        |         |             |        |     |      |

SUGGESTED MOUNTING CONFIGURATION FOR  
KV1710 CASE STYLE "17FL01" PIN CODE



## NOTES:

1. TRACE WIDTH IS SHOWN FOR OAK (OAK-602) WITH DIELECTRIC THICKNESS .022"±.0015". 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 SOLDERMASK

## UNLESS OTHERWISE SPECIFIED

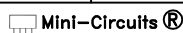
DIMENSIONS ARE IN INCHES

TOLERANCES ON:  
2 PL DECIMALS ±  
3 PL DECIMALS ± .005"  
ANGLES ±  
FRACTIONS ±

## INITIALS

## DATE

|          |     |           |
|----------|-----|-----------|
| DRAWN    | DDR | 17 JUL 12 |
| CHECKED  | DDR | 17 JUL 12 |
| APPROVED | GM  | 17 JUL 12 |



THIS DOCUMENT AND ITS CONTENTS ARE THE PROPERTY OF MINI-CIRCUITS. EXCEPT FOR USE EXPRESSLY GRANTED, IN WRITING, TO ITS VENDORS, VENDEE AND THE UNITED STATES GOVERNMENT, MINI-CIRCUITS RESERVES ALL PROPRIETARY DESIGN, USE, MANUFACTURING AND REPRODUCTION RIGHTS THERETO. THESE CONTENTS SHALL NOT BE USED, DUPLICATED OR DISCLOSED TO ANY OUTSIDE PARTY, IN WHOLE OR IN PART, WITHOUT WRITTEN PERMISSION OF MINI-CIRCUITS.

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



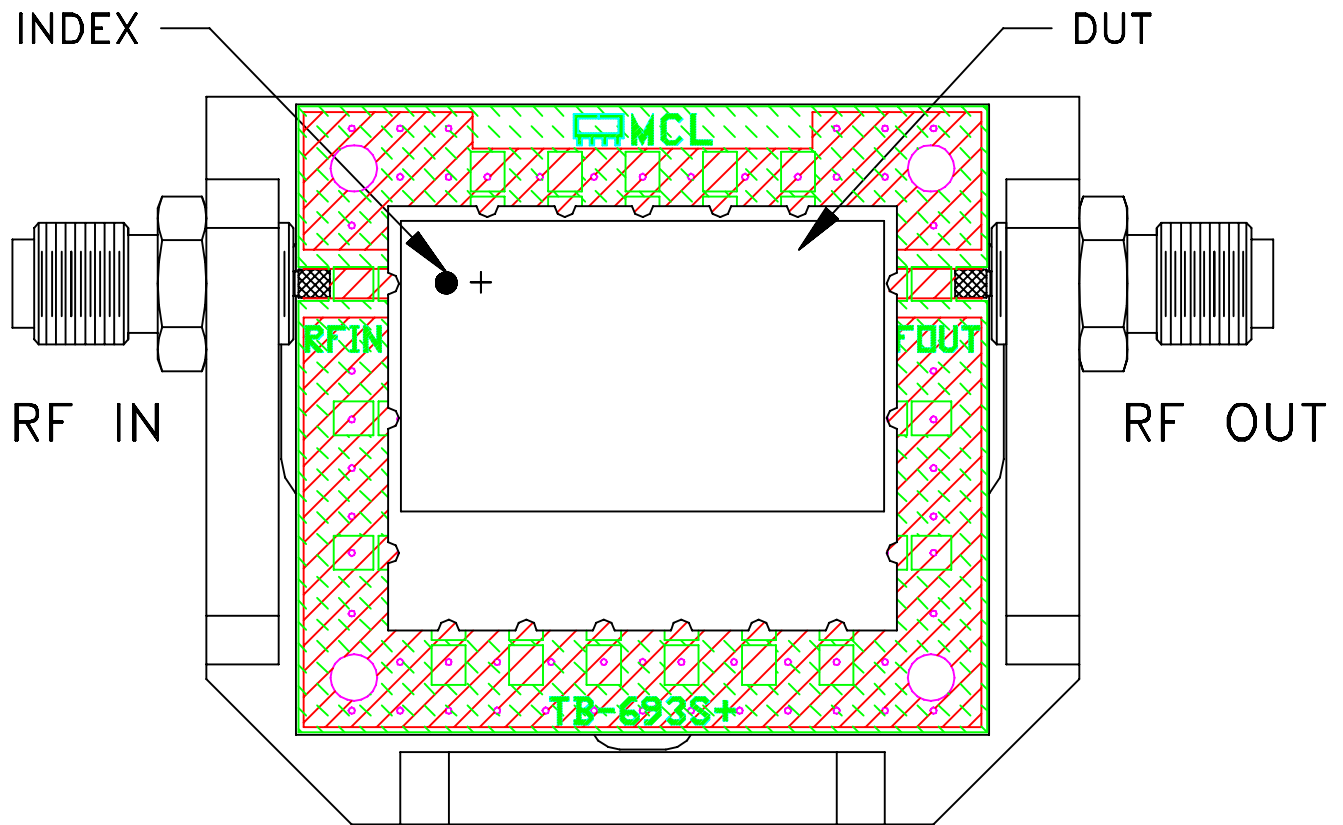
Mini-Circuits®

13 Neptune Avenue  
Brooklyn NY 11235

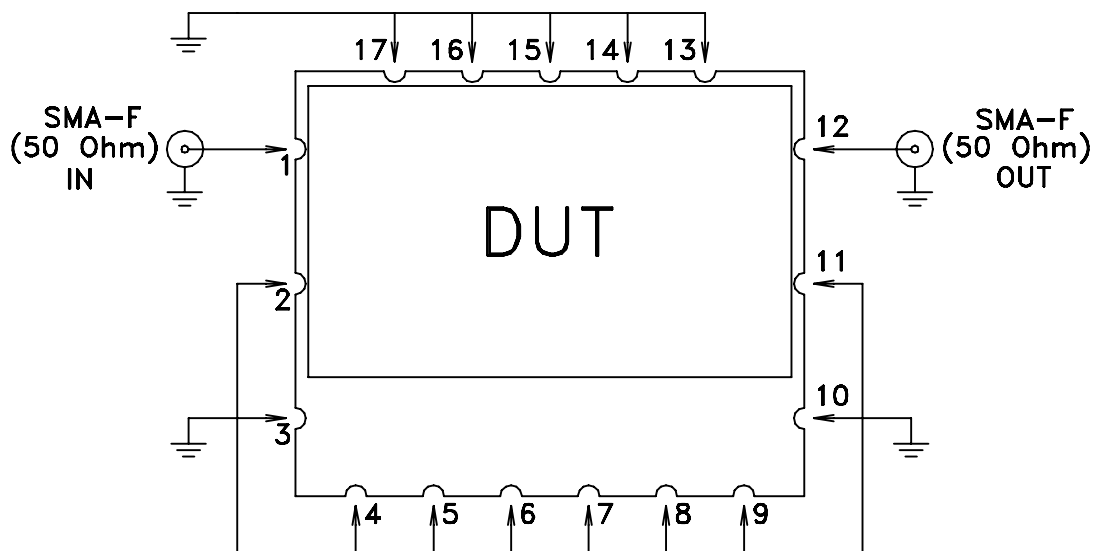
PL, 17FL01, KV1710, CSBP,  
TB-693+, 50 Ohm

|           |                     |                          |                  |
|-----------|---------------------|--------------------------|------------------|
| SIZE<br>A | CODE IDENT<br>15542 | DRAWING NO:<br>98-PL-378 | REV:<br>OR       |
| FILE:     | 98PL378             | SCALE:<br>3:1            | SHEET:<br>1 OF 1 |

# Evaluation Board and Circuit



TB-693+



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: OAK-602 OR Equivalent  
Dielectric Constant= $2.50 \pm .04$ , Thickness=.022 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, 96 hours, 40°C                                      | MIL-STD-202, Method 103B, Condition B, Except 50°C    |
| Thermal Shock              | -55° to 100°C, 100 cycles                                         | MIL-STD-202, Method 107, Condition A-3, except +100°C |
| Solder Reflow Heat         | Sn-Pb Eutectic Process: 225°C peak<br>Pb-Free Process, 245°C peak | J-STD-020, Table 4-1, 4-2 and 5-2, Figure 5-1         |
| Solderability              | 10X Magnification                                                 | J-STD-002, Para 4.2.5, Test S, 95% Coverage           |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 4 times in each of three axes (total 12)    | 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                  |