

# High Pass Filter

## RHP-110+

**50Ω 185 to 2500 MHz**

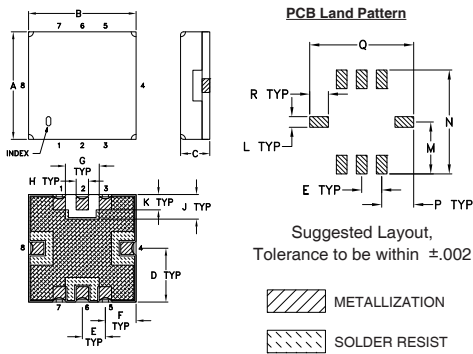
### Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| RF Power Input                                                  | 0.5W at 25°C   |
| Permanent damage may occur if any of these limits are exceeded. |                |

### Pin Connections

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

### Outline Drawing



### Outline Dimensions (inch/mm)

| A    | B    | C    | D    | E    | F    | G    | H    | J    |
|------|------|------|------|------|------|------|------|------|
| .350 | .350 | .100 | .175 | .075 | .100 | .110 | .040 | .080 |
| 8.89 | 8.89 | 2.54 | 4.45 | 1.91 | 2.54 | 2.79 | 1.02 | 2.03 |

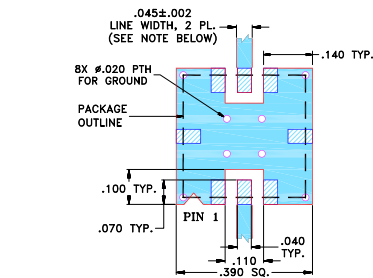
  

| K    | L    | M    | N    | P    | Q    | R    | wt.   |
|------|------|------|------|------|------|------|-------|
| .050 | .040 | .195 | .390 | .120 | .390 | .070 | grams |
| 1.27 | 1.02 | 4.95 | 9.91 | 3.05 | 9.91 | 1.78 | 0.25  |

Note: Please refer to case style drawing for details

### Demo Board MCL P/N: TB-332

### Suggested PCB Layout (PL-176)



### Features

- low insertion loss, 0.3dB typ. @ passband
- high rejection
- shielded case
- aqueous washable

### Applications

- transmitters / receivers
- sub-harmonic rejection



Generic photo used for illustration purposes only  
CASE STYLE: GP731

### +RoHS Compliant

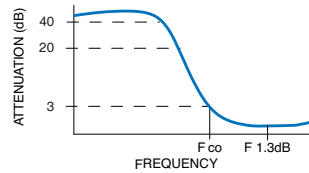
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

| Reel Size | Devices/Reel         |
|-----------|----------------------|
| 7"        | 10, 20, 50, 100, 200 |
| 13"       | 500, 1000            |

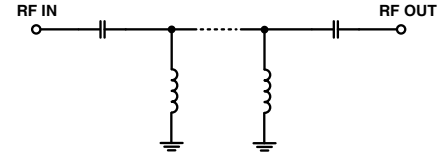
### High Pass Filter Electrical Specifications (T<sub>AMB</sub> = 25°C)

| STOPBAND (MHz) | f <sub>co</sub> , MHz Nom. | PASSBAND (MHz) | VSWR (:1)                   |
|----------------|----------------------------|----------------|-----------------------------|
| (Loss > 40dB)  | (Loss > 20dB)              | (Loss < 1dB)   | Stopband Typ. Passband Typ. |
| DC - 60        | DC - 75                    | 110            | 185 - 2500                  |
|                |                            |                | 18 1.2                      |

### Typical Frequency Response

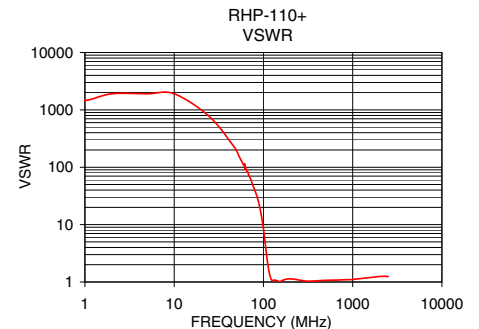
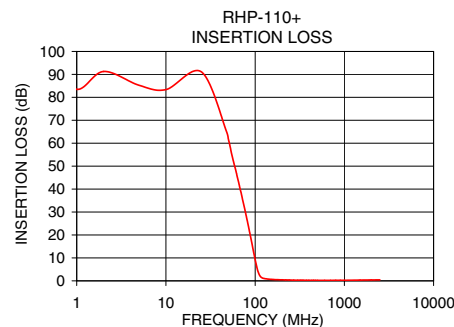


### Functional Schematic



### Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 1.0             | 83.49               | 1457.50   |
| 25.0            | 91.10               | 757.04    |
| 60.0            | 48.89               | 108.79    |
| 75.0            | 32.71               | 51.99     |
| 90.0            | 18.12               | 21.94     |
| 100.0           | 9.19                | 8.47      |
| 105.0           | 5.56                | 4.56      |
| 110.0           | 3.08                | 2.51      |
| 115.0           | 1.82                | 1.59      |
| 125.0           | 1.06                | 1.06      |
| 140.0           | 0.77                | 1.07      |
| 185.0           | 0.48                | 1.13      |
| 300.0           | 0.28                | 1.03      |
| 500.0           | 0.22                | 1.07      |
| 1000.0          | 0.23                | 1.11      |
| 1500.0          | 0.33                | 1.19      |
| 2000.0          | 0.39                | 1.24      |
| 2500.0          | 0.42                | 1.25      |



### 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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# High Pass Filter

RHP-110+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @ Across Temperature

| FREQ.<br>(MHz) | INSERTION LOSS |          |          | GROUP DELAY (In-Out) |          |          | INPUT RETURN LOSS |          |          | OUTPUT RETURN LOSS |          |          |
|----------------|----------------|----------|----------|----------------------|----------|----------|-------------------|----------|----------|--------------------|----------|----------|
|                | (dB)           |          |          | (ns)                 |          |          | (dB)              |          |          | (dB)               |          |          |
|                | @ -40° C       | @ +25° C | @ +85° C | @ -40° C             | @ +25° C | @ +85° C | @ -40° C          | @ +25° C | @ +85° C | @ -40° C           | @ +25° C | @ +85° C |
| 0.5            | 93.56          | 100.61   | 97.43    | -23.50               | -84.71   | 85.36    | 0.02              | 0.01     | 0.02     | 0.01               | 0.01     | 0.01     |
| 1              | 94.15          | 100.64   | 97.91    | -20.61               | -80.16   | 80.38    | 0.01              | 0.01     | 0.01     | 0.01               | 0.01     | 0.01     |
| 3              | 96.54          | 100.75   | 99.82    | -9.07                | -61.94   | 60.48    | 0.01              | 0.01     | 0.01     | 0.01               | 0.01     | 0.01     |
| 5              | 98.92          | 100.86   | 101.73   | 2.47                 | -43.73   | 40.57    | 0.00              | 0.00     | 0.00     | 0.00               | 0.00     | 0.00     |
| 7              | 99.43          | 100.35   | 100.80   | 11.24                | -37.98   | 31.79    | 0.00              | 0.00     | 0.00     | 0.00               | 0.00     | 0.00     |
| 9              | 98.65          | 99.42    | 97.93    | 18.12                | -40.76   | 30.61    | 0.00              | 0.00     | 0.00     | 0.00               | 0.00     | 0.01     |
| 10             | 98.26          | 98.96    | 96.49    | 21.56                | -42.15   | 30.03    | 0.00              | 0.00     | 0.00     | 0.00               | 0.00     | 0.01     |
| 13             | 98.44          | 97.37    | 95.03    | 23.78                | -44.07   | 29.39    | 0.00              | 0.00     | 0.00     | 0.00               | 0.00     | 0.01     |
| 15             | 99.11          | 96.24    | 95.20    | 22.03                | -44.46   | 29.42    | 0.00              | 0.01     | 0.01     | 0.00               | 0.01     | 0.01     |
| 20             | 95.15          | 102.51   | 101.16   | 10.11                | -37.91   | 18.60    | 0.01              | 0.01     | 0.01     | 0.01               | 0.01     | 0.02     |
| 25             | 89.75          | 100.03   | 101.00   | 4.72                 | -30.39   | 12.14    | 0.01              | 0.02     | 0.02     | 0.01               | 0.02     | 0.03     |
| 30             | 94.79          | 94.70    | 99.69    | 4.62                 | -25.01   | 10.84    | 0.02              | 0.03     | 0.03     | 0.01               | 0.03     | 0.04     |
| 35             | 93.72          | 91.12    | 92.06    | 4.67                 | -20.93   | 10.05    | 0.03              | 0.04     | 0.05     | 0.02               | 0.04     | 0.06     |
| 40             | 81.60          | 82.23    | 79.53    | 4.85                 | -17.68   | 9.59     | 0.04              | 0.06     | 0.07     | 0.03               | 0.06     | 0.08     |
| 45             | 71.26          | 70.59    | 70.62    | 5.19                 | -14.93   | 9.43     | 0.06              | 0.08     | 0.09     | 0.05               | 0.08     | 0.10     |
| 50             | 62.78          | 62.88    | 62.53    | 5.78                 | -12.39   | 9.64     | 0.08              | 0.10     | 0.11     | 0.07               | 0.10     | 0.14     |
| 55             | 55.77          | 55.91    | 55.56    | 6.61                 | -9.96    | 10.13    | 0.10              | 0.13     | 0.14     | 0.09               | 0.14     | 0.17     |
| 60             | 49.60          | 49.39    | 49.16    | 7.31                 | -7.94    | 10.51    | 0.13              | 0.16     | 0.18     | 0.12               | 0.17     | 0.21     |
| 61             | 48.41          | 48.23    | 48.00    | 7.38                 | -7.64    | 10.52    | 0.14              | 0.17     | 0.19     | 0.13               | 0.18     | 0.22     |
| 62             | 47.22          | 47.06    | 46.83    | 7.44                 | -7.35    | 10.53    | 0.14              | 0.18     | 0.20     | 0.14               | 0.19     | 0.23     |
| 63             | 46.03          | 45.89    | 45.67    | 7.50                 | -7.06    | 10.54    | 0.15              | 0.19     | 0.21     | 0.14               | 0.20     | 0.24     |
| 64             | 44.84          | 44.72    | 44.51    | 7.56                 | -6.76    | 10.54    | 0.16              | 0.19     | 0.22     | 0.15               | 0.20     | 0.25     |
| 65             | 43.73          | 43.60    | 43.40    | 7.76                 | -6.16    | 10.11    | 0.16              | 0.20     | 0.23     | 0.16               | 0.21     | 0.26     |
| 66             | 42.63          | 42.49    | 42.30    | 8.00                 | -5.46    | 9.53     | 0.17              | 0.21     | 0.24     | 0.17               | 0.22     | 0.27     |
| 67             | 41.53          | 41.39    | 41.21    | 8.24                 | -4.76    | 8.95     | 0.18              | 0.22     | 0.25     | 0.18               | 0.24     | 0.28     |
| 68             | 40.44          | 40.28    | 40.11    | 8.49                 | -4.05    | 8.38     | 0.19              | 0.23     | 0.27     | 0.19               | 0.25     | 0.29     |
| 69             | 39.34          | 39.17    | 39.02    | 8.73                 | -3.35    | 7.80     | 0.20              | 0.24     | 0.28     | 0.20               | 0.26     | 0.30     |
| 70             | 38.27          | 38.10    | 37.94    | 8.97                 | -2.65    | 7.22     | 0.21              | 0.26     | 0.29     | 0.21               | 0.27     | 0.32     |
| 75             | 33.02          | 32.90    | 32.72    | 10.05                | 0.68     | 4.44     | 0.27              | 0.32     | 0.37     | 0.28               | 0.35     | 0.40     |
| 80             | 27.98          | 27.87    | 27.70    | 7.73                 | -1.34    | 7.45     | 0.35              | 0.42     | 0.47     | 0.37               | 0.44     | 0.51     |
| 85             | 23.09          | 22.98    | 22.82    | 5.48                 | 1.80     | 6.81     | 0.47              | 0.56     | 0.63     | 0.50               | 0.59     | 0.67     |
| 86             | 22.12          | 22.02    | 21.86    | 5.13                 | 2.25     | 6.67     | 0.51              | 0.60     | 0.67     | 0.53               | 0.63     | 0.71     |
| 87             | 21.16          | 21.06    | 20.91    | 4.87                 | 2.50     | 6.54     | 0.55              | 0.65     | 0.72     | 0.58               | 0.68     | 0.77     |
| 88             | 20.20          | 20.11    | 19.96    | 4.61                 | 2.75     | 6.41     | 0.59              | 0.69     | 0.78     | 0.62               | 0.73     | 0.82     |
| 89             | 19.25          | 19.15    | 19.01    | 4.35                 | 2.99     | 6.28     | 0.63              | 0.74     | 0.83     | 0.67               | 0.78     | 0.88     |
| 90             | 18.29          | 18.20    | 18.05    | 4.09                 | 3.24     | 6.15     | 0.68              | 0.79     | 0.88     | 0.72               | 0.84     | 0.93     |
| 95             | 13.63          | 13.57    | 13.44    | 5.62                 | 4.04     | 5.91     | 1.07              | 1.22     | 1.35     | 1.12               | 1.29     | 1.43     |
| 100            | 9.28           | 9.27     | 9.18     | 4.24                 | 6.69     | 4.56     | 1.91              | 2.13     | 2.33     | 1.99               | 2.23     | 2.44     |
| 105            | 5.63           | 5.69     | 5.67     | 5.77                 | 8.03     | 6.62     | 3.73              | 4.05     | 4.36     | 3.85               | 4.21     | 4.56     |
| 106            | 4.95           | 5.02     | 5.02     | 6.39                 | 8.15     | 7.33     | 4.17              | 4.51     | 4.84     | 4.29               | 4.68     | 5.05     |
| 107            | 4.34           | 4.42     | 4.44     | 6.90                 | 8.21     | 7.86     | 4.70              | 5.07     | 5.43     | 4.84               | 5.26     | 5.66     |
| 108            | 3.93           | 4.03     | 4.06     | 7.11                 | 8.15     | 7.86     | 5.54              | 5.92     | 6.30     | 5.70               | 6.14     | 6.59     |
| 109            | 3.52           | 3.63     | 3.67     | 7.31                 | 8.08     | 7.87     | 6.37              | 6.77     | 7.18     | 6.55               | 7.03     | 7.51     |
| 110            | 3.12           | 3.24     | 3.29     | 7.52                 | 8.01     | 7.87     | 7.20              | 7.62     | 8.06     | 7.41               | 7.91     | 8.43     |
| 111            | 2.71           | 2.84     | 2.91     | 7.73                 | 7.94     | 7.87     | 8.03              | 8.47     | 8.94     | 8.26               | 8.80     | 9.36     |
| 112            | 2.30           | 2.44     | 2.53     | 7.94                 | 7.87     | 7.87     | 8.86              | 9.32     | 9.81     | 9.12               | 9.68     | 10.28    |
| 113            | 2.11           | 2.26     | 2.35     | 7.95                 | 7.87     | 7.87     | 10.15             | 10.61    | 11.13    | 10.47              | 11.08    | 11.75    |
| 114            | 1.93           | 2.08     | 2.18     | 7.95                 | 7.88     | 7.88     | 11.46             | 11.93    | 12.47    | 11.86              | 12.51    | 13.24    |
| 115            | 1.75           | 1.91     | 2.01     | 7.95                 | 7.89     | 7.88     | 12.77             | 13.25    | 13.81    | 13.24              | 13.94    | 14.74    |



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RHP-110+  
REV:OR  
090623

# High Pass Filter

RHP-110+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @ Across Temperature

| FREQ.<br>(MHz) | INSERTION LOSS |          |          | GROUP DELAY (In-Out) |          |          | INPUT RETURN LOSS |          |          | OUTPUT RETURN LOSS |          |          |
|----------------|----------------|----------|----------|----------------------|----------|----------|-------------------|----------|----------|--------------------|----------|----------|
|                | (dB)           |          |          | (ns)                 |          |          | (dB)              |          |          | (dB)               |          |          |
|                | @ -40° C       | @ +25° C | @ +85° C | @ -40° C             | @ +25° C | @ +85° C | @ -40° C          | @ +25° C | @ +85° C | @ -40° C           | @ +25° C | @ +85° C |
| 116            | 1.57           | 1.73     | 1.84     | 7.95                 | 7.90     | 7.88     | 14.08             | 14.57    | 15.15    | 14.63              | 15.37    | 16.24    |
| 117            | 1.40           | 1.56     | 1.67     | 7.95                 | 7.91     | 7.89     | 15.39             | 15.89    | 16.49    | 16.01              | 16.80    | 17.73    |
| 118            | 1.29           | 1.45     | 1.56     | 7.95                 | 7.92     | 7.89     | 17.12             | 17.59    | 18.17    | 18.06              | 18.96    | 20.06    |
| 119            | 1.22           | 1.38     | 1.49     | 7.96                 | 7.92     | 7.89     | 19.09             | 19.51    | 20.04    | 20.50              | 21.54    | 22.86    |
| 120            | 1.15           | 1.31     | 1.42     | 7.96                 | 7.92     | 7.90     | 21.06             | 21.43    | 21.91    | 22.94              | 24.12    | 25.67    |
| 122            | 1.02           | 1.17     | 1.28     | 7.96                 | 7.92     | 7.91     | 25.01             | 25.27    | 25.66    | 27.81              | 29.29    | 31.29    |
| 124            | 0.94           | 1.08     | 1.19     | 7.95                 | 7.91     | 7.90     | 27.50             | 27.51    | 27.62    | 29.80              | 30.81    | 32.21    |
| 126            | 0.88           | 1.02     | 1.12     | 7.94                 | 7.90     | 7.88     | 29.23             | 28.91    | 28.66    | 30.29              | 30.45    | 30.71    |
| 128            | 0.82           | 0.95     | 1.06     | 7.93                 | 7.89     | 7.86     | 30.96             | 30.31    | 29.70    | 30.78              | 30.08    | 29.22    |
| 130            | 0.78           | 0.92     | 1.01     | 7.91                 | 7.86     | 7.84     | 29.96             | 29.53    | 29.15    | 29.34              | 28.85    | 28.23    |
| 132            | 0.75           | 0.88     | 0.97     | 7.88                 | 7.84     | 7.82     | 28.97             | 28.76    | 28.61    | 27.89              | 27.62    | 27.23    |
| 134            | 0.72           | 0.84     | 0.93     | 7.85                 | 7.81     | 7.80     | 28.46             | 28.41    | 28.44    | 27.00              | 26.88    | 26.69    |
| 136            | 0.69           | 0.81     | 0.90     | 7.81                 | 7.78     | 7.76     | 28.86             | 28.85    | 28.98    | 27.16              | 27.09    | 26.98    |
| 138            | 0.66           | 0.78     | 0.87     | 7.78                 | 7.74     | 7.72     | 29.25             | 29.29    | 29.53    | 27.31              | 27.30    | 27.28    |
| 140            | 0.64           | 0.75     | 0.84     | 7.74                 | 7.70     | 7.68     | 30.49             | 30.52    | 30.84    | 27.96              | 27.98    | 28.01    |
| 142            | 0.62           | 0.73     | 0.81     | 7.69                 | 7.66     | 7.64     | 32.12             | 32.10    | 32.50    | 28.83              | 28.88    | 28.93    |
| 144            | 0.59           | 0.71     | 0.78     | 7.65                 | 7.61     | 7.59     | 33.85             | 33.76    | 34.21    | 29.72              | 29.77    | 29.86    |
| 146            | 0.58           | 0.68     | 0.76     | 7.59                 | 7.55     | 7.53     | 38.64             | 37.35    | 37.09    | 30.80              | 30.83    | 30.84    |
| 148            | 0.56           | 0.66     | 0.74     | 7.53                 | 7.49     | 7.47     | 43.43             | 40.94    | 39.98    | 31.88              | 31.89    | 31.82    |
| 150            | 0.54           | 0.64     | 0.72     | 7.47                 | 7.43     | 7.41     | 45.19             | 42.31    | 40.89    | 32.54              | 32.53    | 32.35    |
| 160            | 0.48           | 0.57     | 0.64     | 7.04                 | 7.00     | 6.97     | 31.15             | 30.94    | 30.24    | 29.84              | 29.69    | 29.17    |
| 170            | 0.43           | 0.52     | 0.58     | 6.30                 | 6.25     | 6.21     | 26.27             | 26.06    | 25.65    | 26.02              | 25.81    | 25.41    |
| 175            | 0.41           | 0.50     | 0.56     | 5.78                 | 5.73     | 5.69     | 25.08             | 24.81    | 24.43    | 24.93              | 24.65    | 24.27    |
| 180            | 0.39           | 0.48     | 0.54     | 5.22                 | 5.17     | 5.14     | 24.33             | 23.99    | 23.61    | 24.23              | 23.89    | 23.50    |
| 185            | 0.38           | 0.46     | 0.53     | 4.70                 | 4.67     | 4.64     | 23.87             | 23.45    | 23.05    | 23.81              | 23.39    | 22.99    |
| 190            | 0.37           | 0.45     | 0.51     | 4.28                 | 4.25     | 4.23     | 23.62             | 23.12    | 22.70    | 23.55              | 23.06    | 22.63    |
| 195            | 0.35           | 0.43     | 0.49     | 3.93                 | 3.91     | 3.89     | 23.51             | 22.96    | 22.51    | 23.46              | 22.90    | 22.43    |
| 200            | 0.34           | 0.42     | 0.48     | 3.65                 | 3.63     | 3.61     | 23.53             | 22.92    | 22.44    | 23.52              | 22.89    | 22.39    |
| 225            | 0.29           | 0.36     | 0.42     | 2.70                 | 2.69     | 2.68     | 24.74             | 24.08    | 23.52    | 24.81              | 24.09    | 23.45    |
| 250            | 0.24           | 0.31     | 0.36     | 2.15                 | 2.13     | 2.13     | 27.24             | 26.68    | 26.18    | 27.29              | 26.75    | 26.13    |
| 275            | 0.21           | 0.28     | 0.33     | 1.78                 | 1.77     | 1.77     | 31.27             | 30.52    | 30.06    | 31.16              | 30.77    | 30.32    |
| 300            | 0.19           | 0.26     | 0.31     | 1.52                 | 1.51     | 1.51     | 36.76             | 35.34    | 34.61    | 37.11              | 36.62    | 36.52    |
| 310            | 0.18           | 0.25     | 0.30     | 1.44                 | 1.43     | 1.42     | 38.79             | 37.21    | 36.17    | 40.22              | 39.52    | 39.63    |
| 320            | 0.18           | 0.25     | 0.30     | 1.36                 | 1.35     | 1.35     | 39.83             | 38.23    | 36.95    | 42.86              | 41.57    | 41.59    |
| 325            | 0.17           | 0.25     | 0.30     | 1.33                 | 1.32     | 1.32     | 39.78             | 38.21    | 36.85    | 43.37              | 41.63    | 41.31    |
| 330            | 0.17           | 0.24     | 0.29     | 1.30                 | 1.29     | 1.28     | 39.49             | 37.90    | 36.51    | 43.32              | 41.17    | 40.52    |
| 340            | 0.16           | 0.24     | 0.29     | 1.23                 | 1.22     | 1.22     | 38.52             | 36.76    | 35.38    | 41.27              | 38.95    | 37.84    |
| 350            | 0.16           | 0.23     | 0.28     | 1.18                 | 1.17     | 1.17     | 37.26             | 35.36    | 33.98    | 39.00              | 36.78    | 35.50    |
| 360            | 0.16           | 0.23     | 0.28     | 1.13                 | 1.12     | 1.12     | 36.03             | 34.08    | 32.66    | 37.07              | 35.02    | 33.62    |
| 370            | 0.15           | 0.23     | 0.28     | 1.08                 | 1.07     | 1.07     | 34.85             | 32.93    | 31.45    | 35.54              | 33.63    | 32.15    |
| 380            | 0.15           | 0.23     | 0.28     | 1.04                 | 1.03     | 1.03     | 33.80             | 31.95    | 30.42    | 34.27              | 32.49    | 30.94    |
| 390            | 0.15           | 0.22     | 0.27     | 1.00                 | 0.99     | 0.99     | 32.86             | 31.10    | 29.52    | 33.22              | 31.55    | 29.94    |
| 400            | 0.14           | 0.22     | 0.28     | 0.97                 | 0.96     | 0.96     | 32.10             | 30.42    | 28.78    | 32.36              | 30.74    | 29.10    |
| 425            | 0.13           | 0.22     | 0.27     | 0.89                 | 0.89     | 0.88     | 30.56             | 28.90    | 27.20    | 30.77              | 29.11    | 27.43    |
| 450            | 0.13           | 0.21     | 0.27     | 0.83                 | 0.82     | 0.82     | 29.75             | 27.84    | 26.11    | 29.88              | 27.95    | 26.26    |
| 475            | 0.13           | 0.21     | 0.27     | 0.78                 | 0.77     | 0.77     | 29.16             | 27.04    | 25.28    | 29.18              | 27.11    | 25.38    |
| 500            | 0.13           | 0.21     | 0.28     | 0.73                 | 0.72     | 0.72     | 28.62             | 26.42    | 24.60    | 28.58              | 26.46    | 24.66    |
| 550            | 0.12           | 0.21     | 0.28     | 0.66                 | 0.65     | 0.65     | 27.87             | 25.48    | 23.48    | 27.75              | 25.42    | 23.46    |
| 600            | 0.12           | 0.21     | 0.29     | 0.61                 | 0.60     | 0.60     | 27.44             | 24.75    | 22.68    | 27.24              | 24.64    | 22.62    |
| 650            | 0.12           | 0.22     | 0.30     | 0.57                 | 0.56     | 0.56     | 27.18             | 24.25    | 22.06    | 26.87              | 24.07    | 21.93    |
| 700            | 0.11           | 0.22     | 0.30     | 0.54                 | 0.53     | 0.53     | 26.79             | 23.76    | 21.46    | 26.48              | 23.60    | 21.36    |
| 750            | 0.12           | 0.23     | 0.32     | 0.51                 | 0.50     | 0.50     | 26.31             | 23.33    | 21.02    | 25.96              | 23.15    | 20.93    |
| 800            | 0.12           | 0.24     | 0.33     | 0.49                 | 0.48     | 0.48     | 26.14             | 22.97    | 20.59    | 25.70              | 22.73    | 20.44    |
| 850            | 0.12           | 0.24     | 0.34     | 0.47                 | 0.46     | 0.46     | 25.75             | 22.56    | 20.15    | 25.33              | 22.36    | 20.05    |
| 900            | 0.12           | 0.25     | 0.35     | 0.46                 | 0.45     | 0.45     | 25.45             | 22.16    | 19.78    | 25.07              | 21.98    | 19.70    |
| 950            | 0.12           | 0.26     | 0.37     | 0.45                 | 0.44     | 0.44     | 25.16             | 21.79    | 19.45    | 24.80              | 21.63    | 19.38    |



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RHP-110+  
REV:OR  
090623

# High Pass Filter

RHP-110+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @ Across Temperature

| FREQ.<br>(MHz) | INSERTION LOSS |          |          | GROUP DELAY (In-Out) |          |          | INPUT RETURN LOSS |          |          | OUTPUT RETURN LOSS |          |          |
|----------------|----------------|----------|----------|----------------------|----------|----------|-------------------|----------|----------|--------------------|----------|----------|
|                | (dB)           |          |          | (ns)                 |          |          | (dB)              |          |          | (dB)               |          |          |
|                | @ -40° C       | @ +25° C | @ +85° C | @ -40° C             | @ +25° C | @ +85° C | @ -40° C          | @ +25° C | @ +85° C | @ -40° C           | @ +25° C | @ +85° C |
| 1000           | 0.12           | 0.27     | 0.38     | 0.44                 | 0.43     | 0.43     | 24.80             | 21.44    | 19.14    | 24.55              | 21.36    | 19.14    |
| 1100           | 0.13           | 0.28     | 0.41     | 0.42                 | 0.41     | 0.41     | 23.82             | 20.73    | 18.47    | 23.70              | 20.76    | 18.56    |
| 1200           | 0.14           | 0.30     | 0.43     | 0.41                 | 0.40     | 0.40     | 22.97             | 20.16    | 18.08    | 22.81              | 20.18    | 18.16    |
| 1300           | 0.15           | 0.32     | 0.45     | 0.40                 | 0.39     | 0.39     | 21.99             | 19.62    | 17.69    | 21.89              | 19.71    | 17.84    |
| 1400           | 0.15           | 0.33     | 0.48     | 0.39                 | 0.38     | 0.38     | 21.43             | 19.17    | 17.38    | 21.36              | 19.26    | 17.52    |
| 1500           | 0.16           | 0.35     | 0.50     | 0.39                 | 0.38     | 0.37     | 21.40             | 18.84    | 17.16    | 21.28              | 18.91    | 17.29    |
| 1600           | 0.17           | 0.37     | 0.52     | 0.38                 | 0.37     | 0.37     | 20.29             | 18.57    | 17.11    | 20.18              | 18.69    | 17.28    |
| 1700           | 0.18           | 0.38     | 0.54     | 0.38                 | 0.37     | 0.36     | 20.02             | 18.38    | 17.01    | 19.96              | 18.49    | 17.16    |
| 1800           | 0.19           | 0.40     | 0.56     | 0.37                 | 0.36     | 0.36     | 19.79             | 18.28    | 17.18    | 19.85              | 18.45    | 17.39    |
| 1900           | 0.20           | 0.41     | 0.57     | 0.37                 | 0.36     | 0.36     | 19.33             | 18.30    | 17.53    | 19.34              | 18.46    | 17.75    |
| 2000           | 0.20           | 0.42     | 0.59     | 0.37                 | 0.36     | 0.36     | 19.56             | 18.47    | 17.69    | 19.56              | 18.67    | 17.92    |
| 2050           | 0.20           | 0.43     | 0.60     | 0.37                 | 0.36     | 0.35     | 19.44             | 18.57    | 17.92    | 19.39              | 18.73    | 18.12    |
| 2100           | 0.20           | 0.43     | 0.61     | 0.37                 | 0.36     | 0.35     | 19.80             | 18.80    | 18.14    | 19.74              | 18.93    | 18.29    |
| 2150           | 0.20           | 0.44     | 0.62     | 0.37                 | 0.35     | 0.35     | 20.21             | 18.98    | 18.33    | 20.22              | 19.06    | 18.43    |
| 2200           | 0.20           | 0.44     | 0.63     | 0.37                 | 0.35     | 0.35     | 20.62             | 19.19    | 18.57    | 20.66              | 19.30    | 18.65    |
| 2250           | 0.20           | 0.44     | 0.63     | 0.37                 | 0.36     | 0.35     | 20.32             | 19.45    | 19.00    | 20.28              | 19.55    | 19.06    |
| 2300           | 0.21           | 0.45     | 0.64     | 0.36                 | 0.35     | 0.35     | 20.18             | 19.74    | 19.56    | 19.98              | 19.76    | 19.54    |
| 2350           | 0.20           | 0.45     | 0.64     | 0.36                 | 0.35     | 0.35     | 20.88             | 20.05    | 19.92    | 20.80              | 20.09    | 19.89    |
| 2400           | 0.21           | 0.46     | 0.65     | 0.36                 | 0.35     | 0.35     | 21.16             | 20.38    | 20.40    | 21.06              | 20.41    | 20.34    |
| 2450           | 0.21           | 0.46     | 0.66     | 0.36                 | 0.35     | 0.35     | 21.22             | 20.77    | 20.97    | 21.01              | 20.76    | 20.89    |
| 2500           | 0.21           | 0.47     | 0.67     | 0.36                 | 0.35     | 0.35     | 22.32             | 21.22    | 21.26    | 22.14              | 21.15    | 20.99    |
| 2550           | 0.21           | 0.48     | 0.68     | 0.37                 | 0.35     | 0.35     | 23.20             | 21.65    | 21.74    | 23.33              | 21.67    | 21.34    |
| 2600           | 0.21           | 0.48     | 0.69     | 0.36                 | 0.35     | 0.35     | 22.38             | 22.15    | 22.80    | 22.18              | 21.99    | 22.19    |
| 2650           | 0.22           | 0.49     | 0.70     | 0.36                 | 0.36     | 0.35     | 22.54             | 22.64    | 23.65    | 22.31              | 22.55    | 23.09    |
| 2700           | 0.23           | 0.50     | 0.72     | 0.37                 | 0.36     | 0.36     | 23.74             | 23.21    | 24.21    | 23.83              | 23.18    | 23.56    |
| 2750           | 0.24           | 0.52     | 0.74     | 0.37                 | 0.36     | 0.36     | 23.62             | 23.68    | 24.90    | 23.93              | 23.97    | 24.40    |
| 2775           | 0.26           | 0.54     | 0.76     | 0.37                 | 0.36     | 0.36     | 23.68             | 23.88    | 25.24    | 24.21              | 24.52    | 25.15    |
| 2800           | 0.28           | 0.57     | 0.80     | 0.37                 | 0.36     | 0.35     | 24.02             | 24.03    | 25.46    | 25.14              | 25.41    | 26.17    |
| 2825           | 0.32           | 0.62     | 0.86     | 0.35                 | 0.34     | 0.33     | 24.09             | 23.81    | 25.03    | 26.69              | 26.49    | 27.19    |
| 2850           | 0.40           | 0.70     | 0.95     | 0.33                 | 0.32     | 0.31     | 23.41             | 23.09    | 24.06    | 28.47              | 27.78    | 27.86    |
| 2875           | 0.50           | 0.80     | 1.03     | 0.32                 | 0.31     | 0.31     | 21.96             | 21.92    | 22.90    | 27.97              | 27.09    | 26.26    |
| 2900           | 0.51           | 0.79     | 1.01     | 0.32                 | 0.31     | 0.31     | 21.27             | 21.55    | 22.67    | 24.73              | 24.53    | 24.07    |
| 2925           | 0.42           | 0.71     | 0.93     | 0.33                 | 0.32     | 0.32     | 21.63             | 22.07    | 23.33    | 23.04              | 23.31    | 23.14    |
| 2950           | 0.35           | 0.65     | 0.87     | 0.34                 | 0.33     | 0.33     | 22.40             | 22.85    | 24.09    | 22.71              | 22.99    | 22.79    |
| 2975           | 0.30           | 0.61     | 0.84     | 0.36                 | 0.35     | 0.35     | 23.22             | 23.57    | 24.76    | 22.90              | 23.02    | 22.73    |
| 3000           | 0.28           | 0.58     | 0.82     | 0.37                 | 0.36     | 0.36     | 23.85             | 24.09    | 25.28    | 23.16              | 23.17    | 22.75    |
| 3050           | 0.26           | 0.57     | 0.81     | 0.37                 | 0.36     | 0.36     | 24.91             | 25.06    | 26.38    | 23.64              | 23.36    | 22.92    |
| 3100           | 0.25           | 0.56     | 0.81     | 0.37                 | 0.36     | 0.35     | 25.16             | 25.67    | 27.27    | 23.47              | 23.51    | 23.19    |
| 3150           | 0.25           | 0.57     | 0.82     | 0.36                 | 0.35     | 0.35     | 25.17             | 25.94    | 27.82    | 23.25              | 23.57    | 23.44    |
| 3200           | 0.26           | 0.58     | 0.83     | 0.36                 | 0.35     | 0.35     | 25.49             | 26.13    | 27.99    | 23.60              | 23.80    | 23.55    |
| 3250           | 0.26           | 0.58     | 0.84     | 0.36                 | 0.35     | 0.35     | 25.57             | 26.45    | 28.12    | 23.29              | 23.70    | 23.50    |
| 3300           | 0.26           | 0.59     | 0.85     | 0.36                 | 0.35     | 0.35     | 26.07             | 26.43    | 27.76    | 23.68              | 23.65    | 23.31    |
| 3350           | 0.26           | 0.60     | 0.87     | 0.36                 | 0.35     | 0.35     | 26.39             | 26.31    | 27.27    | 23.93              | 23.65    | 23.05    |
| 3400           | 0.27           | 0.61     | 0.88     | 0.36                 | 0.35     | 0.35     | 26.21             | 26.26    | 26.97    | 23.62              | 23.49    | 22.79    |
| 3450           | 0.27           | 0.62     | 0.90     | 0.36                 | 0.35     | 0.35     | 26.84             | 26.10    | 26.58    | 24.21              | 23.43    | 22.76    |
| 3500           | 0.27           | 0.63     | 0.92     | 0.37                 | 0.35     | 0.35     | 26.82             | 25.95    | 26.34    | 24.23              | 23.25    | 22.65    |
| 3550           | 0.28           | 0.64     | 0.93     | 0.36                 | 0.35     | 0.35     | 25.78             | 25.73    | 26.11    | 23.43              | 23.18    | 22.66    |
| 3600           | 0.29           | 0.65     | 0.95     | 0.36                 | 0.35     | 0.35     | 25.04             | 25.47    | 25.67    | 22.90              | 23.01    | 22.56    |
| 3650           | 0.30           | 0.66     | 0.97     | 0.37                 | 0.36     | 0.35     | 24.55             | 25.04    | 25.28    | 22.49              | 22.83    | 22.45    |
| 3700           | 0.31           | 0.68     | 0.98     | 0.37                 | 0.36     | 0.35     | 24.53             | 24.65    | 24.86    | 22.65              | 22.77    | 22.42    |
| 3750           | 0.33           | 0.70     | 1.01     | 0.37                 | 0.36     | 0.35     | 24.26             | 24.42    | 24.52    | 22.51              | 22.73    | 22.52    |
| 3800           | 0.34           | 0.72     | 1.03     | 0.37                 | 0.36     | 0.35     | 23.86             | 24.08    | 24.24    | 22.41              | 22.77    | 22.77    |
| 3850           | 0.35           | 0.74     | 1.05     | 0.37                 | 0.36     | 0.36     | 23.18             | 23.71    | 24.43    | 22.13              | 22.63    | 22.96    |
| 3900           | 0.37           | 0.76     | 1.08     | 0.37                 | 0.36     | 0.36     | 21.98             | 23.35    | 24.52    | 20.97              | 22.73    | 23.67    |
| 3950           | 0.39           | 0.78     | 1.11     | 0.37                 | 0.36     | 0.36     | 21.74             | 22.92    | 23.59    | 21.11              | 22.63    | 23.33    |
| 4000           | 0.43           | 0.82     | 1.15     | 0.37                 | 0.37     | 0.36     | 21.20             | 22.62    | 23.22    | 20.92              | 22.85    | 23.35    |



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RHP-110+  
REV:OR  
090623

# High Pass Filter

RHP-110+

## Typical Performance Data

TEST CONDITIONS: INPUT POWER =0 dBm @ Across Temperature

| FREQ.<br>(MHz) | INSERTION LOSS |          |          | GROUP DELAY (In-Out) |          |          | INPUT RETURN LOSS |          |          | OUTPUT RETURN LOSS |          |          |
|----------------|----------------|----------|----------|----------------------|----------|----------|-------------------|----------|----------|--------------------|----------|----------|
|                | (dB)           |          |          | (ns)                 |          |          | (dB)              |          |          | (dB)               |          |          |
|                | @ -40° C       | @ +25° C | @ +85° C | @ -40° C             | @ +25° C | @ +85° C | @ -40° C          | @ +25° C | @ +85° C | @ -40° C           | @ +25° C | @ +85° C |
| 4050           | 0.45           | 0.84     | 1.18     | 0.38                 | 0.37     | 0.36     | 20.84             | 22.11    | 22.95    | 20.65              | 22.50    | 23.73    |
| 4100           | 0.48           | 0.89     | 1.24     | 0.38                 | 0.37     | 0.37     | 21.14             | 21.90    | 22.53    | 21.06              | 22.51    | 23.41    |
| 4150           | 0.52           | 0.94     | 1.30     | 0.39                 | 0.38     | 0.38     | 20.63             | 21.42    | 21.98    | 21.03              | 22.75    | 23.96    |
| 4200           | 0.60           | 1.00     | 1.37     | 0.40                 | 0.39     | 0.39     | 20.51             | 21.07    | 21.21    | 21.32              | 22.87    | 23.67    |
| 4250           | 0.68           | 1.12     | 1.50     | 0.40                 | 0.39     | 0.39     | 19.85             | 20.39    | 20.43    | 21.49              | 23.04    | 24.05    |
| 4300           | 0.84           | 1.29     | 1.68     | 0.41                 | 0.40     | 0.39     | 19.06             | 19.70    | 19.74    | 21.74              | 24.34    | 25.75    |
| 4350           | 1.07           | 1.55     | 1.99     | 0.40                 | 0.39     | 0.38     | 18.22             | 18.57    | 18.47    | 23.31              | 25.95    | 27.31    |
| 4400           | 1.49           | 2.01     | 2.49     | 0.35                 | 0.32     | 0.30     | 16.94             | 17.23    | 16.97    | 26.95              | 29.47    | 31.03    |
| 4450           | 2.16           | 2.67     | 3.20     | 0.21                 | 0.18     | 0.15     | 15.77             | 15.92    | 15.69    | 31.59              | 50.87    | 41.03    |
| 4500           | 2.76           | 3.23     | 3.64     | 0.08                 | 0.06     | 0.05     | 15.47             | 15.68    | 15.72    | 24.04              | 26.65    | 28.07    |
| 4600           | 2.03           | 2.42     | 2.71     | 0.23                 | 0.23     | 0.26     | 19.25             | 19.45    | 19.75    | 20.79              | 23.31    | 25.33    |
| 4700           | 1.09           | 1.50     | 1.86     | 0.41                 | 0.40     | 0.40     | 20.55             | 21.56    | 22.11    | 21.04              | 23.32    | 25.40    |
| 4800           | 0.76           | 1.20     | 1.59     | 0.40                 | 0.39     | 0.39     | 21.00             | 21.89    | 21.95    | 21.43              | 23.51    | 24.36    |
| 4900           | 0.62           | 1.09     | 1.52     | 0.39                 | 0.38     | 0.38     | 20.74             | 22.12    | 22.71    | 21.30              | 23.23    | 23.81    |
| 5000           | 0.58           | 1.09     | 1.51     | 0.38                 | 0.37     | 0.37     | 21.41             | 22.97    | 23.19    | 22.56              | 22.91    | 23.59    |
| 5100           | 0.55           | 1.05     | 1.44     | 0.38                 | 0.37     | 0.37     | 22.39             | 23.32    | 23.18    | 22.74              | 24.05    | 24.74    |
| 5200           | 0.58           | 1.06     | 1.53     | 0.38                 | 0.36     | 0.36     | 24.77             | 24.71    | 24.79    | 22.90              | 24.01    | 23.91    |
| 5300           | 0.56           | 1.09     | 1.51     | 0.37                 | 0.37     | 0.36     | 25.04             | 26.06    | 26.03    | 23.57              | 23.79    | 24.62    |
| 5400           | 0.58           | 1.15     | 1.54     | 0.38                 | 0.37     | 0.36     | 26.93             | 28.43    | 26.56    | 25.21              | 24.14    | 25.66    |
| 5500           | 0.62           | 1.08     | 1.66     | 0.38                 | 0.37     | 0.35     | 26.22             | 27.20    | 29.56    | 23.49              | 25.99    | 23.69    |
| 5600           | 0.59           | 1.18     | 1.63     | 0.39                 | 0.38     | 0.37     | 28.08             | 29.18    | 28.63    | 25.68              | 25.37    | 27.10    |
| 5700           | 0.65           | 1.31     | 1.79     | 0.39                 | 0.34     | 0.36     | 27.24             | 26.25    | 27.49    | 25.80              | 25.18    | 26.17    |
| 5800           | 0.84           | 1.35     | 1.88     | 0.36                 | 0.35     | 0.35     | 23.49             | 24.69    | 25.89    | 24.75              | 24.77    | 24.23    |
| 5900           | 0.83           | 1.43     | 1.85     | 0.37                 | 0.36     | 0.36     | 21.61             | 22.88    | 24.52    | 24.41              | 24.07    | 24.02    |
| 6000           | 0.82           | 1.36     | 1.87     | 0.38                 | 0.38     | 0.38     | 20.66             | 22.17    | 21.85    | 22.61              | 21.88    | 20.83    |
| 6100           | 0.76           | 1.40     | 1.96     | 0.40                 | 0.39     | 0.39     | 21.37             | 21.06    | 20.88    | 21.56              | 20.04    | 19.53    |
| 6200           | 0.91           | 1.53     | 2.07     | 0.39                 | 0.39     | 0.39     | 20.81             | 19.96    | 19.75    | 21.64              | 18.83    | 18.57    |
| 6300           | 0.94           | 1.62     | 2.23     | 0.41                 | 0.41     | 0.38     | 20.07             | 18.88    | 18.47    | 19.75              | 18.19    | 17.56    |
| 6400           | 1.11           | 1.95     | 2.56     | 0.41                 | 0.36     | 0.36     | 19.25             | 18.08    | 17.61    | 18.69              | 16.59    | 15.75    |
| 6500           | 1.41           | 2.00     | 2.61     | 0.37                 | 0.38     | 0.39     | 19.76             | 16.55    | 15.46    | 16.29              | 15.35    | 14.84    |
| 6600           | 1.31           | 2.01     | 2.70     | 0.44                 | 0.42     | 0.42     | 16.68             | 15.19    | 14.47    | 15.01              | 14.39    | 13.95    |
| 6700           | 1.48           | 2.23     | 2.99     | 0.45                 | 0.44     | 0.43     | 15.42             | 14.52    | 13.69    | 13.99              | 13.79    | 13.18    |
| 6800           | 1.83           | 2.69     | 3.41     | 0.47                 | 0.45     | 0.46     | 14.37             | 13.52    | 13.12    | 12.73              | 12.73    | 12.78    |
| 6900           | 2.66           | 3.47     | 4.36     | 0.46                 | 0.44     | 0.43     | 13.39             | 13.01    | 12.90    | 11.39              | 12.12    | 12.19    |
| 7000           | 4.27           | 5.14     | 6.15     | 0.30                 | 0.26     | 0.22     | 12.91             | 12.96    | 13.09    | 10.41              | 11.18    | 11.59    |
| 7100           | 6.62           | 7.45     | 8.12     | -0.15                | -0.15    | -0.17    | 12.79             | 12.90    | 12.86    | 9.44               | 10.66    | 11.20    |
| 7200           | 5.59           | 6.25     | 6.76     | 0.06                 | 0.06     | 0.11     | 13.76             | 14.12    | 14.57    | 10.22              | 12.07    | 13.19    |
| 7300           | 3.52           | 4.24     | 4.77     | 0.43                 | 0.43     | 0.46     | 19.26             | 18.12    | 18.21    | 13.72              | 15.96    | 17.82    |
| 7400           | 2.41           | 3.25     | 4.00     | 0.52                 | 0.49     | 0.51     | 26.34             | 22.99    | 20.92    | 17.41              | 20.90    | 21.95    |
| 7500           | 2.07           | 2.85     | 3.74     | 0.49                 | 0.52     | 0.51     | 21.19             | 21.19    | 19.61    | 17.38              | 20.12    | 19.55    |
| 7600           | 2.04           | 2.80     | 3.75     | 0.49                 | 0.50     | 0.51     | 17.23             | 17.33    | 17.81    | 15.33              | 17.03    | 18.46    |
| 7700           | 2.18           | 3.12     | 4.29     | 0.50                 | 0.46     | 0.49     | 14.75             | 16.16    | 15.94    | 14.03              | 16.07    | 16.60    |
| 7800           | 2.55           | 3.52     | 4.75     | 0.50                 | 0.49     | 0.49     | 12.79             | 14.09    | 13.38    | 12.29              | 14.49    | 14.34    |
| 7900           | 2.91           | 4.31     | 5.54     | 0.53                 | 0.49     | 0.46     | 11.85             | 12.52    | 12.99    | 11.80              | 13.43    | 14.34    |
| 8000           | 3.91           | 5.54     | 7.53     | 0.46                 | 0.44     | 0.34     | 10.42             | 10.87    | 12.11    | 11.50              | 12.80    | 14.47    |
| 8100           | 5.59           | 7.78     | 10.02    | 0.39                 | 0.24     | 0.04     | 9.60              | 10.69    | 12.77    | 10.36              | 12.40    | 14.50    |
| 8200           | 7.75           | 10.48    | 11.22    | 0.26                 | -0.16    | -0.15    | 9.43              | 11.18    | 13.31    | 9.12               | 11.19    | 13.97    |
| 8300           | 10.86          | 10.55    | 9.39     | -0.37                | -0.27    | 0.19     | 9.24              | 11.70    | 14.84    | 9.22               | 12.14    | 15.45    |
| 8400           | 9.12           | 7.81     | 7.91     | -0.05                | 0.43     | 0.42     | 8.98              | 14.03    | 16.14    | 11.68              | 16.65    | 17.60    |
| 8500           | 6.13           | 6.80     | 7.85     | 0.41                 | 0.64     | 0.69     | 12.24             | 13.08    | 14.71    | 19.73              | 17.84    | 17.74    |



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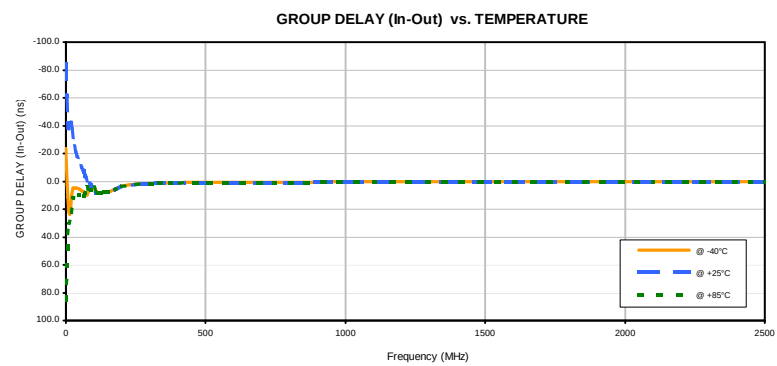
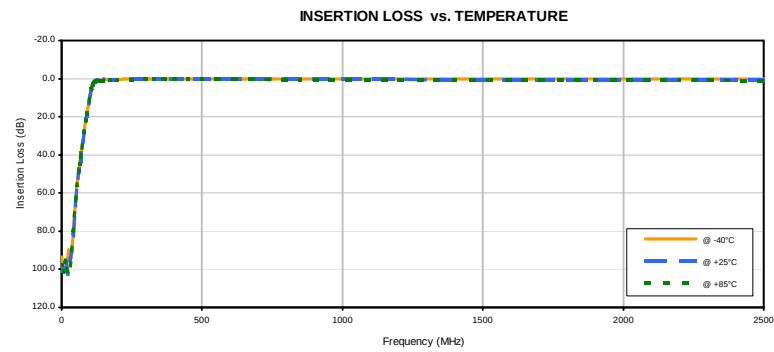


RHP-110+  
REV:OR  
090623

# High Pass Filter

RHP-110+

## Typical Performance Data



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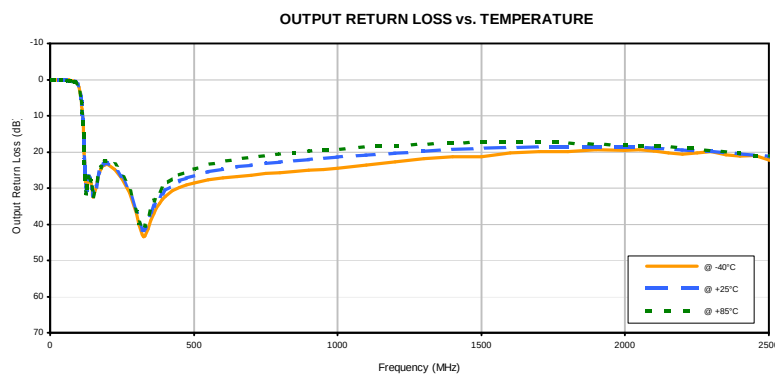
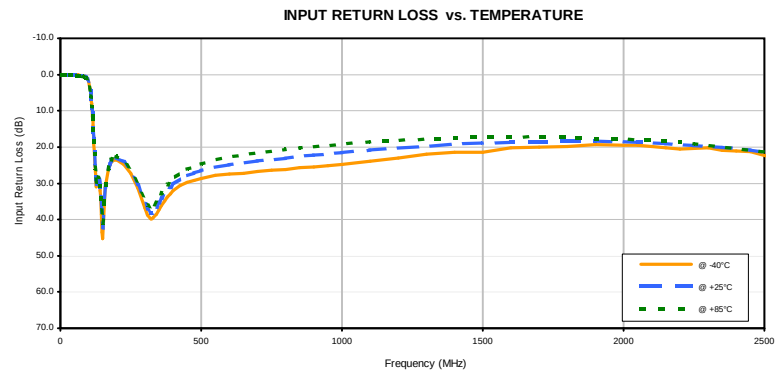


RHP-110+  
REV:OR  
090623

# High Pass Filter

RHP-110+

## Typical Performance Data



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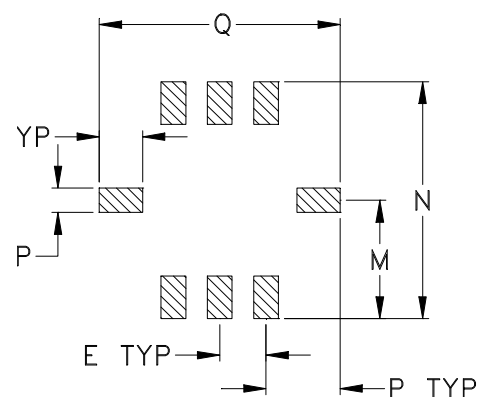
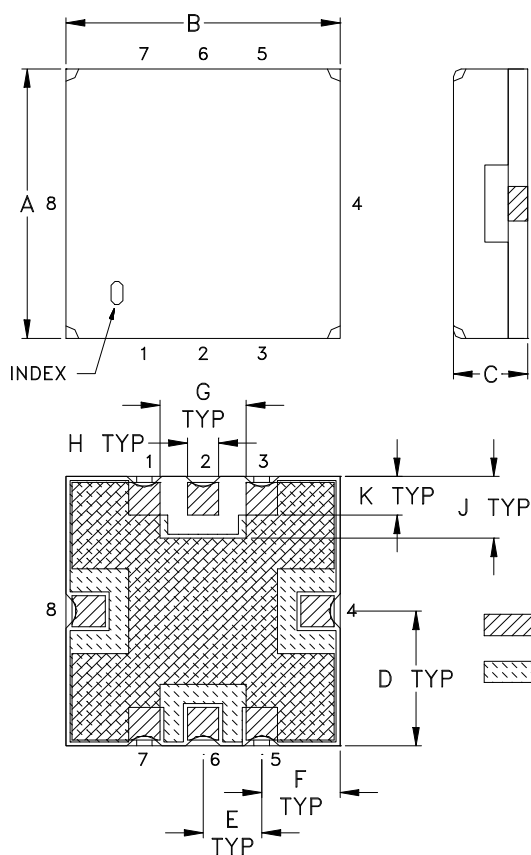
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RHP-110+  
REV:OR  
090623

## Outline Dimensions

GP731



| CASE # | A              | B              | C              | D              | E              | F              | G              | H              | J              | K              | L              | M              |
|--------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| GP731  | .350<br>(8.89) | .350<br>(8.89) | .100<br>(2.54) | .175<br>(4.45) | .075<br>(1.91) | .100<br>(2.54) | .110<br>(2.79) | .040<br>(1.02) | .080<br>(2.03) | .050<br>(1.27) | .040<br>(1.02) | .195<br>(4.95) |

| CASE # | N              | P              | Q              | R              | WT. GRAM           |
|--------|----------------|----------------|----------------|----------------|--------------------|
| GP731  | .390<br>(9.91) | .120<br>(3.05) | .390<br>(9.91) | .070<br>(1.78) | .4<br>+0.3<br>-0.0 |

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

### Notes:

- Case material: Nickel-Silver alloy.
- Base: Printed wiring laminate.
- Termination finish:

For RoHS Case Styles: 3-5  $\mu$  inch (.08-.13 microns) Gold over 120-240  $\mu$  inch (3.05-6.10 microns) Nickel plate.  
For RoHS-5 Case Styles: Tin-Lead plate.



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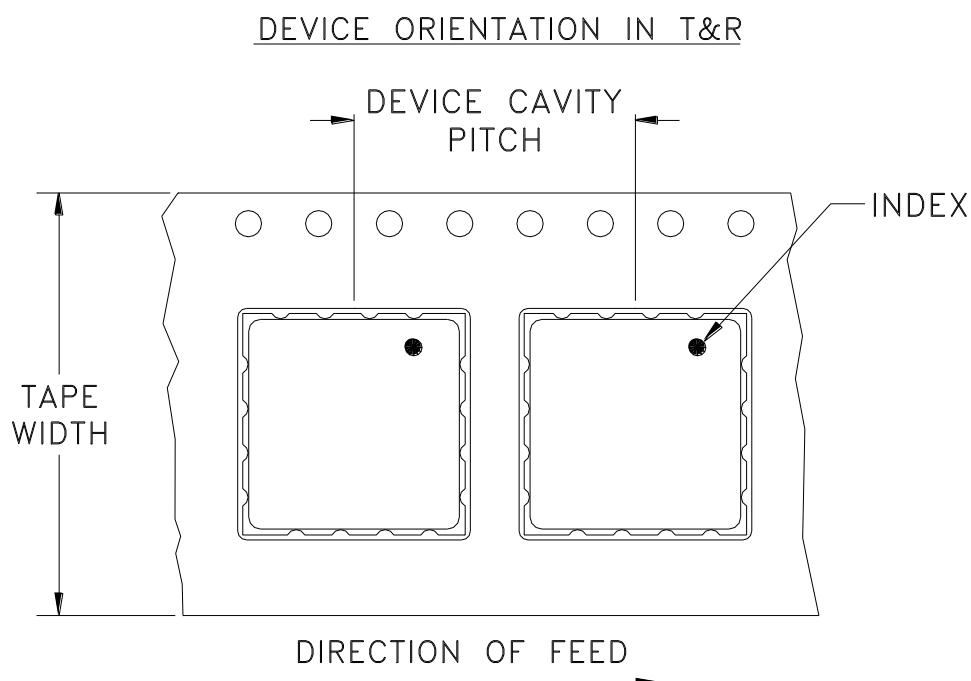


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RF/IF MICROWAVE COMPONENTS



# Tape & Reel Packaging TR-F78



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel<br>see note |
|-------------------|----------------------------|----------------------|------------------------------|
| 16                | 12                         | 7                    | 10                           |
|                   |                            |                      | 20                           |
|                   |                            |                      | 50                           |
|                   |                            |                      | 100                          |
|                   |                            |                      | 200                          |
|                   |                            | 13                   | 500, 1000                    |

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.

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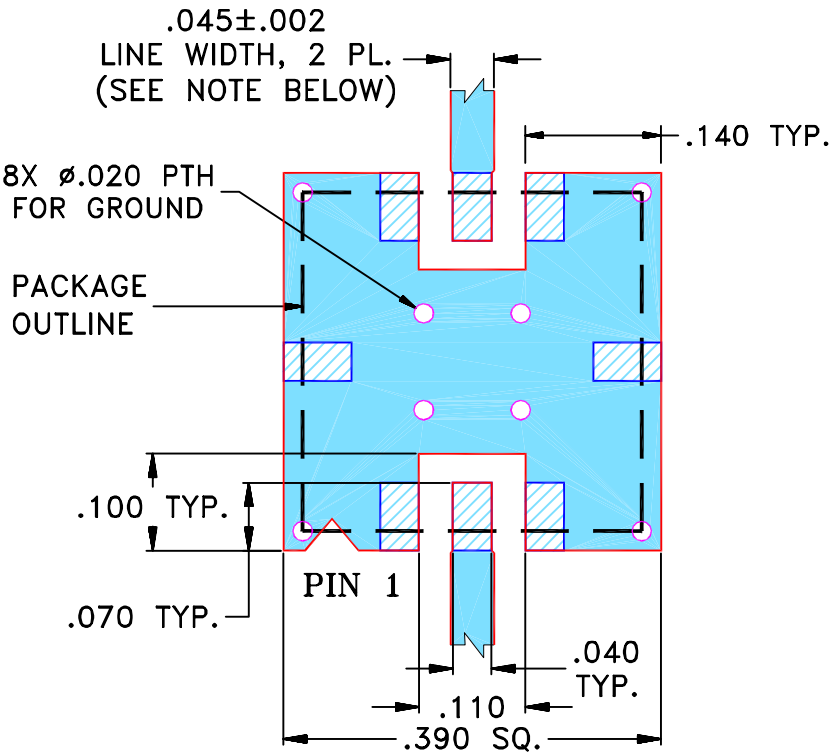
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THIRD ANGLE PROJECTION

| REVISIONS |         |                                      |          |     |      |
|-----------|---------|--------------------------------------|----------|-----|------|
| REV       | ECN No. | DESCRIPTION                          | DATE     | DR  | AUTH |
| OR        | R59289  | NEW RELEASE (FROM RAVON)             | 02/05    | DK  | HH   |
| A         | M101151 | ADDED "RBP" & CORRECTED PIN          | 10/10/05 | MMG | DJ   |
|           |         | CONNECTION TO DESCRIPTION OF PL-DWG. |          |     |      |
| B         | M102713 | UPDATED NOTES, ADDED "...WITH SMOBC" | 01/20/06 | GT  | IL   |

SUGGESTED MOUNTING CONFIGURATION

FOR GP731 CASE STYLE, "qf" PIN CONNECTION.



- NOTES:

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

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS ±

3 PL DECIMALS ± .005

ANGLES ±

FRACTIONS ±

INITIALS

DATE

DRAWN DK (RAVON) 10 FEB 05

CHECKED RZ (RAVON) 10 FEB 05

APPROVED HH (RAVON) 10 FEB 05

Mini-Circuits®

13 Neptune Avenue  
Brooklyn NY 11235

PL, qf, GP731, RBP, TB-332

SIZE A

CODE IDENT 15542

DRAWING NO: 98-PL-176

REV: B

FILE: 98PL176

SCALE: 5:1

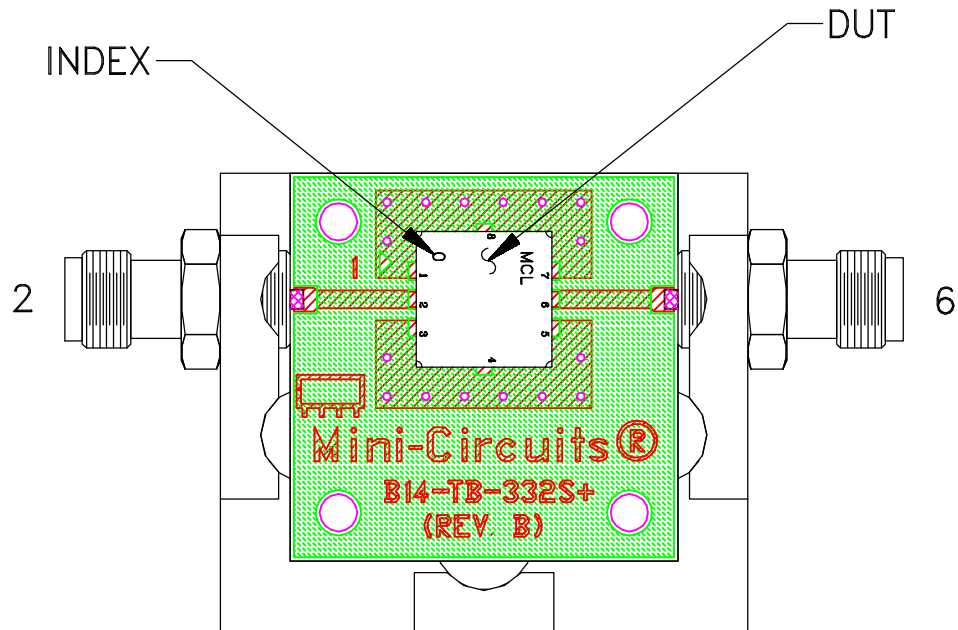
SHEET: 1 OF 1

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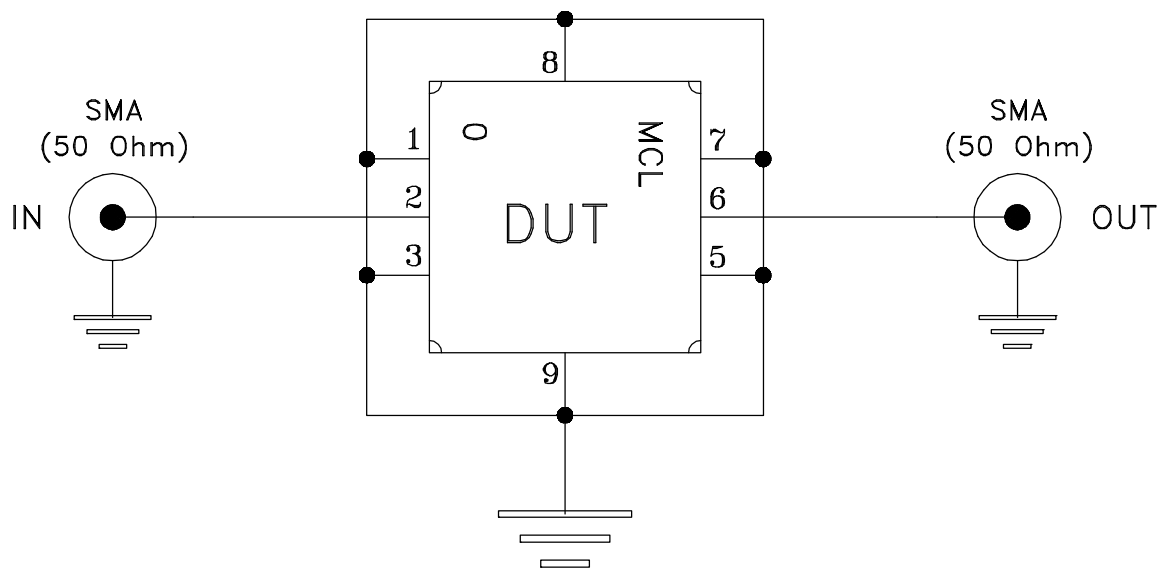
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ASHEETA1.DWG REV:A DATE:01/12/95

# Evaluation Board and Circuit



TB-332



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 or equivalent,  
Dielectric Constant=3.5, Thickness=.020 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                                                                          |
| HAST                           | 130°C, 85% RH, 96 hours                                                                                                                                         | JESD22-A110                                                                                          |
| 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 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, 20-2000 Hz, 4 times in each of three axes (total 12)                                                                                                  | MIL-STD-883, Method 2007.3, Condition A                                                              |
| 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                                                                              |