

# Surface Mount Image Reject Mixer

## JCIR-152H+

Level 18 (LO Power +18dBm) 1000 to 1500 MHz

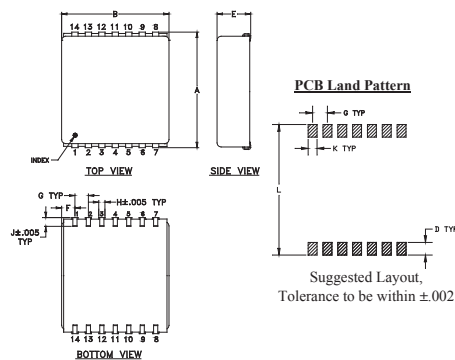
### Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -40°C to 85°C  |
| Storage Temperature                                             | -55°C to 100°C |
| RF Power                                                        | 200mW          |
| IF Current                                                      | 40mA           |
| Permanent damage may occur if any of these limits are exceeded. |                |

### Pin Connections

|                      |                         |
|----------------------|-------------------------|
| LO                   | 2                       |
| RF                   | 9                       |
| IF                   | 11                      |
| GROUND               | 1,3,5,6,7,8,10,12,13,14 |
| 50 OHM TERM EXTERNAL | 4                       |

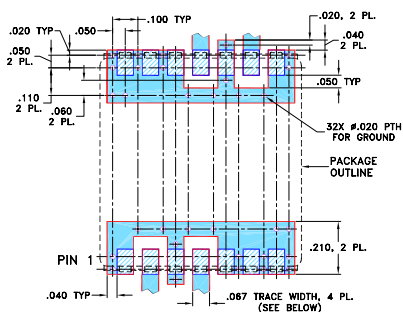
### Outline Drawing



### Outline Dimensions (inch)

| A     | B     | C    | D     | E    | F     | G    |
|-------|-------|------|-------|------|-------|------|
| .870  | .800  | --   | .100  | .250 | .100  | .100 |
| 22.10 | 20.32 | --   | 2.54  | 6.35 | 2.54  | 2.54 |
| H     | J     | K    | L     |      | wt    |      |
| .047  | .065  | .065 | .890  |      | grams |      |
| 1.19  | 1.65  | 1.65 | 22.61 |      | 4.0   |      |

### Demo Board MCL P/N: TB-21 Suggested PCB Layout (PL-209)



### Features

- excellent image rejection, 28 dBc typ.
- excellent L-R isolation, 43 dB typ.
- low conversion loss, 7.5 dB typ.
- aqueous washable
- J-leads for excellent solderability & strain relief

### Applications

- PDC
- land mobile



Generic photo used for illustration purposes only

CASE STYLE: BG291

### +RoHS Compliant

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

### Electrical Specifications

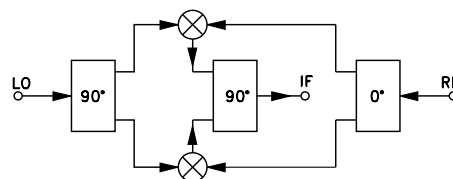
| FREQUENCY<br>(MHz) |           |        | CONVERSION<br>LOSS<br>(dB) |          |      | IMAGE<br>REJECTION<br>(dBc) |      |      | LO-RF<br>ISOL.<br>(dB) |      | LO-IF<br>ISOL.<br>(dB) |      | RF-IF<br>ISOL.<br>(dB) |      | IP3<br>at center<br>band<br>(dBm) |
|--------------------|-----------|--------|----------------------------|----------|------|-----------------------------|------|------|------------------------|------|------------------------|------|------------------------|------|-----------------------------------|
| RF                 | LO        | IF     | $\overline{X}$             | $\sigma$ | Max. | Typ.                        | Min. | Typ. | Min.                   | Typ. | Min.                   | Typ. | Min.                   | Typ. |                                   |
| 1000-1500          | 1080-1580 | 68-100 | 7.5                        | 0.15     | 9.0  | RF>LO                       | 28   | 18   | 43                     | 35   | 32                     | 24   | 32                     | 20   | 25                                |

1 dB COMPRESS.: +11 dBm typ.

### Typical Performance Data

| Frequency (MHz) |         | Conversion Loss (dB) | Image Rejection (dBc) | Isolation (dB) |       |       | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|---------|----------------------|-----------------------|----------------|-------|-------|-------------------|-------------------|
| RF              | LO      |                      |                       | L-R            | L-I   | R-I   |                   |                   |
| 1000.00         | 1080.00 | 7.65                 | 31.63                 | 39.78          | 33.28 | 39.50 | 1.93              | 1.40              |
| 1040.00         | 1120.00 | 7.28                 | 43.89                 | 39.96          | 33.05 | 39.54 | 1.66              | 1.36              |
| 1080.00         | 1160.00 | 7.27                 | 32.63                 | 41.31          | 32.98 | 39.03 | 1.44              | 1.39              |
| 1120.00         | 1200.00 | 7.14                 | 38.31                 | 41.73          | 32.83 | 38.03 | 1.35              | 1.40              |
| 1160.00         | 1240.00 | 7.26                 | 40.17                 | 41.36          | 32.82 | 36.63 | 1.37              | 1.38              |
| 1200.00         | 1280.00 | 7.24                 | 38.31                 | 42.19          | 32.87 | 35.45 | 1.43              | 1.44              |
| 1240.00         | 1320.00 | 7.30                 | 31.82                 | 42.65          | 33.14 | 33.79 | 1.50              | 1.41              |
| 1280.00         | 1360.00 | 7.48                 | 34.28                 | 42.88          | 33.21 | 32.38 | 1.53              | 1.56              |
| 1320.00         | 1400.00 | 7.42                 | 41.52                 | 42.48          | 33.37 | 31.08 | 1.52              | 1.52              |
| 1360.00         | 1440.00 | 7.69                 | 50.03                 | 42.89          | 33.49 | 29.94 | 1.49              | 1.69              |
| 1400.00         | 1480.00 | 7.74                 | 32.64                 | 45.61          | 33.86 | 29.64 | 1.49              | 1.66              |
| 1420.00         | 1500.00 | 7.80                 | 30.99                 | 46.81          | 33.81 | 29.56 | 1.57              | 1.69              |
| 1430.00         | 1510.00 | 7.80                 | 29.60                 | 48.64          | 33.98 | 29.44 | 1.60              | 1.73              |
| 1440.00         | 1520.00 | 7.89                 | 28.66                 | 48.46          | 34.09 | 29.24 | 1.62              | 1.79              |
| 1450.00         | 1530.00 | 8.04                 | 27.42                 | 47.10          | 34.24 | 29.15 | 1.64              | 1.83              |
| 1460.00         | 1540.00 | 8.10                 | 26.87                 | 47.11          | 34.33 | 28.95 | 1.66              | 1.83              |
| 1470.00         | 1550.00 | 8.04                 | 26.62                 | 45.78          | 34.38 | 28.69 | 1.69              | 1.81              |
| 1480.00         | 1560.00 | 7.87                 | 26.26                 | 44.24          | 34.36 | 28.55 | 1.71              | 1.77              |
| 1490.00         | 1570.00 | 7.69                 | 26.22                 | 44.20          | 34.29 | 28.38 | 1.73              | 1.74              |
| 1500.00         | 1580.00 | 7.64                 | 25.96                 | 43.62          | 34.39 | 28.15 | 1.76              | 1.72              |

### Electrical Schematic



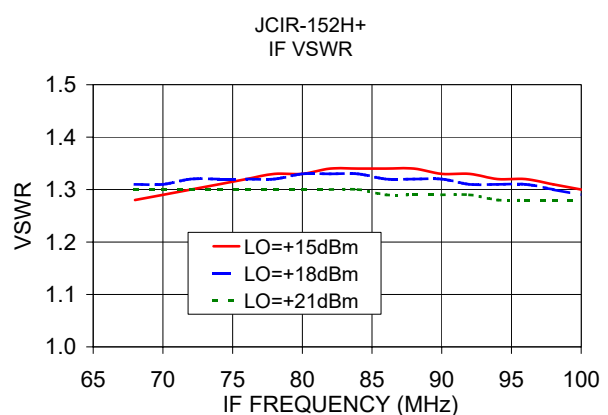
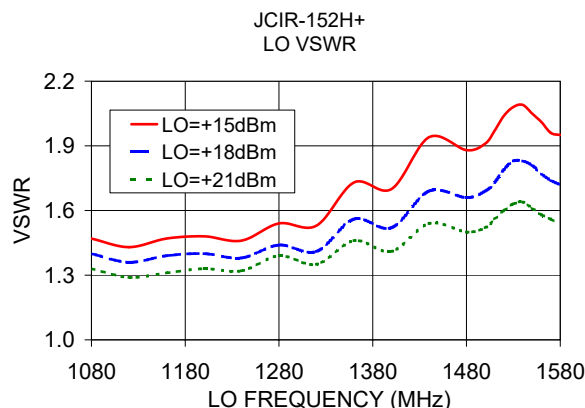
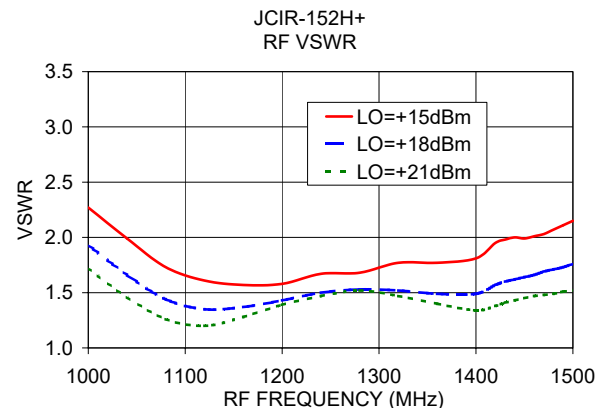
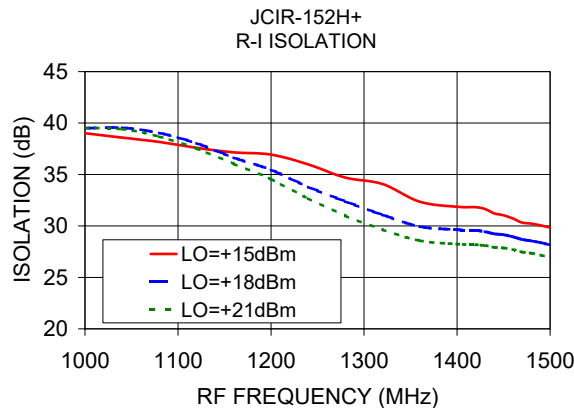
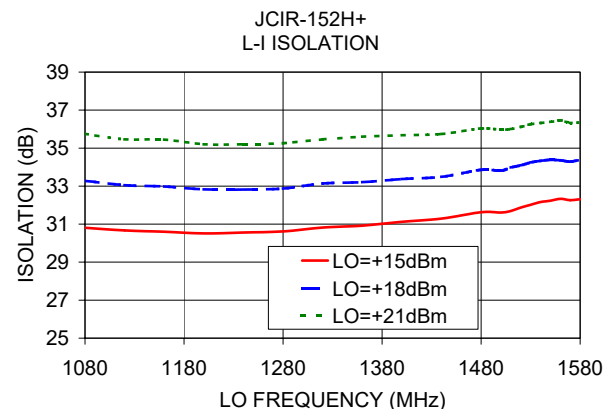
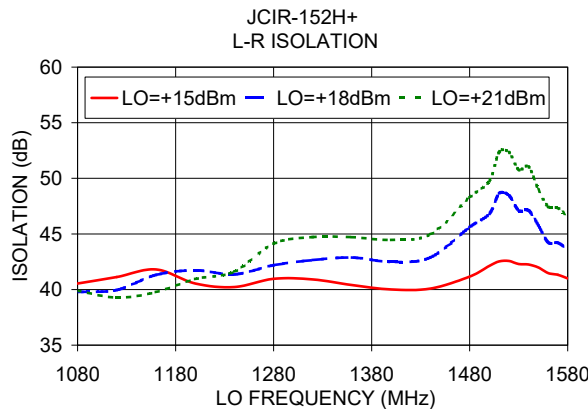
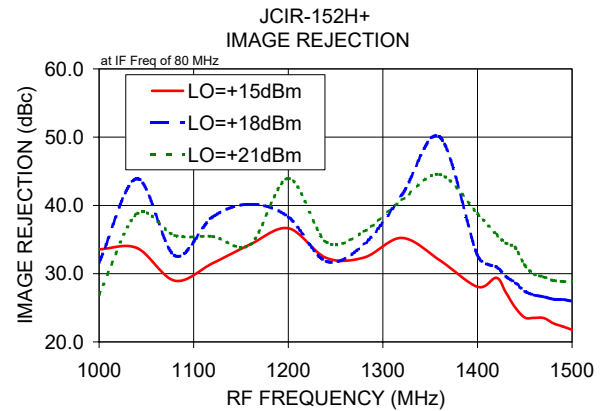
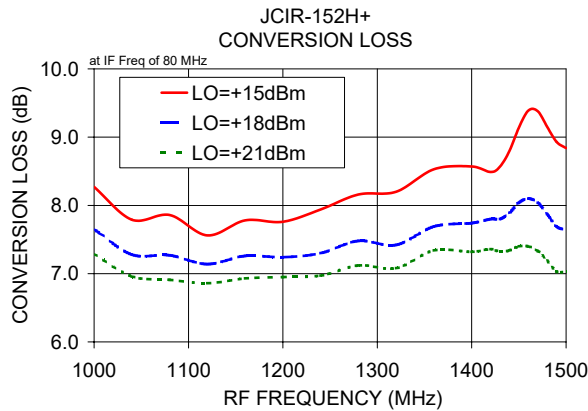
### Notes

- 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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# Image Reject Mixer

JCIR-152H+

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | CONVERSION LOSS<br>IF FIXED<br>@IF(OUT)=80MHz<br>(dB) |      |      | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IMAGE REJECTION<br>IF FIXED<br>@IF(OUT)=80MHz<br>(dBc) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | IP3 INPUT<br>(dBm) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | COMPRESSION<br>@RF=+11dBm<br>(dB) |       |       |
|---------------------|-------------|-------------------------------------------------------|------|------|---------------------|-------------|--------------------------------------------------------|-------|-------|---------------------|-------------|--------------------|-------|-------|---------------------|-------------|-----------------------------------|-------|-------|
|                     |             | @LO (dBm)                                             |      |      |                     |             | @LO (dBm)                                              |       |       |                     |             | @LO (dBm)          |       |       |                     |             | @LO (dBm)                         |       |       |
|                     |             | +15                                                   | +18  | +21  |                     |             | +15                                                    | +18   | +21   |                     |             | +15                | +18   | +21   |                     |             | +15                               | +18   | +21   |
| 1000.00             | 1080.00     | 8.27                                                  | 7.65 | 7.29 | 1000.00             | 1080.00     | 33.57                                                  | 31.63 | 26.90 | 1000.00             | 1080.00     | 25.12              | 25.03 | 24.93 | 1000.00             | 1080.00     | 0.31                              | 0.19  | 0.09  |
| 1040.00             | 1120.00     | 7.79                                                  | 7.28 | 6.96 | 1040.00             | 1120.00     | 33.75                                                  | 43.89 | 38.76 | 1040.00             | 1120.00     | 23.79              | 24.63 | 25.59 | 1040.00             | 1120.00     | 0.32                              | 0.21  | 0.12  |
| 1080.00             | 1160.00     | 7.86                                                  | 7.27 | 6.91 | 1080.00             | 1160.00     | 28.97                                                  | 32.63 | 35.60 | 1080.00             | 1160.00     | 24.01              | 24.99 | 26.29 | 1080.00             | 1160.00     | 0.36                              | 0.24  | 0.15  |
| 1120.00             | 1200.00     | 7.56                                                  | 7.14 | 6.86 | 1120.00             | 1200.00     | 31.53                                                  | 38.31 | 35.45 | 1120.00             | 1200.00     | 23.32              | 24.42 | 25.61 | 1120.00             | 1200.00     | 0.32                              | 0.16  | 0.10  |
| 1160.00             | 1240.00     | 7.78                                                  | 7.26 | 6.93 | 1160.00             | 1240.00     | 34.31                                                  | 40.17 | 34.28 | 1160.00             | 1240.00     | 24.15              | 24.95 | 26.29 | 1160.00             | 1240.00     | 0.35                              | 0.17  | 0.06  |
| 1200.00             | 1280.00     | 7.76                                                  | 7.24 | 6.95 | 1200.00             | 1280.00     | 36.65                                                  | 38.31 | 43.94 | 1200.00             | 1280.00     | 24.14              | 24.16 | 24.63 | 1200.00             | 1280.00     | 0.27                              | 0.13  | 0.03  |
| 1240.00             | 1320.00     | 7.94                                                  | 7.30 | 6.97 | 1240.00             | 1320.00     | 32.31                                                  | 31.82 | 34.66 | 1240.00             | 1320.00     | 25.76              | 25.95 | 25.91 | 1240.00             | 1320.00     | 0.24                              | 0.09  | 0.01  |
| 1280.00             | 1360.00     | 8.16                                                  | 7.48 | 7.12 | 1280.00             | 1360.00     | 32.36                                                  | 34.28 | 36.18 | 1280.00             | 1360.00     | 26.49              | 28.45 | 26.53 | 1280.00             | 1360.00     | 0.18                              | 0.06  | 0.03  |
| 1320.00             | 1400.00     | 8.20                                                  | 7.42 | 7.08 | 1320.00             | 1400.00     | 35.23                                                  | 41.52 | 40.80 | 1320.00             | 1400.00     | 23.02              | 30.38 | 28.59 | 1320.00             | 1400.00     | 0.11                              | 0.01  | -0.04 |
| 1360.00             | 1440.00     | 8.53                                                  | 7.69 | 7.34 | 1360.00             | 1440.00     | 31.98                                                  | 50.03 | 44.54 | 1360.00             | 1440.00     | 21.54              | 30.74 | 29.81 | 1360.00             | 1440.00     | 0.11                              | 0.01  | -0.05 |
| 1400.00             | 1480.00     | 8.57                                                  | 7.74 | 7.32 | 1400.00             | 1480.00     | 28.06                                                  | 32.64 | 38.79 | 1400.00             | 1480.00     | 19.19              | 26.99 | 31.15 | 1400.00             | 1480.00     | 0.05                              | -0.05 | -0.07 |
| 1420.00             | 1500.00     | 8.49                                                  | 7.80 | 7.36 | 1420.00             | 1500.00     | 29.39                                                  | 30.99 | 35.74 | 1420.00             | 1500.00     | 19.19              | 26.25 | 32.38 | 1420.00             | 1500.00     | 0.05                              | -0.07 | -0.10 |
| 1430.00             | 1510.00     | 8.57                                                  | 7.80 | 7.32 | 1430.00             | 1510.00     | 27.25                                                  | 29.60 | 34.50 | 1430.00             | 1510.00     | 19.16              | 25.64 | 33.18 | 1430.00             | 1510.00     | 0.01                              | -0.08 | -0.12 |
| 1440.00             | 1520.00     | 8.80                                                  | 7.89 | 7.34 | 1440.00             | 1520.00     | 25.02                                                  | 28.66 | 33.78 | 1440.00             | 1520.00     | 18.68              | 24.90 | 33.11 | 1440.00             | 1520.00     | 0.04                              | -0.06 | -0.10 |
| 1450.00             | 1530.00     | 9.14                                                  | 8.04 | 7.40 | 1450.00             | 1530.00     | 23.57                                                  | 27.42 | 31.21 | 1450.00             | 1530.00     | 17.90              | 23.71 | 32.50 | 1450.00             | 1530.00     | 0.01                              | -0.08 | -0.10 |
| 1460.00             | 1540.00     | 9.39                                                  | 8.10 | 7.40 | 1460.00             | 1540.00     | 23.52                                                  | 26.87 | 29.93 | 1460.00             | 1540.00     | 17.32              | 22.76 | 32.76 | 1460.00             | 1540.00     | -0.03                             | -0.09 | -0.11 |
| 1470.00             | 1550.00     | 9.38                                                  | 8.04 | 7.33 | 1470.00             | 1550.00     | 23.50                                                  | 26.62 | 29.53 | 1470.00             | 1550.00     | 17.19              | 22.61 | 33.92 | 1470.00             | 1550.00     | -0.03                             | -0.07 | -0.09 |
| 1480.00             | 1560.00     | 9.15                                                  | 7.87 | 7.19 | 1480.00             | 1560.00     | 22.74                                                  | 26.26 | 29.00 | 1480.00             | 1560.00     | 17.44              | 23.09 | 37.87 | 1480.00             | 1560.00     | -0.07                             | -0.07 | -0.09 |
| 1490.00             | 1570.00     | 8.93                                                  | 7.69 | 7.03 | 1490.00             | 1570.00     | 22.26                                                  | 26.22 | 28.85 | 1490.00             | 1570.00     | 17.68              | 23.55 | 34.73 | 1490.00             | 1570.00     | -0.07                             | -0.03 | -0.04 |
| 1500.00             | 1580.00     | 8.84                                                  | 7.64 | 7.03 | 1500.00             | 1580.00     | 21.76                                                  | 25.96 | 28.82 | 1500.00             | 1580.00     | 17.64              | 23.68 | 31.58 | 1500.00             | 1580.00     | -0.12                             | -0.03 | -0.06 |

# Image Reject Mixer

# JCIR-152H+

## Typical Performance Data

| LO<br><br>(MHz) | LO-RF ISOLATION<br>(dB) |       |       | LO-IF ISOLATION<br>(dB) |       |       | RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF-IF ISOLATION<br>(dB) |       |       |
|-----------------|-------------------------|-------|-------|-------------------------|-------|-------|---------------------|-------------|-------------------------|-------|-------|
|                 | @LO (dBm)               |       |       | @LO (dBm)               |       |       |                     |             | @LO (dBm)               |       |       |
|                 | +15                     | +18   | +21   | +15                     | +18   | +21   |                     |             | +15                     | +18   | +21   |
| 1080.00         | 40.54                   | 39.78 | 39.90 | 30.81                   | 33.28 | 35.75 | 1000.00             | 1080.00     | 39.01                   | 39.50 | 39.53 |
| 1120.00         | 41.13                   | 39.96 | 39.28 | 30.67                   | 33.05 | 35.46 | 1040.00             | 1120.00     | 38.58                   | 39.54 | 39.41 |
| 1160.00         | 41.81                   | 41.31 | 39.77 | 30.60                   | 32.98 | 35.45 | 1080.00             | 1160.00     | 38.16                   | 39.03 | 38.68 |
| 1200.00         | 40.54                   | 41.73 | 40.95 | 30.51                   | 32.83 | 35.20 | 1120.00             | 1200.00     | 37.59                   | 38.03 | 37.52 |
| 1240.00         | 40.23                   | 41.36 | 41.61 | 30.56                   | 32.82 | 35.20 | 1160.00             | 1240.00     | 37.15                   | 36.63 | 36.03 |
| 1280.00         | 40.97                   | 42.19 | 44.13 | 30.62                   | 32.87 | 35.26 | 1200.00             | 1280.00     | 36.94                   | 35.45 | 34.54 |
| 1320.00         | 40.91                   | 42.65 | 44.72 | 30.82                   | 33.14 | 35.46 | 1240.00             | 1320.00     | 35.98                   | 33.79 | 32.67 |
| 1360.00         | 40.40                   | 42.88 | 44.71 | 30.92                   | 33.21 | 35.60 | 1280.00             | 1360.00     | 34.70                   | 32.38 | 30.98 |
| 1400.00         | 40.01                   | 42.48 | 44.46 | 31.12                   | 33.37 | 35.68 | 1320.00             | 1400.00     | 34.07                   | 31.08 | 29.64 |
| 1440.00         | 40.09                   | 42.89 | 44.97 | 31.29                   | 33.49 | 35.74 | 1360.00             | 1440.00     | 32.35                   | 29.94 | 28.57 |
| 1480.00         | 41.17                   | 45.61 | 48.28 | 31.63                   | 33.86 | 36.03 | 1400.00             | 1480.00     | 31.87                   | 29.64 | 28.24 |
| 1500.00         | 42.13                   | 46.81 | 49.76 | 31.61                   | 33.81 | 35.96 | 1420.00             | 1500.00     | 31.82                   | 29.56 | 28.17 |
| 1510.00         | 42.53                   | 48.64 | 52.36 | 31.69                   | 33.98 | 36.00 | 1430.00             | 1510.00     | 31.65                   | 29.44 | 28.10 |
| 1520.00         | 42.57                   | 48.46 | 52.35 | 31.87                   | 34.09 | 36.12 | 1440.00             | 1520.00     | 31.22                   | 29.24 | 27.92 |
| 1530.00         | 42.29                   | 47.10 | 50.78 | 32.02                   | 34.24 | 36.26 | 1450.00             | 1530.00     | 31.04                   | 29.15 | 27.86 |
| 1540.00         | 42.25                   | 47.11 | 51.05 | 32.16                   | 34.33 | 36.32 | 1460.00             | 1540.00     | 30.72                   | 28.95 | 27.71 |
| 1550.00         | 41.99                   | 45.78 | 49.00 | 32.23                   | 34.38 | 36.38 | 1470.00             | 1550.00     | 30.32                   | 28.69 | 27.46 |
| 1560.00         | 41.48                   | 44.24 | 47.46 | 32.33                   | 34.36 | 36.46 | 1480.00             | 1560.00     | 30.23                   | 28.55 | 27.35 |
| 1570.00         | 41.32                   | 44.20 | 47.34 | 32.26                   | 34.29 | 36.33 | 1490.00             | 1570.00     | 30.05                   | 28.38 | 27.16 |
| 1580.00         | 41.00                   | 43.62 | 46.53 | 32.31                   | 34.39 | 36.35 | 1500.00             | 1580.00     | 29.84                   | 28.15 | 26.96 |

# Image Reject Mixer

JCIR-152H+

## Typical Performance Data

| RF<br>(IN)<br>(MHz) | LO<br>(MHz) | RF VSWR<br>(:1) |      |      | LO<br>(MHz) | LO VSWR<br>(:1) |      |      | IF<br>(OUT)<br>(MHz) | IF VSWR<br>(:1) |      |      |
|---------------------|-------------|-----------------|------|------|-------------|-----------------|------|------|----------------------|-----------------|------|------|
|                     |             | @LO (dBm)       |      |      |             | @LO (dBm)       |      |      |                      | @LO (dBm)       |      |      |
|                     |             | +15             | +18  | +21  |             | +15             | +18  | +21  |                      | +15             | +18  | +21  |
| 1000.00             | 1080.00     | 2.27            | 1.93 | 1.72 | 1080.00     | 1.47            | 1.40 | 1.33 | 62.00                | 1.25            | 1.30 | 1.31 |
| 1040.00             | 1120.00     | 1.99            | 1.66 | 1.46 | 1120.00     | 1.43            | 1.36 | 1.29 | 64.00                | 1.26            | 1.30 | 1.31 |
| 1080.00             | 1160.00     | 1.73            | 1.44 | 1.26 | 1160.00     | 1.47            | 1.39 | 1.31 | 66.00                | 1.27            | 1.30 | 1.31 |
| 1120.00             | 1200.00     | 1.61            | 1.35 | 1.20 | 1200.00     | 1.48            | 1.40 | 1.33 | 68.00                | 1.28            | 1.31 | 1.30 |
| 1160.00             | 1240.00     | 1.57            | 1.37 | 1.28 | 1240.00     | 1.46            | 1.38 | 1.32 | 70.00                | 1.29            | 1.31 | 1.30 |
| 1200.00             | 1280.00     | 1.58            | 1.43 | 1.39 | 1280.00     | 1.54            | 1.44 | 1.39 | 72.00                | 1.30            | 1.32 | 1.30 |
| 1240.00             | 1320.00     | 1.67            | 1.50 | 1.47 | 1320.00     | 1.53            | 1.41 | 1.35 | 74.00                | 1.31            | 1.32 | 1.30 |
| 1280.00             | 1360.00     | 1.68            | 1.53 | 1.52 | 1360.00     | 1.73            | 1.56 | 1.46 | 76.00                | 1.32            | 1.32 | 1.30 |
| 1320.00             | 1400.00     | 1.77            | 1.52 | 1.47 | 1400.00     | 1.70            | 1.52 | 1.41 | 78.00                | 1.33            | 1.32 | 1.30 |
| 1360.00             | 1440.00     | 1.77            | 1.49 | 1.40 | 1440.00     | 1.94            | 1.69 | 1.54 | 80.00                | 1.33            | 1.33 | 1.30 |
| 1400.00             | 1480.00     | 1.81            | 1.49 | 1.34 | 1480.00     | 1.88            | 1.66 | 1.50 | 82.00                | 1.34            | 1.33 | 1.30 |
| 1420.00             | 1500.00     | 1.95            | 1.57 | 1.38 | 1500.00     | 1.91            | 1.69 | 1.52 | 84.00                | 1.34            | 1.33 | 1.30 |
| 1430.00             | 1510.00     | 1.98            | 1.60 | 1.41 | 1510.00     | 1.97            | 1.73 | 1.56 | 86.00                | 1.34            | 1.32 | 1.29 |
| 1440.00             | 1520.00     | 2.00            | 1.62 | 1.43 | 1520.00     | 2.04            | 1.79 | 1.60 | 88.00                | 1.34            | 1.32 | 1.29 |
| 1450.00             | 1530.00     | 1.99            | 1.64 | 1.45 | 1530.00     | 2.08            | 1.83 | 1.63 | 90.00                | 1.33            | 1.32 | 1.29 |
| 1460.00             | 1540.00     | 2.01            | 1.66 | 1.47 | 1540.00     | 2.09            | 1.83 | 1.64 | 92.00                | 1.33            | 1.31 | 1.29 |
| 1470.00             | 1550.00     | 2.03            | 1.69 | 1.48 | 1550.00     | 2.05            | 1.81 | 1.61 | 94.00                | 1.32            | 1.31 | 1.28 |
| 1480.00             | 1560.00     | 2.07            | 1.71 | 1.49 | 1560.00     | 2.01            | 1.77 | 1.58 | 96.00                | 1.32            | 1.31 | 1.28 |
| 1490.00             | 1570.00     | 2.11            | 1.73 | 1.51 | 1570.00     | 1.96            | 1.74 | 1.56 | 98.00                | 1.31            | 1.30 | 1.28 |
| 1500.00             | 1580.00     | 2.15            | 1.76 | 1.52 | 1580.00     | 1.95            | 1.72 | 1.54 | 100.00               | 1.30            | 1.29 | 1.28 |



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IF/RF MICROWAVE COMPONENTS



REV. X1  
JCIR-152H+  
1/8/2009  
Page 3 of 3

# Image Reject Mixer

JCIR-152H+

## Typical Performance Curves

Conversion Loss @ IF=80 MHz

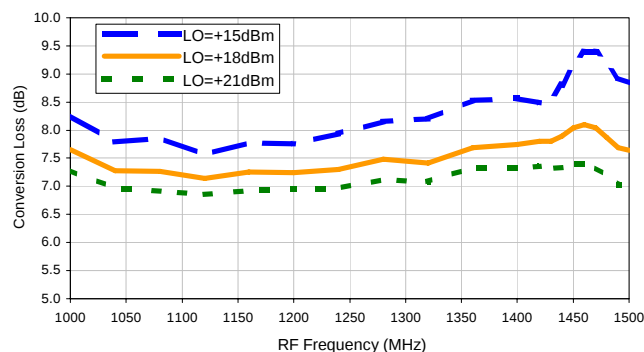
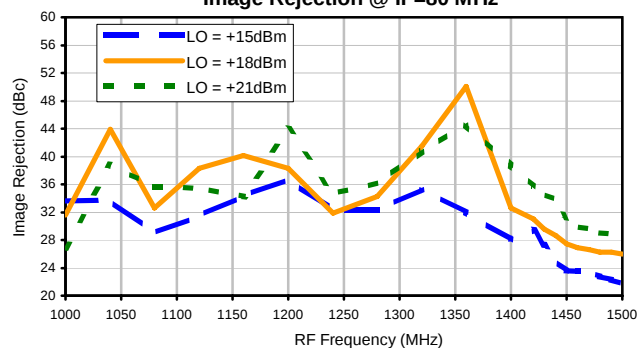
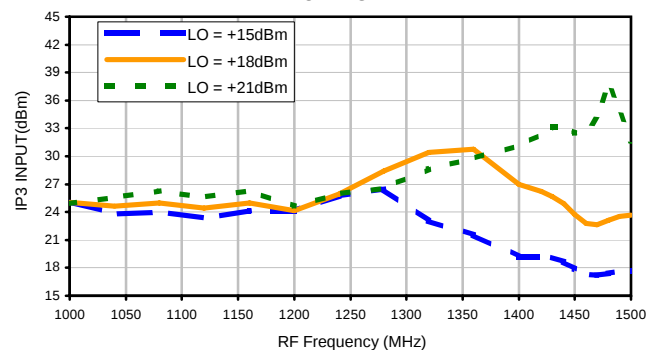


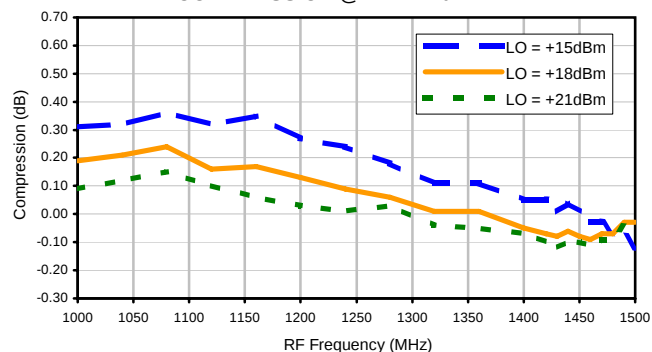
Image Rejection @ IF=80 MHz



IP3 INPUT



COMPRESSION @ RF=+11dBm



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IF/RF MICROWAVE COMPONENTS

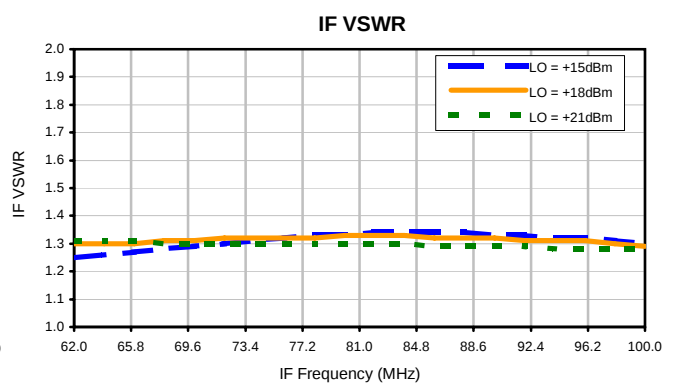
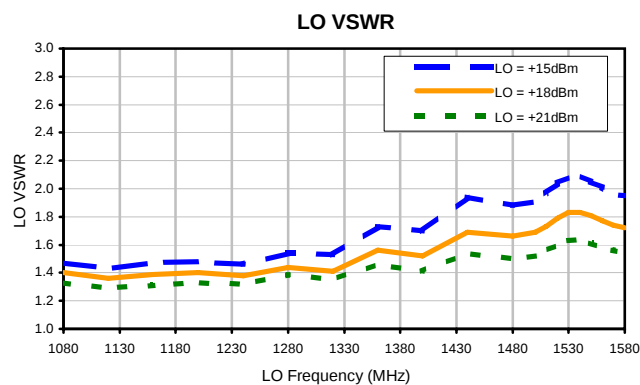
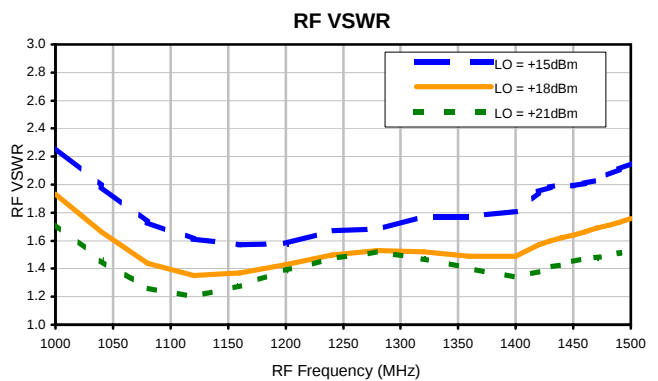
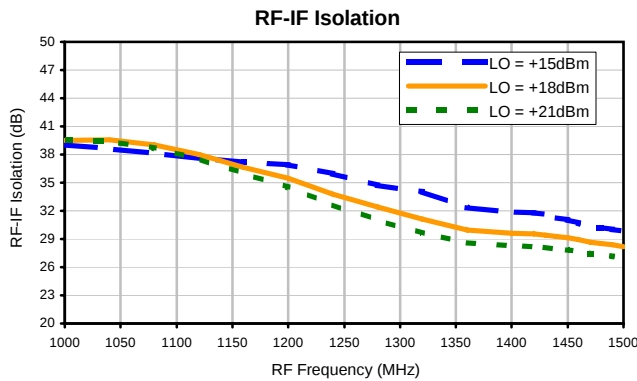
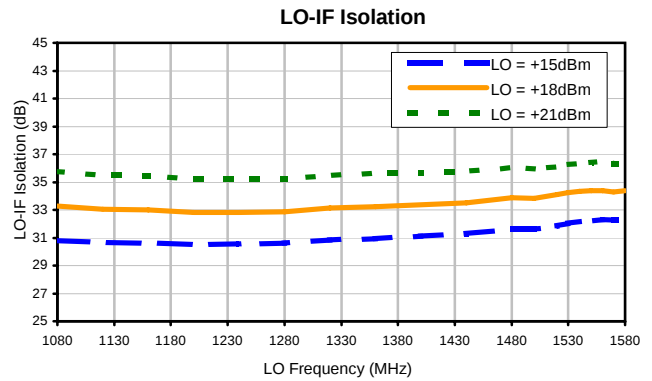
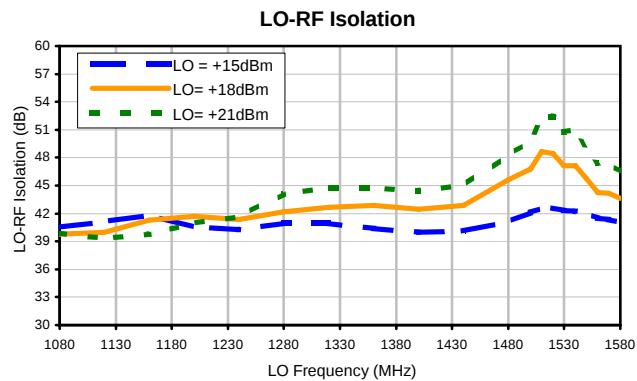


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JCIR-152H+  
1/8/2009  
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# Image Reject Mixer

JCIR-152H+

## Typical Performance Curves



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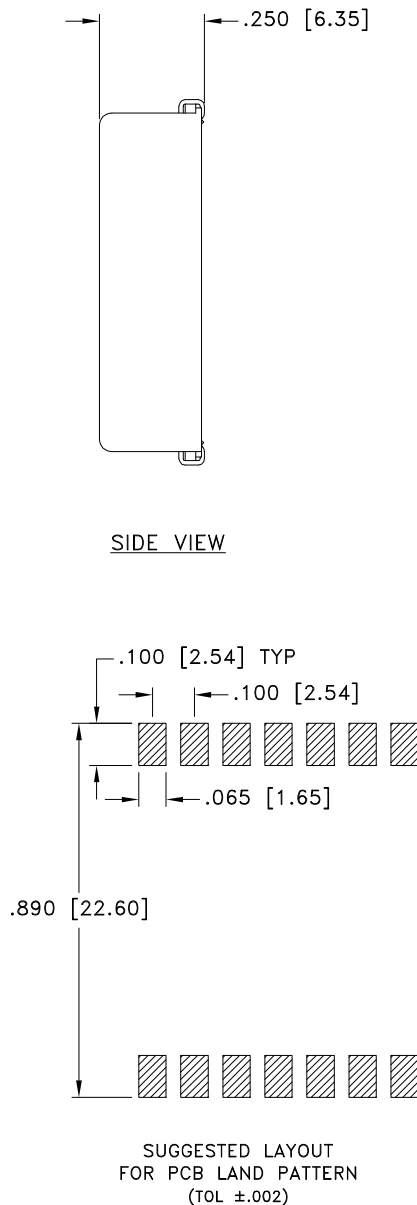
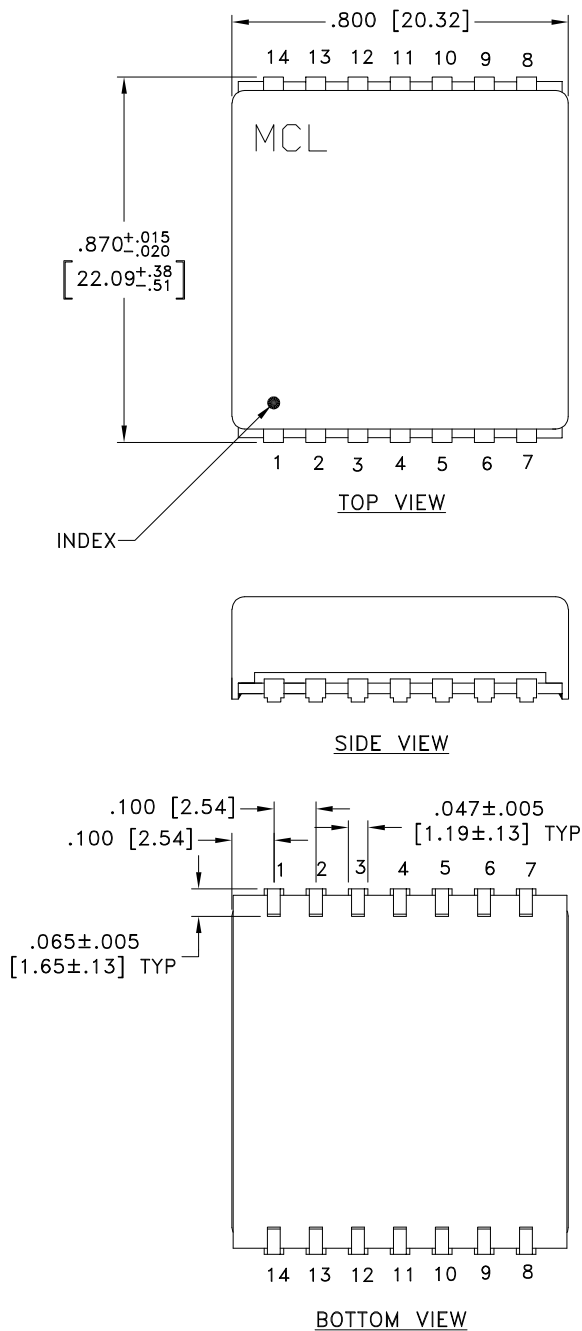
IF/RF MICROWAVE COMPONENTS



REV. X1  
JCIR-152H+  
1/8/2009  
Page 2 of 2

## Outline Dimensions

BG291



DENOTES METALLIZATION

Weight: 4 gram

Dimensions are in inches[mm]. Tolerances: 2PL $\pm$ 0.03[0.76]; 3 PL $\pm$ 0.015 [0.381] inches[mm], unless otherwise specified

### Notes:

1. Case material: Copper-Nickel alloy.
2. Base material: Printed wiring laminate.
3. Termination finish:

For RoHS Case Styles: Tin plate over Nickel plate. All models, (+) suffix.

For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.

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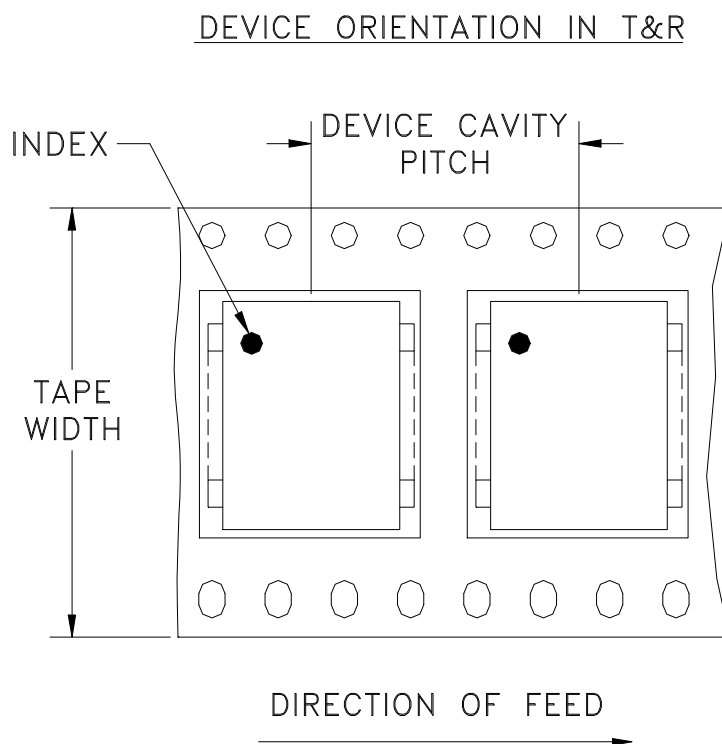
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RF/IF MICROWAVE COMPONENTS

# Tape & Reel Packaging TR-F21



| Tape Width,<br>mm | Device Cavity<br>Pitch, mm | Reel Size,<br>inches | Devices per Reel |
|-------------------|----------------------------|----------------------|------------------|
| 32                | 32                         | 13                   | 200              |

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)



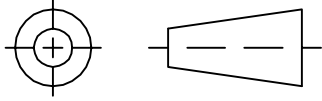
INTERNET <http://www.minicircuits.com>

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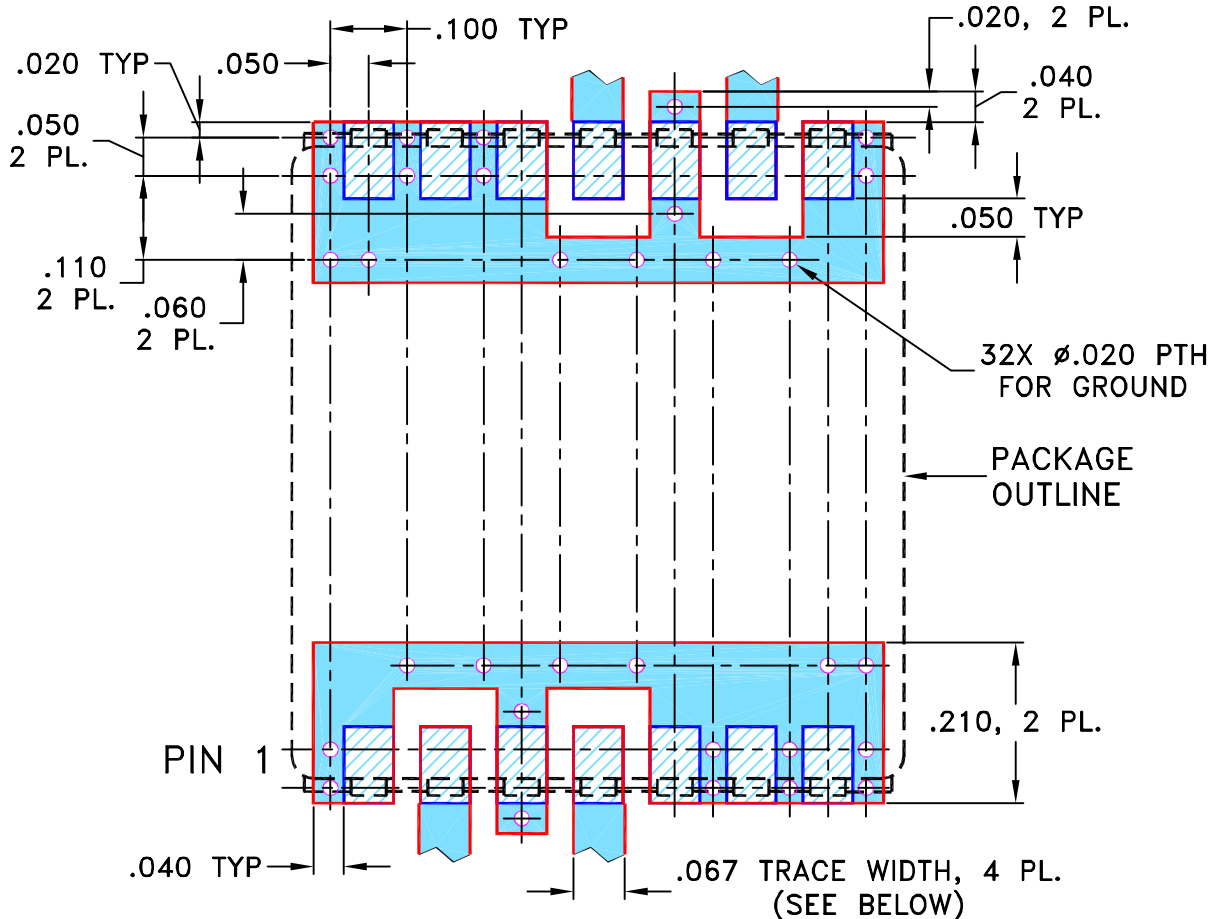
## THIRD ANGLE PROJECTION



## REVISIONS

| REV | ECN No. | DESCRIPTION           | DATE     | DR  | AUTH |
|-----|---------|-----------------------|----------|-----|------|
| OR  | M100733 | NEW RELEASE           | 09/19/05 | MMG | WL   |
| A   | M102713 | ADDED "...WITH SMOBC" | 01/12/06 | GT  | IL   |
|     |         |                       |          |     |      |
|     |         |                       |          |     |      |

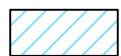
**SUGGESTED MOUNTING CONFIGURATION  
FOR BG291 CASE STYLE, "kj" & "hs" PIN CONNECTION**

**NOTE:**

- TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030"  $\pm$  .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

UNLESS OTHERWISE SPECIFIED

INITIALS

DATE

DIMENSIONS ARE IN INCHES

TOLERANCES ON:

2 PL DECIMALS  $\pm$ 3 PL DECIMALS  $\pm$  .005ANGLES  $\pm$ FRACTIONS  $\pm$ 

DRAWN

MMG

09/09/05

CHECKED

AV

09/16/05

APPROVED

WL

09/19/05



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13 Neptune Avenue  
Brooklyn NY 11235

PL, kj/hs, BG291, JCIR-4MH/JCIQ, TB-21

SIZE

A

CODE IDENT

15542

DRAWING NO:

98-PL-209

REV:

A

FILE:

98PL209

SCALE:

4:1

SHEET:

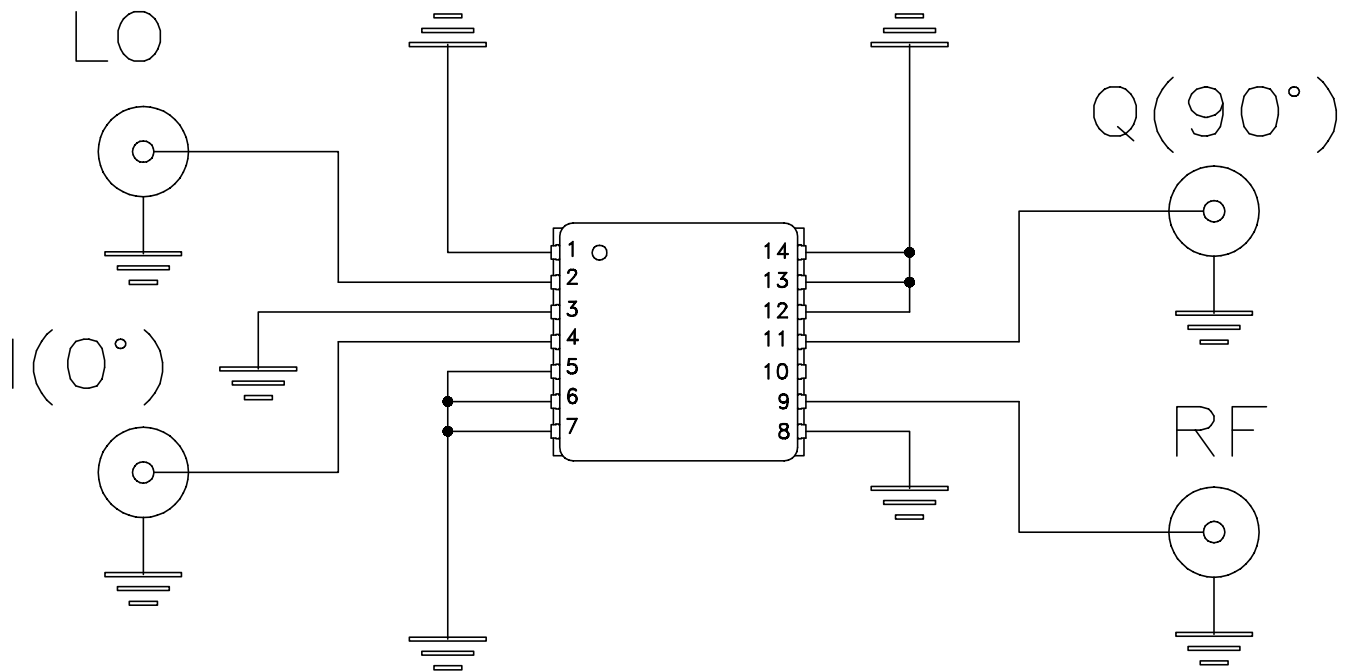
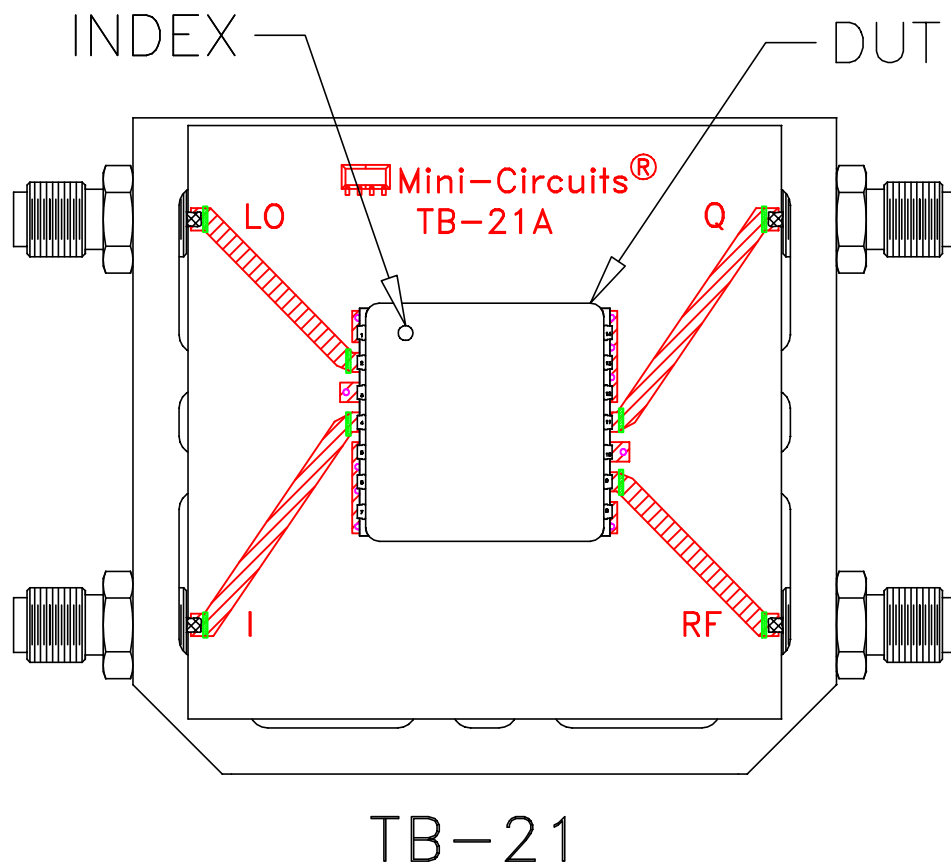
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ASHEETA1.DWG REV:A DATE:01/12/95

# Evaluation Board and Circuit



Schematic Diagram

## Notes:

1. 50 Ohm SMA Female connectors.
2. PCB Material: R04350 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                                                                              |