*Engineering Development Model*

# Frequency Mixer SYM-ED7819/4

## Level 21 (LO Power + 21 dBm)

### Important Note

This model has been designed, built and tested in our engineering department. Performance data represents model capability.
At present it is a non-catalog model. On request, we can supply a final specification sheet, part number and price/delivery information.

Please click "Back", and then click "Contact Us" for Applications support.

**CASE STYLE : TTT167**

| ELECTRICAL SPECIFICATIONS 50Ω @ +25°C | | | | | |
|---|---|---|---|---|---|
| **Parameter** | | **Min.** | **Typ.** | **Max.** | **Units** |
| **Frequency** | **LO** ($f_L$ to $f_U$) | 80 | | 2400 | MHz |
| | **RF** ($f_L$ to $f_U$) | 80 | | 2400 | MHz |
| | **IF** | 10 | | 795 | MHz |
| **Conversion Loss** | **mid band** | | 6.8 | | dB |
| | **Total Range** | | 7.6 | | dB |
| **LO-RF Isolation** | **Low Range** | | 54 | | dB |
| | **Mid Range** | | 49 | | dB |
| | **Upper Range** | | 37 | | dB |
| **LO-IF Isolation** | **Low Range** | | 37 | | dB |
| | **Mid Range** | | 36 | | dB |
| | **Upper Range** | | 34 | | dB |
| **Input IP3** | | | +31 | | dBm |
| **1 dB Compression** | | | +17 | | dBm |

**Note:** Low Range = [$f_L$ to $10f_L$] Mid Range = [$10f_L$ to $f_U/2$] Upper Range = [$f_U/2$ to $f_U$]
mid band = [$2f_L$ to $f_U/2$]

| MAXIMUM RATINGS | |
|---|---|
| **Operating Temperature** | -40°C TO +85°C |
| **Storage Temperature** | -55°C TO +100°C |

| PIN CONNECTIONS | |
|---|---|
| **LO** | 2 |
| **RF** | 1 |
| **IF** | 3 |
| **GROUND** | 4,5,6 |

# Frequency Mixer SYM-ED7819/4

## *Typical Performance Data*

| RF (IN) (MHz) | LO (MHz) | CONVERSION LOSS IF FIXED @IF(OUT)=60MHz (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +19 | +21 | +23 |
| 80.1 | 20.1 | 6.40 | 6.26 | 6.19 |
| 160.1 | 100.1 | 6.69 | 6.52 | 6.42 |
| 240.1 | 180.1 | 6.93 | 6.71 | 6.58 |
| 320.1 | 260.1 | 7.12 | 6.86 | 6.67 |
| 400.1 | 340.1 | 7.24 | 6.92 | 6.67 |
| 480.1 | 420.1 | 7.10 | 6.77 | 6.56 |
| 560.1 | 500.1 | 7.11 | 6.74 | 6.55 |
| 640.1 | 580.1 | 6.98 | 6.69 | 6.54 |
| 720.1 | 660.1 | 7.01 | 6.74 | 6.58 |
| 800.1 | 740.1 | 7.07 | 6.81 | 6.69 |
| 880.1 | 820.1 | 7.18 | 6.95 | 6.82 |
| 960.1 | 900.1 | 7.16 | 6.96 | 6.86 |
| 1040.1 | 980.1 | 7.15 | 6.95 | 6.86 |
| 1120.1 | 1060.1 | 7.22 | 7.03 | 6.94 |
| 1200.1 | 1140.1 | 7.43 | 7.22 | 7.11 |
| 1280.1 | 1220.1 | 7.58 | 7.36 | 7.26 |
| 1360.1 | 1300.1 | 7.78 | 7.54 | 7.43 |
| 1440.1 | 1380.1 | 7.97 | 7.74 | 7.61 |
| 1520.1 | 1460.1 | 8.09 | 7.84 | 7.72 |
| 1600.1 | 1540.1 | 8.36 | 8.10 | 7.96 |
| 1680.1 | 1620.1 | 8.58 | 8.31 | 8.14 |
| 1760.1 | 1700.1 | 8.87 | 8.55 | 8.35 |
| 1840.1 | 1780.1 | 9.10 | 8.74 | 8.52 |
| 1920.1 | 1860.1 | 9.12 | 8.72 | 8.49 |
| 2000.1 | 1940.1 | 9.19 | 8.70 | 8.47 |
| 2080.1 | 2020.1 | 9.27 | 8.77 | 8.49 |
| 2160.1 | 2100.1 | 9.46 | 9.05 | 8.77 |
| 2240.1 | 2180.1 | 9.62 | 9.13 | 8.84 |
| 2320.1 | 2260.1 | 9.64 | 9.14 | 8.87 |
| 2400.1 | 2340.1 | 9.46 | 9.08 | 8.82 |
| 2480.1 | 2420.1 | 9.31 | 8.96 | 8.74 |
| 2560.1 | 2500.1 | 9.20 | 8.87 | 8.66 |
| 2640.1 | 2580.1 | 9.31 | 8.97 | 8.76 |
| 2720.1 | 2660.1 | 9.53 | 9.13 | 8.93 |
| 2800.1 | 2740.1 | 9.67 | 9.21 | 9.01 |
| 2880.1 | 2820.1 | 9.76 | 9.34 | 9.16 |
| 2960.1 | 2900.1 | 9.88 | 9.56 | 9.40 |
| 3040.1 | 2980.1 | 10.28 | 9.99 | 9.83 |
| 3120.1 | 3060.1 | 10.74 | 10.41 | 10.29 |
| 3200.1 | 3140.1 | 11.00 | 10.70 | 10.59 |

| RF (IN) (MHz) | LO (MHz) | IP3 INPUT (dBm) @LO (dBm) | | |
|---|---|---|---|---|
| | | +19 | +21 | +23 |
| 80.1 | 20.1 | 31.17 | 35.69 | 33.26 |
| 160.1 | 100.1 | 26.89 | 27.05 | 27.50 |
| 240.1 | 180.1 | 24.55 | 25.27 | 26.27 |
| 320.1 | 260.1 | 24.66 | 25.93 | 27.81 |
| 400.1 | 340.1 | 25.19 | 27.32 | 29.40 |
| 480.1 | 420.1 | 27.91 | 30.16 | 35.11 |
| 560.1 | 500.1 | 28.54 | 31.62 | 37.86 |
| 640.1 | 580.1 | 30.67 | 35.99 | 37.71 |
| 720.1 | 660.1 | 37.77 | 36.14 | 35.14 |
| 800.1 | 740.1 | 34.43 | 32.34 | 32.32 |
| 880.1 | 820.1 | 41.44 | 37.38 | 39.70 |
| 960.1 | 900.1 | 39.94 | 35.18 | 32.97 |
| 1040.1 | 980.1 | 31.47 | 32.31 | 33.08 |
| 1120.1 | 1060.1 | 31.05 | 31.28 | 30.45 |
| 1200.1 | 1140.1 | 28.91 | 31.96 | 32.30 |
| 1280.1 | 1220.1 | 29.38 | 33.70 | 33.56 |
| 1360.1 | 1300.1 | 30.00 | 33.43 | 33.72 |
| 1440.1 | 1380.1 | 34.42 | 32.92 | 32.02 |
| 1520.1 | 1460.1 | 34.60 | 35.40 | 33.40 |
| 1600.1 | 1540.1 | 29.29 | 31.94 | 36.11 |
| 1680.1 | 1620.1 | 32.27 | 36.42 | 37.00 |
| 1760.1 | 1700.1 | 30.02 | 32.81 | 38.64 |
| 1840.1 | 1780.1 | 38.06 | 33.79 | 32.57 |
| 1920.1 | 1860.1 | 32.61 | 32.05 | 31.53 |
| 2000.1 | 1940.1 | 34.29 | 29.85 | 29.54 |
| 2080.1 | 2020.1 | 33.60 | 28.44 | 27.82 |
| 2160.1 | 2100.1 | 35.05 | 31.37 | 30.21 |
| 2240.1 | 2180.1 | 31.04 | 30.00 | 30.09 |
| 2320.1 | 2260.1 | 29.56 | 27.88 | 28.17 |
| 2400.1 | 2340.1 | 29.97 | 28.04 | 27.13 |
| 2480.1 | 2420.1 | 28.42 | 26.96 | 26.23 |
| 2560.1 | 2500.1 | 25.20 | 24.91 | 24.86 |
| 2640.1 | 2580.1 | 25.47 | 25.39 | 25.75 |
| 2720.1 | 2660.1 | 25.81 | 26.01 | 25.81 |
| 2800.1 | 2740.1 | 24.98 | 25.79 | 25.53 |
| 2880.1 | 2820.1 | 24.48 | 26.36 | 26.87 |
| 2960.1 | 2900.1 | 23.88 | 26.71 | 28.77 |
| 3040.1 | 2980.1 | 24.23 | 27.12 | 29.15 |
| 3120.1 | 3060.1 | 24.44 | 27.50 | 29.51 |
| 3200.1 | 3140.1 | 25.04 | 27.36 | 28.33 |

| RF (IN) (MHz) | LO (MHz) | COMPRESSION @RF IN=+17dBm (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +19 | +21 | +23 |
| 80.1 | 20.1 | 1.07 | 0.78 | 0.58 |
| 160.6 | 100.6 | 0.95 | 0.69 | 0.47 |
| 241.1 | 181.1 | 0.81 | 0.53 | 0.39 |
| 321.6 | 261.6 | 0.71 | 0.50 | 0.39 |
| 402.2 | 342.2 | 0.72 | 0.62 | 0.50 |
| 482.7 | 422.7 | 0.85 | 0.74 | 0.57 |
| 563.2 | 503.2 | 0.98 | 0.83 | 0.64 |
| 643.7 | 583.7 | 1.07 | 0.85 | 0.64 |
| 724.2 | 664.2 | 1.08 | 0.83 | 0.60 |
| 804.7 | 744.7 | 1.00 | 0.75 | 0.54 |
| 885.3 | 825.3 | 0.97 | 0.72 | 0.52 |
| 965.8 | 905.8 | 0.88 | 0.63 | 0.47 |
| 1046.3 | 986.3 | 0.79 | 0.64 | 0.48 |
| 1126.8 | 1066.8 | 0.68 | 0.50 | 0.39 |
| 1207.3 | 1147.3 | 0.59 | 0.39 | 0.28 |
| 1287.8 | 1227.8 | 0.56 | 0.40 | 0.28 |
| 1368.4 | 1308.4 | 0.57 | 0.36 | 0.25 |
| 1448.9 | 1388.9 | 0.54 | 0.33 | 0.23 |
| 1529.4 | 1469.4 | 0.54 | 0.39 | 0.27 |
| 1609.9 | 1549.9 | 0.56 | 0.38 | 0.28 |
| 1690.4 | 1630.4 | 0.54 | 0.34 | 0.25 |
| 1770.9 | 1710.9 | 0.60 | 0.40 | 0.29 |
| 1851.5 | 1791.5 | 0.63 | 0.41 | 0.30 |
| 1932.0 | 1872.0 | 0.67 | 0.48 | 0.36 |
| 2012.5 | 1952.5 | 0.63 | 0.49 | 0.40 |
| 2093.0 | 2033.0 | 0.65 | 0.58 | 0.50 |
| 2173.5 | 2113.5 | 0.70 | 0.52 | 0.46 |
| 2254.0 | 2194.0 | 0.70 | 0.53 | 0.48 |
| 2334.6 | 2274.6 | 0.76 | 0.57 | 0.51 |
| 2415.1 | 2355.1 | 0.79 | 0.59 | 0.54 |
| 2495.6 | 2435.6 | 0.91 | 0.70 | 0.59 |
| 2576.1 | 2516.1 | 1.17 | 0.81 | 0.64 |
| 2656.6 | 2596.6 | 1.35 | 0.92 | 0.70 |
| 2737.1 | 2677.1 | 1.54 | 1.03 | 0.80 |
| 2817.6 | 2757.6 | 1.67 | 1.13 | 0.85 |
| 2898.2 | 2838.2 | 1.66 | 1.09 | 0.75 |
| 2978.7 | 2918.7 | 1.61 | 0.96 | 0.59 |
| 3059.2 | 2999.2 | 1.60 | 0.95 | 0.56 |
| 3139.7 | 3079.7 | 1.73 | 0.92 | 0.53 |
| 3200.1 | 3140.1 | 1.69 | 0.90 | 0.49 |



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## *Typical Performance Data*

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=837.5MHz (dB) @LO (dBm) +21 |
|---|---|---|
| 827.4 | 10.1 | 7.72 |
| 790.2 | 47.3 | 7.79 |
| 753.1 | 84.4 | 7.84 |
| 715.9 | 121.6 | 7.72 |
| 678.8 | 158.7 | 7.76 |
| 641.6 | 195.9 | 7.77 |
| 604.5 | 233.0 | 7.74 |
| 567.3 | 270.2 | 7.76 |
| 517.8 | 319.7 | 7.66 |
| 480.6 | 356.9 | 7.46 |
| 431.1 | 406.4 | 7.29 |
| 393.9 | 443.6 | 7.19 |
| 344.4 | 493.1 | 7.02 |
| 307.2 | 530.3 | 7.00 |
| 257.7 | 579.8 | 6.97 |
| 220.5 | 617.0 | 6.95 |
| 171.0 | 666.5 | 6.71 |
| 133.8 | 703.7 | 6.68 |
| 84.3 | 753.2 | 6.63 |
| 47.2 | 790.3 | 6.71 |
| 10.0 | 847.5 | 7.52 |
| 94.2 | 931.7 | 6.71 |
| 206.5 | 1044.0 | 6.59 |
| 290.7 | 1128.2 | 6.82 |
| 403.0 | 1240.5 | 6.90 |
| 487.2 | 1324.7 | 6.94 |
| 599.5 | 1437.0 | 7.08 |
| 683.7 | 1521.2 | 7.24 |
| 796.0 | 1633.5 | 7.48 |
| 880.2 | 1717.7 | 7.74 |
| 992.4 | 1829.9 | 8.07 |
| 1076.6 | 1914.1 | 8.28 |
| 1188.9 | 2026.4 | 8.69 |
| 1273.1 | 2110.6 | 9.02 |
| 1385.4 | 2222.9 | 9.47 |
| 1469.6 | 2307.1 | 9.71 |
| 1581.9 | 2419.4 | 9.90 |
| 1666.1 | 2503.6 | 10.08 |
| 1778.4 | 2615.9 | 10.43 |
| 1862.6 | 2700.1 | 10.62 |

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=810MHz (dB) @LO (dBm) +21 |
|---|---|---|
| 10.1 | 820.1 | 7.37 |
| 50.5 | 860.5 | 6.70 |
| 91.0 | 901.0 | 6.68 |
| 131.4 | 941.4 | 6.59 |
| 171.8 | 981.8 | 6.61 |
| 212.3 | 1022.3 | 6.65 |
| 252.7 | 1062.7 | 6.78 |
| 293.1 | 1103.1 | 6.74 |
| 333.5 | 1143.5 | 6.81 |
| 374.0 | 1184.0 | 6.86 |
| 414.4 | 1224.4 | 6.93 |
| 475.0 | 1285.0 | 6.91 |
| 515.5 | 1325.5 | 7.05 |
| 576.1 | 1386.1 | 7.13 |
| 616.6 | 1426.6 | 7.15 |
| 677.2 | 1487.2 | 7.13 |
| 717.6 | 1527.6 | 7.21 |
| 778.3 | 1588.3 | 7.43 |
| 818.7 | 1628.7 | 7.44 |
| 879.3 | 1689.3 | 7.70 |
| 919.8 | 1729.8 | 7.74 |
| 980.4 | 1790.4 | 7.97 |
| 1020.9 | 1830.9 | 8.05 |
| 1081.5 | 1891.5 | 8.24 |
| 1121.9 | 1931.9 | 8.25 |
| 1182.6 | 1992.6 | 8.59 |
| 1223.0 | 2033.0 | 8.64 |
| 1283.6 | 2093.6 | 8.98 |
| 1324.1 | 2134.1 | 8.99 |
| 1384.7 | 2194.7 | 9.42 |
| 1425.2 | 2235.2 | 9.41 |
| 1485.8 | 2295.8 | 9.66 |
| 1526.2 | 2336.2 | 9.70 |
| 1586.9 | 2396.9 | 9.87 |
| 1627.3 | 2437.3 | 9.89 |
| 1687.9 | 2497.9 | 10.10 |
| 1728.4 | 2538.4 | 10.10 |
| 1789.0 | 2599.0 | 10.34 |
| 1829.5 | 2639.5 | 10.38 |
| 1890.1 | 2700.1 | 10.58 |

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=865.1MHz (dB) @LO (dBm) +21 |
|---|---|---|
| 855.0 | 10.1 | 7.80 |
| 834.4 | 30.7 | 7.84 |
| 813.8 | 51.3 | 7.88 |
| 793.2 | 71.9 | 7.94 |
| 772.6 | 92.5 | 7.95 |
| 752.0 | 113.1 | 7.93 |
| 731.3 | 133.8 | 7.86 |
| 710.7 | 154.4 | 7.79 |
| 690.1 | 175.0 | 7.88 |
| 669.5 | 195.6 | 7.87 |
| 648.9 | 216.2 | 7.66 |
| 628.3 | 236.8 | 7.93 |
| 607.7 | 257.4 | 7.83 |
| 587.1 | 278.0 | 7.85 |
| 566.5 | 298.6 | 7.79 |
| 545.9 | 319.2 | 7.65 |
| 525.2 | 339.9 | 7.70 |
| 504.6 | 360.5 | 7.59 |
| 484.0 | 381.1 | 7.49 |
| 463.4 | 401.7 | 7.42 |
| 442.8 | 422.3 | 7.39 |
| 422.2 | 442.9 | 7.35 |
| 401.6 | 463.5 | 7.23 |
| 381.0 | 484.1 | 7.23 |
| 360.4 | 504.7 | 7.11 |
| 339.8 | 525.3 | 7.10 |
| 319.1 | 546.0 | 7.11 |
| 298.5 | 566.6 | 6.99 |
| 277.9 | 587.2 | 7.05 |
| 257.3 | 607.8 | 6.99 |
| 236.7 | 628.4 | 7.01 |
| 216.1 | 649.0 | 6.81 |
| 195.5 | 669.6 | 6.74 |
| 174.9 | 690.2 | 6.65 |
| 154.3 | 710.8 | 6.73 |
| 133.7 | 731.4 | 6.63 |
| 92.4 | 772.7 | 6.72 |
| 71.8 | 793.3 | 6.73 |
| 30.6 | 834.5 | 6.82 |
| 10.0 | 855.1 | 7.42 |




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## *Typical Performance Data*

| LO (MHz) | LO-RF ISOLATION (dB) @LO (dBm) | | | LO-IF ISOLATION (dB) @LO (dBm) | | |
|---|---|---|---|---|---|---|
| | +19 | +21 | +23 | +19 | +21 | +23 |
| 20.1 | 38.26 | 40.86 | 43.33 | 32.47 | 33.89 | 35.23 |
| 100.1 | 46.88 | 49.67 | 52.40 | 37.81 | 39.71 | 41.31 |
| 180.1 | 50.26 | 52.71 | 54.79 | 38.33 | 39.71 | 40.37 |
| 260.1 | 52.10 | 54.08 | 55.68 | 38.87 | 39.12 | 38.94 |
| 340.1 | 53.65 | 55.17 | 55.96 | 37.93 | 37.56 | 36.98 |
| 420.1 | 55.21 | 55.56 | 55.26 | 37.25 | 36.51 | 35.79 |
| 500.1 | 57.16 | 56.30 | 56.02 | 37.43 | 36.20 | 35.56 |
| 580.1 | 58.93 | 60.65 | 62.72 | 36.88 | 35.96 | 35.39 |
| 660.1 | 60.10 | 60.93 | 61.43 | 37.36 | 36.50 | 35.97 |
| 740.1 | 59.07 | 57.75 | 56.88 | 37.67 | 36.66 | 36.33 |
| 820.1 | 55.69 | 53.92 | 52.02 | 37.87 | 37.38 | 37.00 |
| 900.1 | 50.76 | 49.91 | 48.97 | 37.65 | 37.13 | 37.06 |
| 980.1 | 47.01 | 46.13 | 45.61 | 36.73 | 36.80 | 37.16 |
| 1060.1 | 46.80 | 45.93 | 44.38 | 35.70 | 35.99 | 36.25 |
| 1140.1 | 46.58 | 45.08 | 43.92 | 35.66 | 35.68 | 36.07 |
| 1220.1 | 43.77 | 42.05 | 40.98 | 36.57 | 36.27 | 36.13 |
| 1300.1 | 40.71 | 39.63 | 39.01 | 36.65 | 36.03 | 35.76 |
| 1380.1 | 40.00 | 38.85 | 38.38 | 36.20 | 35.34 | 35.01 |
| 1460.1 | 39.71 | 38.61 | 38.01 | 35.24 | 34.43 | 34.08 |
| 1540.1 | 39.17 | 38.40 | 37.88 | 35.73 | 35.08 | 34.73 |
| 1620.1 | 38.21 | 37.33 | 36.71 | 35.61 | 35.16 | 34.90 |
| 1700.1 | 36.66 | 36.23 | 35.87 | 34.86 | 34.68 | 34.50 |
| 1780.1 | 36.41 | 36.24 | 35.58 | 35.21 | 35.54 | 35.25 |
| 1860.1 | 36.33 | 36.07 | 35.40 | 34.76 | 35.15 | 35.09 |
| 1940.1 | 36.37 | 35.85 | 35.11 | 35.71 | 36.09 | 35.90 |
| 2020.1 | 35.18 | 34.36 | 33.96 | 35.43 | 35.32 | 35.01 |
| 2100.1 | 35.61 | 34.63 | 33.72 | 34.44 | 34.20 | 33.63 |
| 2180.1 | 37.06 | 35.45 | 34.23 | 33.94 | 33.01 | 32.07 |
| 2260.1 | 38.18 | 36.07 | 34.96 | 33.01 | 31.62 | 30.80 |
| 2340.1 | 39.19 | 37.08 | 35.89 | 32.19 | 30.88 | 30.08 |
| 2420.1 | 39.63 | 38.80 | 37.75 | 30.80 | 30.05 | 29.25 |
| 2500.1 | 37.37 | 37.17 | 36.88 | 30.12 | 29.18 | 28.31 |
| 2580.1 | 35.57 | 35.83 | 36.05 | 30.30 | 29.18 | 28.19 |
| 2660.1 | 33.74 | 33.99 | 34.59 | 30.37 | 29.16 | 28.13 |
| 2740.1 | 32.04 | 32.35 | 33.22 | 30.43 | 28.94 | 28.11 |
| 2820.1 | 30.25 | 30.67 | 31.41 | 30.05 | 28.53 | 27.74 |
| 2900.1 | 28.74 | 29.23 | 29.89 | 30.08 | 28.50 | 27.63 |
| 2980.1 | 27.61 | 28.28 | 28.98 | 30.12 | 28.89 | 27.82 |
| 3060.1 | 27.27 | 27.68 | 28.38 | 30.78 | 29.27 | 28.23 |
| 3140.1 | 27.96 | 28.35 | 28.96 | 30.43 | 29.30 | 28.47 |

| RF (IN) (MHz) | LO (MHz) | RF-IF ISOLATION (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +19 | +21 | +23 |
| 80.1 | 20.1 | 24.02 | 23.96 | 23.99 |
| 160.1 | 100.1 | 25.49 | 25.46 | 25.50 |
| 240.1 | 180.1 | 25.98 | 25.89 | 25.75 |
| 320.1 | 260.1 | 26.55 | 26.53 | 26.36 |
| 400.1 | 340.1 | 27.60 | 27.54 | 27.39 |
| 480.1 | 420.1 | 28.70 | 28.96 | 29.53 |
| 560.1 | 500.1 | 29.87 | 30.31 | 30.81 |
| 640.1 | 580.1 | 31.81 | 32.25 | 32.43 |
| 720.1 | 660.1 | 33.88 | 34.12 | 33.90 |
| 800.1 | 740.1 | 37.17 | 37.11 | 36.34 |
| 880.1 | 820.1 | 43.00 | 43.17 | 41.64 |
| 960.1 | 900.1 | 50.41 | 53.55 | 53.31 |
| 1040.1 | 980.1 | 45.67 | 46.38 | 49.32 |
| 1120.1 | 1060.1 | 43.04 | 43.40 | 45.67 |
| 1200.1 | 1140.1 | 39.91 | 39.85 | 40.72 |
| 1280.1 | 1220.1 | 37.53 | 37.61 | 38.70 |
| 1360.1 | 1300.1 | 35.24 | 35.32 | 35.96 |
| 1440.1 | 1380.1 | 34.11 | 34.35 | 35.09 |
| 1520.1 | 1460.1 | 34.26 | 34.55 | 35.24 |
| 1600.1 | 1540.1 | 33.47 | 33.95 | 34.61 |
| 1680.1 | 1620.1 | 32.39 | 33.01 | 33.87 |
| 1760.1 | 1700.1 | 31.78 | 32.71 | 33.79 |
| 1840.1 | 1780.1 | 31.71 | 32.43 | 33.16 |
| 1920.1 | 1860.1 | 32.36 | 32.79 | 33.14 |
| 2000.1 | 1940.1 | 31.88 | 31.74 | 31.67 |
| 2080.1 | 2020.1 | 31.60 | 31.62 | 31.49 |
| 2160.1 | 2100.1 | 31.22 | 31.10 | 30.96 |
| 2240.1 | 2180.1 | 30.99 | 31.25 | 31.18 |
| 2320.1 | 2260.1 | 29.92 | 30.62 | 30.90 |
| 2400.1 | 2340.1 | 28.93 | 29.38 | 29.75 |
| 2480.1 | 2420.1 | 28.59 | 28.80 | 28.95 |
| 2560.1 | 2500.1 | 28.23 | 28.12 | 28.09 |
| 2640.1 | 2580.1 | 27.84 | 27.81 | 27.70 |
| 2720.1 | 2660.1 | 27.69 | 27.74 | 27.80 |
| 2800.1 | 2740.1 | 28.53 | 28.48 | 28.60 |
| 2880.1 | 2820.1 | 29.62 | 29.23 | 29.04 |
| 2960.1 | 2900.1 | 30.67 | 30.12 | 29.77 |
| 3040.1 | 2980.1 | 31.76 | 31.10 | 30.45 |
| 3120.1 | 3060.1 | 31.95 | 30.97 | 30.18 |
| 3200.1 | 3140.1 | 32.35 | 31.14 | 30.35 |




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## *Typical Performance Data*

| RF (IN) (MHz) | LO (MHz) | RF VSWR (:1) @LO (dBm) | | |
|---|---|---|---|---|
| | | +19 | +21 | +23 |
| 80.1 | 20.1 | 1.16 | 1.11 | 1.09 |
| 160.1 | 100.1 | 1.26 | 1.19 | 1.14 |
| 240.1 | 180.1 | 1.34 | 1.26 | 1.21 |
| 320.1 | 260.1 | 1.40 | 1.32 | 1.26 |
| 400.1 | 340.1 | 1.47 | 1.38 | 1.31 |
| 480.1 | 420.1 | 1.50 | 1.41 | 1.34 |
| 560.1 | 500.1 | 1.56 | 1.46 | 1.39 |
| 640.1 | 580.1 | 1.59 | 1.50 | 1.44 |
| 720.1 | 660.1 | 1.63 | 1.55 | 1.48 |
| 800.1 | 740.1 | 1.67 | 1.59 | 1.52 |
| 880.1 | 820.1 | 1.69 | 1.61 | 1.55 |
| 960.1 | 900.1 | 1.72 | 1.64 | 1.58 |
| 1040.1 | 980.1 | 1.77 | 1.69 | 1.63 |
| 1120.1 | 1060.1 | 1.82 | 1.73 | 1.67 |
| 1200.1 | 1140.1 | 1.87 | 1.78 | 1.71 |
| 1280.1 | 1220.1 | 1.87 | 1.77 | 1.70 |
| 1360.1 | 1300.1 | 1.92 | 1.80 | 1.73 |
| 1440.1 | 1380.1 | 2.00 | 1.90 | 1.82 |
| 1520.1 | 1460.1 | 2.10 | 1.99 | 1.92 |
| 1600.1 | 1540.1 | 2.20 | 2.09 | 2.01 |
| 1680.1 | 1620.1 | 2.30 | 2.19 | 2.11 |
| 1760.1 | 1700.1 | 2.38 | 2.28 | 2.20 |
| 1840.1 | 1780.1 | 2.40 | 2.31 | 2.24 |
| 1920.1 | 1860.1 | 2.38 | 2.29 | 2.22 |
| 2000.1 | 1940.1 | 2.41 | 2.31 | 2.24 |
| 2080.1 | 2020.1 | 2.44 | 2.35 | 2.27 |
| 2160.1 | 2100.1 | 2.38 | 2.30 | 2.23 |
| 2240.1 | 2180.1 | 2.28 | 2.18 | 2.13 |
| 2320.1 | 2260.1 | 2.18 | 2.08 | 2.02 |
| 2400.1 | 2340.1 | 2.10 | 2.01 | 1.94 |
| 2480.1 | 2420.1 | 2.04 | 1.95 | 1.89 |
| 2560.1 | 2500.1 | 2.01 | 1.92 | 1.84 |
| 2640.1 | 2580.1 | 1.98 | 1.88 | 1.81 |
| 2720.1 | 2660.1 | 1.96 | 1.85 | 1.78 |
| 2800.1 | 2740.1 | 1.88 | 1.78 | 1.73 |
| 2880.1 | 2820.1 | 1.80 | 1.75 | 1.71 |
| 2960.1 | 2900.1 | 1.76 | 1.74 | 1.72 |
| 3040.1 | 2980.1 | 1.79 | 1.78 | 1.78 |
| 3120.1 | 3060.1 | 1.80 | 1.79 | 1.81 |
| 3200.1 | 3140.1 | 1.76 | 1.77 | 1.80 |

| LO (MHz) | LO VSWR (:1) @LO (dBm) | | |
|---|---|---|---|
| | +19 | +21 | +23 |
| 20.1 | 1.42 | 1.74 | 2.11 |
| 100.1 | 1.30 | 1.65 | 2.03 |
| 180.1 | 1.28 | 1.62 | 1.98 |
| 260.1 | 1.27 | 1.59 | 1.95 |
| 340.1 | 1.24 | 1.56 | 1.91 |
| 420.1 | 1.20 | 1.51 | 1.85 |
| 500.1 | 1.16 | 1.46 | 1.78 |
| 580.1 | 1.11 | 1.40 | 1.70 |
| 660.1 | 1.07 | 1.34 | 1.63 |
| 740.1 | 1.03 | 1.30 | 1.58 |
| 820.1 | 1.01 | 1.26 | 1.53 |
| 900.1 | 1.04 | 1.22 | 1.48 |
| 980.1 | 1.08 | 1.17 | 1.42 |
| 1060.1 | 1.12 | 1.14 | 1.37 |
| 1140.1 | 1.17 | 1.13 | 1.34 |
| 1220.1 | 1.22 | 1.14 | 1.33 |
| 1300.1 | 1.27 | 1.17 | 1.33 |
| 1380.1 | 1.33 | 1.23 | 1.35 |
| 1460.1 | 1.40 | 1.30 | 1.39 |
| 1540.1 | 1.49 | 1.38 | 1.46 |
| 1620.1 | 1.59 | 1.49 | 1.55 |
| 1700.1 | 1.69 | 1.60 | 1.66 |
| 1780.1 | 1.77 | 1.71 | 1.78 |
| 1860.1 | 1.86 | 1.83 | 1.93 |
| 1940.1 | 1.94 | 1.94 | 2.07 |
| 2020.1 | 2.02 | 2.05 | 2.19 |
| 2100.1 | 2.08 | 2.13 | 2.27 |
| 2180.1 | 2.11 | 2.19 | 2.35 |
| 2260.1 | 2.17 | 2.29 | 2.48 |
| 2340.1 | 2.22 | 2.37 | 2.58 |
| 2420.1 | 2.25 | 2.41 | 2.61 |
| 2500.1 | 2.22 | 2.39 | 2.58 |
| 2580.1 | 2.18 | 2.35 | 2.52 |
| 2660.1 | 2.19 | 2.36 | 2.55 |
| 2740.1 | 2.21 | 2.39 | 2.57 |
| 2820.1 | 2.23 | 2.41 | 2.59 |
| 2900.1 | 2.21 | 2.39 | 2.57 |
| 2980.1 | 2.16 | 2.33 | 2.49 |
| 3060.1 | 2.14 | 2.30 | 2.45 |
| 3140.1 | 2.15 | 2.33 | 2.48 |

| IF (OUT) (MHz) | IF VSWR @LO=805MHz (:1) @LO (dBm) | | |
|---|---|---|---|
| | +19 | +21 | +23 |
| 10.0 | 1.28 | 1.25 | 1.26 |
| 30.1 | 1.24 | 1.18 | 1.15 |
| 50.3 | 1.23 | 1.15 | 1.11 |
| 70.4 | 1.21 | 1.13 | 1.09 |
| 90.5 | 1.22 | 1.15 | 1.11 |
| 110.6 | 1.25 | 1.18 | 1.15 |
| 130.8 | 1.26 | 1.19 | 1.15 |
| 150.9 | 1.25 | 1.18 | 1.14 |
| 171.0 | 1.23 | 1.16 | 1.13 |
| 191.2 | 1.25 | 1.19 | 1.17 |
| 211.3 | 1.28 | 1.22 | 1.19 |
| 231.4 | 1.28 | 1.23 | 1.20 |
| 251.5 | 1.26 | 1.21 | 1.19 |
| 271.7 | 1.25 | 1.21 | 1.19 |
| 291.8 | 1.27 | 1.24 | 1.23 |
| 311.9 | 1.30 | 1.26 | 1.25 |
| 332.1 | 1.30 | 1.26 | 1.25 |
| 352.2 | 1.28 | 1.25 | 1.24 |
| 372.3 | 1.30 | 1.27 | 1.27 |
| 392.4 | 1.31 | 1.29 | 1.29 |
| 412.6 | 1.35 | 1.32 | 1.32 |
| 432.7 | 1.31 | 1.29 | 1.29 |
| 452.8 | 1.33 | 1.32 | 1.33 |
| 472.9 | 1.34 | 1.34 | 1.34 |
| 493.1 | 1.36 | 1.35 | 1.35 |
| 513.2 | 1.36 | 1.35 | 1.36 |
| 533.3 | 1.35 | 1.35 | 1.36 |
| 553.5 | 1.38 | 1.39 | 1.40 |
| 573.6 | 1.38 | 1.38 | 1.40 |
| 593.7 | 1.40 | 1.41 | 1.42 |
| 613.8 | 1.39 | 1.40 | 1.41 |
| 634.0 | 1.41 | 1.42 | 1.44 |
| 654.1 | 1.41 | 1.43 | 1.45 |
| 674.2 | 1.43 | 1.44 | 1.46 |
| 694.4 | 1.43 | 1.45 | 1.47 |
| 714.5 | 1.43 | 1.45 | 1.47 |
| 734.6 | 1.45 | 1.47 | 1.50 |
| 754.7 | 1.44 | 1.47 | 1.49 |
| 774.9 | 1.48 | 1.51 | 1.54 |
| 795.0 | 1.42 | 1.45 | 1.48 |




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*Harmonics Tables*

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 11 | 22 | 20 | 30 | 25 | 30 | 35 | 34 | 31 | 28 |
| 1 | - | 36 | +0 | 32 | 13 | 48 | 33 | 44 | 28 | 51 | 44 | 49 |
| 2 | 60 | 63 | 50 | 64 | 52 | 69 | 54 | 66 | 60 | 60 | 63 | 61 |
| 3 | 90 | 77 | 65 | 76 | 65 | 73 | 67 | 75 | 62 | 83 | 62 | 81 |
| 4 | >90 | >85 | 72 | >85 | 75 | >85 | 81 | >85 | 81 | >85 | >85 | >85 |
| 5 | >90 | >85 | >85 | >85 | >85 | >85 | 82 | >85 | 83 | >85 | >85 | >85 |
| 6 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 7 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 8 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 9 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 10 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 834 MHz; 2.00 dBm.**
**LO IN: 775 MHz; +21.00 dBm**
**IF OUT: 59 MHz; -4.69 dBm**

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 11 | 22 | 20 | 30 | 25 | 30 | 35 | 34 | 31 | 28 |
| 1 | - | 36 | +0 | 32 | 13 | 48 | 33 | 44 | 28 | 50 | 44 | 49 |
| 2 | 60 | 63 | 50 | 64 | 52 | 69 | 54 | 66 | 60 | 60 | 63 | 61 |
| 3 | 90 | 77 | 65 | 74 | 65 | 74 | 67 | 75 | 61 | 83 | 62 | 81 |
| 4 | >90 | >85 | 72 | >85 | 76 | >85 | 78 | >85 | 81 | >85 | >85 | >85 |
| 5 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | 83 | >85 | >85 | >85 |
| 6 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 7 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 8 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 9 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 10 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 834 MHz; 2.00 dBm.**
**LO IN: 775 MHz; +21.00 dBm**
**IF OUT: 59 MHz; -4.7 dBm**

**Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.**
**2. + entry denotes harmonics are in (dBc) above IF OUTPUT.**
**3. RF Cal represent the Harmonics level of the RF input signal to the mixer.**



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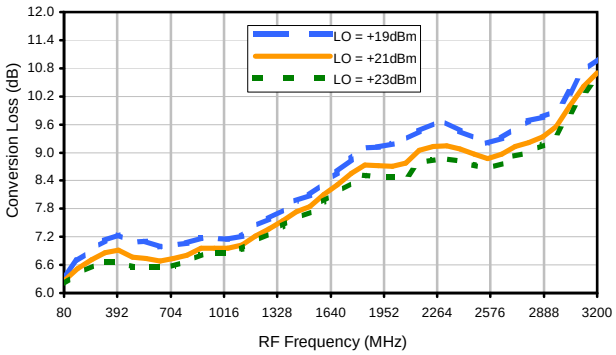
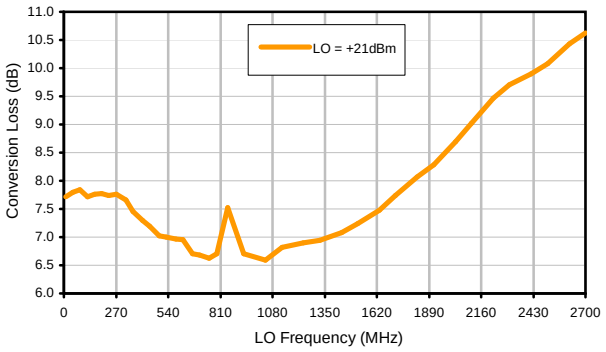
## *Typical Performance Curves*

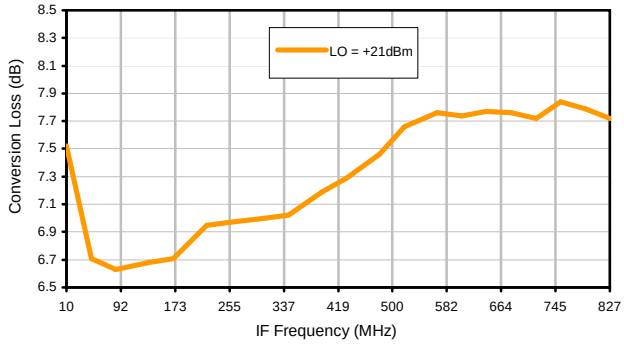
**Conversion Loss @ IF=60MHz**



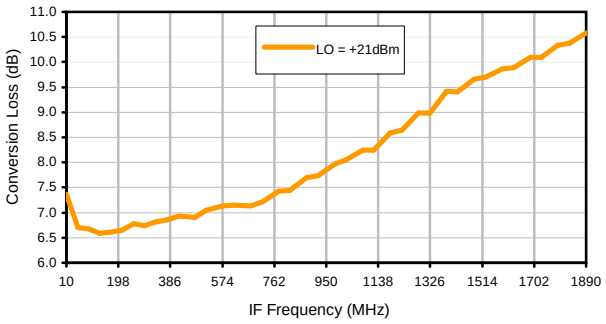

**Conversion Loss vs. LO @ RF=837.5MHz**



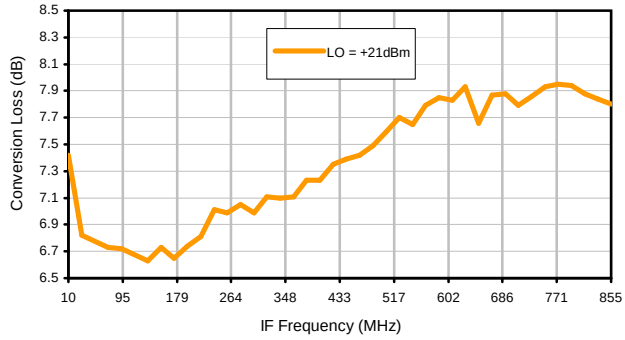

**Conversion Loss vs. IF @ RF=837.5MHz**



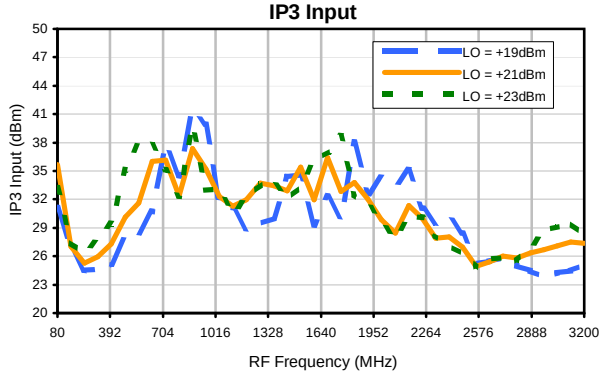

**Conversion Loss vs. IF @ RF=810MHz**



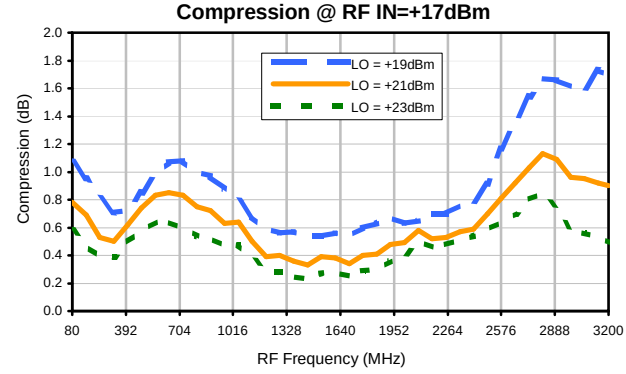

**Conversion Loss vs. IF @ RF=865.1MHz**




**IP3 Input**




**Compression @ RF IN=+17dBm**







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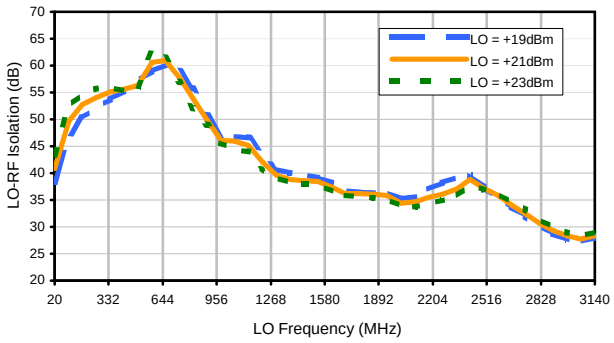
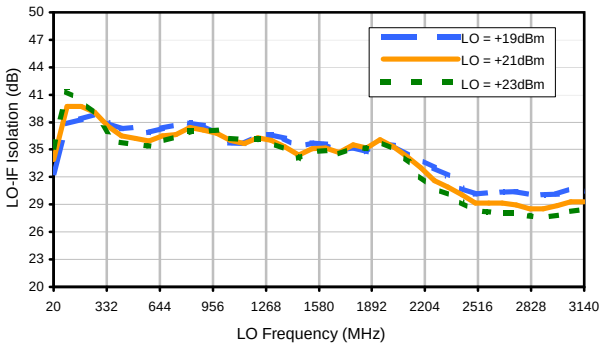
## *Typical Performance Curves*

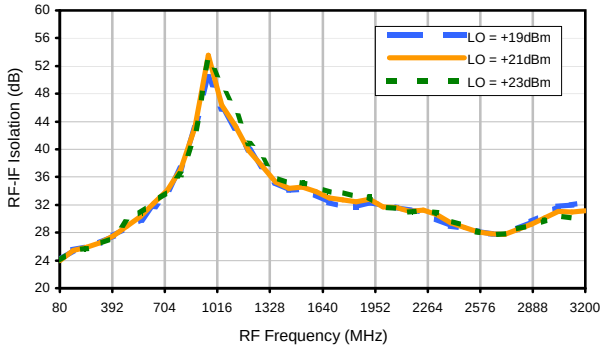
### LO-RF Isolation



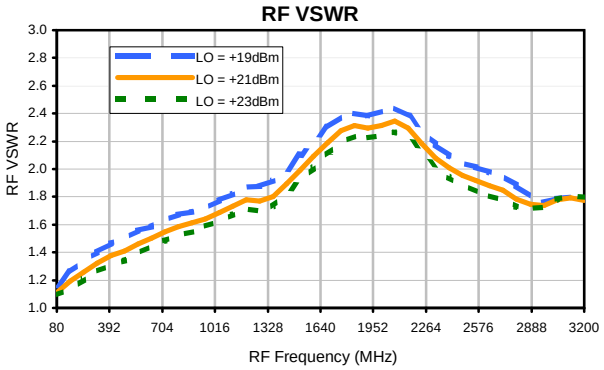

### LO-IF Isolation



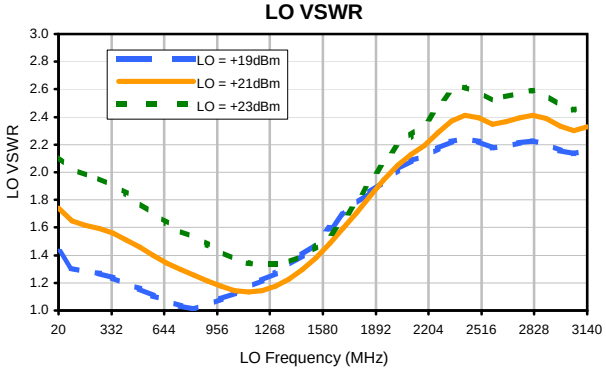

### RF-IF Isolation



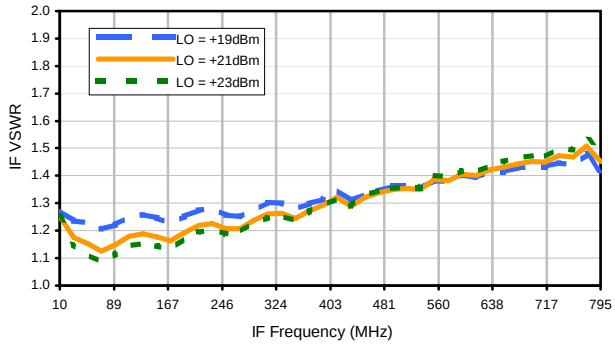

### RF VSWR




### LO VSWR




### IF VSWR







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*Harmonics Tables*

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 11 | 22 | 20 | 30 | 25 | 30 | 35 | 34 | 31 | 28 |
| 1 | - | 36 | +0 | 32 | 13 | 48 | 33 | 44 | 28 | 51 | 44 | 49 |
| 2 | 60 | 63 | 50 | 64 | 52 | 69 | 54 | 66 | 60 | 60 | 63 | 61 |
| 3 | 90 | 77 | 65 | 76 | 65 | 73 | 67 | 75 | 62 | 83 | 62 | 81 |
| 4 | >90 | >85 | 72 | >85 | 75 | >85 | 81 | >85 | 81 | >85 | >85 | >85 |
| 5 | >90 | >85 | >85 | >85 | >85 | >85 | 82 | >85 | 83 | >85 | >85 | >85 |
| 6 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 7 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 8 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 9 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 10 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 834 MHz; 2.00 dBm.**
**LO IN: 775 MHz; +21.00 dBm**
**IF OUT: 59 MHz; -4.69 dBm**

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 11 | 22 | 20 | 30 | 25 | 30 | 35 | 34 | 31 | 28 |
| 1 | - | 36 | +0 | 32 | 13 | 48 | 33 | 44 | 28 | 50 | 44 | 49 |
| 2 | 60 | 63 | 50 | 64 | 52 | 69 | 54 | 66 | 60 | 60 | 63 | 61 |
| 3 | 90 | 77 | 65 | 74 | 65 | 74 | 67 | 75 | 61 | 83 | 62 | 81 |
| 4 | >90 | >85 | 72 | >85 | 76 | >85 | 78 | >85 | 81 | >85 | >85 | >85 |
| 5 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | 83 | >85 | >85 | >85 |
| 6 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 7 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 8 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 9 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| 10 | >90 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 | >85 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 834 MHz; 2.00 dBm.**
**LO IN: 775 MHz; +21.00 dBm**
**IF OUT: 59 MHz; -4.7 dBm**

**Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.**
**2. + entry denotes harmonics are in (dBc) above IF OUTPUT.**
**3. RF Cal represent the Harmonics level of the RF input signal to the mixer.**



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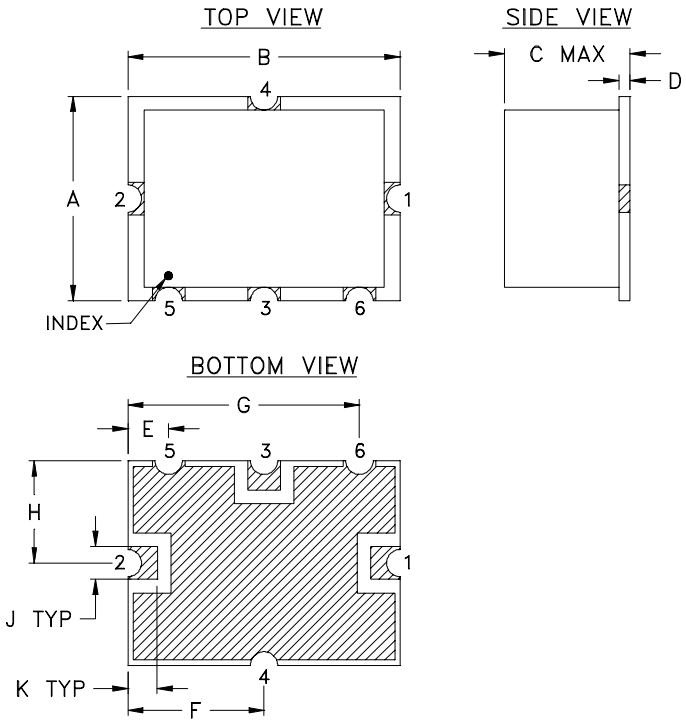
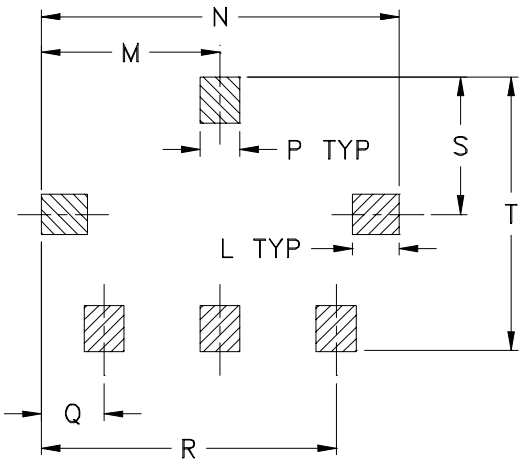
# Case Style TTT

## Outline Dimensions

**TTT166**
**TTT167**




## PCB Land Pattern




Suggested Layout,
Tolerance to be within ±.002

| CASE # | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TTT166 | .38 (9.65) | .50 (12.70) | .15 (3.81) | .020 (0.51) | .075 (1.91) | .250 (6.35) | .425 (10.80) | .187 (4.75) | .050 (1.27) | .050 (1.27) | .070 (1.78) | .270 (6.86) | .540 (13.72) |
| TTT167 | | | .23 (5.84) | | | | | | | | | | |

| CASE # | P | Q | R | S | T | WT. GRAM |
|---|---|---|---|---|---|---|
| TTT166 | .060 (1.52) | .095 (2.41) | .445 (11.30) | .208 (5.28) | .415 (10.54) | .8 |
| TTT167 | | | | | | .8 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. ± .01; 3 Pl. ± .005**

### Note:

1. Case material: Plastic.
2. Base material: Printed wiring laminate.
3. Termination finish:
   For RoHS Case Styles: 3-5 µ inch (.08-.13 microns) Gold over 120-240 µ inch (3.05-6.10 microns) Nickel plate. All models, (+) suffix.
   For RoHS-5 Case Styles: Tin-Lead plate. All models, no (+) suffix.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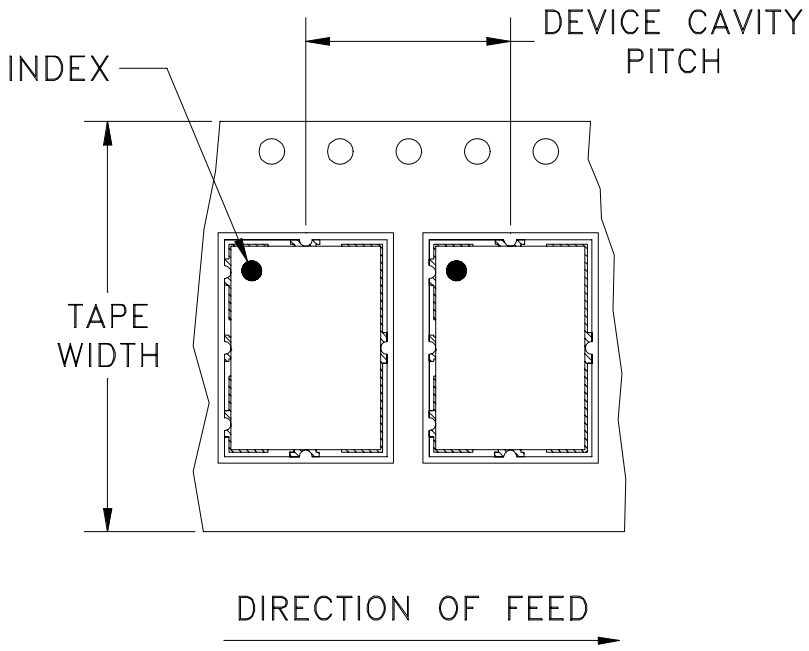
# Tape & Reel Packaging TR-F12

DEVICE ORIENTATION IN T&R




| Tape Width, mm | Device Cavity Pitch, mm | Reel Size, inches | Devices per Reel | |
|---|---|---|---|---|
| 24 | 12 | 7 | Small quantity standards (see note) | 10 |
| | | | | 20 |
| | | | | 50 |
| | | | | 100 |
| | | | | 200 |
| | | 13 | Standard | 500 |

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

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

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

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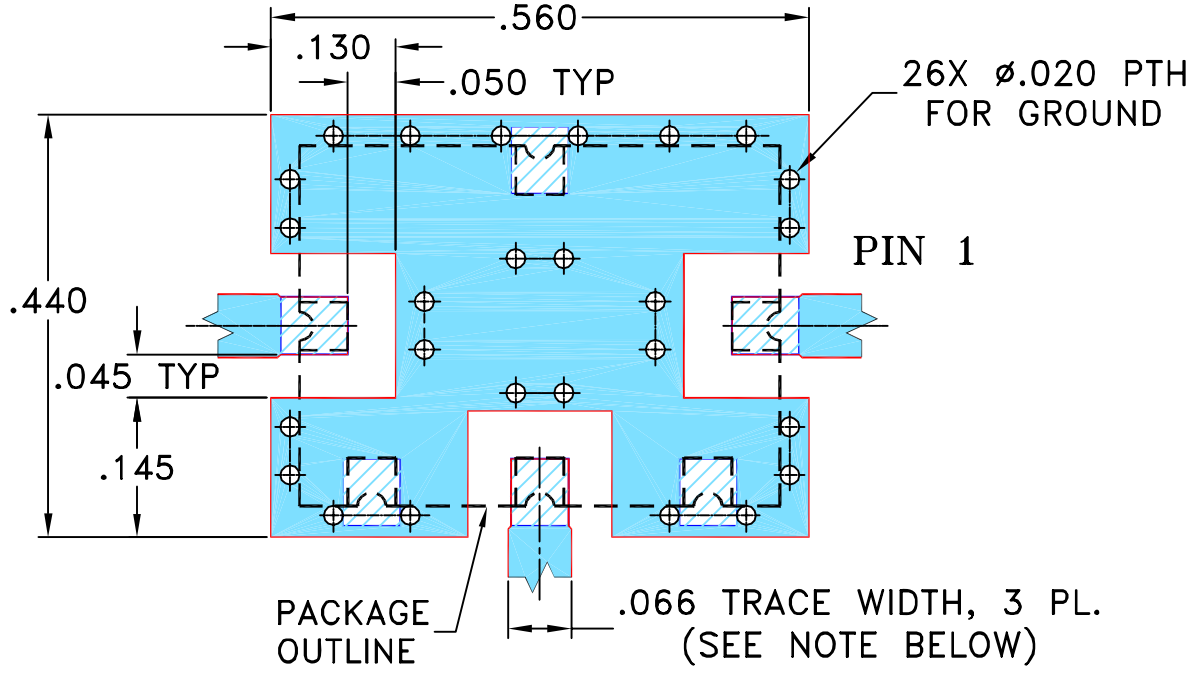
THIRD ANGLE PROJECTION

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| REV | ECN No. | DESCRIPTION | DATE | DR | AUTH |
| A | M86762 | ADDED CONNECTIONS "lp & lq" | 05/23/03 | MMG | WL |
| B | M94598 | ADDED CONNECTION "hk" | 10/08/04 | MMG | HY |
| C | M102713 | UPDATED NOTES & DESCRIPTION | 01/14/06 | GF | IL |
| D | M132989 | UPDATED NOTE 2 | 08/24/11 | GF | DJ |

# SUGGESTED MOUNTING CONFIGURATION FOR TTT166/167 CASE STYLE, "hk"/"lp"/"lq" "x"/"ck"/"ec" PIN CONNECTIONS




NOTE:

1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. THE USE OF SOLDER MASK OVER THE GROUND AREA UNDER THE UNIT AS SHOWN IS RECOMMENDED TO PREVENT POTENTIAL SHORTING. IF USER CHOOSES TO EXPOSE METAL UNDER THE ENTIRE UNIT GROUND PAD FOR IMPROVED GROUNDING, IT IS RECOMMENDED A SOLDER MASK DAM BE APPLIED AROUND EACH GROUND PAD TO ENSURE FILLET AND CONNECTION AT GROUND PADS.
3. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.

DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER), SEE NOTE 2.

DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

| UNLESS OTHERWISE SPECIFIED | | INITIALS | DATE |
|---|---|---|---|
| DIMENSIONS ARE IN INCHES | DRAWN | GF | 03/18/03 |
| TOLERANCES ON: | CHECKED | IL | 04/15/03 |
| 2 PL DECIMALS ± | APPROVED | DJ | 04/15/03 |
| 3 PL DECIMALS ± .005 | | | |
| ANGLES ± | | | |
| FRACTIONS ± | | | |

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

Mini-Circuits® 13 Neptune Avenue Brooklyn NY 11235

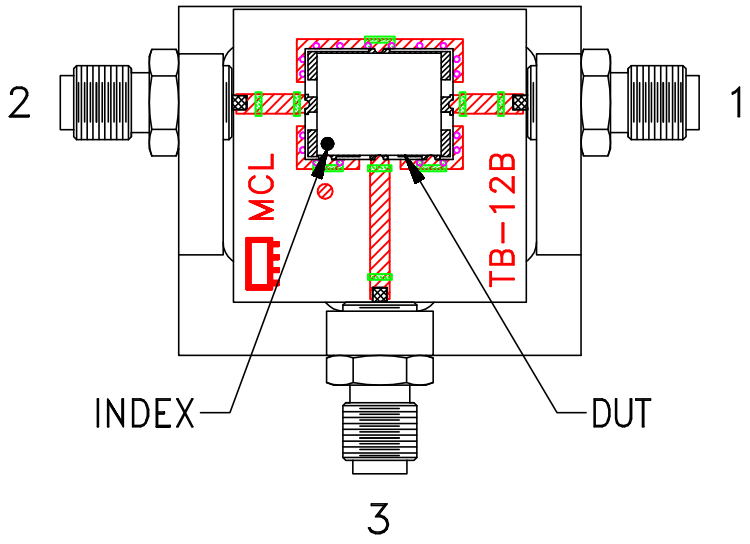
PL, hk/lp/lq/x/ck/ec, TTT166/167, SYM/HJK/SYAS/SYPD, TB-12

| SIZE | CODE IDENT | DRAWING NO: | REV: |
|---|---|---|---|
| A | 15542 | 98-PL-079 | D |

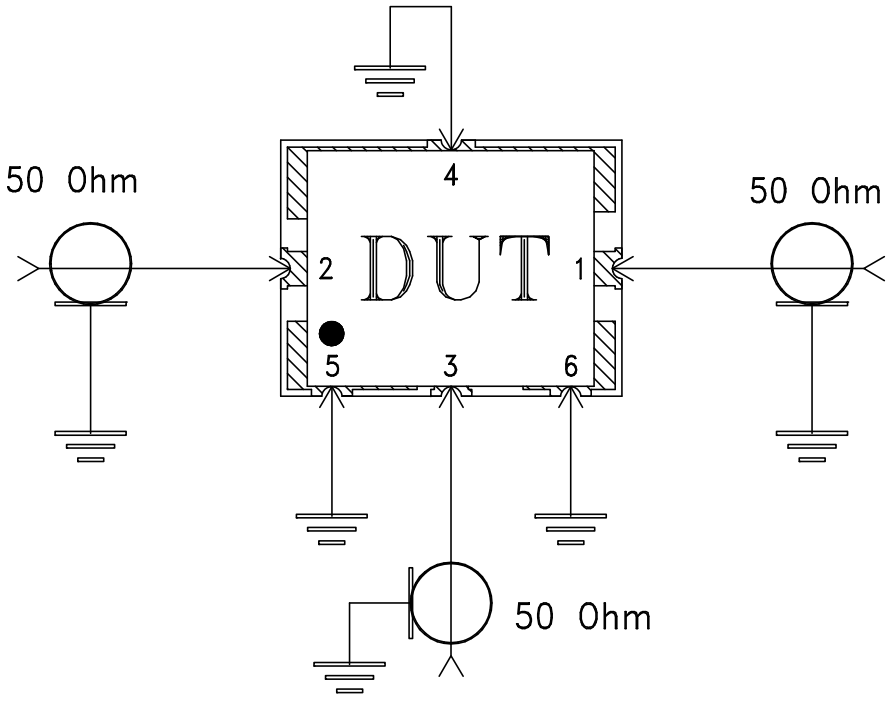
| FILE: | SCALE: | SHEET: |
|---|---|---|
| 98PL079 | 5:1 | 1 OF 1 |

# Evaluation Board and Circuit

For Pin Connections Refer to Data Sheet of the DUT




TB-12




Schematic Diagram

## Notes:

1. SMA Female connectors.
2. PCB Material: Rogers RO4350 or equivalent, Dielectric Constant=3.5, Thickness=.030 inch.

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# Environmental Specifications ENV02T1

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 |


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