


# Frequency Mixers

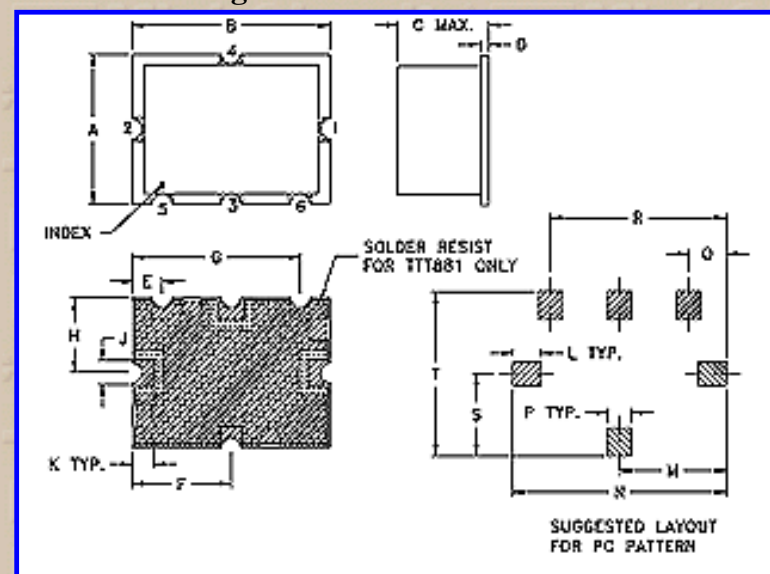
 [print this page](#)

## LO Power Level 17 dBm

### Pin Configuration

| Port | LO | RF | IF | Gnd Ext. | Case Gnd | Not Used |
|------|----|----|----|----------|----------|----------|
| x    | 2  | 1  | 3  | 4,5,6    | -        | -        |

### Outline Drawing



**Case Style - TTT167 (inch,mm)** weight: 0.8 grams.

| A     | B      | C     | D      | E     | F     | G      | H     | J      |
|-------|--------|-------|--------|-------|-------|--------|-------|--------|
| .375  | .500   | .23   | .020   | .075  | .250  | .425   | .187  | .050   |
| 9.525 | 12.700 | 5.842 | 0.508  | 1.905 | 6.350 | 10.795 | 4.750 | 1.270  |
| K     | L      | M     | N      | P     | Q     | R      | S     | T      |
| .050  | .070   | .270  | .540   | .060  | .095  | .445   | .208  | .415   |
| 1.270 | 1.778  | 6.858 | 13.716 | 1.524 | 2.413 | 11.303 | 5.283 | 10.541 |

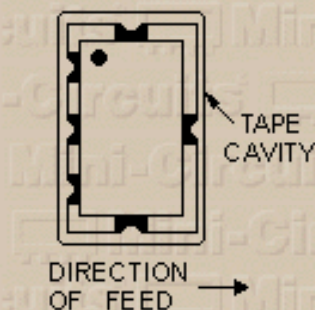
Tolerance: .x ± .1 .xx ± .03 .xxx ± .015 inch.

#### Material and Finish:

Case material: plastic or copper-nickel alloy, Glass Epoxy Laminate or ceramic base. Termination finish: tin-lead plate or tin plate.

#### Packaging:

#### UNIT ORIENTATION



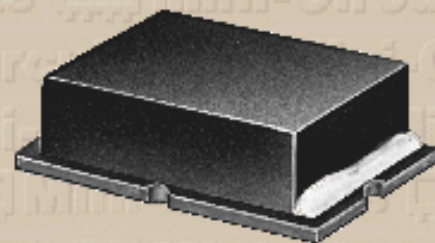
#### Packaging information:

Tape Width(mm): 24  
 Reel Size(inches): 13  
 Device Cavity Pitch(mm): 12  
 Devices Per Reel: 500

### Notes:

- For Surface Mount Environmental Specifications, please click [here](#).
- General Quality Control Procedures and Environmental Specifications are given in [Mini-Circuits Guarantees Quality](#).
- Hi-Rel, MIL description are given in [Hi-Rel and MIL](#).
- Prices and Specifications subjects to change without notice.

## SYM-EDR5227



### Electrical Specifications

#### SYM-EDR5227

LO Power Level 17 dBm

| Frequency MHz |         | Conversion Loss dB |             | LO-RF Isolation dB |    |    | LO-IF Isolation dB |    |    |
|---------------|---------|--------------------|-------------|--------------------|----|----|--------------------|----|----|
| LO/RF         | IF      | Mid-Band           | Total Range | L                  | M  | U  | L                  | M  | U  |
| 1400-1900     | 245-250 | 8.0                | 8.0         | 23                 | 23 | 23 | 30                 | 30 | 30 |

L=low range( $f_L$  to  $10f_L$ ) M=mid range( $10f_L$  to  $f_U/2$ ) U=upper range( $f_U/2$  to  $f_U$ )

### Typical Performance Data

| SYM-EDR5227 |          | Conversion Loss (dB) |            |            | ISO      | Isolation L-R (dB) |            |            | Isolation L-I (dB) |            |            |
|-------------|----------|----------------------|------------|------------|----------|--------------------|------------|------------|--------------------|------------|------------|
| RF MHz      | LO MHz   | LO +14 dBm           | LO +17 dBm | LO +20 dBm | LO (MHz) | LO +14 dBm         | LO +17 dBm | LO +20 dBm | LO +14 dBm         | LO +17 dBm | LO +20 dBm |
| 1400.010    | 1645.000 | 6.64                 | 6.09       | 5.87       | 1300.100 | 29.74              | 28.91      | 28.04      | 42.80              | 38.52      | 35.63      |
| 1442.867    | 1688.586 | 6.70                 | 6.16       | 5.93       | 1326.100 | 29.66              | 28.72      | 27.71      | 42.69              | 38.42      | 35.31      |
| 1485.724    | 1732.171 | 6.70                 | 6.16       | 5.93       | 1352.100 | 29.34              | 28.59      | 27.87      | 42.10              | 38.35      | 35.62      |
| 1528.581    | 1775.757 | 6.66                 | 6.14       | 5.94       | 1378.100 | 29.11              | 28.49      | 27.88      | 41.92              | 38.52      | 35.73      |
| 1571.439    | 1819.343 | 6.71                 | 6.18       | 5.95       | 1404.100 | 29.18              | 28.37      | 27.59      | 42.26              | 38.49      | 35.43      |
| 1614.296    | 1862.929 | 6.68                 | 6.15       | 5.92       | 1430.100 | 29.05              | 28.19      | 27.44      | 42.30              | 38.55      | 35.23      |
| 1645.000    | 1400.000 | 6.86                 | 6.26       | 5.97       | 1460.100 | 28.56              | 28.13      | 27.58      | 41.88              | 38.72      | 35.53      |
| 1657.153    | 1906.514 | 6.79                 | 6.26       | 6.01       | 1482.878 | 28.49              | 28.07      | 27.48      | 41.85              | 38.82      | 35.53      |
| 1660.010    | 1409.900 | 6.91                 | 6.27       | 6.00       | 1505.656 | 28.53              | 27.93      | 27.21      | 42.09              | 38.85      | 35.28      |
| 1688.573    | 1442.843 | 6.81                 | 6.23       | 5.94       | 1528.433 | 28.52              | 27.91      | 27.20      | 42.21              | 38.95      | 35.29      |
| 1700.010    | 1950.100 | 6.84                 | 6.31       | 6.04       | 1551.211 | 28.34              | 27.89      | 27.36      | 42.01              | 39.23      | 35.63      |
| 1700.010    | 1945.000 | 6.89                 | 6.35       | 6.04       | 1573.989 | 28.23              | 27.85      | 27.39      | 42.02              | 39.40      | 35.90      |
| 1710.010    | 1465.000 | 6.79                 | 6.25       | 5.96       | 1596.767 | 28.26              | 27.74      | 27.18      | 42.09              | 39.38      | 35.76      |
| 1719.008    | 1469.920 | 6.84                 | 6.29       | 5.98       | 1619.544 | 28.34              | 27.75      | 27.15      | 42.30              | 39.41      | 35.74      |
| 1730.010    | 1976.020 | 6.99                 | 6.43       | 6.12       | 1642.322 | 28.26              | 27.81      | 27.32      | 42.34              | 39.64      | 36.02      |
| 1732.146    | 1485.686 | 6.83                 | 6.29       | 5.99       | 1665.100 | 28.06              | 27.81      | 27.43      | 42.15              | 39.92      | 36.36      |
| 1750.010    | 1503.980 | 6.89                 | 6.34       | 6.04       | 1710.100 | 28.15              | 27.77      | 27.31      | 42.26              | 39.48      | 36.08      |
| 1760.010    | 2007.040 | 7.09                 | 6.52       | 6.22       | 1732.322 | 28.13              | 27.84      | 27.49      | 42.11              | 39.32      | 36.06      |
| 1775.719    | 1528.529 | 6.89                 | 6.31       | 6.01       | 1754.544 | 28.08              | 27.94      | 27.70      | 41.90              | 39.33      | 36.20      |
| 1778.006    | 1529.940 | 6.88                 | 6.33       | 6.04       | 1776.767 | 28.02              | 27.90      | 27.70      | 41.58              | 38.86      | 35.96      |
| 1790.010    | 1542.960 | 6.86                 | 6.32       | 6.04       | 1798.989 | 28.08              | 27.88      | 27.68      | 41.44              | 38.66      | 35.78      |
| 1790.010    | 2038.060 | 7.16                 | 6.60       | 6.27       | 1821.211 | 28.14              | 27.97      | 27.82      | 41.19              | 38.38      | 35.54      |
| 1819.291    | 1571.371 | 6.88                 | 6.38       | 6.09       | 1843.433 | 28.15              | 28.07      | 28.00      | 40.96              | 38.17      | 35.45      |
| 1820.010    | 2069.080 | 7.32                 | 6.74       | 6.39       | 1865.656 | 28.10              | 28.07      | 28.05      | 40.47              | 37.86      | 35.31      |
| 1830.010    | 1581.940 | 6.90                 | 6.37       | 6.12       | 1887.878 | 28.15              | 28.07      | 28.03      | 39.95              | 37.37      | 35.01      |
| 1837.004    | 1589.960 | 6.92                 | 6.41       | 6.11       | 1910.100 | 28.23              | 28.13      | 28.11      | 39.62              | 36.84      | 34.64      |
| 1850.010    | 2100.100 | 7.59                 | 6.93       | 6.55       | 1930.100 | 28.29              | 28.24      | 28.27      | 39.48              | 36.60      | 34.46      |
| 1862.864    | 1614.214 | 6.97                 | 6.44       | 6.15       | 1950.869 | 28.32              | 28.37      | 28.44      | 39.06              | 36.27      | 34.17      |

|          |          |      |      |      |          |       |       |       |       |       |       |
|----------|----------|------|------|------|----------|-------|-------|-------|-------|-------|-------|
| 1870.010 | 1620.920 | 6.96 | 6.43 | 6.18 | 1971.639 | 28.32 | 28.39 | 28.58 | 38.64 | 35.90 | 33.80 |
| 1896.002 | 1649.980 | 6.97 | 6.46 | 6.18 | 1992.408 | 28.35 | 28.41 | 28.59 | 38.27 | 35.60 | 33.41 |
| 1906.437 | 1657.057 | 6.99 | 6.47 | 6.20 | 2013.177 | 28.43 | 28.50 | 28.69 | 37.88 | 35.32 | 33.13 |
| 1910.010 | 1659.900 | 7.00 | 6.48 | 6.22 | 2033.946 | 28.40 | 28.55 | 28.84 | 37.58 | 35.04 | 33.05 |
| 1950.010 | 1699.900 | 7.14 | 6.60 | 6.32 | 2054.715 | 28.41 | 28.57 | 28.91 | 37.21 | 34.85 | 32.94 |
| 1950.010 | 1705.000 | 7.13 | 6.59 | 6.33 | 2075.485 | 28.32 | 28.49 | 28.85 | 36.74 | 34.44 | 32.56 |
| 1955.000 | 1710.000 | 7.17 | 6.61 | 6.33 | 2096.254 | 28.26 | 28.38 | 28.74 | 36.37 | 34.09 | 32.27 |
| 1980.010 | 1733.980 | 7.21 | 6.66 | 6.37 | 2117.023 | 28.20 | 28.34 | 28.74 | 35.94 | 33.82 | 31.90 |
| 2010.010 | 1762.960 | 7.29 | 6.71 | 6.41 | 2137.792 | 28.09 | 28.29 | 28.76 | 35.69 | 33.70 | 31.82 |
| 2040.010 | 1791.940 | 7.45 | 6.90 | 6.52 | 2158.562 | 27.90 | 28.09 | 28.64 | 35.32 | 33.38 | 31.66 |
| 2070.010 | 1820.920 | 7.56 | 6.97 | 6.66 | 2179.331 | 27.71 | 27.88 | 28.44 | 35.01 | 33.00 | 31.32 |
| 2100.010 | 1849.900 | 7.61 | 7.03 | 6.66 | 2200.100 | 27.46 | 27.78 | 28.23 | 34.63 | 32.65 | 31.05 |

| RF/LO       | VSWR RF port |            |            | VSWR LO port |            |            | IF          | VSWR IF port |            |            |
|-------------|--------------|------------|------------|--------------|------------|------------|-------------|--------------|------------|------------|
| FREQ. (MHz) | LO +14 dBm   | LO +17 dBm | LO +20 dBm | LO +14 dBm   | LO +17 dBm | LO +20 dBm | FREQ. (MHz) | LO +14 dBm   | LO +17 dBm | LO +20 dBm |
| 1300.100    | 2.64         | 2.38       | 2.18       | 1.69         | 1.07       | 1.49       | 50.100      | 1.12         | 1.11       | 1.25       |
| 1326.100    | 2.66         | 2.38       | 2.18       | 1.65         | 1.05       | 1.48       | 60.725      | 1.12         | 1.11       | 1.25       |
| 1352.100    | 2.61         | 2.34       | 2.15       | 1.60         | 1.03       | 1.46       | 71.350      | 1.13         | 1.11       | 1.25       |
| 1378.100    | 2.51         | 2.29       | 2.12       | 1.62         | 1.02       | 1.48       | 81.975      | 1.14         | 1.12       | 1.25       |
| 1404.100    | 2.52         | 2.27       | 2.10       | 1.61         | 1.02       | 1.50       | 92.600      | 1.14         | 1.12       | 1.25       |
| 1430.100    | 2.46         | 2.23       | 2.06       | 1.57         | 1.03       | 1.49       | 103.225     | 1.15         | 1.13       | 1.26       |
| 1460.100    | 2.40         | 2.18       | 2.02       | 1.55         | 1.06       | 1.51       | 113.850     | 1.15         | 1.13       | 1.26       |
| 1482.878    | 2.33         | 2.12       | 1.97       | 1.54         | 1.09       | 1.56       | 124.475     | 1.16         | 1.13       | 1.26       |
| 1505.656    | 2.29         | 2.10       | 1.94       | 1.54         | 1.10       | 1.57       | 135.100     | 1.16         | 1.14       | 1.26       |
| 1528.433    | 2.21         | 2.05       | 1.89       | 1.49         | 1.12       | 1.56       | 145.725     | 1.17         | 1.14       | 1.26       |
| 1551.211    | 2.14         | 2.00       | 1.83       | 1.49         | 1.14       | 1.59       | 156.350     | 1.18         | 1.15       | 1.27       |
| 1573.989    | 2.07         | 1.96       | 1.80       | 1.51         | 1.17       | 1.64       | 166.975     | 1.18         | 1.15       | 1.27       |
| 1596.767    | 2.02         | 1.92       | 1.77       | 1.49         | 1.18       | 1.66       | 177.600     | 1.18         | 1.16       | 1.27       |
| 1619.544    | 1.97         | 1.88       | 1.74       | 1.46         | 1.20       | 1.65       | 188.225     | 1.19         | 1.16       | 1.27       |
| 1642.322    | 1.92         | 1.85       | 1.72       | 1.47         | 1.22       | 1.69       | 198.850     | 1.19         | 1.17       | 1.28       |
| 1665.100    | 1.80         | 1.77       | 1.64       | 1.49         | 1.26       | 1.80       | 209.475     | 1.20         | 1.17       | 1.28       |
| 1710.100    | 1.76         | 1.80       | 1.67       | 1.43         | 1.27       | 1.76       | 220.100     | 1.20         | 1.18       | 1.28       |
| 1732.322    | 1.72         | 1.79       | 1.66       | 1.42         | 1.29       | 1.80       | 245.000     | 1.21         | 1.19       | 1.29       |
| 1754.544    | 1.67         | 1.79       | 1.66       | 1.43         | 1.32       | 1.87       | 246.020     | 1.21         | 1.19       | 1.29       |
| 1776.767    | 1.61         | 1.78       | 1.66       | 1.40         | 1.32       | 1.83       | 247.040     | 1.21         | 1.19       | 1.29       |
| 1798.989    | 1.56         | 1.78       | 1.66       | 1.38         | 1.31       | 1.80       | 248.060     | 1.21         | 1.19       | 1.29       |
| 1821.211    | 1.52         | 1.78       | 1.65       | 1.36         | 1.34       | 1.85       | 249.080     | 1.21         | 1.19       | 1.29       |
| 1843.433    | 1.51         | 1.79       | 1.66       | 1.35         | 1.35       | 1.88       | 250.100     | 1.21         | 1.19       | 1.30       |
| 1865.656    | 1.52         | 1.79       | 1.66       | 1.34         | 1.35       | 1.82       | 270.100     | 1.22         | 1.20       | 1.30       |
| 1887.878    | 1.56         | 1.79       | 1.67       | 1.31         | 1.35       | 1.81       | 284.475     | 1.23         | 1.21       | 1.31       |
| 1910.100    | 1.60         | 1.78       | 1.66       | 1.30         | 1.38       | 1.86       | 298.850     | 1.23         | 1.21       | 1.31       |
| 1930.100    | 1.64         | 1.79       | 1.67       | 1.30         | 1.38       | 1.87       | 313.225     | 1.24         | 1.22       | 1.32       |
| 1950.869    | 1.69         | 1.80       | 1.68       | 1.27         | 1.39       | 1.83       | 327.600     | 1.24         | 1.23       | 1.33       |
| 1971.639    | 1.74         | 1.80       | 1.68       | 1.26         | 1.38       | 1.82       | 341.975     | 1.25         | 1.24       | 1.33       |
| 1992.408    | 1.77         | 1.80       | 1.68       | 1.24         | 1.40       | 1.86       | 356.350     | 1.26         | 1.25       | 1.33       |
| 2013.177    | 1.80         | 1.80       | 1.68       | 1.24         | 1.43       | 1.91       | 370.725     | 1.26         | 1.25       | 1.34       |
| 2033.946    | 1.82         | 1.80       | 1.68       | 1.22         | 1.41       | 1.86       | 385.100     | 1.27         | 1.25       | 1.34       |
| 2054.715    | 1.85         | 1.80       | 1.69       | 1.21         | 1.41       | 1.85       | 399.475     | 1.28         | 1.26       | 1.34       |
| 2075.485    | 1.87         | 1.81       | 1.70       | 1.20         | 1.44       | 1.90       | 413.850     | 1.29         | 1.27       | 1.34       |
| 2096.254    | 1.88         | 1.81       | 1.70       | 1.20         | 1.47       | 1.95       | 428.225     | 1.29         | 1.27       | 1.34       |
| 2117.023    | 1.90         | 1.82       | 1.70       | 1.19         | 1.47       | 1.93       | 442.600     | 1.30         | 1.27       | 1.35       |
| 2137.792    | 1.91         | 1.82       | 1.71       | 1.17         | 1.47       | 1.90       | 456.975     | 1.31         | 1.28       | 1.35       |
| 2158.561    | 1.93         | 1.83       | 1.73       | 1.16         | 1.48       | 1.94       | 471.350     | 1.31         | 1.28       | 1.35       |
| 2179.331    | 1.95         | 1.84       | 1.73       | 1.17         | 1.53       | 2.02       | 485.725     | 1.32         | 1.29       | 1.35       |

|          |      |      |      |      |      |      |         |      |      |      |
|----------|------|------|------|------|------|------|---------|------|------|------|
| 2200.100 | 1.95 | 1.85 | 1.74 | 1.16 | 1.53 | 2.01 | 500.100 | 1.32 | 1.29 | 1.35 |
|----------|------|------|------|------|------|------|---------|------|------|------|

| RF       | LO     | IP3   |
|----------|--------|-------|
| 1400     | 1645   | 26.5  |
| 1409.9   | 1660   | 26.34 |
| 1442.843 | 1688.6 | 28.8  |
| 1465     | 1710   | 29.94 |
| 1469.92  | 1719   | 30.05 |
| 1485.686 | 1732.1 | 30.15 |
| 1503.98  | 1750   | 29.83 |
| 1528.529 | 1775.7 | 30.81 |
| 1529.94  | 1778   | 30.72 |
| 1542.96  | 1790   | 30.4  |
| 1571.371 | 1819.3 | 30.97 |
| 1581.94  | 1830   | 30.48 |
| 1589.96  | 1837   | 30.19 |
| 1614.214 | 1862.9 | 31.03 |
| 1620.92  | 1870   | 31.61 |
| 1645     | 1400   | 32.9  |
| 1649.98  | 1896   | 31.22 |
| 1657.057 | 1906.4 | 32.13 |
| 1659.9   | 1910   | 32.26 |
| 1688.586 | 1442.9 | 27.17 |
| 1699.9   | 1950   | 32.01 |
| 1705     | 1950   | 32.32 |
| 1710     | 1955   | 33.14 |
| 1732.171 | 1485.7 | 33.3  |
| 1733.98  | 1980   | 33.15 |
| 1762.96  | 2010   | 32.04 |
| 1775.757 | 1528.6 | 26.77 |
| 1791.94  | 2040   | 30.94 |
| 1819.343 | 1571.4 | 31.1  |
| 1820.92  | 2070   | 32.42 |
| 1849.9   | 2100   | 30.98 |
| 1862.929 | 1614.3 | 26.91 |
| 1906.514 | 1657.2 | 27.92 |
| 1945     | 1700   | 26.34 |
| 1950.1   | 1700   | 26.36 |
| 1976.02  | 1730   | 25.58 |
| 2007.04  | 1760   | 27.78 |
| 2038.06  | 1790   | 27.1  |
| 2069.08  | 1820   | 26.31 |
| 2100.1   | 1850   | 28.69 |

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