



# SME1400B-17

Broadband Surface Mount Mixer

The Communications Edge™

## Product Features

- RF 1 to 2200 MHz
- LO 1 to 2200 MHz
- IF 1 to 2000 MHz
- LO Drive: +17 dBm (Other Levels Available)
- No Internal Solder Connections

## Product Photo



## Specifications

| Parameter                             | Units | Typical | Guaranteed |               |
|---------------------------------------|-------|---------|------------|---------------|
|                                       |       |         | +25°C      | -40° to +70°C |
| SSB Conversion Loss                   |       |         |            |               |
| RF/LO = 10-1300 MHz, IF = 10-1000 MHz | dB    | 6.5     | 8.0        | 8.5           |
| RF/LO = 10-2200 MHz, IF = 30-1000 MHz | dB    | 7.5     | 9.0        | 9.5           |
| RF/LO = 1-2200 MHz, IF = 1-2000 MHz   | dB    | 8.0     |            |               |
| Port-to-Port Isolation                |       |         |            |               |
| L-R = 10-1500 MHz                     | dB    | 30      | 20         | 21            |
| L-R = 10-2200 MHz                     | dB    | 25      | 15         | 17            |
| L-I = 10-2000 MHz                     | dB    | 26      | 19         | 20            |
| L-I = 10-2200 MHz                     | dB    | 22      | 15         | 16            |
| R-I                                   | dB    | 25      |            |               |
| 3rd Order Input Intercept Point       | dBm   | 27      |            |               |
| VSWR                                  |       |         |            |               |
| R-Port = 600-2000 MHz                 |       | 1.7:1   |            |               |
| R-Port = 10-2200 MHz                  |       | 2.0:1   |            |               |
| L-Port = 600-2000 MHz                 |       | 1.6:1   |            |               |
| L-Port = 10-2200 MHz                  |       | 2.0:1   |            |               |
| I-Port                                |       | 1.8:1   |            |               |
| 1 dB Conversion Compression           | dBm   | +13     |            |               |

1. Measured in a 50-ohm system with nominal LO drive of +17 dBm, low side LO, and downconverter application only, unless otherwise specified.

2. Measured at LO = 400-2100 MHz, RF = 500-2200 MHz, IF = 100 MHz, unless otherwise specified.

## Absolute Maximum Ratings

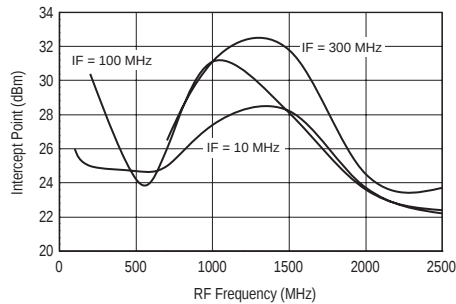
| Parameter             | Rating           |
|-----------------------|------------------|
| Operating Temperature | -40 to +70°C     |
| Storage Temperature   | -65 to +100°C    |
| RF Input Power        | +23 dBm at +25°C |

## Ordering Information

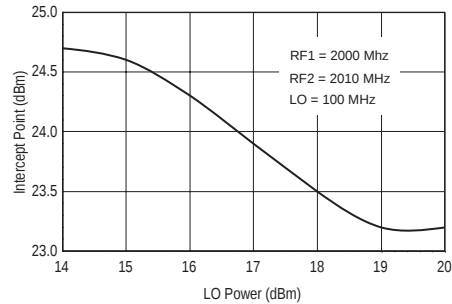
| Part No.        | Description                         |
|-----------------|-------------------------------------|
| SME1400B-17     | Mixer (Available in tape and reel)  |
| SME1400B-17-PCB | Fully assembled application circuit |

## Performance Charts

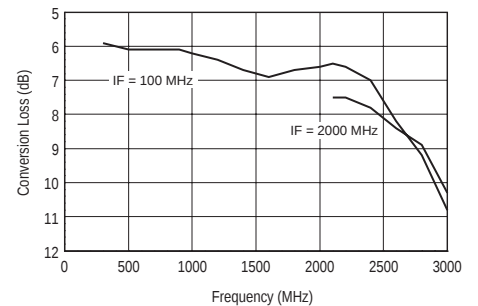
**IIP3 vs. Frequency**



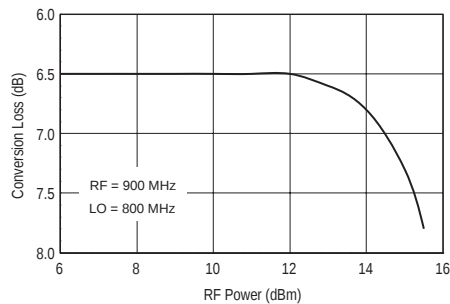
**IIP3 vs. LO Power**



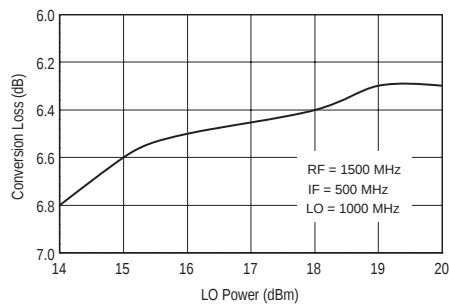
**Conversion Loss vs. Frequency**



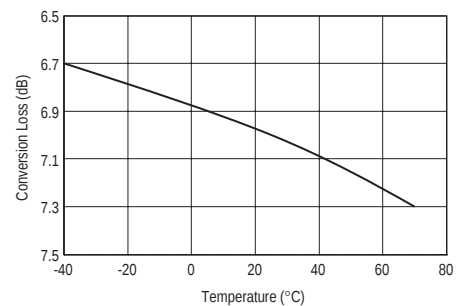
**Conversion Loss vs. RF Power**



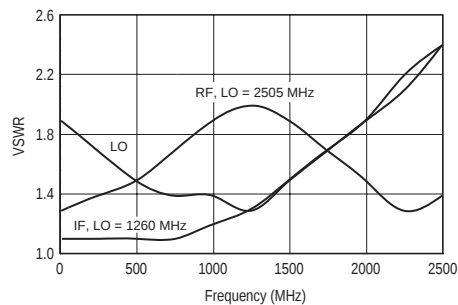
**Conversion Loss vs. LO Power**



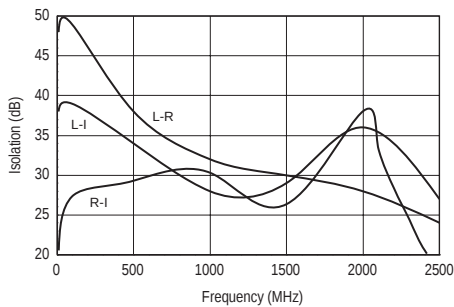
**Conversion Loss vs. Temperature**



**VSWR vs. Frequency**



**Isolation vs. Frequency**



## Single-Tone IM Products

| Harmonics of RF | Harmonics of fLO |     |     |     |     |     |
|-----------------|------------------|-----|-----|-----|-----|-----|
|                 | 0                | 1   | 2   | 3   | 4   | 5   |
| 0               |                  | 22  | 27  | 28  | 39  | 34  |
| 1               | 17               | 0   | 19  | 23  | 39  | 46  |
| 2               | 64               | 60  | 61  | 60  | 65  | 73  |
| 3               | >80              | 77  | >80 | 78  | >80 | >80 |
| 4               | >80              | >80 | >80 | >80 | >80 | >80 |
| 5               | >80              | >80 | >80 | >80 | >80 | >80 |

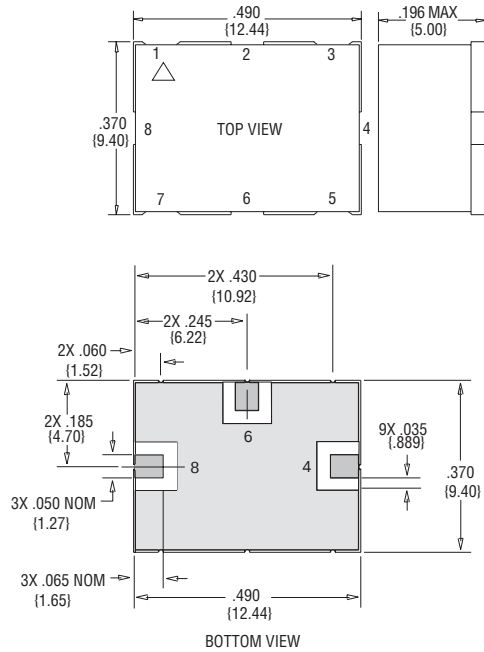
| LO Mult | RF Mult | LO MHz | RF MHz | MHz   | IM Prod dB |
|---------|---------|--------|--------|-------|------------|
| 0       | 1       | 2150   | 2200   | 2200  | 17         |
| 0       | 2       | 2150   | 2200   | 4400  | 64         |
| 0       | 3       | 2150   | 2200   | 6600  | 81         |
| 0       | 4       | 2150   | 2200   | 8800  | 86         |
| 0       | 5       | 2150   | 2200   | 11000 | 86         |
| 1       | 0       | 2150   | 2200   | 2150  | 22         |
| -1      | 1       | 2150   | 2200   | 50    | 0          |
| -1      | 2       | 2150   | 1100   | 50    | 60         |
| -1      | 3       | 2150   | 734    | 52    | 77         |
| -1      | 4       | 2150   | 550    | 50    | 92         |
| -1      | 5       | 2150   | 440    | 50    | 89         |
| 2       | 0       | 2150   | 2200   | 4300  | 27         |
| -2      | 1       | 2150   | 4350   | 50    | 19         |
| -2      | 2       | 2150   | 2175   | 50    | 61         |
| -2      | 3       | 2150   | 1450   | 50    | 85         |
| -2      | 4       | 2150   | 1088   | 52    | 90         |
| -2      | 5       | 2150   | 870    | 50    | 88         |
| 3       | 0       | 2150   | 2200   | 6450  | 28         |
| -3      | 1       | 2150   | 6500   | 50    | 23         |
| -3      | 2       | 2150   | 3250   | 50    | 60         |
| -3      | 3       | 2150   | 2167   | 51    | 78         |
| -3      | 4       | 2150   | 1625   | 50    | 89         |
| -3      | 5       | 2150   | 1300   | 50    | 88         |
| 4       | 0       | 2150   | 2200   | 8600  | 39         |
| -4      | 1       | 2150   | 8650   | 50    | 39         |
| -4      | 2       | 2150   | 4325   | 50    | 65         |
| -4      | 3       | 2150   | 2884   | 52    | 81         |
| -4      | 4       | 2150   | 2163   | 52    | 90         |
| -4      | 5       | 2150   | 1730   | 50    | 87         |
| 5       | 0       | 2150   | 2200   | 10750 | 34         |
| -5      | 1       | 2150   | 10800  | 50    | 46         |
| -5      | 2       | 2150   | 5400   | 50    | 73         |
| -5      | 3       | 2150   | 3600   | 50    | 88         |
| -5      | 4       | 2150   | 2700   | 50    | 89         |
| -5      | 5       | 2150   | 2160   | 50    | 89         |

Test Conditions RF at -10 dBm, LO at +17 dBm

RF harmonics and intermodulation products are referenced to a desired signal produced by fRF = 2200 MHz and fLO = 2150 MHz.

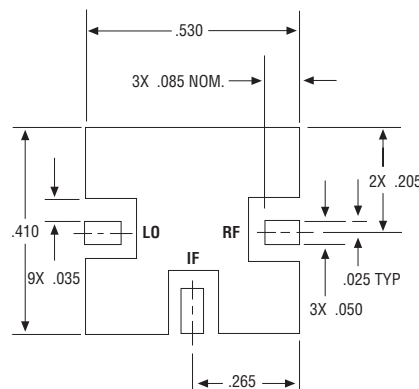
LO harmonics are referenced to the LO drive signal.

## Outline Drawing



| Function | Pin No.   |
|----------|-----------|
| RF       | 4         |
| LO       | 8         |
| IF       | 6         |
| GND      | 1,2,3,5,7 |

## Land Pattern



Specifications and information are subject to change without notice.



Caution! ESD sensitive device.

