



WJZ1020

Broadband Surface Mount Mixer



Product Features

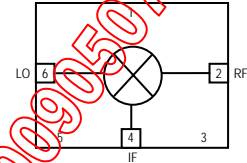
- +27.8 dBm Input IP3
- RF: 1 – 2700 MHz
- LO: 1 – 2700 MHz
- IF: 1 – 2000 MHz
- +17 dBm LO Drive Level
- No Internal Solder Connections
- Lead Free/RoHS-compliant SMT package
- No External Bias Required

Product Description

The WJZ1020 is a passive double-balanced diode-ring mixer that provides high dynamic range performance in a Lead Free/ RoHS-compliant surface mount package. The mixer is nominally driven with a LO input power of +17 dBm to optimize performance. Other WJZ models are available for other LO drive levels.

Targeted applications include frequency up/down conversion, modulation and demodulation for receivers and transmitters used in 2.5G and 3G GSM/CDMA/W-CDMA systems. The device can also be used in Radar, Satellite, Test / Medical Instruments, Avionics communications and Navigation markets.

Functional Diagram



Top View

Applications

- Up/down frequency conversion
- Phase Detector
- Image Rejection
- Current Controlled Attenuator

Specifications

| Parameter | Unit | Min | Typ | Max | Notes |
|---|------|-----|-------|-----|---|
| SSB Conversion Loss | | | | | |
| RF/LO = 10-1300 MHz, IF = 10-1000 MHz | dB | | 6.8 | 8.5 | See note 1. Guaranteed at 8 dB max at 25 °C |
| RF/LO = 10-2200 MHz, IF = 30-1000 MHz | dB | | 6.9 | 9.5 | See note 1. Guaranteed at 9 dB max at 25 °C |
| Port-to-Port Isolation | | | | | |
| L-R = 10-1500 MHz | dB | 21 | 38 | | |
| L-R = 10-2200 MHz | dB | 17 | 36 | | |
| L-I = 10-2000 MHz | dB | 20 | 31 | | |
| L-I = 10-2200 MHz | dB | 16 | 33 | | |
| R-I = 10-2200 MHz | dB | | 25 | | |
| 3 rd Order Input Intercept Point | dBm | | +27.8 | | |
| 1dB Input Compression Point | dBm | | +13 | | |
| VSWR | | | | | |
| RF Port = 600-1200 MHz | | | 1.6:1 | | IF = 100 MHz |
| RF Port = 1200-1800 MHz | | | 1.6:1 | | IF = 100 MHz |
| RF Port = 1800-2500 MHz | | | 1.7:1 | | IF = 100 MHz |
| LO Port = 600-1200 MHz | | | 1.3:1 | | |
| LO Port = 1200-1800 MHz | | | 1.9:1 | | |
| LO Port = 1800-2500 MHz | | | 2.0:1 | | |
| IF Port | | | 1.8:1 | | |
| LO Drive Level | dBm | | +17 | | |

1. Measured in a 50 ohm system with a nominal LO drive of +17 dBm, low side LO, in a downconversion application with LO = 2100 MHz, RF = 2200 MHz, IF = 100 MHz.

Absolute Maximum Rating

| Parameter | Rating |
|----------------------------|----------------|
| Operating Case Temperature | -40 to +85 °C |
| Storage Temperature | -65 to +100 °C |
| RF Input Power | +23 dBm |

Operation of this device above any of these parameters may cause permanent damage.

Ordering Information

| Part No. | Description |
|----------|-------------------------------|
| WJZ1020 | Broadband Surface Mount Mixer |
| WJZ1020H | Broadband Surface Mount Mixer |
| WJZ1020Z | Broadband Surface Mount Mixer |

Standard T/R reel size = 500 pieces on a 13" reel.

Specifications and information are subject to change without notice

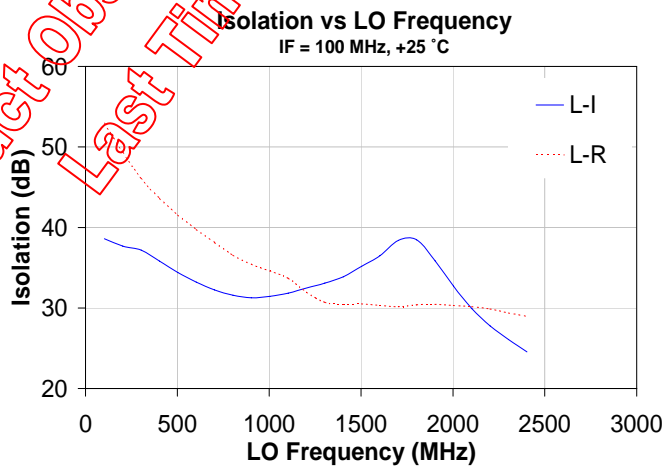
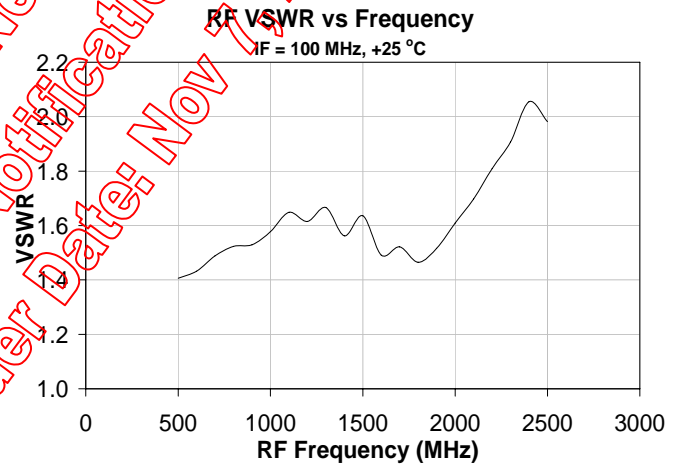
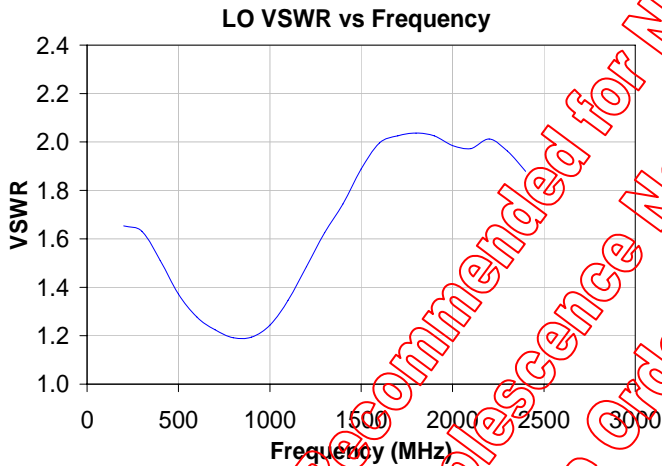
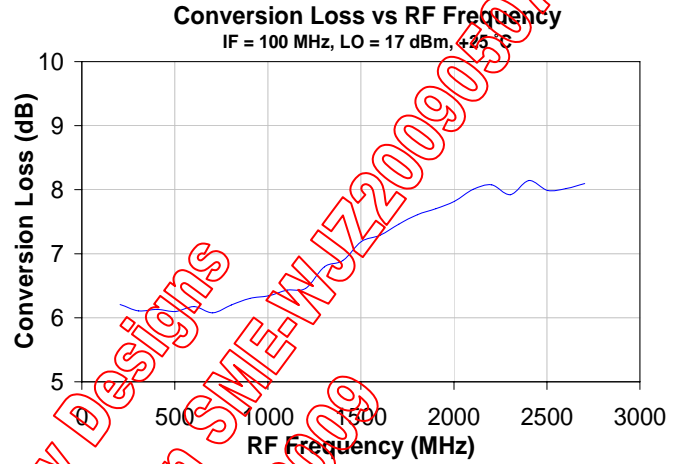
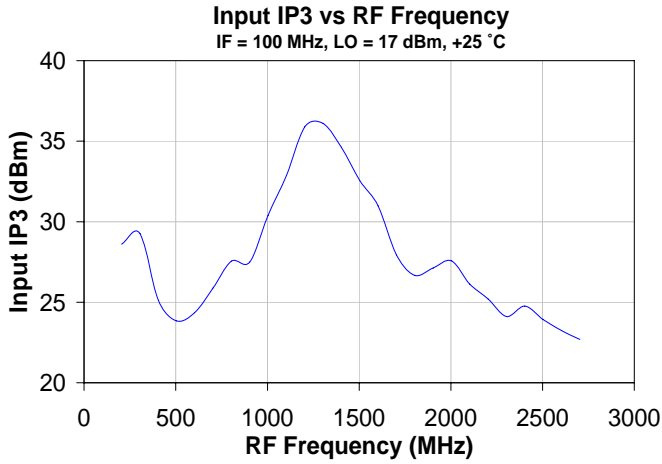


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Performance Charts



Not Recommended for New Designs
Refer to Product Obsolescence Notification SME-WJZ20090007
Last Time Order Date: Nov 1, 2009



Single-Tone IM Products

| Harmonics of fRF | Harmonics of fLO | | | | | |
|------------------|------------------|------|------|------|------|------|
| | 0 | 1 | 2 | 3 | 4 | 5 |
| 0 | | 33 | 46 | 53 | 53 | 58 |
| 1 | 20 | 0 | 32 | 20 | 28 | 48 |
| 2 | 67 | 51 | 59 | 57 | 66 | 64 |
| 3 | > 75 | 61 | 75 | 72 | > 75 | 75 |
| 4 | > 75 | > 75 | > 75 | > 75 | > 75 | > 75 |
| 5 | > 75 | > 75 | > 75 | > 75 | > 75 | > 75 |

| LO Mult | RF Mult | LO (MHz) | RF (MHz) | IM Products (MHz) | dBc |
|---------|---------|----------|----------|-------------------|------|
| 0 | 1 | 2150 | 2200 | 2200 | 20 |
| 0 | 2 | 2150 | 2200 | 4400 | 67 |
| 0 | 3 | 2150 | 2200 | 6600 | > 75 |
| 0 | 4 | 2150 | 2200 | 8800 | > 75 |
| 0 | 5 | 2150 | 2200 | 11000 | > 75 |
| 1 | 0 | 2150 | 2200 | 2150 | 33 |
| -1 | 1 | 2150 | 2200 | 50 | 0 |
| -1 | 2 | 2150 | 1100 | 50 | 51 |
| -1 | 3 | 2150 | 734 | 52 | 61 |
| -1 | 4 | 2150 | 550 | 50 | > 75 |
| -1 | 5 | 2150 | 440 | 50 | > 75 |
| 2 | 0 | 2150 | 2200 | 4300 | 46 |
| -2 | 1 | 2150 | 4350 | 50 | 32 |
| -2 | 2 | 2150 | 2175 | 50 | 59 |
| -2 | 3 | 2150 | 1450 | 50 | 75 |
| -2 | 4 | 2150 | 1088 | 52 | > 75 |
| -2 | 5 | 2150 | 870 | 50 | > 75 |
| 3 | 0 | 2150 | 2200 | 6450 | 53 |
| -3 | 1 | 2150 | 6500 | 50 | 20 |
| -3 | 2 | 2150 | 3250 | 50 | 57 |
| -3 | 3 | 2150 | 2167 | 51 | 72 |
| -3 | 4 | 2150 | 1625 | 50 | > 75 |
| -3 | 5 | 2150 | 1300 | 50 | > 75 |
| 4 | 0 | 2150 | 2200 | 8600 | 53 |
| -4 | 1 | 2150 | 8650 | 50 | 28 |
| -4 | 2 | 2150 | 4325 | 50 | 66 |
| -4 | 3 | 2150 | 2884 | 52 | > 75 |
| -4 | 4 | 2150 | 2163 | 52 | > 75 |
| -4 | 5 | 2150 | 1730 | 50 | > 75 |
| 5 | 0 | 2150 | 2200 | 10750 | 58 |
| -5 | 1 | 2150 | 10800 | 50 | 48 |
| -5 | 2 | 2150 | 5400 | 50 | 64 |
| -5 | 3 | 2150 | 3600 | 50 | 75 |
| -5 | 4 | 2150 | 2700 | 50 | > 75 |
| -5 | 5 | 2150 | 2160 | 50 | > 75 |

RF harmonics and intermodulation products are referenced to a desired signal produced by fRF = 2000 MHz and fLO = 2150 MHz

LO harmonics are referenced to the +17 dBm LO drive signal

Test Condition: RF Power = -10dBm; LO Power = 17 dBm

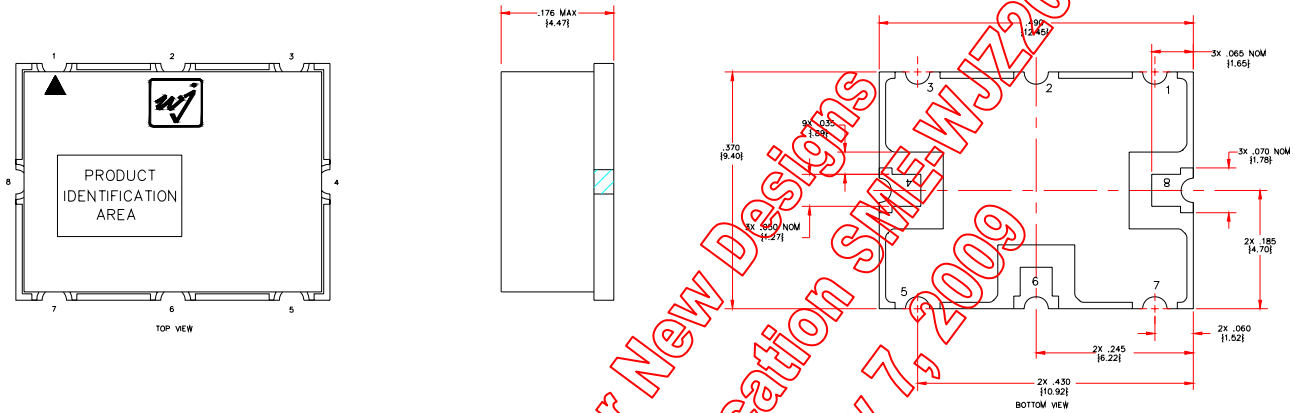
Refer to Product Obsolescence Notification: WJZ1020, Nov 7, 2009. Not Recommended for New Designs. Last Time Order Date: Nov 7, 2009. WJZ20090507



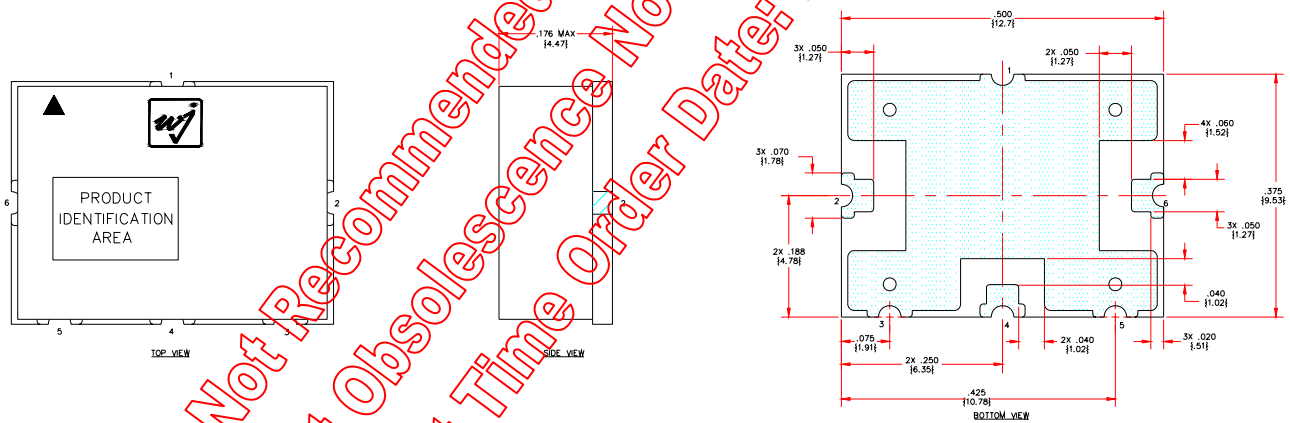
WJZ1020 Mechanical Information

This package is lead-free/RoHS-compliant. The plating material is ENIG "Electroless Nickel Immersion Gold".
 It is compatible with leaded and lead-free (maximum 260°C reflow temperatures)
 Also recommend adding active flux of 2% during solder reflow.

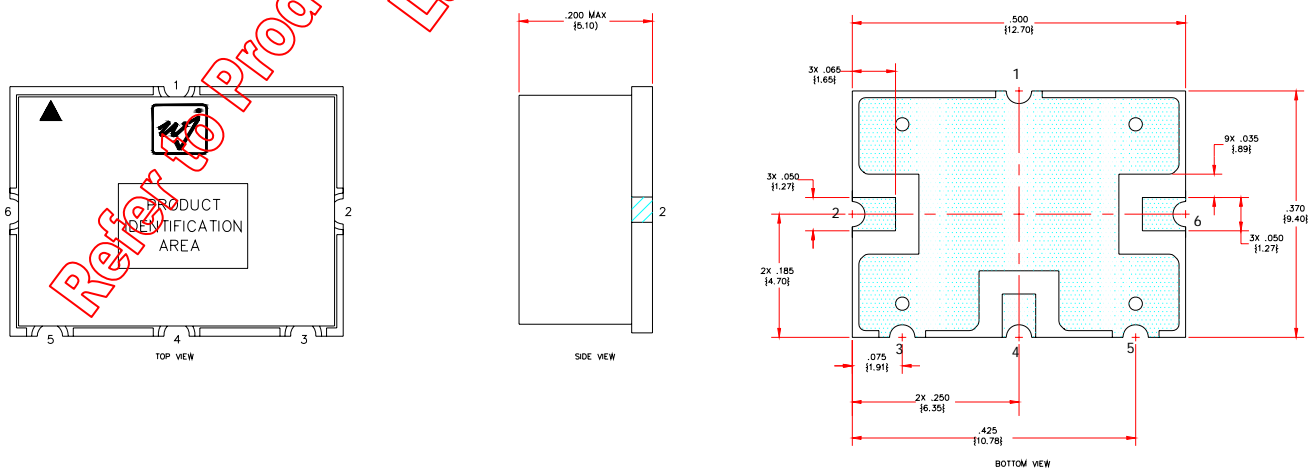
WJZ1020 Outline Drawing



WJZ1020H Outline Drawing



WJZ1020Z Outline Drawing



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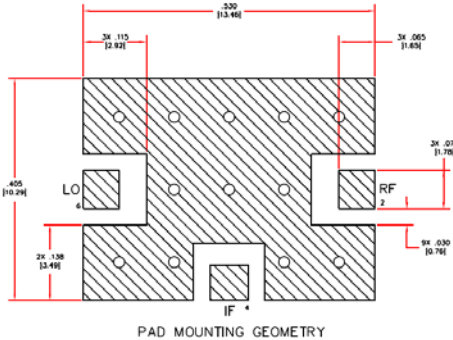


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Land Pattern / Mounting Configuration



Notes:

1. Package unit weight is 2.0 grams max.
2. Dimensions are expressed in inches. Dimensions in brackets are millimeter equivalents.
3. Tolerance .XXX +/- .015, .XX +/- .02
4. Package circuit board material: .021" FR-4, 2 layers, .025" total thickness.
5. Land pattern ground vias are critical for RF grounding considerations. A minimum of 12 ground vias (min. diameter of 20 mil or 51µm) underneath the device is required.
6. PC board trace width depends on the board material and thickness.
7. Blocking capacitors are required on the ports (pins 2, 4, 6) if any dc signal is present.

Product Marking

The component will be marked with a "WJZ1020", "WJZ1020H" or "WJZ1020Z" designator followed by an alphanumeric lot code on the top surface of the package.

Tape and reel specifications for this part will be located on the website in the "Application Notes" section.

ESD Information

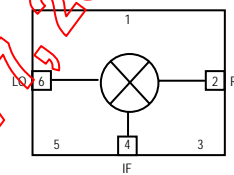


Caution! ESD sensitive device.

ESD Classification: Class 1C
 Value: Passes $\geq 1000V$ to $<2000 V$
 Test: Human Body Model (HBM)
 Standard: JEDEC Standard JESD22-A114

ESD Classification: Class IV
 Value: Passes $\geq 1000 V$
 Test: Charged Device Model (CDM)
 Standard: JEDEC Standard JESD22-C101

Functional Pin Layout



Top view

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

Not Recommended for New Designs
 Refer to Product Obsolescence Notification: Nov 7, 2009 (SMW200910501)
 Last Time Order Date: