



# WJZ1010

## Broadband Surface Mount Mixer

### Product Features

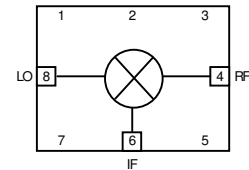
- +22 dBm Input IP3
- RF: 1 – 2500 MHz
- LO: 1 – 2500 MHz
- IF: 1 – 2000 MHz
- +13 dBm LO Drive Level
- No Internal Solder Connections
- Lead Free/RoHS compliant SMT package
- No External Bias Required

### Product Description

The WJZ1010 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 +13 dBm to optimize its 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                                   | Units | Min | Typ   | Max | Notes                                       |
|---|-------|-----|-------|-----|---|
| SSB Conversion Loss                         |       |     |       |     |   |
| RF/LO = 10-1300 MHz, IF = 10-1000 MHz       | dB    |     | 6.5   | 8.5 | See note 1. Guaranteed at 8 dB max at 25 °C |
| RF/LO = 10-2500 MHz, IF = 30-1000 MHz       | dB    |     | 7.4   | 9.5 | See note 1. Guaranteed at 9 dB max at 25 °C |
| Port-to-Port Isolation                      |       |     |       |     |   |
| L-R = 10-2000 MHz                           | dB    | 21  | 38    |     |   |
| L-R = 10-2500 MHz                           | dB    | 17  | 37    |     |   |
| L-I = 10-2000 MHz                           | dB    | 20  | 34    |     |   |
| L-I = 10-2500 MHz                           | dB    | 16  | 33    |     |   |
| R-I = 10-2200 MHz                           | dB    |     | 25    |     |   |
| 3 <sup>rd</sup> Order Input Intercept Point | dBm   |     | +22   |     |   |
| 1dB Input Compression Point                 | dBm   |     | +9    |     |   |
| VSWR  |       |     |       |     |   |
| RF Port = 600-1200 MHz                      |       |     | 1.9:1 |     | IF = 100 MHz                                |
| RF Port = 1200-1800 MHz                     |       |     | 1.8:1 |     | IF = 100 MHz                                |
| RF Port = 1800-2500 MHz                     |       |     | 1.8:1 |     | IF = 100 MHz                                |
| LO Port = 600-1200 MHz                      |       |     | 1.3:1 |     |   |
| LO Port = 1200-1800 MHz                     |       |     | 1.8:1 |     |   |
| LO Port = 1800-2500 MHz                     |       |     | 1.8:1 |     |   |
| IF Port                                     |       |     | 1.2:1 |     |   |
| LO Drive Level                              | dBm   |     | +13   |     |   |

1. Measured in a 50 ohm system with a nominal LO drive of +13 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             | +19 dBm        |

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

### Ordering Information

| Part No.    | Description                             |
|-------------|---|
| WJZ1010     | Broadband Surface Mount Mixer           |
| WJZ1010-PCB | Fully-Assembled Mixer Application Board |

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

Specifications and information are subject to change without notice

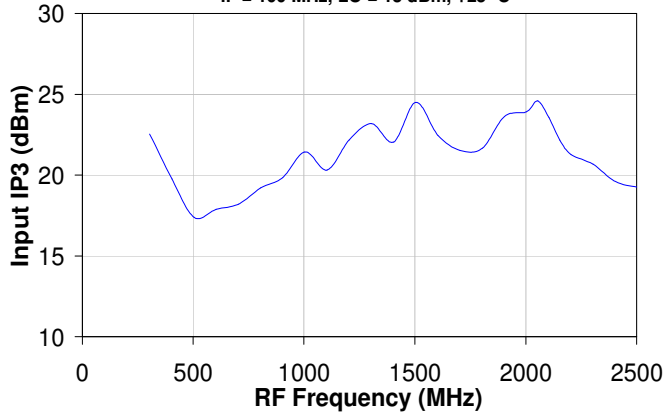


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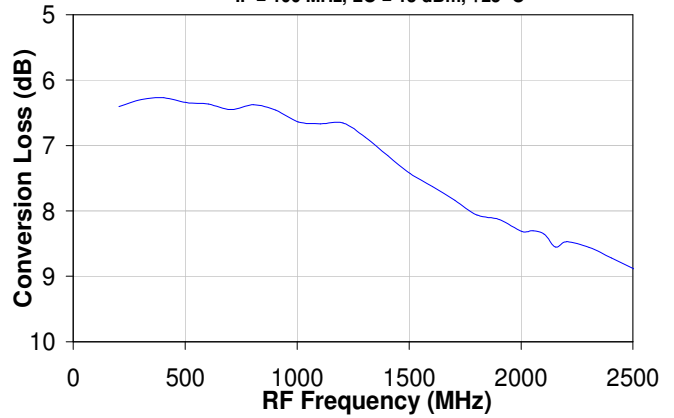
Broadband Surface Mount Mixer

## Performance Charts

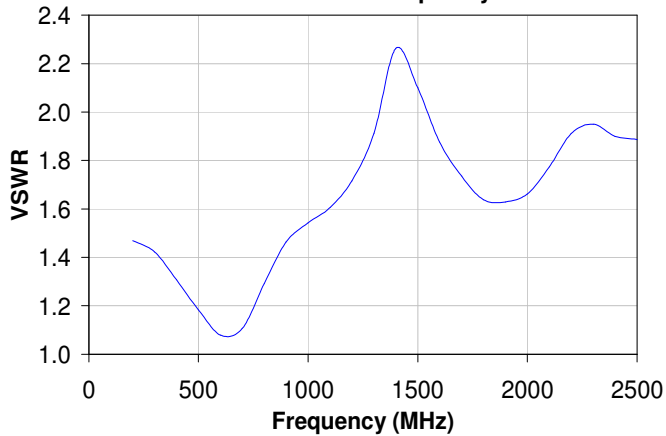
**Input IP3 vs RF Frequency**  
IF = 100 MHz, LO = 13 dBm, +25 °C



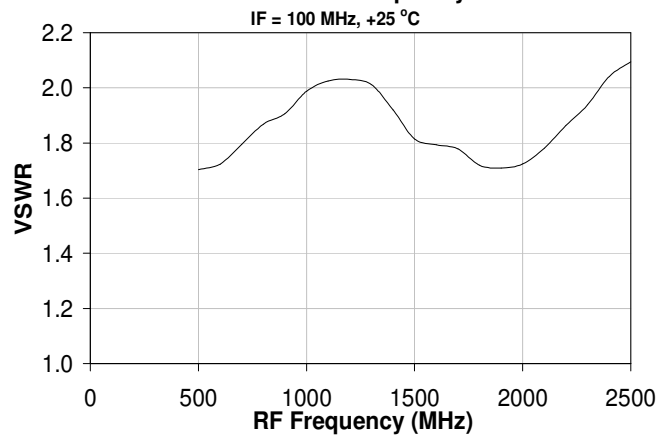
**Conversion Loss vs RF Frequency**  
IF = 100 MHz, LO = 13 dBm, +25 °C



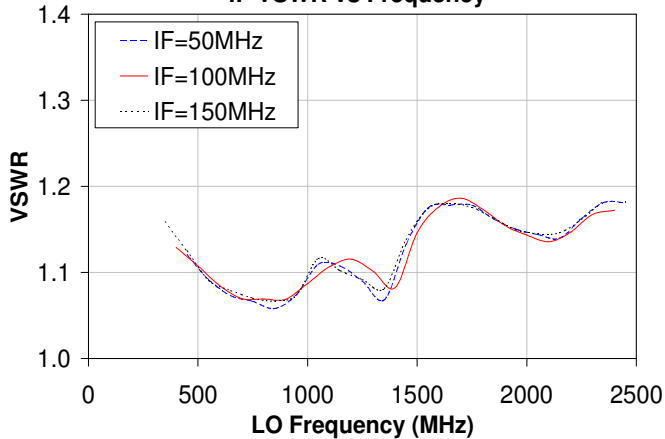
**LO VSWR vs Frequency**



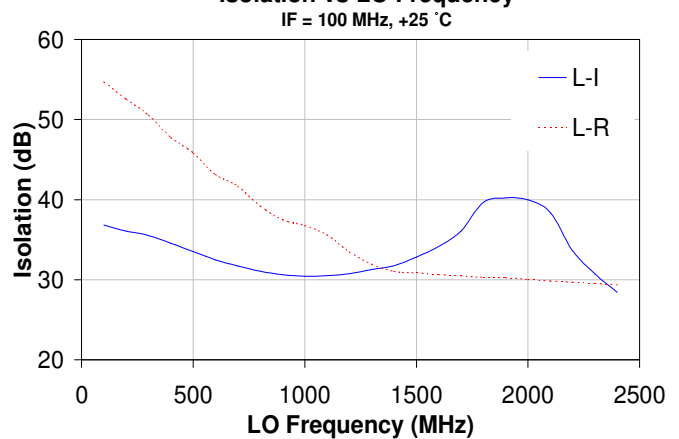
**RF VSWR vs Frequency**



**IF VSWR vs Frequency**



**Isolation vs LO Frequency**



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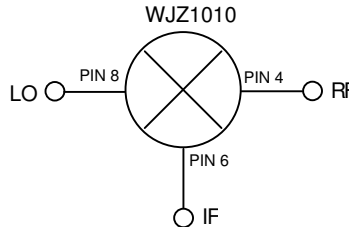
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## Broadband Surface Mount Mixer

### Mechanical Information

This package is lead-free/RoHS-compliant. The plating material is lead-free Tin (Sn).  
 It is compatible with lead-free (maximum 260°C reflow temperature) and recommend 245°C reflow temperature soldering processes.  
 Also recommend adding active flux of 2% during solder reflow.

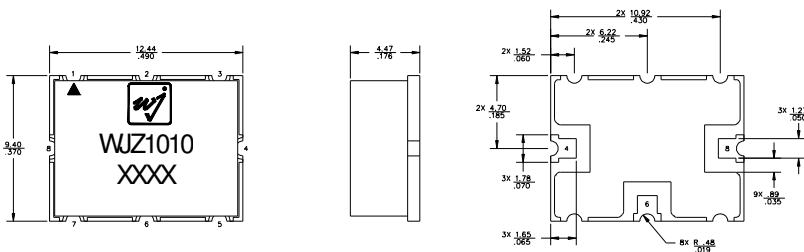
### Application Circuit



Notes:

1. Circuit board material: .021" FR-4, 2 layers, .025" total thickness
2. Blocking capacitors are required on the ports (pins 4, 6, 8) if any dc signal is present.

### Outline Drawing

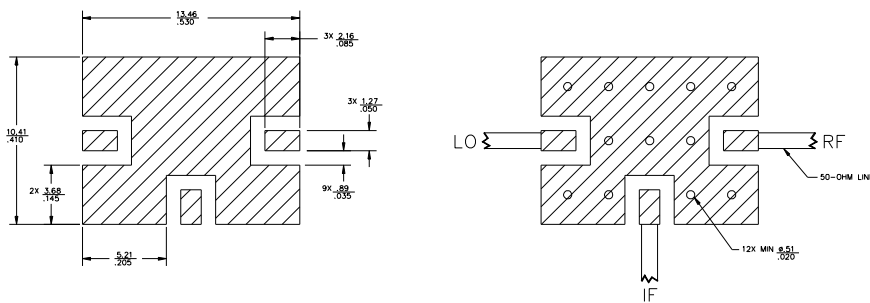


### Product Marking

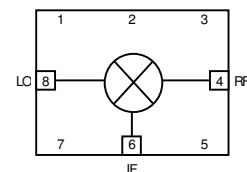
The component will be marked with a "WJZ1010" designator followed by an alphanumeric lot code on the top surface of the package.

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

### Land Pattern / Mounting Configuration



### Functional Pin Layout



Top view

| Pin No.                     | Function |
|-----------------------------|----------|
| 4                           | RF       |
| 6                           | IF       |
| 8                           | LO       |
| 1,2,3,5,7<br>Backside Metal | GND      |

Notes:

1. Ground vias are critical for RF grounding considerations.
2. A minimum of 12 ground vias underneath the device is required.
3. Trace width depends on the PC board material and thickness