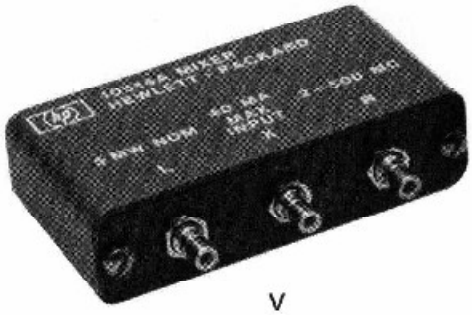
# DOUBLE BALANCED MIXERS



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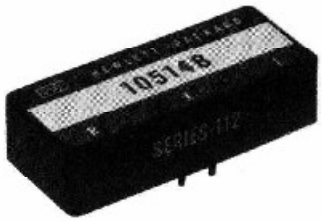


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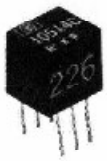


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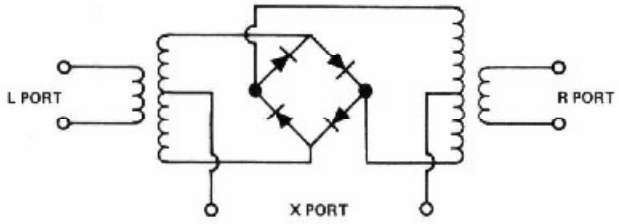


**DESCRIPTION.** The 10514/34 Double Balanced Mixers combine a matched set of four hot carrier mixer diodes with two transformers, forming a mixer/modulator circuit with all three ports isolated from each oth by balancing rather than filters. This feature, in conjunction with the multi-decade bandwidth, gives rise to an extremely versatile product.

The Double Balanced Mixers are available in two frequency ranges (200 KHz to 500 MHz and 50 KHz to 150 MHz), and three package styles; accessory model, with a choice of connectors; PC board model, for maximum economy; and miniature PC model, for minimum size and weight.

## GUARANTEED

| | DESCRIPTION | PACKAGE | OPERATING FREQUENCY | | POWER HANDLING mA MAX |
|---|---|---|---|---|---|
| | | | RF PORTS | VIDEO PORT MHz | |
| 10514A | 500 MHz, With Connectors | V | 200 kHz to 500 MHz | DC to 500 | 40 |
| 10514B | 500 MHz, PC Board Mounting | W | 200 kHz to 500 MHz | DC to 500 | 40 |
| 10514C | 500 MHz, Miniature | X | 10 MHz to 500 MHz | DC to 500 | 40 |
| 10534A | 150 MHz With Connectors | V | 50 kHz to 150 MHz | DC to 150 | 40 |
| 10534B | 150 MHz, PC Board Mounting | W | 50 kHz to 150 MHz | DC to 150 | 40 |
| 10534C | 150 MHz, Miniature | X | 50 kHz to 150 MHz | DC to 150 | 40 |

# DOUBLE BALANCED MIXERS

**APPLICATIONS.** Almost any application involving frequency conversion can be filled with a double balanced mixer. Up-conversion, down-conversion, broadband mixing, phase detection, AM modulation, and balanced modulation (DSB suppressed carrier) are some examples of common applications. In addition, many control functions, such as pulse modulation, switching, and variable attenuation can be done with the double balanced mixer.

**LOW NOISE.** Guaranteed SSB noise figures range from 6 dB to 9.5 dB depending upon frequency. In addition, these mixers exhibit very low I/f noise (less than 10 nV per root cycle at 10 Hz) a must for phase detectors and low frequency IF systems.

**SWITCHING APPLICATIONS.** As a switch or pulse modulator, fast switching (1 ns) can be obtained with low current (10 mA). Also, the balanced isolation between ports means that the switching speed is independent of the RF frequency, and very low frequency signals can still be switched in 1 nanosecond.

**HIGH ISOLATION BETWEEN PORTS.** Operating as a mixer, the LO power is isolated from the RF and IF ports by a minimum of 35 or 40 dB over a 2 decade bandwidth.

**SPECIAL ORDERING INFORMATION.** The basic part number defines the frequency range; the letter suffix describes the package style. In addition, the A versions which use BNC Jack connectors as standard equipment can be obtained with other connectors by ordering the following options:

| OPTION CODE | CONNECTOR TYPE |
|---|---|
| 001 | TNC Jack |
| 002 | SMA Jack |
| 003 | Sealectro Screw-On |
| 004 | Sealectro Snap-On |

**WANT MORE DETAILS?** Ask for the 10514/10534 Double Balanced Mixer Data Sheet.



# SPECIFICATIONS

| SSB CONVERSION LOSS | SSB NOISE FIGURE | OPERATING TEMPERATURE | hp |
|---|---|---|---|
| 7 dB, 0.5 to 50 MHz; 9 dB Full Range | 6.5 dB, 0.5 to 60 MHz; 9 dB Full Range | −54° to +75°C | 10514A |
| 7 dB, 0.5 to 50 MHz; 9 dB Full Range | 6.5 dB, 0.5 to 60 MHz; 9 dB Full Range | −54° to +75°C | 10514B |
| 7.2 dB, 15 to 250 MHz; 9 dB Full Range | 6.5 dB, 15 to 250 MHz; 9.5 dB Full Range | −54° to +75°C | 10514C |
| 6.5 dB, 0.2 to 35 MHz; 8 dB Full Range | 6 dB, 0.2 to 50 MHz; 8 dB Full Range | −54° to +75°C | 10534A |
| 6.5 dB, 0.2 to 35 MHz; 8 dB Full Range | 6 dB, 0.2 to 50 MHz; 8 dB Full Range | −54° to +75°C | 10534B |
| 6.5 dB, 0.2 to 35 MHz; 8 dB Full Range | 6 dB, 0.2 to 50 MHz; 8 dB Full Range | −54° to +75°C | 10534C |