

Surface Mount

Frequency Mixer

ADE-192H+

Level 17 (LO Power +17 dBm) 100 to 1910 MHz

The Big Deal

- High IP3, +23 dBm
- Low conversion loss, 8.6 dB
- Excellent P1dB compression, +17 dBm at input
- High L-R isolation, 35 dB



CASE STYLE: CD542

Product Overview

Mini-Circuits' ADE-192H+ is a surface mount triple balanced frequency mixer providing high IP3 performance, ideal for minimizing 3rd order intermodulation distortion in multiple carrier environments and other systems where unwanted signals may be present. This model also provides high isolation, high P1dB compression point, and low conversion loss. The mixer comes in a compact, six-lead plastic case measuring 0.27 x 0.31 x 0.22", saving space in dense board layouts.

Key Features

| Feature | Advantages |
|---|--|
| High IP3, +23 dBm | Minimizes third order intermodulation distortion and enables high-dynamic range. |
| Low conversion loss, 8.6 dB | Enables lower NF front ends, improving system sensitivity. |
| Excellent P1dB compression, +17 dBm at input | Provides linear performance for a wide range of RF input power levels. |
| High isolation, <ul style="list-style-type: none">• L-R, 35 dB• L-I, 33 dB | Preserves signal integrity from input to output and reduces undesired signal responses that can interfere with system performance. |
| Small size, 0.27 x 0.31 x 0.22" | Saves board space and accommodates tight layouts. |

Notes

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B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



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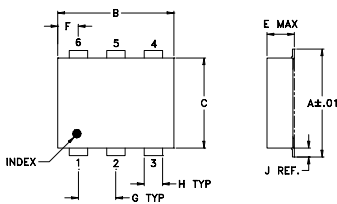
Maximum Ratings

| | |
|---|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power | 250mW |
| Permanent damage may occur if any of these limits are exceeded. | |

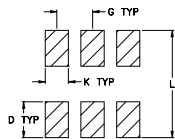
Pad Connections

| | |
|--------|-------|
| LO | 6 |
| RF | 2 |
| IF | 3 |
| GROUND | 1,4,5 |

Outline Drawing



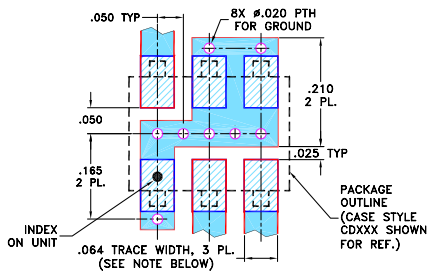
PCB Land Pattern



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G |
|------|------|------|------|-------|------|------|
| .272 | .310 | .220 | .100 | .112 | .055 | .100 |
| 6.91 | 7.87 | 5.59 | 2.54 | 2.84 | 1.40 | 2.54 |
| H | J | K | L | wt | | |
| .030 | .026 | .065 | .300 | grams | | |
| 0.76 | 0.66 | 1.65 | 7.62 | 0.20 | | |

Demo Board MCL P/N: TB-03 Suggested PCB Layout (PL-052)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.
2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
 - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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Features

- low conversion loss, 7.8 dB typ.
- excellent IP3, 26 dB typ.
- low profile package
- aqueous washable
- protected by US patent 6,133,525

Applications

- PCS
- cellular

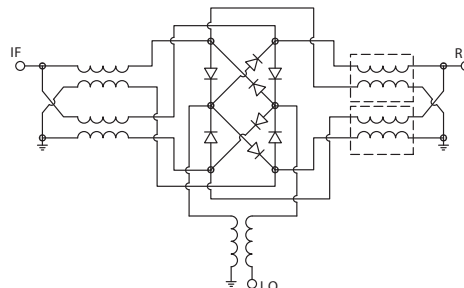
Electrical Specifications at 25°C

| Parameter | Min. | Typ. | Max. | Unit |
|------------------------------------|------|------|------|------|
| Frequency Range, RF/LO | 100 | — | 1910 | MHz |
| Frequency Range, IF | 50 | — | 1800 | MHz |
| Conversion Loss | — | 8.6 | 9.8 | dB |
| LO to RF Isolation | 24 | 35 | — | dB |
| LO to IF Isolation | 23 | 33 | — | dB |
| IP3 | — | 23 | — | dBm |
| RF Input Power at 1 dB Compression | — | +17 | — | dBm |

Typical Performance Data

| Frequency (MHz) | | Conversion Loss (dB) | Isolation L-R (dB) | Isolation L-I (dB) | VSWR RF Port (:1) | VSWR LO Port (:1) |
|-----------------|---------|----------------------|--------------------|--------------------|-------------------|-------------------|
| RF | LO | LO +17dBm | LO +17dBm | LO +17dBm | LO +17dBm | LO +20dBm |
| 100.00 | 150.00 | 8.19 | 30.77 | 28.93 | 1.02 | 1.16 |
| 170.00 | 220.00 | 8.24 | 31.21 | 29.22 | 1.03 | 1.19 |
| 205.00 | 255.00 | 8.14 | 31.46 | 29.36 | 1.04 | 1.17 |
| 310.00 | 360.00 | 8.10 | 32.12 | 29.77 | 1.11 | 1.19 |
| 415.00 | 465.00 | 8.04 | 33.02 | 30.34 | 1.20 | 1.20 |
| 555.00 | 605.00 | 8.07 | 35.02 | 31.33 | 1.31 | 1.27 |
| 625.00 | 675.00 | 7.91 | 36.19 | 31.60 | 1.37 | 1.31 |
| 730.00 | 780.00 | 7.98 | 37.96 | 32.05 | 1.46 | 1.39 |
| 800.00 | 850.00 | 7.92 | 39.31 | 32.25 | 1.53 | 1.36 |
| 905.00 | 955.00 | 7.83 | 41.10 | 32.34 | 1.53 | 1.51 |
| 1005.00 | 1055.00 | 7.68 | 40.64 | 31.88 | 1.53 | 1.65 |
| 1110.00 | 1160.00 | 7.61 | 36.11 | 32.49 | 1.55 | 1.67 |
| 1215.00 | 1265.00 | 7.60 | 36.93 | 33.69 | 1.64 | 1.61 |
| 1320.00 | 1370.00 | 7.55 | 39.08 | 35.06 | 1.83 | 1.59 |
| 1425.00 | 1475.00 | 7.48 | 39.30 | 35.87 | 1.91 | 1.66 |
| 1530.00 | 1580.00 | 7.53 | 37.77 | 36.54 | 1.92 | 1.75 |
| 1600.00 | 1650.00 | 7.44 | 38.76 | 38.14 | 2.05 | 1.70 |
| 1705.00 | 1755.00 | 7.48 | 38.58 | 39.17 | 1.88 | 1.77 |
| 1810.00 | 1860.00 | 7.62 | 38.18 | 38.75 | 1.77 | 1.89 |
| 1910.00 | 1960.00 | 7.97 | 38.56 | 36.96 | 1.87 | 2.05 |

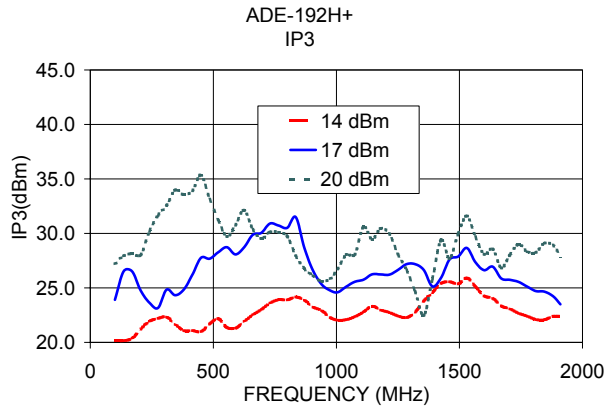
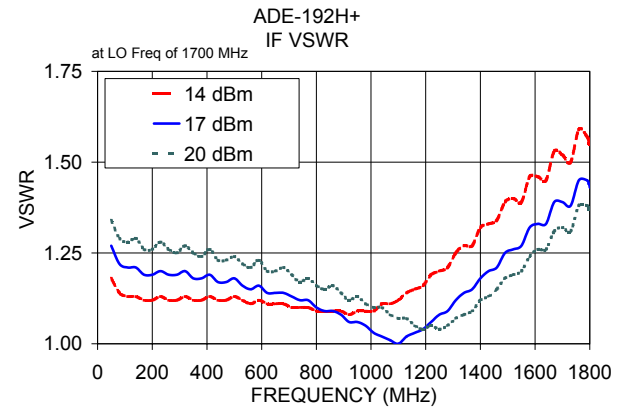
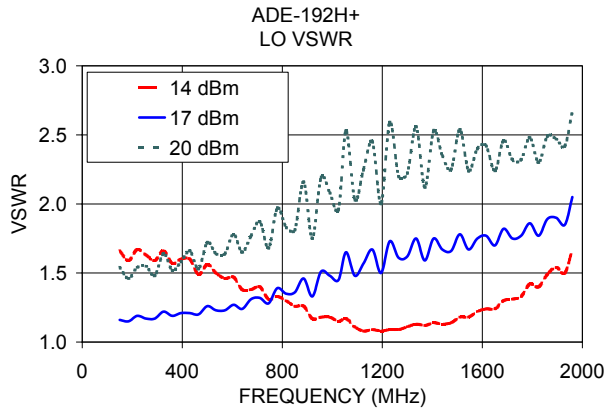
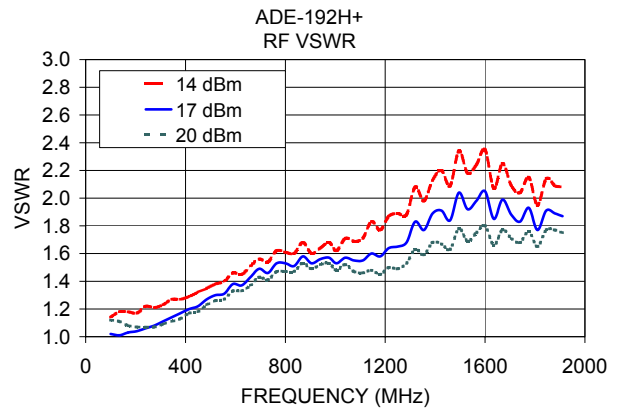
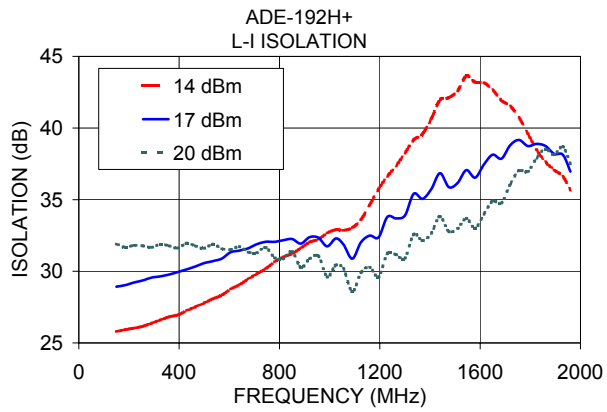
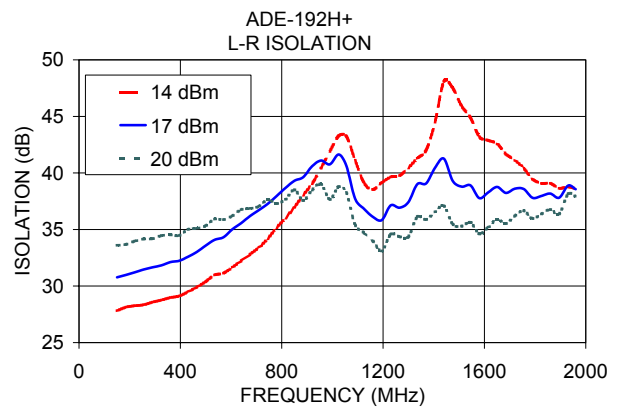
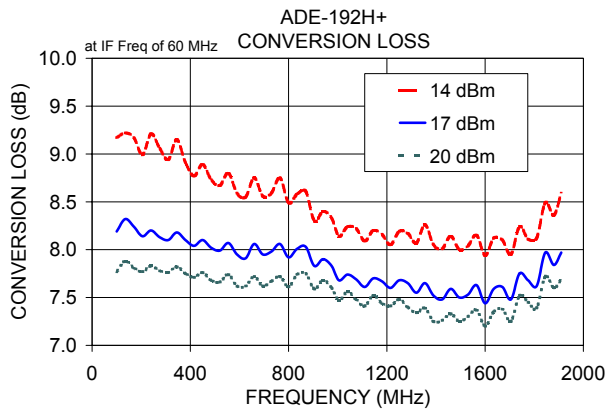
Electrical Schematic



+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Available Tape and Reel at no extra cost

| Reel Size | Devices/Reel |
|-----------|---------------------------|
| 7" | 10, 20, 50, 100, 200, 500 |
| 13" | 500, 1000 |



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