

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"><li>• L-R, 35 dB</li><li>• L-I, 33 dB</li></ul>	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

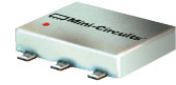
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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](http://www.minicircuits.com/MCLStore/terms.jsp)



# Surface Mount Frequency Mixer

## ADE-192H+

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



CASE STYLE: CD542

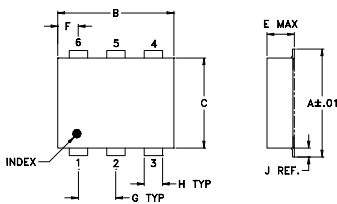
#### Maximum Ratings

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.	

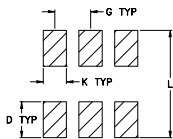
#### Pad Connections

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

#### Outline Drawing



#### PCB Land Pattern

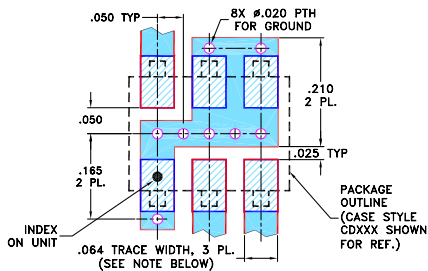


Suggested Layout.  
Tolerance to be within ±.002

#### 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

#### Notes

A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.  
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-Circuit's 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-Circuit's website at [www.minicircuits.com/WCLStore/terms.jsp](http://www.minicircuits.com/WCLStore/terms.jsp)

#### 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

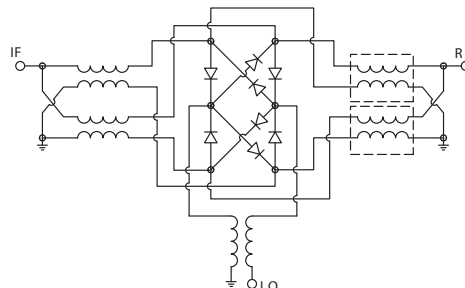
#### Electrical Specifications at 25°C

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



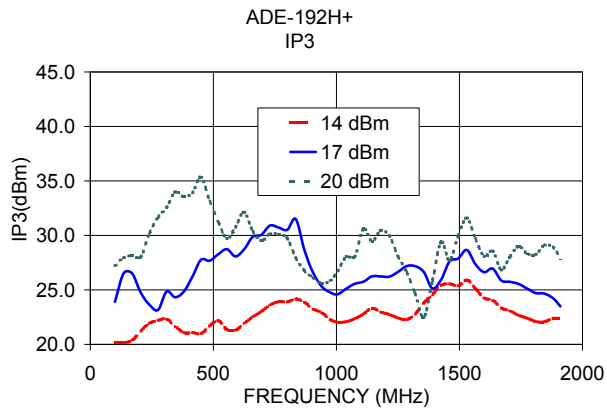
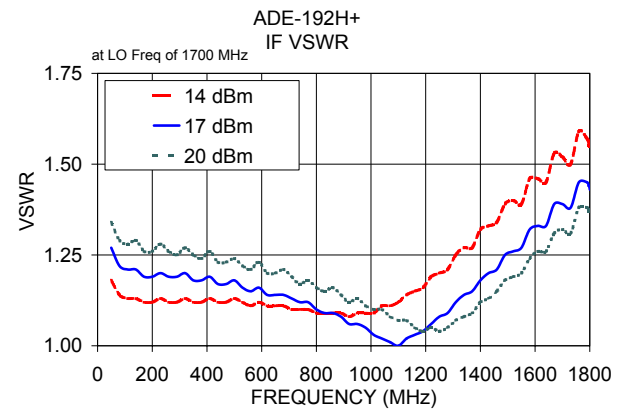
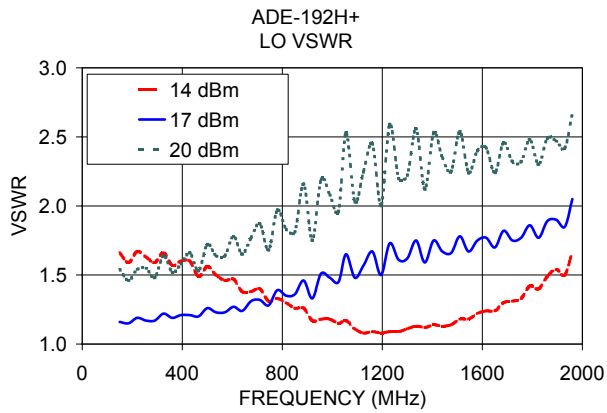
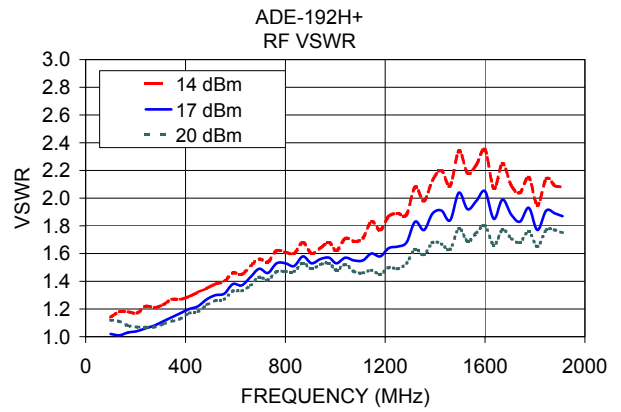
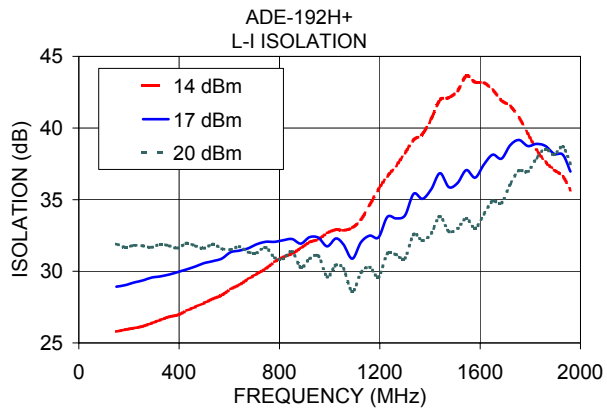
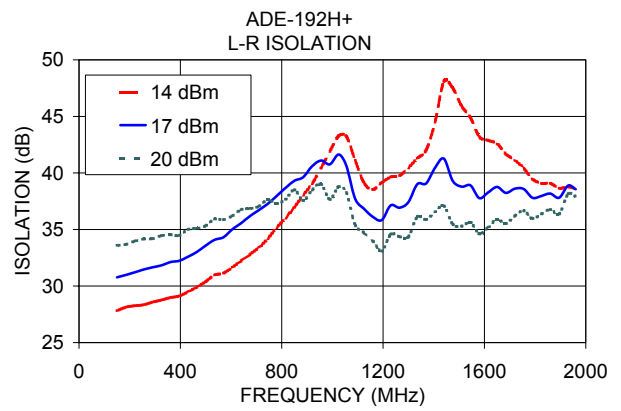
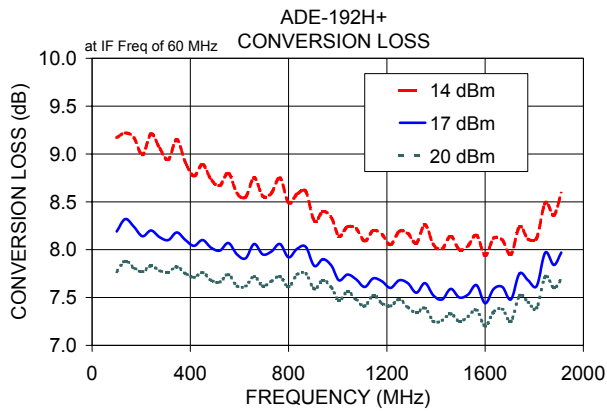
[www.minicircuits.com](http://www.minicircuits.com) P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

**+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

REV. A  
M151107  
ADE-192H+  
ED-13397/1  
WL/CP/AM  
150518  
Page 2 of 3



**Notes**

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

