*Surface Mount*

# Frequency Mixer

## ADE-1ASK

## Level 7 (LO Power +7 dBm) 2 to 600 MHz

CASE STYLE: CD542

### Maximum Ratings

| | |
|---|---|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power | 50mW |
| IF Current | 40mA |

Permanent damage may occur if any of these limits are exceeded.

### Pin Connections

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

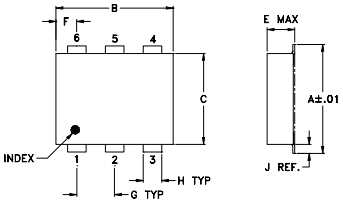
### Features

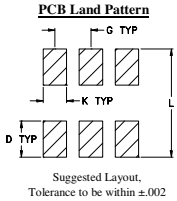
- low conversion loss, 5.3 dB typ.
- excellent L-R isolation, 50 dB typ.
- low profile package
- aqueous washable
- protected by U.S. Patent 6,133,525

### Applications

- VSAT systems
- instrumentation
- cellular

### Outline Drawing



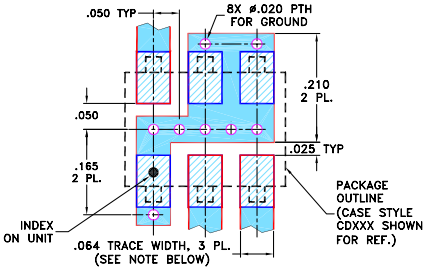

Suggested Layout,
Tolerance to be within ±.002

### 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

### Electrical Specifications

| FREQUENCY (MHz) | | CONVERSION LOSS (dB) | | | | LO-RF ISOLATION (dB) | | | | | | LO-IF ISOLATION (dB) | | | | | | IP3 at center band (dBm) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Mid-Band m | | | Total Range | L | | M | | U | | L | | M | | U | | |
| LO/RF | IF | | | | | | | | | | | | | | | | | |
| $f_L$-$f_U$ | | $\overline{X}$ | σ | Max. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. |
| 2-600 | DC-600 | 5.3 | 0.10 | 6.5 | 7.5 | 55 | 45 | 50 | 30 | 40 | 25 | 50 | 40 | 45 | 24 | 35 | 18 | 16 |

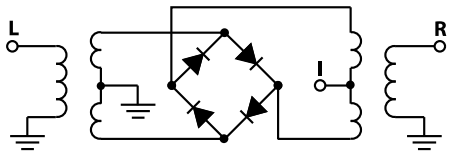
1 dB COMP.: +1 dBm typ.
Phase detection, positive polarity

L = low range [$f_L$ to 10 $f_L$] M = mid range [10 $f_L$ to $f_U$/2] U = upper range [$f_U$/2 to $f_U$]
m= mid band [2$f_L$ to $f_U$/2]

### 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 +7dBm | LO +7dBm | LO +7dBm | LO +7dBm | LO +7dBm |
| 1.00 | 31.00 | 6.13 | 67.70 | 64.10 | 1.38 | 2.58 |
| 2.00 | 32.00 | 5.68 | 67.90 | 64.20 | 1.22 | 2.55 |
| 2.18 | 32.18 | 5.68 | 67.90 | 64.00 | 1.21 | 2.52 |
| 4.73 | 34.73 | 5.45 | 66.90 | 64.10 | 1.12 | 2.55 |
| 10.29 | 40.29 | 5.40 | 66.00 | 63.10 | 1.09 | 2.52 |
| 22.37 | 52.37 | 5.49 | 63.30 | 61.10 | 1.07 | 2.52 |
| 48.66 | 78.66 | 5.44 | 59.70 | 57.50 | 1.04 | 2.52 |
| 105.82 | 135.82 | 5.42 | 54.50 | 52.40 | 1.00 | 2.52 |
| 230.13 | 260.13 | 5.49 | 48.90 | 47.20 | 1.05 | 2.61 |
| 500.50 | 530.50 | 5.96 | 46.80 | 38.20 | 1.25 | 2.88 |
| 556.00 | 586.00 | 6.18 | 47.40 | 36.40 | 1.20 | 2.92 |
| 600.00 | 630.00 | 6.29 | 45.90 | 35.20 | 1.21 | 2.96 |
| 611.50 | 641.50 | 6.31 | 45.10 | 35.00 | 1.21 | 2.88 |
| 667.00 | 697.00 | 6.43 | 42.60 | 31.90 | 1.26 | 3.21 |
| 722.50 | 752.50 | 6.81 | 41.00 | 30.90 | 1.38 | 3.01 |
| 778.00 | 808.00 | 6.93 | 38.60 | 29.20 | 1.58 | 3.21 |
| 833.50 | 863.50 | 7.22 | 36.80 | 28.10 | 1.78 | 3.38 |
| 889.00 | 919.00 | 7.46 | 35.20 | 28.60 | 1.99 | 3.16 |
| 944.50 | 974.50 | 7.58 | 33.10 | 26.60 | 2.25 | 3.64 |
| 1000.00 | 1030.00 | 7.83 | 30.70 | 24.00 | 2.49 | 3.64 |

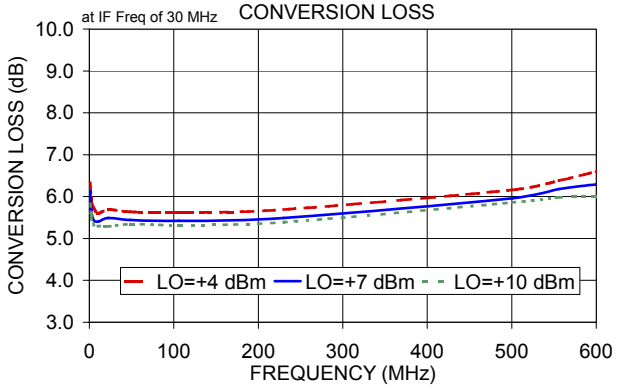
### Electrical Schematic



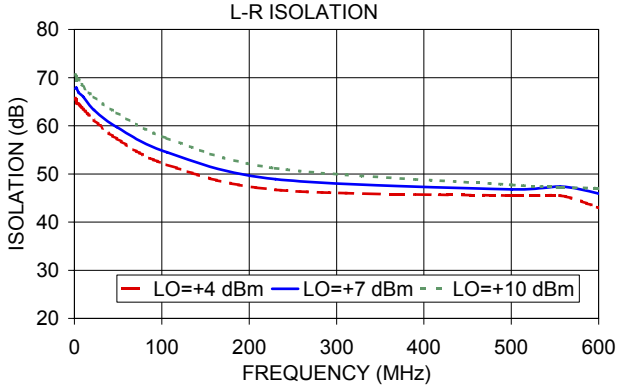
## Performance Charts

# ADE-1ASK

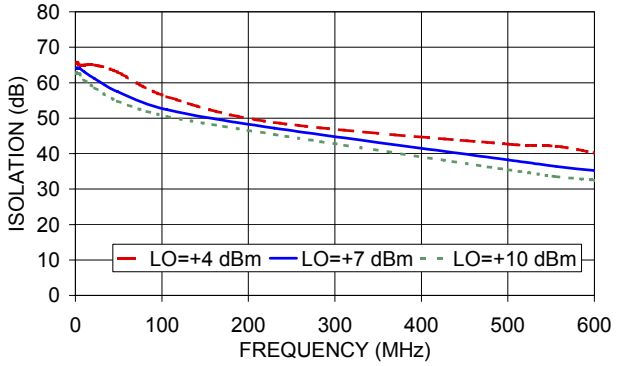
ADE-1ASK
at IF Freq of 30 MHz CONVERSION LOSS



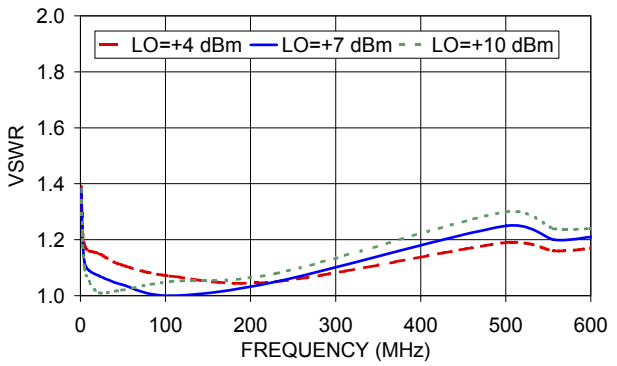

ADE-1ASK
L-R ISOLATION



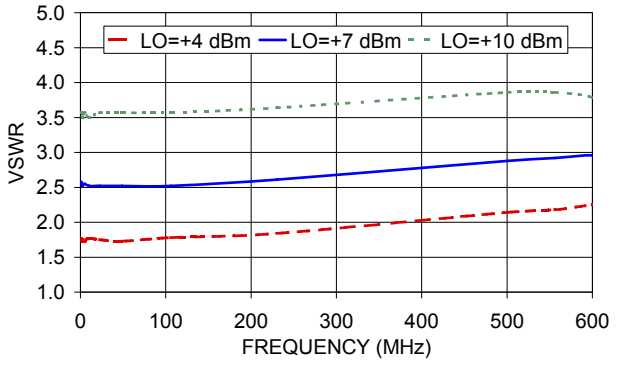

ADE-1ASK
L-I ISOLATION



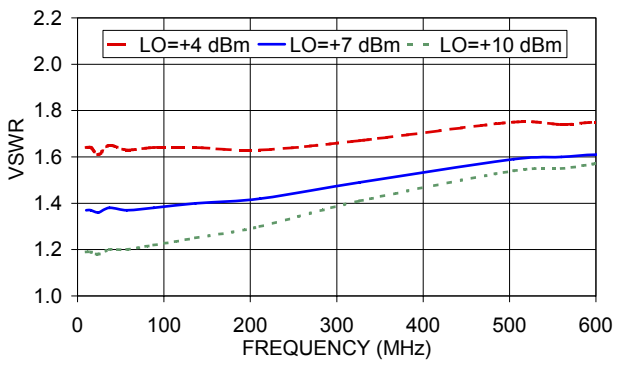

ADE-1ASK
RF VSWR




ADE-1ASK
LO VSWR




ADE-1ASK
IF VSWR




Notes
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