*Coaxial*

# Frequency Mixer

## ZFM-3H+

Level 17 (LO Power +17 dBm) 0.05 to 300 MHz

*Generic photo used for illustration purposes only*

CASE STYLE: K18

| Connectors | Model |
|---|---|
| **BNC** | ZFM-3H+ |
| **SMA** | ZFM-3H-S(+) |
| **BRACKET (OPTION "B")** | |

***+RoHS Compliant***

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

### Maximum Ratings

| | |
|---|---|
| Operating Temperature | -55°C to 100°C |
| Storage Temperature | -55°C to 100°C |
| RF Power | 200mW |
| IF Current | 40mA |

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

### Coaxial Connections

| | |
|---|---|
| LO | 1 |
| RF | 2 |
| IF | 3 |

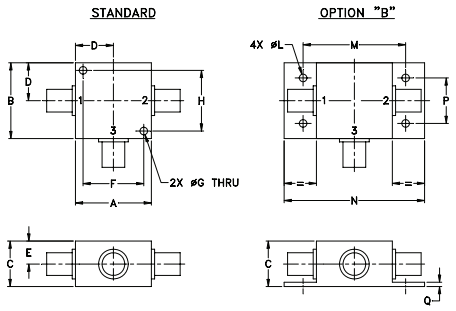
### Features

- low conversion loss,5.18 dB typ.
- high L-R isolation, 40 dB typ, L-I, 35 dB typ.
- rugged shielded case

### Applications

- VHF
- FM radio
- defense & federal communications
- instrumentation

### Outline Drawing




### Outline Dimensions ( inch / mm )

| A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|
| 1.25 | 1.25 | .75 | .63 | .38 | 1.00 | .125 | 1.000 |
| 31.75 | 31.75 | 19.05 | 16.00 | 9.65 | 25.40 | 3.18 | 25.40 |

| J | K | L | M | N | P | Q | wt |
|---|---|---|---|---|---|---|---|
| -- | -- | .125 | 1.688 | 2.18 | .75 | .07 | grams |
| -- | -- | 3.18 | 42.88 | 55.37 | 19.05 | 1.78 | 70.0 |

### Electrical Specifications

| FREQUENCY (MHz) | | CONVERSION LOSS (dB) | | | | LO-RF ISOLATION (dB) | | | | | | LO-IF ISOLATION (dB) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LO/RF | IF | Mid-Band m | | | Total Range | L | | M | | U | | L | | M | | U | |
| $f_L$-$f_U$ | | $\overline{X}$ | σ | Max. | Max. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. |
| 0.05-300 | DC-300 | 5.18 | 0.11 | 7.0 | 8.5 | 55 | 45 | 40 | 30 | 30 | 25 | 50 | 40 | 35 | 25 | 25 | 20 |

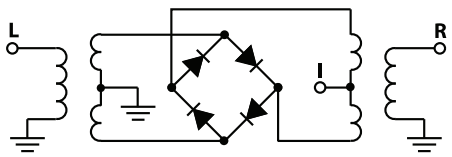
1 dB COMP.: +14 dBm typ.

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 +17dBm | LO +7dBm | LO +17dBm | LO +17dBm | LO +17dBm |
| 0.05 | 30.05 | 5.81 | 65.01 | 59.81 | 1.63 | 1.53 |
| 1.00 | 31.00 | 4.70 | 61.51 | 56.17 | 1.64 | 1.52 |
| 2.00 | 32.00 | 4.63 | 62.05 | 56.05 | 1.64 | 1.39 |
| 10.00 | 40.00 | 4.79 | 64.41 | 56.12 | 1.61 | 1.53 |
| 20.00 | 50.00 | 5.00 | 57.00 | 52.66 | 1.61 | 1.46 |
| 29.94 | 59.94 | 4.75 | 51.03 | 48.60 | 1.60 | 1.56 |
| 49.23 | 79.23 | 4.69 | 47.42 | 46.33 | 1.56 | 1.51 |
| 68.52 | 98.52 | 4.67 | 42.12 | 42.25 | 1.53 | 1.51 |
| 87.81 | 57.81 | 4.57 | 38.18 | 38.54 | 1.51 | 1.54 |
| 100.00 | 70.00 | 4.50 | 36.56 | 37.81 | 1.46 | 1.59 |
| 136.03 | 106.03 | 4.45 | 35.70 | 36.26 | 1.40 | 1.60 |
| 155.32 | 125.32 | 4.61 | 33.06 | 33.98 | 1.31 | 1.59 |
| 174.61 | 144.61 | 4.84 | 32.15 | 32.92 | 1.28 | 1.59 |
| 193.90 | 163.90 | 4.96 | 31.48 | 32.48 | 1.22 | 1.65 |
| 213.19 | 183.19 | 4.98 | 29.23 | 30.80 | 1.17 | 1.75 |
| 232.48 | 202.48 | 5.17 | 27.78 | 29.94 | 1.11 | 1.87 |
| 242.13 | 212.13 | 5.27 | 28.94 | 32.37 | 1.05 | 1.81 |
| 261.42 | 231.42 | 5.60 | 31.41 | 33.19 | 1.03 | 1.76 |
| 280.71 | 250.71 | 6.03 | 34.81 | 33.60 | 1.02 | 1.78 |
| 300.00 | 270.00 | 6.64 | 36.67 | 31.62 | 1.02 | 1.72 |

### Electrical Schematic




Notes

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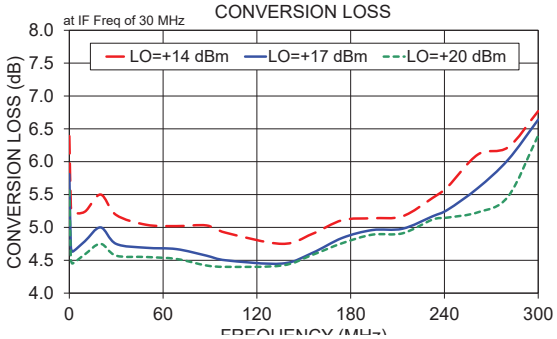
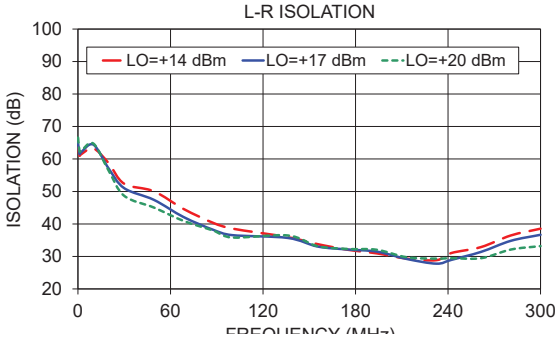
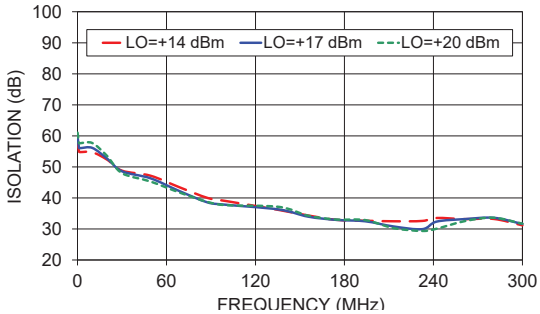
ZFM-3H-S+
CONVERSION LOSS



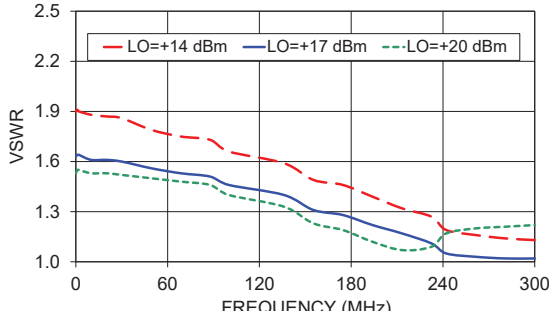

ZFM-3H-S+
L-R ISOLATION



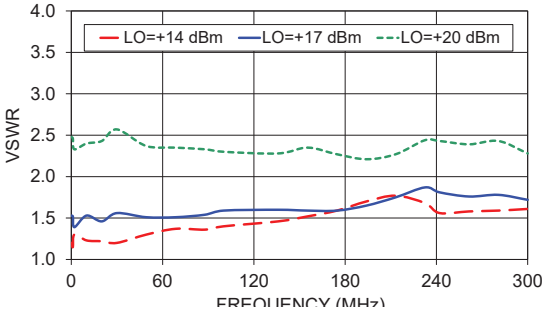

ZFM-3H-S+
L-I ISOLATION



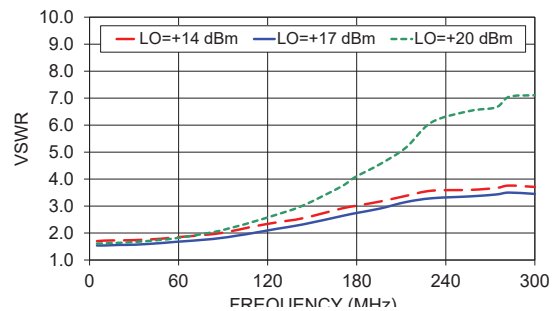

ZFM-3H-S+
RF VSWR




ZFM-3H-S+
LO VSWR




ZFM-3H-S+
IF VSWR





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# Frequency Mixer ZFM-3H+

## *Typical Performance Data*

| RF (IN) (MHz) | LO (MHz) | CONVERSION LOSS IF FIXED @IF(OUT)=30MHz (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +14 | +17 | +20 |
| 0.1 | 30.1 | 6.39 | 5.81 | 5.56 |
| 1.0 | 31.0 | 5.32 | 4.70 | 4.51 |
| 2.0 | 32.0 | 5.23 | 4.63 | 4.45 |
| 10.0 | 40.0 | 5.24 | 4.79 | 4.59 |
| 22.7 | 52.7 | 5.64 | 5.26 | 5.07 |
| 35.2 | 65.2 | 5.66 | 5.29 | 5.11 |
| 47.8 | 77.8 | 5.69 | 5.34 | 5.14 |
| 60.4 | 90.4 | 5.64 | 5.29 | 5.12 |
| 72.9 | 102.9 | 5.65 | 5.32 | 5.12 |
| 85.5 | 115.5 | 5.65 | 5.30 | 5.13 |
| 98.0 | 128.0 | 5.62 | 5.32 | 5.14 |
| 110.6 | 140.6 | 5.58 | 5.29 | 5.15 |
| 123.2 | 153.2 | 5.66 | 5.27 | 5.13 |
| 135.7 | 165.7 | 5.83 | 5.38 | 5.13 |
| 148.3 | 178.3 | 5.89 | 5.56 | 5.29 |
| 160.9 | 190.9 | 5.86 | 5.59 | 5.42 |
| 173.4 | 203.4 | 5.84 | 5.59 | 5.45 |
| 186.0 | 216.0 | 5.85 | 5.58 | 5.44 |
| 198.6 | 228.6 | 5.90 | 5.52 | 5.39 |
| 211.1 | 241.1 | 6.16 | 5.61 | 5.44 |
| 236.3 | 266.3 | 6.85 | 6.24 | 5.67 |
| 248.8 | 278.8 | 7.01 | 6.53 | 6.01 |
| 261.4 | 291.4 | 6.98 | 6.59 | 6.29 |
| 273.9 | 303.9 | 7.08 | 6.74 | 6.48 |
| 286.5 | 316.5 | 7.12 | 6.80 | 6.54 |
| 299.1 | 329.1 | 7.32 | 7.02 | 6.77 |
| 311.6 | 341.6 | 7.51 | 7.21 | 6.94 |
| 336.8 | 366.8 | 7.83 | 7.46 | 6.92 |
| 349.3 | 379.3 | 7.79 | 7.30 | 6.65 |
| 361.9 | 391.9 | 8.11 | 7.37 | 6.69 |
| 374.5 | 404.5 | 7.95 | 7.05 | 6.58 |
| 387.0 | 417.0 | 7.95 | 7.03 | 6.73 |
| 399.6 | 429.6 | 8.12 | 7.03 | 6.74 |
| 412.2 | 442.2 | 8.09 | 7.10 | 6.93 |
| 437.3 | 467.3 | 8.44 | 7.36 | 7.26 |
| 449.8 | 479.8 | 9.12 | 7.81 | 7.72 |
| 462.4 | 492.4 | 9.53 | 8.02 | 8.05 |
| 475.0 | 505.0 | 10.75 | 8.73 | 8.79 |
| 487.5 | 517.5 | 11.78 | 9.10 | 9.16 |
| 500.1 | 530.1 | 12.65 | 9.83 | 9.92 |

| RF (IN) (MHz) | LO (MHz) | IP3 INPUT (dBm) @LO (dBm) | | |
|---|---|---|---|---|
| | | +14 | +17 | +20 |
| 10.1 | 40.1 | 31.08 | 28.29 | 27.62 |
| 22.7 | 52.7 | 32.27 | 27.51 | 25.95 |
| 35.2 | 65.2 | 27.65 | 26.21 | 25.01 |
| 47.8 | 77.8 | 27.27 | 24.88 | 24.83 |
| 60.4 | 90.4 | 26.83 | 24.27 | 26.73 |
| 72.9 | 102.9 | 23.08 | 23.30 | 26.61 |
| 85.5 | 115.5 | 22.16 | 21.94 | 25.75 |
| 98.0 | 128.0 | 22.86 | 24.54 | 28.86 |
| 110.6 | 140.6 | 22.97 | 31.79 | 27.24 |
| 123.2 | 153.2 | 21.68 | 26.64 | 30.77 |
| 135.7 | 165.7 | 20.85 | 23.66 | 32.22 |
| 148.3 | 178.3 | 20.74 | 23.80 | 25.53 |
| 160.9 | 190.9 | 22.01 | 24.85 | 26.49 |
| 173.4 | 203.4 | 21.53 | 24.95 | 28.59 |
| 186.0 | 216.0 | 19.82 | 24.75 | 27.37 |
| 198.6 | 228.6 | 19.16 | 25.46 | 28.80 |
| 211.1 | 241.1 | 20.96 | 26.85 | 21.97 |
| 223.7 | 253.7 | 21.99 | 23.64 | 22.17 |
| 236.3 | 266.3 | 17.57 | 19.58 | 21.98 |
| 248.8 | 278.8 | 16.10 | 15.61 | 18.44 |
| 261.4 | 291.4 | 16.10 | 14.56 | 14.40 |
| 273.9 | 303.9 | 16.39 | 14.70 | 13.84 |
| 286.5 | 316.5 | 16.16 | 15.03 | 14.37 |
| 299.1 | 329.1 | 16.71 | 15.93 | 15.56 |
| 311.6 | 341.6 | 16.31 | 15.91 | 16.06 |
| 324.2 | 354.2 | 17.19 | 16.90 | 17.42 |
| 336.8 | 366.8 | 17.13 | 17.24 | 17.34 |
| 349.3 | 379.3 | 17.40 | 17.31 | 17.02 |
| 361.9 | 391.9 | 18.45 | 17.56 | 18.17 |
| 374.5 | 404.5 | 18.24 | 16.47 | 18.79 |
| 387.0 | 417.0 | 20.11 | 16.55 | 20.12 |
| 399.6 | 429.6 | 19.55 | 17.10 | 22.05 |
| 412.2 | 442.2 | 23.10 | 18.00 | 23.22 |
| 424.7 | 454.7 | 22.50 | 19.36 | 23.76 |
| 437.3 | 467.3 | 21.20 | 19.98 | 22.41 |
| 449.8 | 479.8 | 20.90 | 20.25 | 22.13 |
| 462.4 | 492.4 | 20.56 | 19.96 | 22.01 |
| 475.0 | 505.0 | 21.55 | 20.75 | 22.50 |
| 487.5 | 517.5 | 24.89 | 20.42 | 21.97 |
| 500.1 | 530.1 | 23.02 | 20.24 | 21.02 |

| RF (IN) (MHz) | LO (MHz) | COMPRESSION @RF IN=+14dBm (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +14 | +17 | +20 |
| 10.1 | 40.1 | 1.23 | 0.78 | 0.55 |
| 22.7 | 52.7 | 0.99 | 0.64 | 0.45 |
| 35.2 | 65.2 | 1.06 | 0.65 | 0.42 |
| 47.8 | 77.8 | 1.01 | 0.62 | 0.40 |
| 60.4 | 90.4 | 1.01 | 0.56 | 0.39 |
| 72.9 | 102.9 | 0.95 | 0.55 | 0.36 |
| 85.5 | 115.5 | 1.02 | 0.50 | 0.31 |
| 98.0 | 128.0 | 0.96 | 0.45 | 0.30 |
| 110.6 | 140.6 | 0.95 | 0.46 | 0.32 |
| 123.2 | 153.2 | 0.91 | 0.53 | 0.33 |
| 135.7 | 165.7 | 0.86 | 0.49 | 0.38 |
| 148.3 | 178.3 | 0.80 | 0.35 | 0.33 |
| 160.9 | 190.9 | 0.95 | 0.36 | 0.26 |
| 173.4 | 203.4 | 1.08 | 0.46 | 0.33 |
| 186.0 | 216.0 | 1.32 | 0.60 | 0.38 |
| 198.6 | 228.6 | 1.50 | 0.82 | 0.46 |
| 211.1 | 241.1 | 1.40 | 1.03 | 0.51 |
| 223.7 | 253.7 | 1.22 | 1.17 | 0.62 |
| 236.3 | 266.3 | 1.22 | 1.10 | 0.86 |
| 248.8 | 278.8 | 1.31 | 1.14 | 0.96 |
| 261.4 | 291.4 | 1.47 | 1.25 | 0.94 |
| 273.9 | 303.9 | 1.68 | 1.35 | 1.02 |
| 286.5 | 316.5 | 1.78 | 1.41 | 1.12 |
| 299.1 | 329.1 | 1.60 | 1.22 | 0.96 |
| 311.6 | 341.6 | 1.67 | 1.21 | 0.99 |
| 324.2 | 354.2 | 1.60 | 1.09 | 0.93 |
| 336.8 | 366.8 | 1.44 | 0.97 | 0.93 |
| 349.3 | 379.3 | 1.45 | 1.03 | 1.07 |
| 361.9 | 391.9 | 1.33 | 1.06 | 1.05 |
| 374.5 | 404.5 | 1.47 | 1.33 | 1.19 |
| 387.0 | 417.0 | 1.63 | 1.45 | 1.15 |
| 399.6 | 429.6 | 1.84 | 1.67 | 1.21 |
| 412.2 | 442.2 | 2.11 | 1.68 | 1.10 |
| 424.7 | 454.7 | 2.12 | 1.74 | 1.20 |
| 437.3 | 467.3 | 2.34 | 1.78 | 1.13 |
| 449.8 | 479.8 | 2.33 | 1.70 | 1.00 |
| 462.4 | 492.4 | 2.23 | 1.67 | 0.89 |
| 475.0 | 505.0 | 1.81 | 1.54 | 0.67 |
| 487.5 | 517.5 | 1.73 | 1.71 | 0.69 |
| 500.1 | 530.1 | 1.79 | 1.72 | 0.56 |



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## *Typical Performance Data*

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=150.1MHz (dB) @LO (dBm) +17 |
|---|---|---|
| 140.0 | 10.1 | 5.48 |
| 136.7 | 13.4 | 5.50 |
| 133.3 | 16.8 | 5.49 |
| 130.0 | 20.1 | 5.42 |
| 126.7 | 23.4 | 5.36 |
| 123.3 | 26.8 | 5.40 |
| 120.0 | 30.1 | 5.33 |
| 116.7 | 33.4 | 5.24 |
| 113.3 | 36.8 | 5.15 |
| 110.0 | 40.1 | 5.13 |
| 106.7 | 43.4 | 5.18 |
| 103.3 | 46.8 | 5.13 |
| 100.0 | 50.1 | 5.10 |
| 96.7 | 53.4 | 5.09 |
| 93.3 | 56.8 | 5.10 |
| 90.0 | 60.1 | 5.11 |
| 86.7 | 63.4 | 5.09 |
| 83.3 | 66.8 | 5.05 |
| 80.0 | 70.1 | 5.03 |
| 76.7 | 73.4 | 5.00 |
| 73.3 | 76.8 | 5.01 |
| 70.0 | 80.1 | 5.06 |
| 66.7 | 83.4 | 5.07 |
| 63.3 | 86.8 | 5.08 |
| 60.0 | 90.1 | 5.12 |
| 56.7 | 93.4 | 5.12 |
| 53.3 | 96.8 | 5.10 |
| 50.0 | 100.1 | 5.10 |
| 46.7 | 103.4 | 5.08 |
| 43.3 | 106.8 | 5.07 |
| 40.0 | 110.1 | 5.09 |
| 36.7 | 113.4 | 5.11 |
| 33.3 | 116.8 | 5.15 |
| 30.0 | 120.1 | 5.17 |
| 26.7 | 123.4 | 5.21 |
| 23.3 | 126.8 | 5.23 |
| 20.0 | 130.1 | 5.25 |
| 16.7 | 133.4 | 5.27 |
| 13.3 | 136.8 | 5.25 |
| 10.0 | 140.1 | 5.29 |

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=10.1MHz (dB) @LO (dBm) +17 |
|---|---|---|
| 10.0 | 20.1 | 5.11 |
| 17.2 | 27.3 | 5.11 |
| 24.4 | 34.5 | 4.97 |
| 31.5 | 41.6 | 4.98 |
| 38.7 | 48.8 | 5.00 |
| 45.9 | 56.0 | 5.06 |
| 53.1 | 63.2 | 5.07 |
| 60.3 | 70.4 | 5.06 |
| 67.4 | 77.5 | 5.11 |
| 74.6 | 84.7 | 5.14 |
| 81.8 | 91.9 | 5.18 |
| 89.0 | 99.1 | 5.19 |
| 96.2 | 106.3 | 5.21 |
| 103.3 | 113.4 | 5.25 |
| 110.5 | 120.6 | 5.32 |
| 117.7 | 127.8 | 5.37 |
| 124.9 | 135.0 | 5.36 |
| 132.1 | 142.2 | 5.30 |
| 139.2 | 149.3 | 5.34 |
| 146.4 | 156.5 | 5.40 |
| 153.6 | 163.7 | 5.53 |
| 160.8 | 170.9 | 5.69 |
| 167.9 | 178.0 | 5.89 |
| 175.1 | 185.2 | 6.00 |
| 182.3 | 192.4 | 5.99 |
| 189.5 | 199.6 | 5.98 |
| 196.7 | 206.8 | 6.01 |
| 203.8 | 213.9 | 6.11 |
| 211.0 | 221.1 | 6.10 |
| 218.2 | 228.3 | 6.06 |
| 225.4 | 235.5 | 5.99 |
| 232.6 | 242.7 | 6.05 |
| 239.7 | 249.8 | 6.01 |
| 246.9 | 257.0 | 6.13 |
| 254.1 | 264.2 | 6.23 |
| 261.3 | 271.4 | 6.48 |
| 268.5 | 278.6 | 6.42 |
| 275.6 | 285.7 | 6.47 |
| 282.8 | 292.9 | 6.26 |
| 290.0 | 300.1 | 6.26 |

| IF (OUT) (MHz) | LO (MHz) | CONVERSION LOSS VS. IF FREQUENCY @RF(IN)=300.1MHz (dB) @LO (dBm) +17 |
|---|---|---|
| 290.0 | 10.1 | 6.89 |
| 282.8 | 17.3 | 6.74 |
| 275.6 | 24.5 | 6.56 |
| 268.5 | 31.6 | 6.50 |
| 261.3 | 38.8 | 6.39 |
| 254.1 | 46.0 | 6.33 |
| 246.9 | 53.2 | 6.25 |
| 239.7 | 60.4 | 6.21 |
| 232.6 | 67.5 | 6.16 |
| 225.4 | 74.7 | 6.06 |
| 218.2 | 81.9 | 6.00 |
| 211.0 | 89.1 | 5.98 |
| 203.8 | 96.3 | 5.99 |
| 196.7 | 103.4 | 5.99 |
| 189.5 | 110.6 | 5.97 |
| 182.3 | 117.8 | 5.98 |
| 175.1 | 125.0 | 5.97 |
| 167.9 | 132.2 | 6.01 |
| 160.8 | 139.3 | 5.99 |
| 153.6 | 146.5 | 6.02 |
| 146.4 | 153.7 | 6.09 |
| 139.2 | 160.9 | 6.14 |
| 132.1 | 168.0 | 6.10 |
| 124.9 | 175.2 | 6.01 |
| 117.7 | 182.4 | 5.94 |
| 110.5 | 189.6 | 5.94 |
| 103.3 | 196.8 | 5.97 |
| 96.2 | 203.9 | 5.97 |
| 89.0 | 211.1 | 6.00 |
| 81.8 | 218.3 | 6.06 |
| 74.6 | 225.5 | 6.14 |
| 67.4 | 232.7 | 6.18 |
| 60.3 | 239.8 | 6.21 |
| 53.1 | 247.0 | 6.23 |
| 45.9 | 254.2 | 6.35 |
| 38.7 | 261.4 | 6.50 |
| 31.5 | 268.6 | 6.66 |
| 24.4 | 275.7 | 6.74 |
| 17.2 | 282.9 | 6.77 |
| 10.0 | 290.1 | 6.80 |




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## *Typical Performance Data*

| LO (MHz) | LO-RF ISOLATION (dB) @LO (dBm) | | | LO-IF ISOLATION (dB) @LO (dBm) | | |
|---|---|---|---|---|---|---|
| | +14 | +17 | +20 | +14 | +17 | +20 |
| 0.1 | 63.69 | 65.01 | 66.59 | 58.11 | 59.81 | 61.05 |
| 1.0 | 61.00 | 61.51 | 62.33 | 54.94 | 56.17 | 57.68 |
| 2.0 | 61.43 | 62.05 | 62.47 | 54.78 | 56.05 | 57.65 |
| 10.0 | 63.25 | 64.41 | 64.74 | 54.73 | 56.12 | 57.68 |
| 22.7 | 76.09 | 77.69 | 78.64 | 60.48 | 57.58 | 55.91 |
| 35.2 | 71.82 | 73.49 | 75.46 | 56.93 | 56.01 | 54.70 |
| 47.8 | 68.97 | 70.56 | 72.90 | 54.65 | 53.91 | 53.57 |
| 60.4 | 66.83 | 68.35 | 69.89 | 51.72 | 51.56 | 52.19 |
| 72.9 | 64.79 | 66.96 | 69.08 | 48.71 | 49.56 | 50.73 |
| 85.5 | 64.48 | 65.78 | 66.70 | 46.60 | 47.84 | 49.05 |
| 98.0 | 62.50 | 66.41 | 70.25 | 44.96 | 46.67 | 47.80 |
| 110.6 | 59.98 | 61.25 | 63.19 | 43.82 | 45.52 | 46.88 |
| 123.2 | 60.58 | 62.43 | 64.08 | 42.62 | 44.62 | 46.05 |
| 135.7 | 62.88 | 65.85 | 66.29 | 40.66 | 42.05 | 43.63 |
| 148.3 | 60.56 | 63.52 | 64.31 | 40.87 | 41.71 | 42.70 |
| 160.9 | 55.82 | 59.57 | 61.68 | 41.06 | 42.32 | 42.73 |
| 173.4 | 52.89 | 55.34 | 58.53 | 40.99 | 42.96 | 44.25 |
| 186.0 | 51.33 | 53.27 | 55.07 | 39.31 | 40.78 | 42.29 |
| 198.6 | 49.51 | 51.71 | 54.20 | 37.88 | 39.52 | 40.86 |
| 211.1 | 49.33 | 52.26 | 55.00 | 37.60 | 39.45 | 40.56 |
| 236.3 | 49.89 | 50.87 | 51.58 | 37.38 | 38.91 | 38.24 |
| 248.8 | 52.64 | 52.63 | 56.00 | 39.52 | 38.93 | 36.84 |
| 261.4 | 53.57 | 57.89 | 52.28 | 40.45 | 39.65 | 36.62 |
| 273.9 | 52.70 | 53.94 | 50.51 | 38.81 | 38.86 | 37.02 |
| 286.5 | 50.59 | 51.28 | 51.15 | 35.76 | 35.40 | 35.45 |
| 299.1 | 47.92 | 47.02 | 44.89 | 34.11 | 33.93 | 34.05 |
| 311.6 | 47.24 | 45.46 | 43.53 | 33.73 | 33.44 | 33.25 |
| 336.8 | 48.61 | 46.61 | 43.41 | 34.02 | 33.14 | 32.23 |
| 349.3 | 47.09 | 43.95 | 41.16 | 34.27 | 32.92 | 31.69 |
| 361.9 | 47.40 | 44.21 | 41.52 | 34.94 | 32.93 | 30.98 |
| 374.5 | 49.09 | 45.53 | 39.44 | 35.42 | 33.53 | 29.35 |
| 387.0 | 45.99 | 41.39 | 34.86 | 34.95 | 34.10 | 26.89 |
| 399.6 | 45.46 | 40.91 | 33.97 | 32.75 | 32.89 | 25.00 |
| 412.2 | 43.18 | 40.07 | 33.19 | 29.74 | 30.41 | 23.35 |
| 437.3 | 34.84 | 34.66 | 29.91 | 24.48 | 26.11 | 21.38 |
| 449.8 | 32.05 | 32.98 | 28.94 | 22.48 | 24.52 | 20.59 |
| 462.4 | 29.39 | 30.98 | 27.87 | 20.78 | 23.20 | 20.25 |
| 475.0 | 27.21 | 28.76 | 26.25 | 19.41 | 21.85 | 19.58 |
| 487.5 | 25.66 | 27.21 | 25.57 | 18.28 | 20.21 | 18.80 |
| 500.1 | 24.45 | 25.41 | 24.54 | 17.81 | 18.89 | 18.06 |

| RF (IN) (MHz) | LO (MHz) | RF-IF ISOLATION (dB) @LO (dBm) | | |
|---|---|---|---|---|
| | | +14 | +17 | +20 |
| 10.1 | 40.1 | 36.96 | 37.44 | 37.20 |
| 22.7 | 52.7 | 32.23 | 32.64 | 33.09 |
| 35.2 | 65.2 | 28.89 | 29.46 | 29.70 |
| 47.8 | 77.8 | 27.10 | 27.47 | 27.81 |
| 60.4 | 90.4 | 25.50 | 26.13 | 26.50 |
| 72.9 | 102.9 | 24.37 | 24.74 | 25.02 |
| 85.5 | 115.5 | 23.89 | 24.50 | 24.85 |
| 98.0 | 128.0 | 23.16 | 23.87 | 24.47 |
| 110.6 | 140.6 | 22.64 | 23.42 | 23.92 |
| 123.2 | 153.2 | 22.13 | 23.05 | 23.61 |
| 135.7 | 165.7 | 21.46 | 22.27 | 23.04 |
| 148.3 | 178.3 | 21.61 | 22.18 | 22.81 |
| 160.9 | 190.9 | 21.96 | 22.53 | 22.84 |
| 173.4 | 203.4 | 22.20 | 22.87 | 23.31 |
| 186.0 | 216.0 | 22.53 | 23.46 | 23.98 |
| 198.6 | 228.6 | 21.49 | 22.65 | 23.40 |
| 211.1 | 241.1 | 20.22 | 21.74 | 22.71 |
| 223.7 | 253.7 | 18.77 | 20.12 | 20.80 |
| 236.3 | 266.3 | 17.73 | 18.65 | 19.48 |
| 248.8 | 278.8 | 16.99 | 17.60 | 18.25 |
| 261.4 | 291.4 | 16.45 | 16.80 | 17.13 |
| 273.9 | 303.9 | 16.23 | 16.45 | 16.77 |
| 286.5 | 316.5 | 15.84 | 15.92 | 16.15 |
| 299.1 | 329.1 | 15.78 | 15.81 | 15.96 |
| 311.6 | 341.6 | 15.59 | 15.61 | 15.74 |
| 324.2 | 354.2 | 15.72 | 15.75 | 15.98 |
| 336.8 | 366.8 | 15.76 | 15.80 | 16.18 |
| 349.3 | 379.3 | 15.62 | 15.73 | 16.14 |
| 361.9 | 391.9 | 15.96 | 16.07 | 16.20 |
| 374.5 | 404.5 | 15.65 | 15.62 | 15.51 |
| 387.0 | 417.0 | 15.55 | 15.28 | 14.79 |
| 399.6 | 429.6 | 15.35 | 14.68 | 13.98 |
| 412.2 | 442.2 | 14.51 | 13.52 | 12.94 |
| 424.7 | 454.7 | 13.87 | 12.74 | 12.21 |
| 437.3 | 467.3 | 12.93 | 11.79 | 11.25 |
| 449.8 | 479.8 | 12.08 | 11.00 | 10.59 |
| 462.4 | 492.4 | 11.28 | 10.16 | 9.84 |
| 475.0 | 505.0 | 10.59 | 9.37 | 9.06 |
| 487.5 | 517.5 | 9.94 | 8.75 | 8.49 |
| 500.1 | 530.1 | 9.26 | 8.13 | 7.80 |




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## *Typical Performance Data*

| RF (IN) (MHz) | LO (MHz) | RF VSWR (:1) @LO (dBm) | | |
|---|---|---|---|---|
| | | +14 | +17 | +20 |
| 5.0 | 35.0 | 1.90 | 1.63 | 1.53 |
| 10.0 | 40.0 | 1.91 | 1.64 | 1.55 |
| 22.7 | 52.7 | 1.80 | 1.57 | 1.44 |
| 35.2 | 65.2 | 1.77 | 1.57 | 1.43 |
| 47.8 | 77.8 | 1.76 | 1.55 | 1.41 |
| 60.4 | 90.4 | 1.76 | 1.53 | 1.39 |
| 72.9 | 102.9 | 1.72 | 1.51 | 1.38 |
| 85.5 | 115.5 | 1.69 | 1.44 | 1.32 |
| 98.0 | 128.0 | 1.63 | 1.44 | 1.29 |
| 110.6 | 140.6 | 1.59 | 1.40 | 1.30 |
| 123.2 | 153.2 | 1.58 | 1.38 | 1.29 |
| 135.7 | 165.7 | 1.61 | 1.39 | 1.26 |
| 148.3 | 178.3 | 1.54 | 1.40 | 1.27 |
| 160.9 | 190.9 | 1.44 | 1.32 | 1.25 |
| 173.4 | 203.4 | 1.36 | 1.25 | 1.21 |
| 186.0 | 216.0 | 1.33 | 1.23 | 1.21 |
| 198.6 | 228.6 | 1.33 | 1.24 | 1.25 |
| 211.1 | 241.1 | 1.39 | 1.29 | 1.33 |
| 223.7 | 253.7 | 1.49 | 1.33 | 1.38 |
| 236.3 | 266.3 | 1.56 | 1.37 | 1.39 |
| 248.8 | 278.8 | 1.62 | 1.46 | 1.40 |
| 261.4 | 291.4 | 1.61 | 1.48 | 1.42 |
| 273.9 | 303.9 | 1.58 | 1.49 | 1.43 |
| 286.5 | 316.5 | 1.54 | 1.47 | 1.43 |
| 299.1 | 329.1 | 1.51 | 1.44 | 1.39 |
| 311.6 | 341.6 | 1.52 | 1.45 | 1.40 |
| 324.2 | 354.2 | 1.43 | 1.35 | 1.27 |
| 336.8 | 366.8 | 1.44 | 1.35 | 1.20 |
| 349.3 | 379.3 | 1.37 | 1.24 | 1.07 |
| 361.9 | 391.9 | 1.41 | 1.23 | 1.13 |
| 374.5 | 404.5 | 1.35 | 1.18 | 1.16 |
| 387.0 | 417.0 | 1.39 | 1.28 | 1.31 |
| 399.6 | 429.6 | 1.46 | 1.36 | 1.39 |
| 412.2 | 442.2 | 1.53 | 1.51 | 1.55 |
| 424.7 | 454.7 | 1.66 | 1.62 | 1.66 |
| 437.3 | 467.3 | 1.72 | 1.72 | 1.77 |
| 449.8 | 479.8 | 1.92 | 1.91 | 1.95 |
| 462.4 | 492.4 | 2.00 | 1.96 | 2.02 |
| 475.0 | 505.0 | 2.21 | 2.09 | 2.14 |
| 487.5 | 517.5 | 2.37 | 2.11 | 2.14 |
| 500.1 | 530.1 | 2.54 | 2.19 | 2.18 |

| LO (MHz) | LO VSWR (:1) @LO (dBm) | | |
|---|---|---|---|
| | +14 | +17 | +20 |
| 5.0 | 1.20 | 1.53 | 2.48 |
| 10.0 | 1.15 | 1.52 | 2.46 |
| 22.7 | 1.20 | 1.43 | 2.15 |
| 35.2 | 1.20 | 1.46 | 2.24 |
| 47.8 | 1.19 | 1.45 | 2.20 |
| 60.4 | 1.15 | 1.42 | 2.12 |
| 72.9 | 1.13 | 1.40 | 2.06 |
| 85.5 | 1.13 | 1.40 | 2.04 |
| 98.0 | 1.14 | 1.42 | 2.08 |
| 110.6 | 1.13 | 1.45 | 2.14 |
| 123.2 | 1.11 | 1.49 | 2.20 |
| 135.7 | 1.08 | 1.51 | 2.23 |
| 148.3 | 1.08 | 1.52 | 2.20 |
| 160.9 | 1.10 | 1.53 | 2.18 |
| 173.4 | 1.08 | 1.55 | 2.19 |
| 186.0 | 1.07 | 1.58 | 2.24 |
| 198.6 | 1.09 | 1.62 | 2.31 |
| 211.1 | 1.15 | 1.67 | 2.37 |
| 223.7 | 1.21 | 1.70 | 2.39 |
| 236.3 | 1.27 | 1.73 | 2.38 |
| 248.8 | 1.31 | 1.77 | 2.38 |
| 261.4 | 1.31 | 1.83 | 2.43 |
| 273.9 | 1.33 | 1.89 | 2.52 |
| 286.5 | 1.36 | 1.95 | 2.62 |
| 299.1 | 1.40 | 2.02 | 2.72 |
| 311.6 | 1.44 | 2.07 | 2.78 |
| 324.2 | 1.47 | 2.10 | 2.81 |
| 336.8 | 1.51 | 2.12 | 2.82 |
| 349.3 | 1.54 | 2.14 | 2.83 |
| 361.9 | 1.58 | 2.18 | 2.87 |
| 374.5 | 1.63 | 2.24 | 2.93 |
| 387.0 | 1.70 | 2.30 | 2.99 |
| 399.6 | 1.76 | 2.34 | 3.01 |
| 412.2 | 1.82 | 2.37 | 3.00 |
| 424.7 | 1.87 | 2.37 | 2.99 |
| 437.3 | 1.93 | 2.39 | 2.98 |
| 449.8 | 2.02 | 2.45 | 3.00 |
| 462.4 | 2.12 | 2.51 | 3.05 |
| 475.0 | 2.23 | 2.58 | 3.10 |
| 487.5 | 2.36 | 2.65 | 3.14 |
| 500.1 | 2.48 | 2.71 | 3.17 |

| IF (OUT) (MHz) | IF VSWR @LO=300.1MHz (:1) @LO (dBm) | | |
|---|---|---|---|
| | +14 | +17 | +20 |
| 5.0 | 1.70 | 1.54 | 1.61 |
| 10.0 | 1.72 | 1.54 | 1.62 |
| 17.4 | 3.58 | 3.21 | 2.87 |
| 24.9 | 3.23 | 2.92 | 2.60 |
| 32.3 | 3.10 | 2.82 | 2.51 |
| 39.7 | 2.92 | 2.67 | 2.37 |
| 47.2 | 2.88 | 2.66 | 2.36 |
| 54.6 | 2.92 | 2.69 | 2.39 |
| 62.1 | 2.95 | 2.73 | 2.42 |
| 69.5 | 2.97 | 2.76 | 2.46 |
| 76.9 | 3.02 | 2.81 | 2.52 |
| 84.4 | 3.04 | 2.83 | 2.57 |
| 91.8 | 3.09 | 2.87 | 2.61 |
| 99.2 | 3.12 | 2.89 | 2.64 |
| 106.7 | 3.18 | 2.94 | 2.69 |
| 114.1 | 3.18 | 2.95 | 2.71 |
| 121.5 | 3.17 | 2.95 | 2.72 |
| 129.0 | 3.11 | 2.91 | 2.69 |
| 136.4 | 3.06 | 2.89 | 2.67 |
| 143.8 | 3.04 | 2.86 | 2.65 |
| 151.3 | 3.02 | 2.85 | 2.64 |
| 158.7 | 2.99 | 2.83 | 2.63 |
| 166.2 | 2.98 | 2.82 | 2.64 |
| 173.6 | 2.96 | 2.80 | 2.64 |
| 181.0 | 2.99 | 2.82 | 2.67 |
| 188.5 | 3.01 | 2.84 | 2.68 |
| 195.9 | 3.04 | 2.86 | 2.70 |
| 203.3 | 3.01 | 2.84 | 2.69 |
| 210.8 | 2.95 | 2.78 | 2.63 |
| 218.2 | 2.86 | 2.69 | 2.55 |
| 225.6 | 2.80 | 2.62 | 2.47 |
| 233.1 | 2.78 | 2.61 | 2.44 |
| 240.5 | 2.79 | 2.61 | 2.44 |
| 247.9 | 2.76 | 2.59 | 2.42 |
| 255.4 | 2.73 | 2.56 | 2.39 |
| 262.8 | 2.72 | 2.54 | 2.38 |
| 270.3 | 2.76 | 2.56 | 2.39 |
| 277.7 | 2.81 | 2.60 | 2.41 |
| 285.1 | 2.84 | 2.61 | 2.42 |
| 292.6 | 2.80 | 2.58 | 2.39 |
| 300.0 | 2.74 | 2.53 | 2.37 |




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*Harmonics Tables*

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 18 | 28 | 20 | 39 | 28 | 42 | 29 | 42 | 39 | 52 |
| 1 | - | 16 | +0 | 28 | 15 | 29 | 26 | 43 | 28 | 51 | 33 | 48 |
| 2 | >100 | 70 | 53 | 61 | 51 | 65 | 63 | 65 | 56 | 75 | 52 | 60 |
| 3 | >100 | 54 | 52 | 57 | 46 | 62 | 44 | 60 | 47 | 66 | 51 | 60 |
| 4 | >100 | 77 | 67 | 79 | 69 | 84 | 67 | 76 | 73 | 84 | 72 | 83 |
| 5 | >100 | 87 | 70 | 77 | 68 | 72 | 65 | 76 | 66 | 80 | 89 | >93 |
| 6 | >100 | >93 | 89 | 92 | 86 | >93 | 51 | 90 | 83 | 93 | 85 | >93 |
| 7 | >100 | >93 | 89 | 93 | 84 | 85 | 82 | 81 | >93 | 93 | 92 | >93 |
| 8 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | 93 | >93 | >93 | >93 |
| 9 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| 10 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 150.1 MHz; -1.00 dBm.**
**LO IN: 180.01 MHz; +17.00 dBm**
**IF OUT: 29.91 MHz; -6.59 dBm**

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 28 | 41 | 31 | 49 | 41 | 58 | 42 | 64 | 50 | 71 |
| 1 | - | 17 | +0 | 29 | 14 | 33 | 30 | 46 | 36 | 54 | 43 | 56 |
| 2 | 80 | 52 | 64 | 56 | 56 | 52 | 63 | 80 | 60 | 64 | 53 | 60 |
| 3 | >100 | 41 | 36 | 44 | 57 | 47 | 47 | 45 | 41 | 56 | 43 | 56 |
| 4 | >100 | 78 | 62 | 66 | 63 | 68 | 71 | 69 | 63 | 75 | 67 | 73 |
| 5 | >100 | 68 | 62 | 63 | 50 | 69 | 44 | 60 | 45 | 64 | 53 | 67 |
| 6 | >100 | 88 | 76 | 80 | 74 | 81 | 55 | 78 | 72 | 73 | 73 | 83 |
| 7 | >100 | 69 | 71 | 70 | 61 | 83 | 61 | 66 | 54 | 69 | 56 | 76 |
| 8 | >100 | >103 | 83 | 96 | 82 | 79 | 75 | 82 | 78 | 85 | 74 | 77 |
| 9 | >100 | 83 | 80 | 91 | 86 | 82 | 67 | 72 | 66 | 70 | 64 | 70 |
| 10 | >100 | 85 | 84 | 92 | 86 | 93 | 81 | 89 | 91 | 96 | 82 | 96 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:** **RF IN: 150.1 MHz; 9.00 dBm.**
**LO IN: 180.01 MHz; +17.00 dBm**
**IF OUT: 29.91 MHz; 3.48 dBm**

**Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.**
**2. + entry denotes harmonics are in (dBc) above IF OUTPUT.**
**3. RF Cal represent the Harmonics level of the RF input signal to the mixer.**



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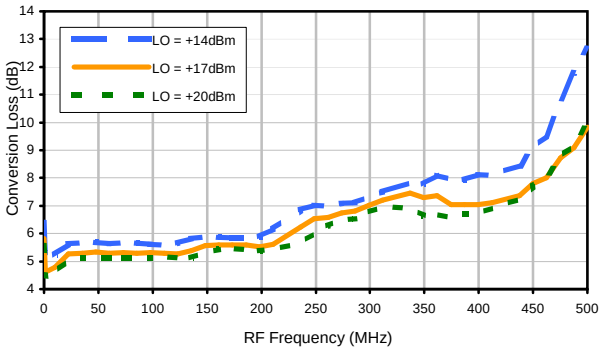
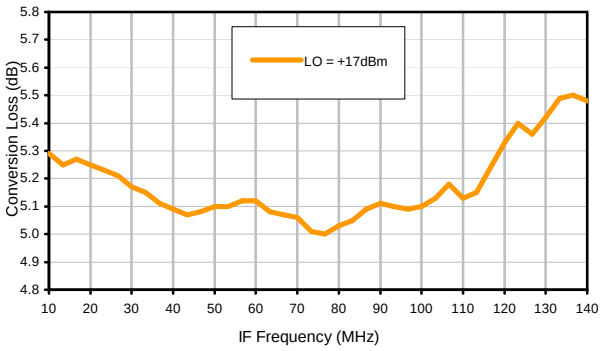
# Frequency Mixer ZFM-3H+

## *Typical Performance Curves*

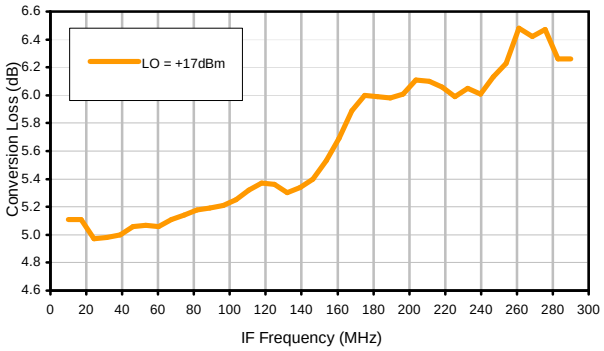
**Conversion Loss @ IF=30MHz**



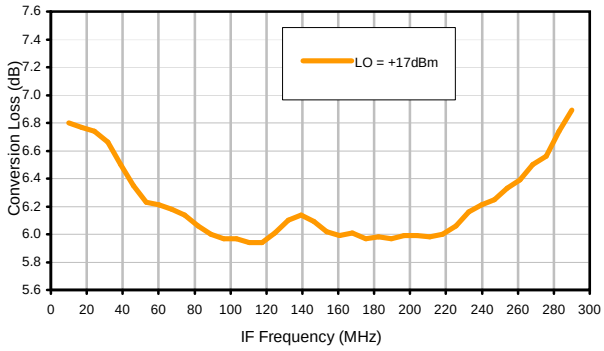

**Conversion Loss vs. IF @ RF=150.1MHz**



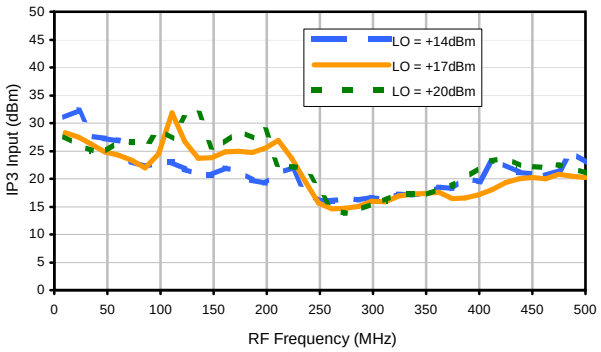

**Conversion Loss vs. IF @ RF=10.1MHz**



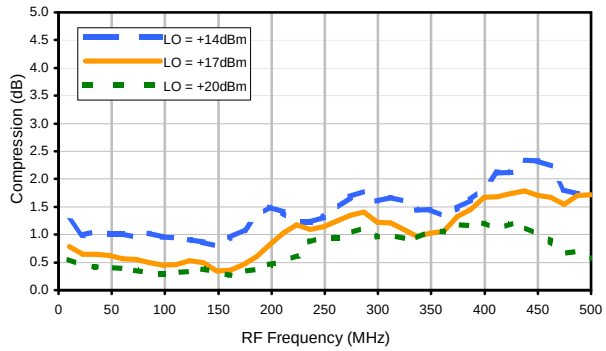

**Conversion Loss vs. IF @ RF=300.1MHz**




**IP3 Input**




**Compression @ RF IN=+14dBm**







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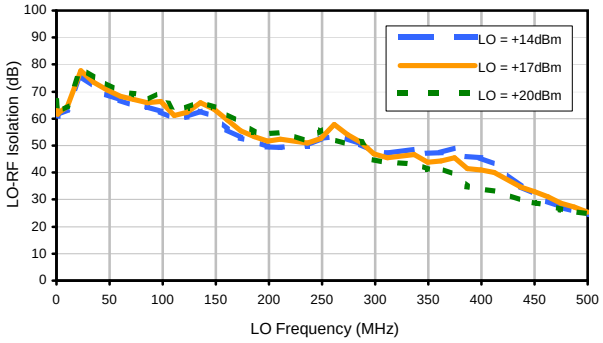
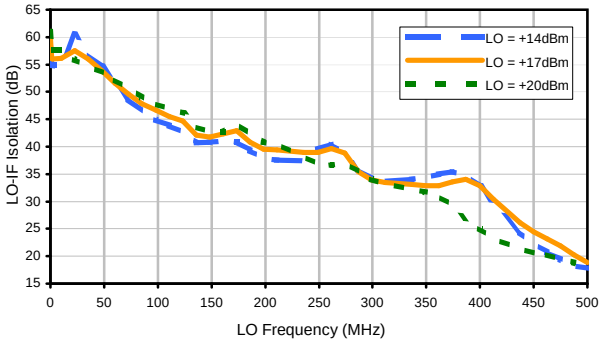
## *Typical Performance Curves*

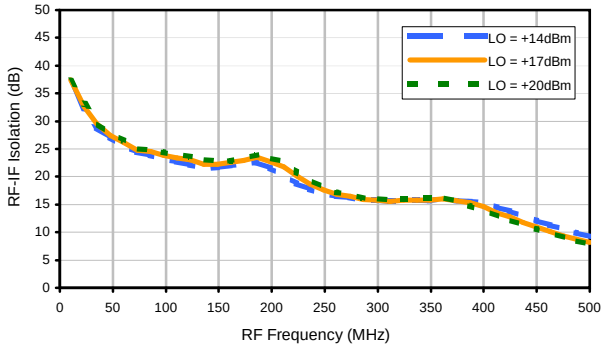
### LO-RF Isolation



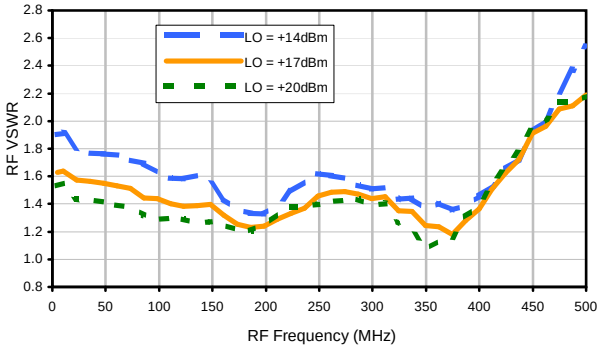

### LO-IF Isolation



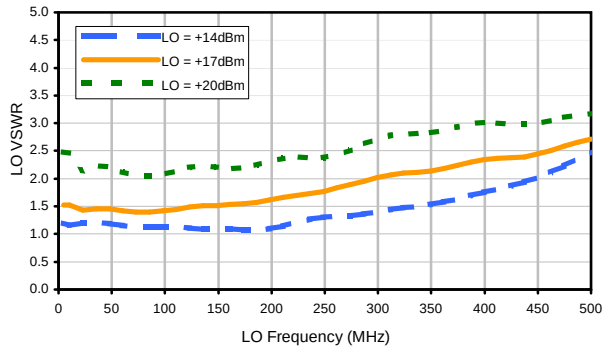

### RF-IF Isolation



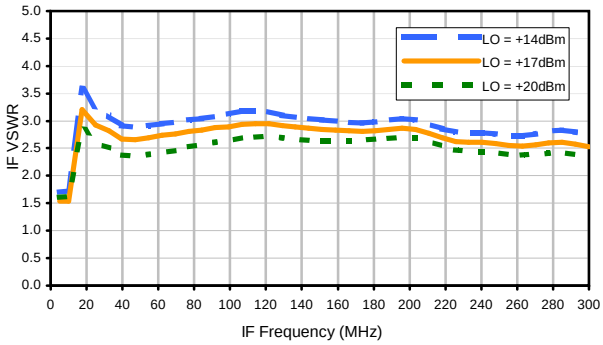

### RF VSWR




### LO VSWR




### IF VSWR







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*Harmonics Tables*

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 18 | 28 | 20 | 39 | 28 | 42 | 29 | 42 | 39 | 52 |
| 1 | - | 16 | +0 | 28 | 15 | 29 | 26 | 43 | 28 | 51 | 33 | 48 |
| 2 | >100 | 70 | 53 | 61 | 51 | 65 | 63 | 65 | 56 | 75 | 52 | 60 |
| 3 | >100 | 54 | 52 | 57 | 46 | 62 | 44 | 60 | 47 | 66 | 51 | 60 |
| 4 | >100 | 77 | 67 | 79 | 69 | 84 | 67 | 76 | 73 | 84 | 72 | 83 |
| 5 | >100 | 87 | 70 | 77 | 68 | 72 | 65 | 76 | 66 | 80 | 89 | >93 |
| 6 | >100 | >93 | 89 | 92 | 86 | >93 | 51 | 90 | 83 | 93 | 85 | >93 |
| 7 | >100 | >93 | 89 | 93 | 84 | 85 | 82 | 81 | >93 | 93 | 92 | >93 |
| 8 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | 93 | >93 | >93 | >93 |
| 9 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| 10 | >100 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 | >93 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:**
**RF IN: 150.1 MHz; -1.00 dBm.**
**LO IN: 180.01 MHz; +17.00 dBm**
**IF OUT: 29.91 MHz; -6.59 dBm**

| RF HARMONICS ORDER | (-dBm) | (-dBc) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | - | - | 28 | 41 | 31 | 49 | 41 | 58 | 42 | 64 | 50 | 71 |
| 1 | - | 17 | +0 | 29 | 14 | 33 | 30 | 46 | 36 | 54 | 43 | 56 |
| 2 | 80 | 52 | 64 | 56 | 56 | 52 | 63 | 80 | 60 | 64 | 53 | 60 |
| 3 | >100 | 41 | 36 | 44 | 57 | 47 | 47 | 45 | 41 | 56 | 43 | 56 |
| 4 | >100 | 78 | 62 | 66 | 63 | 68 | 71 | 69 | 63 | 75 | 67 | 73 |
| 5 | >100 | 68 | 62 | 63 | 50 | 69 | 44 | 60 | 45 | 64 | 53 | 67 |
| 6 | >100 | 88 | 76 | 80 | 74 | 81 | 55 | 78 | 72 | 73 | 73 | 83 |
| 7 | >100 | 69 | 71 | 70 | 61 | 83 | 61 | 66 | 54 | 69 | 56 | 76 |
| 8 | >100 | >103 | 83 | 96 | 82 | 79 | 75 | 82 | 78 | 85 | 74 | 77 |
| 9 | >100 | 83 | 80 | 91 | 86 | 82 | 67 | 72 | 66 | 70 | 64 | 70 |
| 10 | >100 | 85 | 84 | 92 | 86 | 93 | 81 | 89 | 91 | 96 | 82 | 96 |
| | RF CAL | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

**LO HARMONICS ORDER**

**Test conditions:**
**RF IN: 150.1 MHz; 9.00 dBm.**
**LO IN: 180.01 MHz; +17.00 dBm**
**IF OUT: 29.91 MHz; 3.48 dBm**

**Notes: 1. All Harmonics are in (dBc) relative to IF OUTPUT.**
**2. + entry denotes harmonics are in (dBc) above IF OUTPUT.**
**3. RF Cal represent the Harmonics level of the RF input signal to the mixer.**




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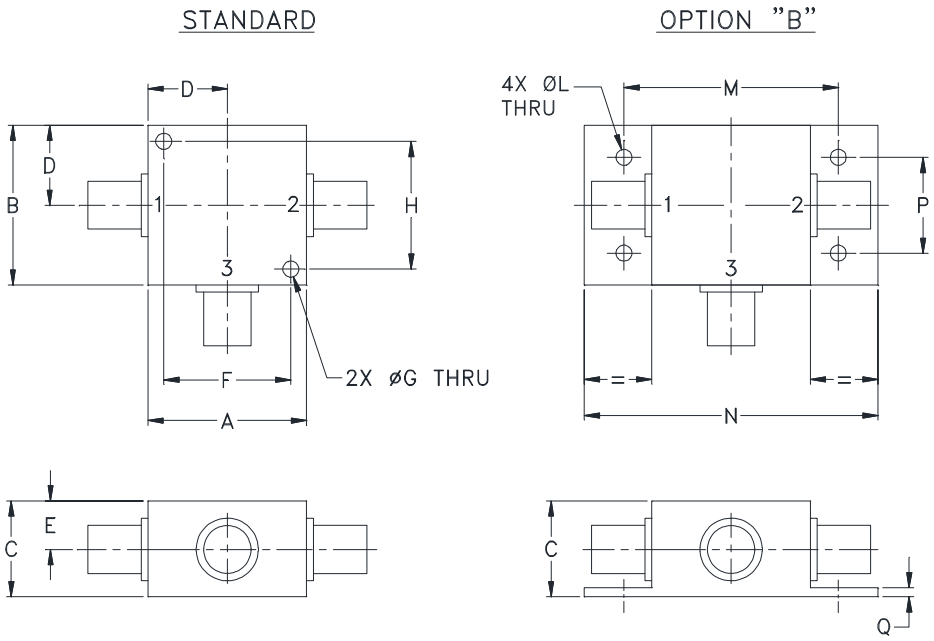
# Case Style K

**K18**

## Outline Dimensions




| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| K18 | 1.25 (31.75 | 1.25 (31.75) | .75 (19.05) | .63 (16.00) | .38 (9.65) | 1.000 (25.40) | .125 (3.18) | 1.000 (25.40) | -- -- | -- -- | .125 (3.18) | 1.688 (42.88) | 2.18 (55.37) |

| CASE# | P | Q | WT. GRAMS |
|---|---|---|---|
| K18 | .75 (19.05) | .07 (1.78) | 70.0 |

**Dimensions are in inches (mm). Tolerances: 2 Pl. ± .03; 3 Pl. ± .015**

### Notes:

1. Case material: Aluminum alloy.
2. Case finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number.
4. For port marking 1, 2, and 3 see specifications data sheet.
5. For bracket version, option B, dimension "C" changes from .75 to .94 inches when connectors are type N.
6. Refer to the individual model data sheet for the type of connectors available.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# Environmental Specifications ENV28

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification | Test/Inspection Condition | Reference/Spec |
|---|---|---|
| Operating Temperature | -55° to 100°C<br>Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Barometric Pressure | 100,000 Feet | MIL-STD-202, Method 105, Condition D |
| Humidity | 90% RH, 65°C<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103 |
| Thermal Shock | -65° to 125°C, 5 cycles | MIL-STD-202, Method 107, Condition B |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition I |


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