

X3 Frequency Multiplier

RMK-3-332+

50Ω Output 2100 to 3300 MHz



CASE STYLE: TT1224

The Big Deal

- Wideband, 2100 to 3300 MHz output
- Wide input power range, +10 to +15 dBm
- Low conversion loss, 15 dB typ.
- Excellent harmonic suppression, 40 dBc typ.

Product Overview

Mini-Circuits' RMK-3-332+ is a surface mount frequency multiplier with a multiplication factor of 3, converting input frequencies of 700 to 1100 MHz into output frequencies of 2100 to 3300 MHz. It provides a wide input power range, low conversion loss and excellent suppression of adjacent harmonics. The multiplier comes housed in a miniature surface-mount package (0.25 x 0.31 x 0.16") ideal for dense circuit board layouts.

| Feature | Advantages |
|---|--|
| Wideband, 2100 – 3300 MHz output | With an output frequency range spanning 2100 to 3300 MHz, this multiplier covers a wide range of applications. |
| Low conversion loss, 15 dB typ. | Low conversion loss results in higher output signal power, reducing the need for amplification at later stages. |
| Excellent harmonic suppression: <ul style="list-style-type: none">• F2, 40 dBc typ.• F3, 37 dBc typ. | Reduces spurious signals and the need for additional filtering. Helps avoid spectral regrowth in multiple-channel systems. |
| Wide input power range, +10 to +15 dBm | Wide input power signal range accommodates different input signal levels while still maintaining a low conversion loss. |
| Low cost | Provides an easy, cost-effective solution for generating high-frequency signals from a lower frequency signal source. |
| Small size, 0.25 x 0.31 x 0.16" | Saves space in dense circuit board 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



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PRICE: \$8.95 ea. QTY (10-49)

+RoHS Compliant

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

Maximum Ratings

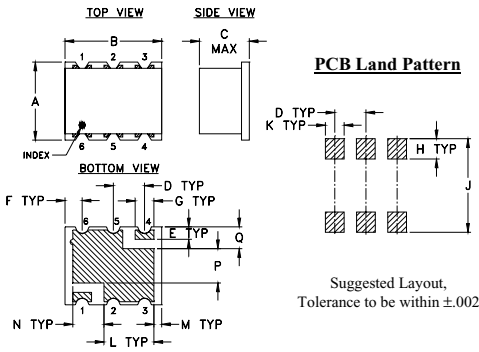
| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Input Power | 20 dBm |

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

Pin Connections

| | |
|--------|---------|
| INPUT | 1 |
| OUTPUT | 4 |
| GROUND | 2,3,5,6 |

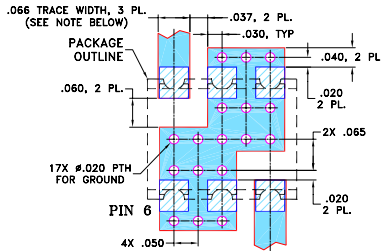
Outline Drawing



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H | |
|------|------|------|------|------|------|------|-------|--|
| .25 | .31 | .16 | .100 | .040 | .055 | .060 | .065 | |
| 6.35 | 7.87 | 4.06 | 2.54 | 1.02 | 1.40 | 1.52 | 1.65 | |
| J | K | L | M | N | P | Q | wt. | |
| .300 | .060 | .160 | .025 | .100 | .110 | .070 | grams | |
| 7.62 | 1.52 | 4.06 | 0.64 | 2.54 | 2.79 | 1.78 | 0.16 | |

Demo Board MCL P/N: TB-393 Suggested PCB Layout (PL-258)



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.
3. DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
4. DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

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Features

- low input power, +10 dBm
- low conversion loss, 15 dB typ.
- high rejection of adjacent harmonics, 40 dBc typ.
- aqueous washable

Applications

- synthesizers
- local oscillators
- satellite up and down converters

Electrical Specifications at 25°C

| Parameter | Min. | Typ. | Max. | Unit |
|------------------------------|------|------|------|------|
| Multiplier Factor | | 3 | | |
| Frequency Range, Input (F1) | 700 | | 1100 | MHz |
| Frequency Range, Output (F3) | 2100 | | 3300 | MHz |
| Input Power | 10 | | 15 | dBm |
| Conversion Loss | | 15.6 | 20 | dB |
| Harmonic Output* | F1 | -3 | 3 | dBc |
| | F2 | 25 | 40 | |
| | F4 | 24 | 37 | |

* Harmonics of input frequency below the power level of F3

Typical Performance Data

| Input Frequency (MHz) | INPUT RF= 10 dBm | | | | INPUT RF= 15dBm | | | |
|-----------------------|----------------------|--------------------------------|-------|-------|----------------------|--------------------------------|-------|-------|
| | Conversion Loss (dB) | Harmonic Output Below F3 (dBc) | | | Conversion Loss (dB) | Harmonic Output Below F3 (dBc) | | |
| | F3 | F1 | F2 | F4 | F3 | F1 | F2 | F4 |
| 700 | 15.23 | 8.29 | 34.75 | 30.69 | 16.80 | 9.97 | 37.49 | 31.86 |
| 760 | 14.26 | 7.61 | 37.07 | 34.81 | 15.74 | 9.47 | 38.29 | 35.95 |
| 780 | 14.66 | 6.97 | 39.19 | 36.81 | 15.47 | 9.26 | 41.87 | 41.30 |
| 800 | 14.37 | 6.68 | 45.91 | 42.27 | 15.41 | 8.88 | 48.74 | 52.41 |
| 820 | 13.82 | 6.63 | 50.71 | 47.51 | 15.43 | 8.45 | 50.06 | 55.73 |
| 840 | 13.81 | 6.22 | 51.23 | 49.55 | 15.28 | 8.03 | 50.69 | 48.69 |
| 860 | 14.35 | 5.48 | 50.58 | 50.68 | 15.35 | 7.56 | 54.99 | 54.91 |
| 880 | 14.10 | 5.18 | 50.70 | 53.46 | 15.40 | 7.15 | 49.07 | 49.70 |
| 900 | 13.57 | 5.20 | 66.29 | 72.85 | 15.54 | 6.64 | 61.36 | 63.84 |
| 920 | 13.57 | 4.77 | 69.31 | 80.23 | 15.48 | 6.08 | 66.64 | 70.85 |
| 940 | 14.14 | 3.97 | 73.17 | 78.32 | 15.62 | 5.62 | 74.28 | 84.06 |
| 960 | 14.00 | 3.62 | 70.78 | 74.62 | 15.88 | 5.10 | 75.81 | 83.07 |
| 1000 | 13.50 | 3.23 | 69.53 | 73.79 | 15.99 | 3.99 | 74.14 | 77.51 |
| 1100 | 14.17 | 0.94 | 66.64 | 75.41 | 17.03 | 1.55 | 69.48 | 74.88 |

