

# X3 Frequency Multiplier

50Ω Output 450 to 900 MHz

RMK-3-92+



CASE STYLE: TT1224

## 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 |

## Features

- low conversion loss, 14 dB typ.
- high rejection of adjacent harmonics, 66 dBc typ.
- aqueous washable

## Applications

- synthesizers
- local oscillators
- satellite up and down converters

## Electrical Specifications at 25°C

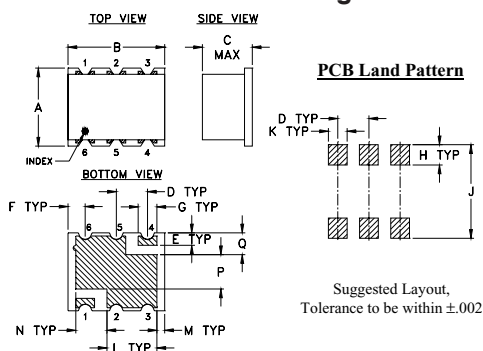
| Parameter                    | Min. | Typ. | Max. | Unit |
|------------------------------|------|------|------|------|
| Multiplier Factor            |      | 3    |      |      |
| Frequency Range, Input (F1)  | 150  | —    | 300  | MHz  |
| Frequency Range, Output (F3) | 450  | —    | 900  | MHz  |
| Input Power                  | 12   | —    | 17   | dBm  |
| Conversion Loss              | —    | 14   | 19   | dB   |
| Harmonic Output*             | F1   | -13  | -1   | —    |
|                              | F2   | 40   | 66   | —    |
|                              | F4   | 40   | 67   | —    |

\* Harmonics of input frequency below the power level of F3

## Typical Performance Data

| Frequency      |                 | Conv. Loss<br>(dB)<br>F3 | Harmonic Rejection Below F3, (-dBc)<br>at RF Input Power 17 dBm |       |       |
|----------------|-----------------|--------------------------|-----------------------------------------------------------------|-------|-------|
| Input<br>(MHz) | Output<br>(MHz) |                          | F1                                                              | F2    | F4    |
| 150.00         | 450.00          | 15.47                    | 8.55                                                            | 77.81 | 83.80 |
| 160.00         | 480.00          | 14.88                    | 8.06                                                            | 75.12 | 76.81 |
| 180.00         | 540.00          | 14.09                    | 6.59                                                            | 73.46 | 80.89 |
| 200.00         | 600.00          | 14.14                    | 4.67                                                            | 69.31 | 78.91 |
| 220.00         | 660.00          | 14.08                    | 2.94                                                            | 68.16 | 74.84 |
| 240.00         | 720.00          | 14.17                    | 1.07                                                            | 68.79 | 71.74 |
| 250.00         | 750.00          | 14.29                    | 0.21                                                            | 68.64 | 71.11 |
| 260.00         | 780.00          | 14.47                    | -0.72                                                           | 66.50 | 69.28 |
| 280.00         | 840.00          | 14.78                    | -2.47                                                           | 71.34 | 66.85 |
| 300.00         | 900.00          | 15.01                    | -4.15                                                           | 75.10 | 63.85 |

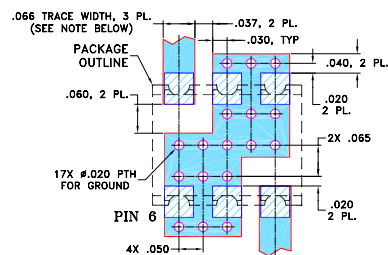
## Outline Drawing



## Outline Dimensions (inch)

| 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

### 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.  
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AV/CP/AM  
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Page 1 of 1