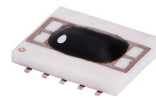


# X2 Frequency Multiplier

50Ω Output 2200 to 3800 MHz

KC2-19+



Generic photo used for illustration purposes only

CASE STYLE: DZ885

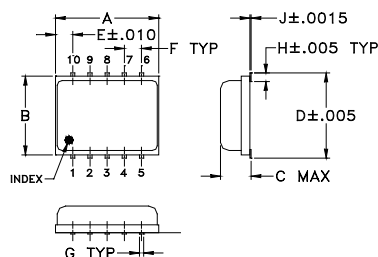
## Maximum Ratings

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Operating Temperature                                           | -55°C to 100°C |
| Storage Temperature                                             | -55°C to 100°C |
| RF Input, 25°C                                                  | 200mW          |
| Permanent damage may occur if any of these limits are exceeded. |                |

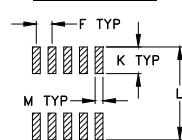
## Pin Connections

|                    |               |
|--------------------|---------------|
| INPUT              | 10            |
| OUTPUT             | 5             |
| 50Ω TERMINATE EXT. | 3             |
| GROUND             | 1,2,4,6,7,8,9 |

## Outline Drawing



### PCB Land Pattern

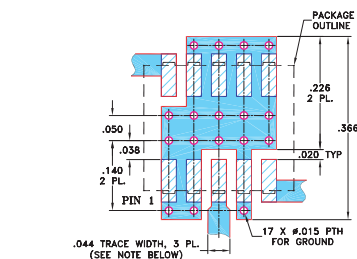


Suggested Layout,  
Tolerance to be within ±.002

## Outline Dimensions (inch)

| A    | B    | C    | D    | E    | F    | G     |
|------|------|------|------|------|------|-------|
| .30  | .250 | .085 | .266 | .050 | .050 | .012  |
| 7.62 | 6.35 | 2.16 | 6.76 | 1.27 | 1.27 | 0.30  |
| H    | J    | K    | L    | M    |      | wt    |
| .029 | .004 | .085 | .296 | .030 |      | grams |
| 0.74 | 0.10 | 2.16 | 7.52 | 0.76 |      | 0.25  |

## Demo Board MCL P/N: TB-144 Suggested PCB Layout (PL-045)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS .020" ± .0015"; 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

## Features

- low conversion loss, 10.5 dB typ.
- LTCC design
- low profile, 0.085"
- low cost

## Applications

- synthesizers
- local oscillators

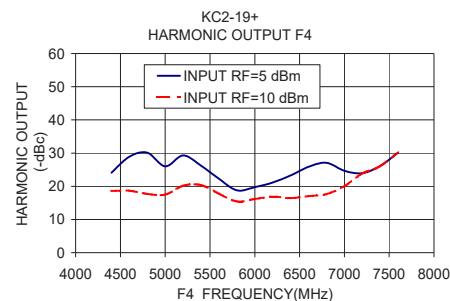
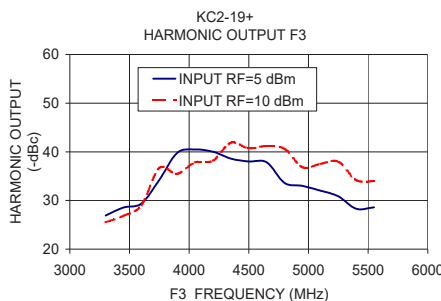
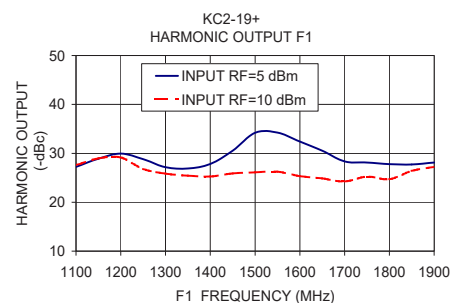
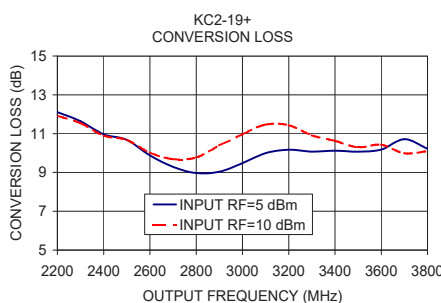
## Electrical Specifications

| MULTIPLICATION FACTOR | FREQUENCY (MHz) |           | INPUT POWER (dBm) |      | CONVERSION LOSS (dB) | *HARMONIC OUTPUT (dBc) |         |         |         |         |         |
|-----------------------|-----------------|-----------|-------------------|------|----------------------|------------------------|---------|---------|---------|---------|---------|
|                       | F1 Input        | F2 Output | Min.              | Max. |                      | F1 Typ.                | F1 Min. | F3 Typ. | F3 Min. | F4 Typ. | F4 Min. |
| 2                     | 1100-1900       | 2200-3800 | 5                 | 10   | 10.5 14.6            | 24                     | 18      | 30      | 18      | 17      | 12      |

\* Harmonics of input frequency below the power level of F2

## Typical Performance Data

| Input Frequency (MHz) | INPUT RF= 5 dBm      |                                 |       |       | INPUT RF= 10 dBm     |                                 |       |       |
|-----------------------|----------------------|---------------------------------|-------|-------|----------------------|---------------------------------|-------|-------|
|                       | Conversion Loss (dB) | Harmonic Output Below F2 (-dBc) |       |       | Conversion Loss (dB) | Harmonic Output Below F2 (-dBc) |       |       |
|                       |                      | F1                              | F3    | F4    |                      | F1                              | F3    | F4    |
| 1100.00               | 12.11                | 27.22                           | 26.90 | 24.09 | 11.92                | 27.59                           | 25.53 | 18.60 |
| 1200.00               | 10.96                | 29.96                           | 29.37 | 30.10 | 10.90                | 29.15                           | 29.02 | 17.70 |
| 1300.00               | 9.88                 | 27.15                           | 39.80 | 29.28 | 10.02                | 25.85                           | 35.46 | 20.19 |
| 1400.00               | 8.97                 | 27.83                           | 40.01 | 22.24 | 9.77                 | 25.27                           | 38.18 | 17.75 |
| 1500.00               | 9.48                 | 34.22                           | 38.00 | 19.75 | 10.96                | 26.11                           | 40.72 | 16.17 |
| 1550.00               | 10.00                | 34.23                           | 37.86 | 21.15 | 11.46                | 26.25                           | 41.21 | 16.88 |
| 1600.00               | 10.17                | 32.42                           | 33.61 | 23.26 | 11.43                | 25.32                           | 40.61 | 16.41 |
| 1650.00               | 10.07                | 30.54                           | 33.01 | 25.89 | 10.91                | 24.88                           | 36.81 | 17.03 |
| 1700.00               | 10.12                | 28.35                           | 32.01 | 27.07 | 10.63                | 24.25                           | 37.51 | 17.60 |
| 1750.00               | 10.07                | 28.10                           | 30.86 | 24.69 | 10.30                | 25.22                           | 37.99 | 20.05 |
| 1800.00               | 10.18                | 27.80                           | 28.28 | 23.96 | 10.43                | 24.71                           | 34.18 | 23.83 |
| 1850.00               | 10.71                | 27.71                           | 28.58 | 26.17 | 9.99                 | 26.42                           | 33.97 | 26.09 |
| 1900.00               | 10.22                | 28.10                           | 30.19 | 30.17 | 10.10                | 27.22                           | 33.59 | 30.26 |



### 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-Circuits' 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)



# Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Mini-Circuits:](#)

[KC2-19+](#)