

# X3 Frequency Multiplier

50Ω Output 300 to 450 MHz

## RMK-3-451+



Generic photo used for illustration purposes only  
CASE STYLE: TT1224

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

**Available Tape and Reel at no extra cost**

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

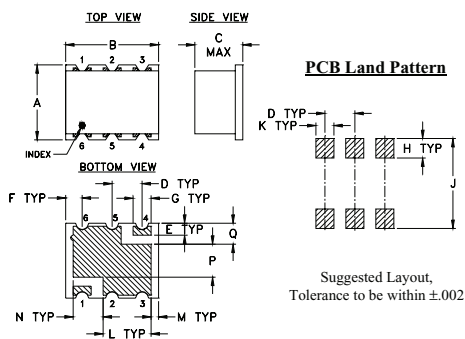
### Maximum Ratings

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

### Pin Connections

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

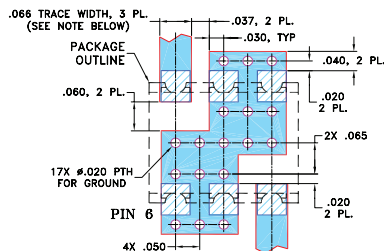
### Outline Drawing



### 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

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuits' applicable established test performance criteria and measurement instructions.
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### Features

- broadband
- low conversion loss, 13.2 dB typ.
- high rejection F2, -52 dBc typ.; F4, -50 dBc typ.
- low cost
- aqueous washable

### Applications

- synthesizers
- local oscillators
- satellite up and down converters

### Electrical Specifications

MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBC)					
	F1 Input	F3 Output	Min.	Max.	Typ.	Max.	F1 Typ. Min.	F2 Typ. Min.	F4 Typ. Min.			
3	100-150	300-450	12	17	13.2	16	4	-7	52	40	50	37

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

### Typical Performance Data

Input Frequency (MHz)	INPUT RF= 12 dBm				INPUT RF= 17 dBm			
	Conversion Loss (dB)	Harmonic Output Below F3 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F3 (-dBc)		
	F3	F1	F2	F4	F3	F1	F2	F4
100.00	13.40	4.43	53.95	54.52	14.49	7.11	52.92	47.80
110.00	13.09	3.00	50.23	49.20	14.10	5.78	50.69	49.32
120.00	12.98	1.49	57.22	56.49	13.88	4.41	57.92	58.21
130.00	13.10	-0.05	62.62	71.51	13.80	3.03	67.71	70.53
140.00	13.22	-1.53	61.72	72.27	14.02	1.47	66.97	71.68
150.00	13.40	-3.09	61.54	71.44	14.37	-0.19	66.43	70.17

