

# X2 Frequency Multiplier

## KBA-40+

50Ω Output 5400 to 9600 MHz



Generic photo used for illustration purposes only  
CASE STYLE: SM2

### Maximum Ratings

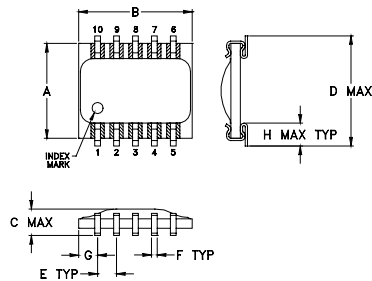
Operating Temperature	-40°C to 85 °C
Storage Temperature	-55°C to 100°C
RF Input Power	200mW
Permanent damage may occur if any of these limits are exceeded.	

### Pin Connections

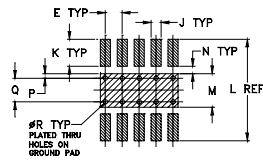
INPUT	10
OUTPUT	6
SAMPLE*	1
GROUND	2,3,4,5,7,8,9

\* Sample port output power, -10 dBc typ.  
Terminate in 50 ohms if not used.

### Outline Drawing



### PCB Land Pattern

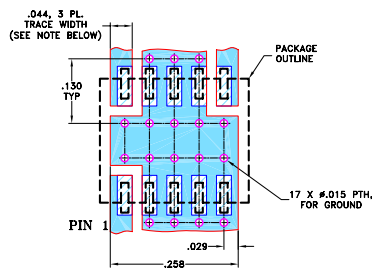


Suggested Layout,  
Tolerance to be within ±.002  
ADJACENT GROUND PINS SHALL BE CONNECTED TO EACH OTHER AND TO GROUND PAD

### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	
.250	.300	.095	.290	.050	.115	.050	.060	
6.35	7.62	2.41	7.37	1.27	2.93	1.27	1.52	
J	K	L	M	N	P	Q	R	wt
.030	.080	.300	.100	.020	.015	.070	.014	grams
0.76	2.03	7.62	2.54	0.51	0.38	1.78	0.36	0.3

### Demo Board MCL P/N: TB-74 Suggested PCB Layout (PL-067)



- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS RO4350B WITH DIELECTRIC THICKNESS 0.020" ± 0.0015"; 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

#### 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-Circuit's 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-Circuit's website at [www.minicircuits.com/MCLStore/terms.jsp](http://www.minicircuits.com/MCLStore/terms.jsp)

### Features

- wideband, 5400 to 9600 MHz
- low insertion loss, 12.3 dB typ.
- low profile, 0.070" max.
- aqueous washable
- protected by U.S patent 5,534,830

### 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.	Typ.	Max.	F1 Typ.	F1 Min.	F3 Typ.	F3 Min.	F4 Typ.	F4 Min.
2	2700-4800	5400-9600	10	16	12.3	17.6	18	10	26	15	24	14
	2700-4800	5400-9600	5	10	13	19	15	8	26	16	26	12

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

### Typical Performance Data 25°C

Input Frequency (MHz)	Conversion Loss (dB) F2	Harmonic Output (-dBc)		
		F1	F3	F4
2700.00	14.26	27.19	35.82	15.80
2750.00	13.90	26.33	40.98	16.70
2900.00	12.84	21.84	33.70	19.39
3000.00	12.90	22.03	34.30	21.18
3200.00	13.59	25.82	43.18	20.79
3600.00	10.77	23.96	26.54	24.70
3800.00	11.60	18.24	23.18	31.24
4000.00	12.09	17.42	21.89	34.19
4400.00	13.44	19.00	34.16	36.27
4800.00	13.61	18.85	29.53	38.03

