

# X4 Frequency Multiplier

50Ω Output 1280 to 2000 MHz

## RKK-4-23+



Generic photo used for illustration purposes only

CASE STYLE: CK1246

### Maximum Ratings

Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	20dBm
Permanent damage may occur if any of these limits are exceeded.	

### Pin Connections

INPUT	2
OUTPUT	10
GROUND	1,3,4,5,6,7,8,9,11,12,13,14,15,16

### Features

- broadband
- high rejection F1, 27 dBc typ; F2, 34 dBc typ; F3, 38 dBc typ; F5, 30 dBc typ.
- aqueous washable

### Applications

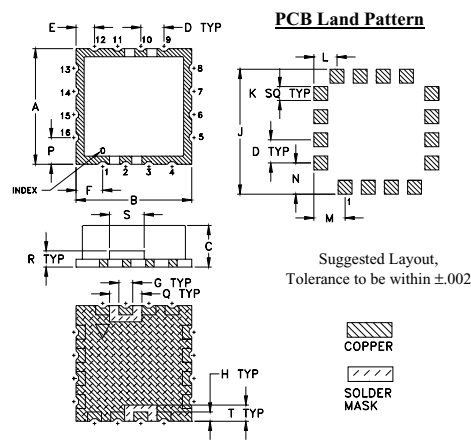
- synthesizers
- local oscillators
- satellite up and down converters

**+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
13"	200, 500

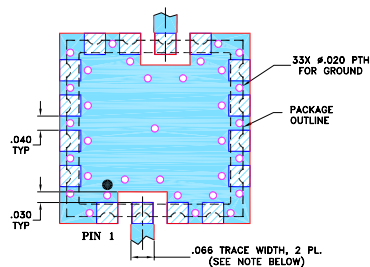
### Outline Drawing



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	wt.
.500	.500	.180	.100	.080	.115	.060	.040	.540	.060	grams
12.70	12.70	4.57	2.54	2.03	2.92	1.52	1.02	13.72	1.52	1.0
L	M	N	P	Q	R	S	T			
.100	.135	.135	.115	.140	.070	.150	.070			
2.54	3.43	3.43	2.92	3.56	1.78	3.81	1.78			

### Demo Board MCL P/N: TB-435+ Suggested PCB Layout (PL-267)



- 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.  
 DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)  
 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-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)

### Electrical Specifications

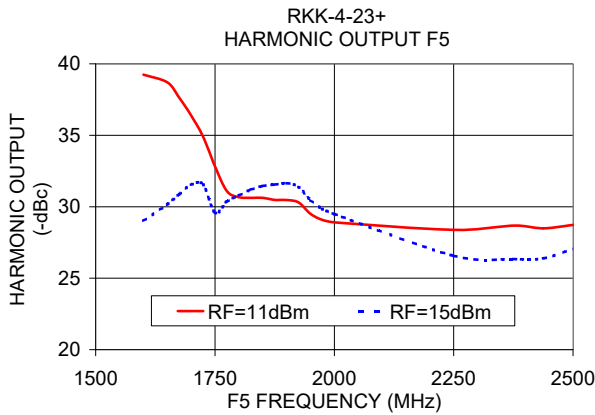
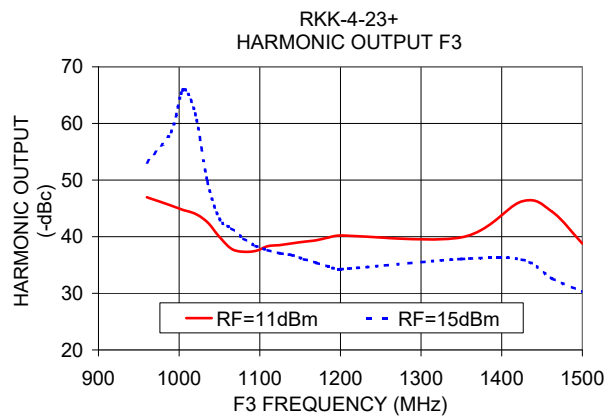
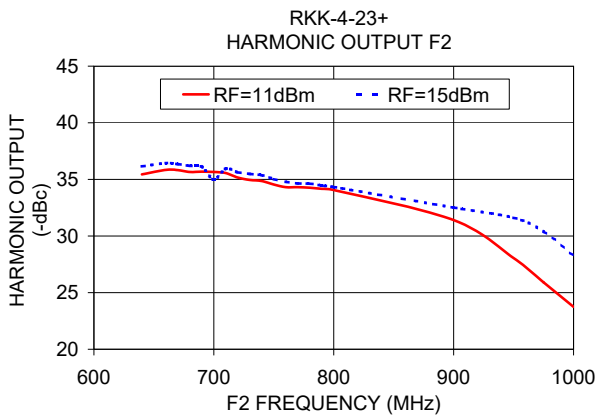
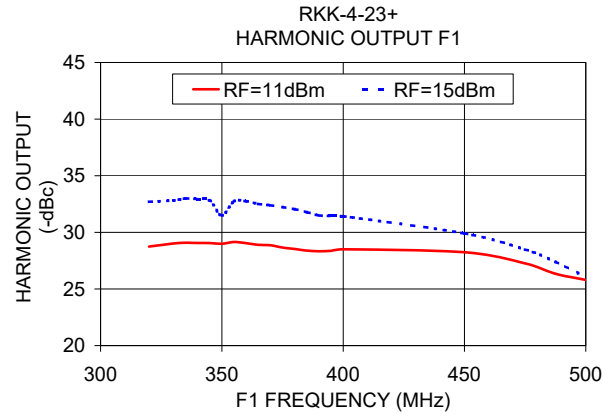
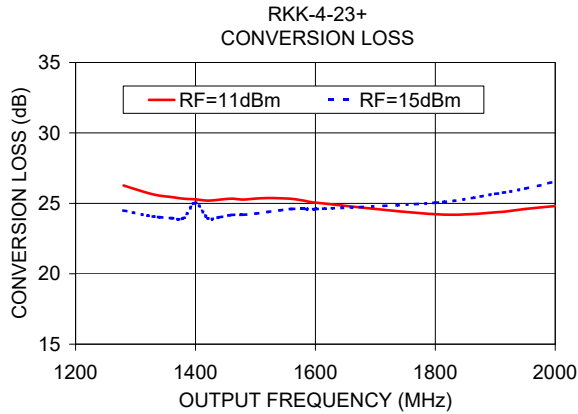
MULTIPLICATION FACTOR	FREQUENCY (MHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)							
	F1 Input	F4 Output	Min.	Max.	Typ.	Max.	F1 Typ.	F2 Typ.	F3 Typ.	F5 Typ.				
4	320-500	1280-2000	11	15	24.5	30	27	21	34	20	38	23	30	24

\* Harmonics of input frequency below the power level of F4, at RF in +11dBm

### Typical Performance Data

Input Frequency (MHz)	INPUT RF= 11dBm					INPUT RF= 15dBm				
	Conversion Loss (dB) F4	Harmonic Output Below F4 (-dBc) F1	F2	F3	F5	Conversion Loss (dB) F4	Harmonic Output Below F4 (-dBc) F1	F2	F3	F5
320.00	26.27	28.75	35.44	46.96	39.24	24.49	32.70	36.15	53.13	29.02
330.00	25.74	29.02	35.84	45.50	38.71	24.13	32.82	36.44	58.48	30.17
335.00	25.55	29.08	35.82	44.71	37.64	24.02	32.98	36.35	65.96	30.87
340.00	25.45	29.06	35.66	44.05	36.39	23.95	32.94	36.20	61.74	31.54
345.00	25.33	29.05	35.69	42.56	34.90	23.95	32.81	36.13	49.78	31.55
350.00	25.28	29.00	35.66	39.96	32.82	25.04	31.50	34.98	43.15	29.58
355.00	25.19	29.15	35.56	37.85	31.09	23.96	32.74	35.95	41.46	30.36
360.00	25.26	29.04	35.16	37.33	30.67	24.01	32.75	35.63	39.65	30.79
365.00	25.33	28.90	34.95	37.50	30.62	24.17	32.51	35.48	38.36	31.20
370.00	25.27	28.86	34.86	38.33	30.62	24.19	32.39	35.37	37.62	31.45
375.00	25.34	28.66	34.55	38.52	30.48	24.27	32.23	35.03	37.06	31.55
380.00	25.38	28.53	34.31	38.82	30.47	24.38	32.05	34.79	36.74	31.65
385.00	25.36	28.39	34.31	39.11	30.30	24.50	31.78	34.64	36.00	31.39
390.00	25.32	28.33	34.27	39.37	29.51	24.60	31.50	34.62	35.39	30.46
395.00	25.20	28.37	34.17	39.84	29.08	24.61	31.45	34.47	34.75	29.84
400.00	25.05	28.50	34.06	40.22	28.91	24.59	31.42	34.32	34.27	29.48
450.00	24.23	28.24	31.41	39.88	28.38	25.04	29.90	32.51	36.06	26.57
475.00	24.36	27.26	28.05	46.24	28.68	25.67	28.48	31.61	35.95	26.34
487.50	24.60	26.34	25.91	44.43	28.49	26.04	27.39	30.40	32.60	26.39
500.00	24.81	25.80	23.75	38.79	28.73	26.54	26.04	28.27	30.25	27.07





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