

X2 Frequency Multiplier

KSX2-24+

50Ω Output 10 to 20 GHz



Maximum Ratings

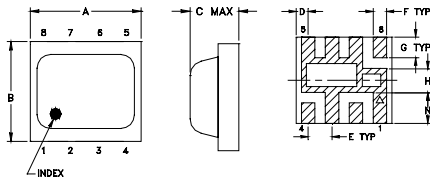
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input, 25°C	100 mW

Permanent damage may occur if any of these limits are exceeded.

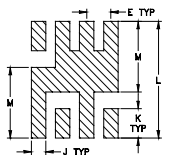
Pin Connections

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

Outline Drawing



PCB Land Pattern

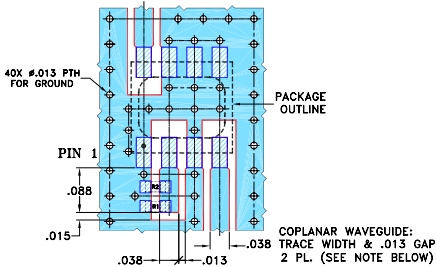


Suggested Layout, Tolerance to be within ±.002

Outline Dimensions (inch/mm)

A	B	C	D	E	F	G
.200	.180	.087	.025	.050	.028	.043
5.08	4.57	2.21	0.64	1.27	0.71	1.09
H	J	K	L	M	N	wt
.050	.030	.060	0.238	0.144	0.065	grams
1.27	0.76	1.52	6.05	3.66	1.65	0.08

Demo Board MCL P/N: TB-473+ Suggested PCB Layout (PL-287)



RESISTORS R1, R2: 100 Ohm, 0402 SIZE

- NOTES: 1. COPLANAR WAVEGUIDE PARAMETERS ARE 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.

- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
- DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Features

- low conversion loss, 11.5 dB typ.
- high fundamental & harmonic suppression, F1, 30 dBc typ.; F3, 35 dBc typ.; F4, 25 dBc typ.
- LTCC design
- low profile, 0.085"
- aqueous washable

Applications

- synthesizers
- local oscillators

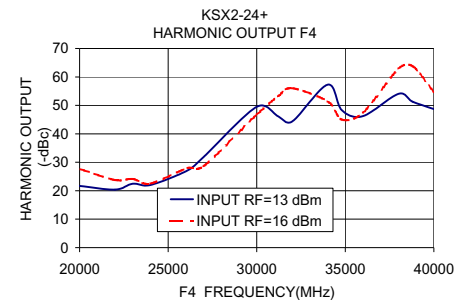
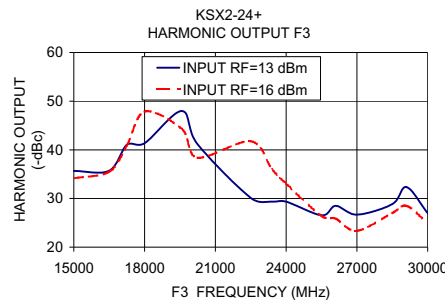
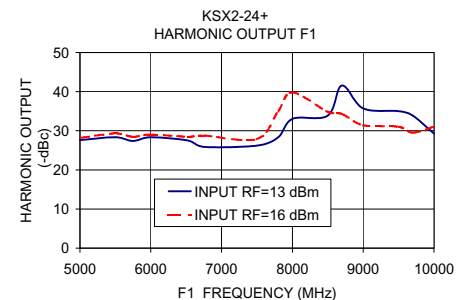
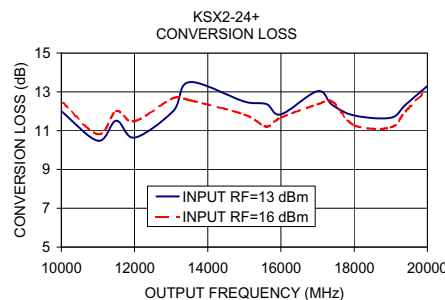
Electrical Specifications

MULTIPLICATION FACTOR	FREQUENCY (GHz)		INPUT POWER (dBm)		CONVERSION LOSS (dB)		*HARMONIC OUTPUT (dBc)					
	F1	F2					F1		F3		F4	
	Input	Output	Min.	Max.	Typ.	Max.	Typ.	Min.	Typ.	Min.	Typ.	Min.
2	5 - 8	10 - 16	13	16	11.5	15	30	18	35	23	25	15
			10	13	15	18	21	14	30	18	20	13
	8 - 10	16 - 20	13	16	12	15	33	20	27	17	50	35
			10	13	15	18.5	30	16	23	16	40	30

* Harmonics of input frequency below the power level of F2

Typical Performance Data

Input Frequency (MHz)	INPUT RF= 13dBm				INPUT RF= 16dBm			
	Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)			Conversion Loss (dB)	Harmonic Output Below F2 (-dBc)		
	F2	F1	F3	F4	F2	F1	F3	F4
5000.00	12.00	27.66	35.68	21.67	12.50	28.16	34.16	27.66
5500.00	10.48	28.33	35.69	20.40	10.81	29.34	35.52	23.74
5750.00	11.51	27.39	41.04	22.47	12.01	28.45	40.87	24.16
6000.00	10.64	28.35	41.35	22.02	11.48	29.02	47.85	22.52
6525.00	12.00	27.53	47.97	27.17	12.67	28.45	44.30	28.00
6750.00	13.50	25.87	41.12	31.83	12.57	28.77	38.39	28.54
7500.00	12.50	26.19	30.10	49.49	11.83	27.87	41.77	46.76
7800.00	12.37	28.34	29.35	46.17	11.21	34.97	36.01	53.17
8000.00	11.84	33.06	29.35	44.32	11.67	39.81	33.03	56.06
8500.00	13.03	33.87	26.54	57.26	12.36	34.83	26.38	51.43
8700.00	12.33	41.57	28.51	48.32	12.50	34.33	25.85	44.99
9000.00	11.78	35.72	26.68	46.24	11.28	31.39	23.35	47.40
9500.00	11.66	35.01	28.85	54.08	11.16	31.02	27.02	62.92
9700.00	12.33	33.85	32.33	51.30	12.00	29.51	28.50	63.80
10000.00	13.30	29.27	26.97	48.71	13.13	31.03	24.97	54.71



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