WINSOURCE ELECTRONICS

THE DATASHEET OF

RMK-5-352+

X5 Frequency Multiplier

RMK-5-352+

50Ω Output 2750 to 3500 MHz

The Big Deal

- Low conversion loss, 22 dB
- Excellent harmonic suppression, -40 dBc @ F4 and F6.

CASE STYLE: TT1224

Product Overview

Mini-Circuits' RMK-5-352+ is a surface mount frequency multiplier with a multiplication factor of 5, converting input frequencies from 550 to 700 MHz into output frequencies from 2750 to 3500 MHz. This model is rated for +17 dBm input power and provides low conversion loss and excellent harmonic suppression. The multiplier comes housed in a shielded surface-mount package (0.25 x 0.31 x 0.16") with wraparound terminations for excellent solderability.

Key Features

Feature	Advantages
Low conversion loss, 22 dB typ.	Low conversion loss results in higher output signal power, reducing the need for amplification at later stages.
Excellent harmonic suppression: • F4, 40 dBc • F6, 40 dBc	Reduces spurious signals and the need for additional filtering. Reduces spectral regrowth in multiple-channel systems.
Low cost	Provides an easy, cost-effective solution for generating high-frequency signals from a lower frequency signal source.
Small size, 0.25 x 0.31 x 0.16"	Saves space in dense circuit board layouts

Notes
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Generic photo used for illustration purposes only

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+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

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

Pin Connections

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

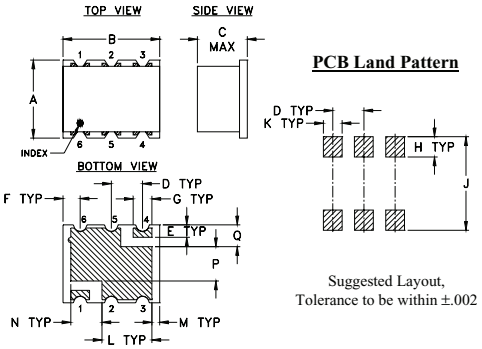
Features

- low conversion loss, 22 dB typ.
- high rejection of adjacent harmonics, -40 dBc typ.
- aqueous washable

Applications

- synthesizers
- local oscillators
- satellite up and down converters

Outline Drawing

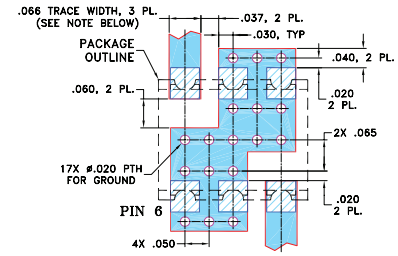


Outline Dimensions (inch / mm)

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: 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

Electrical Specifications at 25°C

Parameter		Min.	Typ.	Max.	Unit
Multiplier Factor			5		
Frequency Range, Input (F1)		550	—	700	MHz
Frequency Range, Output (F5)		2750	—	3500	MHz
Input Power		—	17	—	dBm
Conversion Loss		—	22	24.5	dB
Harmonic Ouput*	F1	—	-6.5	-1	dBc
	F2	—	-56	-40	
	F3	—	0	+9.5	
	F4	—	-40	-30	
	F6	—	-40	-30	
	F7	—	-10.5	-4	

* Harmonics of input frequency relative to the power level of F5

Typical Performance Data

Frequency Input (MHz)	Frequency Output (MHz)	Conv. Loss (dB) F5	Harmonic Rejection Relative to F5, (dBc) at RF Input Power 17 dBm F1	F2	F3	F4	F6	F7
550	2750	20.34	-10.60	-60.86	-2.26	-45.75	-47.76	-8.88
560	2800	20.27	-10.29	-61.69	-2.04	-45.80	-47.37	-9.33
570	2850	20.35	-9.88	-62.52	-1.57	-45.67	-46.93	-9.63
580	2900	20.34	-9.64	-63.68	-1.20	-45.87	-46.49	-9.83
590	2950	20.34	-9.33	-65.18	-0.80	-45.91	-46.01	-10.21
600	3000	20.35	-8.97	-66.96	-0.44	-46.17	-45.66	-10.29
610	3050	20.38	-8.63	-70.08	-0.12	-46.26	-45.16	-10.59
620	3100	20.55	-8.27	-71.80	0.50	-46.43	-44.74	-10.70
630	3150	20.71	-7.86	-69.97	0.90	-46.45	-44.63	-11.08
640	3200	20.78	-7.47	-67.44	1.31	-46.70	-44.57	-11.31
650	3250	20.97	-6.97	-65.66	1.93	-46.98	-44.60	-11.18
660	3300	20.92	-6.79	-63.85	2.18	-47.38	-44.55	-11.36
670	3350	21.17	-6.28	-61.83	2.75	-47.80	-44.32	-11.32
680	3400	21.35	-5.85	-60.26	3.25	-48.78	-44.09	-11.36
700	3500	21.97	-4.81	-56.10	4.36	-50.58	-43.30	-11.73

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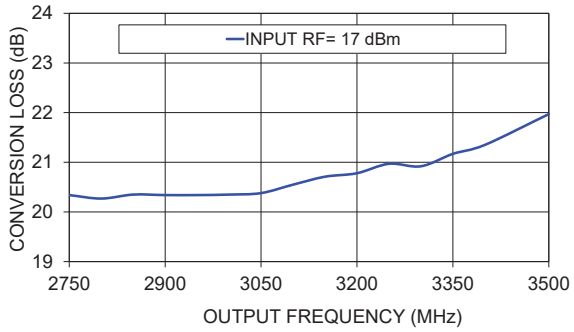
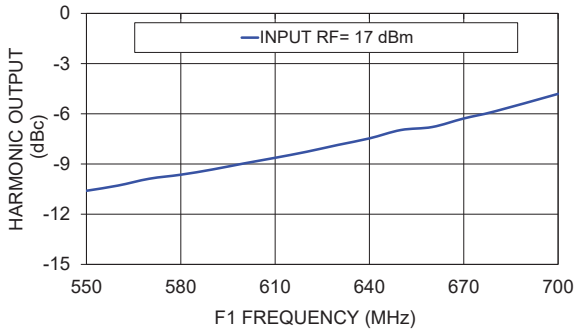
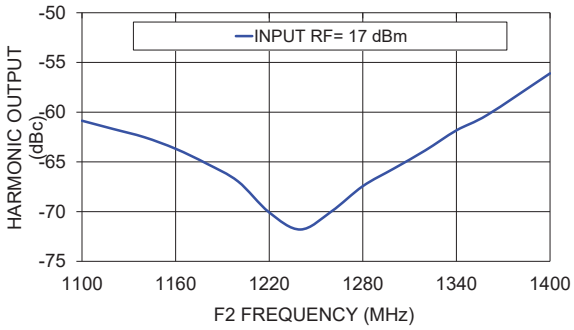
RMK-5-352+
CONVERSION LOSS



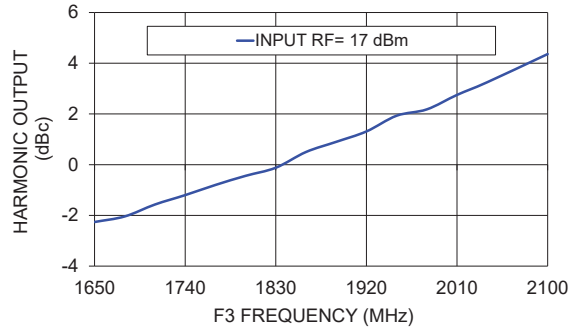
RMK-5-352+
HARMONIC OUTPUT F1



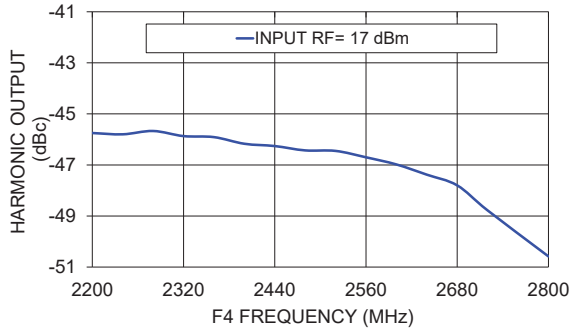
RMK-5-352+
HARMONIC OUTPUT F2



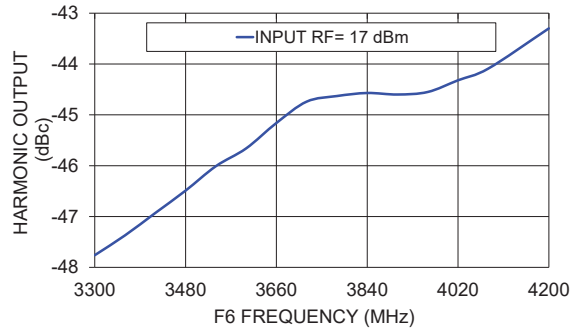
RMK-5-352+
HARMONIC OUTPUT F3



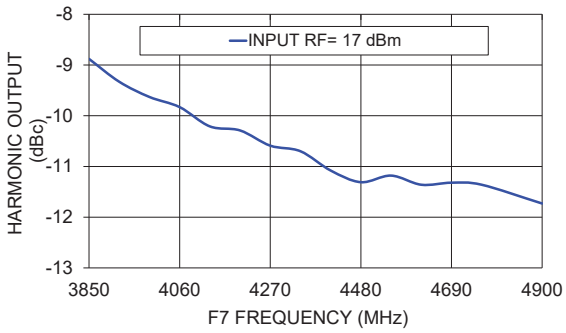
RMK-5-352+
HARMONIC OUTPUT F4



RMK-5-352+
HARMONIC OUTPUT F6



RMK-5-352+
HARMONIC OUTPUT F7



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