

X7 Frequency Multiplier

50Ω Output 52.5 to 80.5 MHz

RMK-7-81+

The Big Deal

- High rejection of adjacent harmonics, >45 dBc
- 50 Ω in/out, no tuning necessary



CASE STYLE: TT1224

Product Overview

The RMK-7-81+ is a cost-effective X7 frequency multiplier that utilizes specially selected silicon Schottky diodes and compatible filter circuitry to achieve a low conversion loss, yet have a high rejection of unwanted harmonics near its F7 output. It makes the RMK-7-81+ ideal for a wide range of applications. The tiny plastic case, 0.25" x 0.31" x 0.16" high, is aqueous washable and RoHS compliant.

Feature	Advantages
<30 dB conversion loss	Efficient choice for converting 7.5 MHz source to 52.5 MHz output while maintaining useful signal power, especially for reference crystal oscillators. Only 12 dBm input required for -10 dBm output, especially useful for low-loss systems such as instrumentation
>45 dB rejection of F6 and F8	Proprietary internal circuitry achieves high suppression and minimizes filter requirements for undesired signals, as in wireless Tx/Rx for military applications, aircraft, cordless telephones, remote control and PMR.
Internally balanced to 50Ω in/out, no DC power required	Saves PCB space and simplifies application design, with no external matching or biasing circuits required
Small surface mount package	Easily integrated in systems with minimal PCB area available

Notes

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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.
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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, 27 dB typ.
- high adjacent harmonic rejection, 45 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

Electrical Specifications at 25°C

Parameter	Min.	Typ.	Max.	Unit
Multiplier Factor		7		
Frequency Range, Input (F1)	7.5	—	11.5	MHz
Frequency Range, Output (F7)	52.5	—	80.5	MHz
Input Power	8	—	12	dBm
Conversion Loss	—	27	30	dB
Harmonic Output*	F1	-5	3	dBc
	F2	36	55	
	F3	-10	-5	
	F4	28	48	
	F5	-10	-5	
	F6	26	47	
	F8	25	45	

* Harmonics of input frequency below the power level of F7

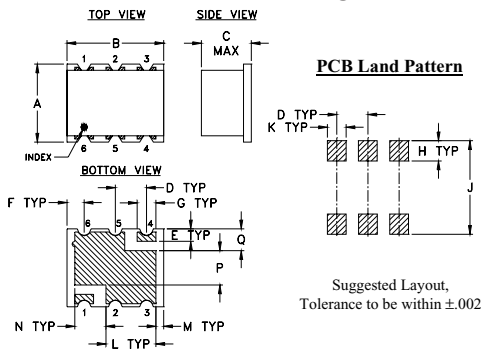
Typical Performance Data

Frequency		Conv. Loss (dB)	Harmonic Rejection Below F7 (dBc) <i>at RF Input Power 8 dBm</i>						
Input (MHz)	Output (MHz)		F7	F1	F2	F3	F4	F5	F6
7.5	52.5	25.96	10.53	66.11	2.71	52.37	0.46	47.38	46.47
8.0	56.0	25.51	9.76	71.85	1.96	72.52	0.99	68.21	62.54
8.5	59.5	25.27	8.84	70.16	1.11	74.97	1.58	69.19	63.37
9.0	63.0	25.43	7.65	69.88	0.01	74.79	2.32	64.97	61.80
9.5	66.5	25.90	6.31	69.69	1.32	73.85	3.16	62.39	61.23
10.0	70.0	26.18	5.14	68.54	2.49	74.25	3.85	61.23	60.96
10.5	73.5	26.19	4.25	67.43	3.36	73.07	4.32	59.86	60.21
11.0	77.0	26.28	3.32	65.99	4.24	73.54	4.74	59.19	60.08
11.5	80.5	27.07	1.84	63.71	5.59	80.83	5.36	60.71	61.83

at RF Input Power 12 dBm

7.5	52.5	28.01	11.70	60.82	4.02	48.04	0.36	42.27	40.62
8.0	56.0	27.45	11.01	75.79	3.38	60.96	0.12	54.07	51.87
8.5	59.5	26.98	10.21	74.16	2.70	60.69	0.62	53.58	51.78
9.0	63.0	26.85	9.27	77.90	1.81	57.39	1.24	51.02	50.10
9.5	66.5	27.13	8.18	76.65	0.65	55.74	1.99	49.94	49.83
10.0	70.0	27.41	7.08	73.56	0.49	54.85	2.67	49.65	50.10
10.5	73.5	27.38	6.23	71.30	1.35	53.60	3.14	48.88	49.62
11.0	77.0	27.27	5.44	69.18	2.07	52.35	3.47	47.96	48.83
11.5	80.5	27.62	4.39	69.12	3.06	53.03	3.88	48.89	49.96

Outline Drawing

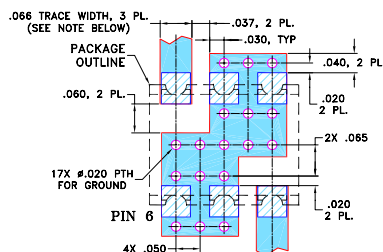


Suggested Layout,
Tolerance to be within ±.002

Outline Dimensions (inch)

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

Notes

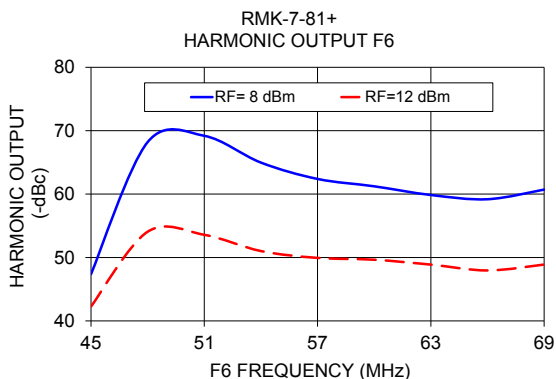
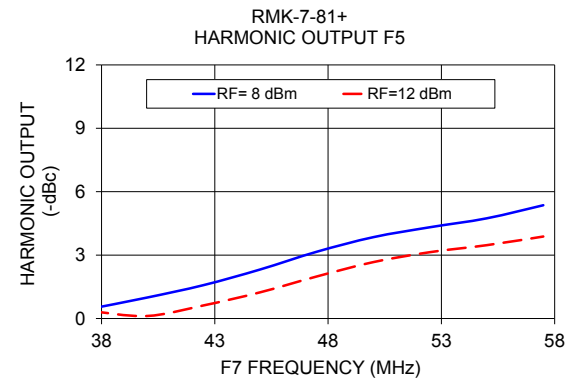
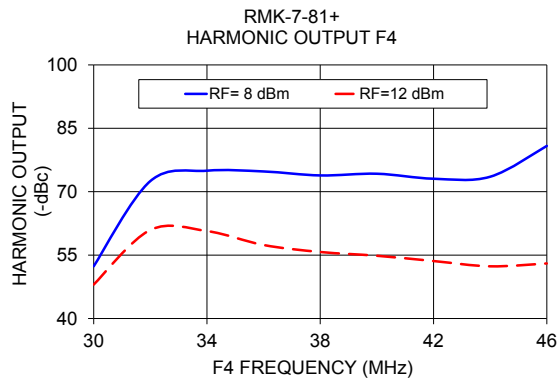
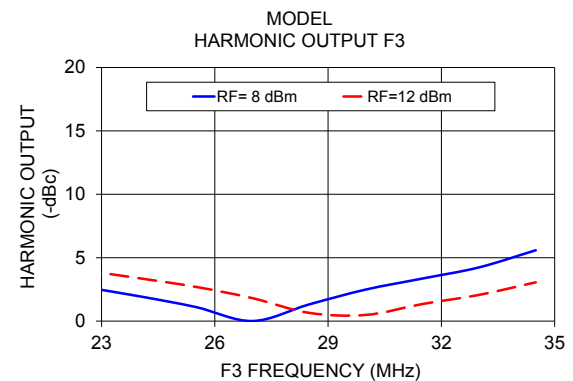
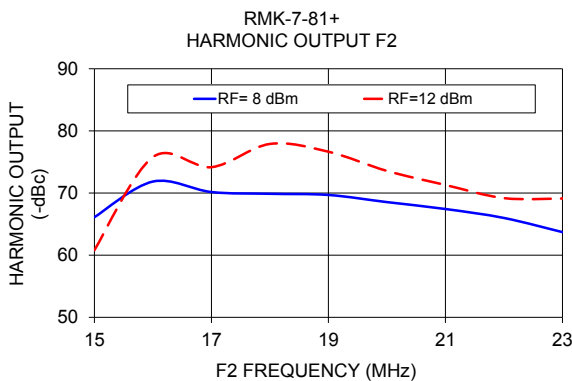
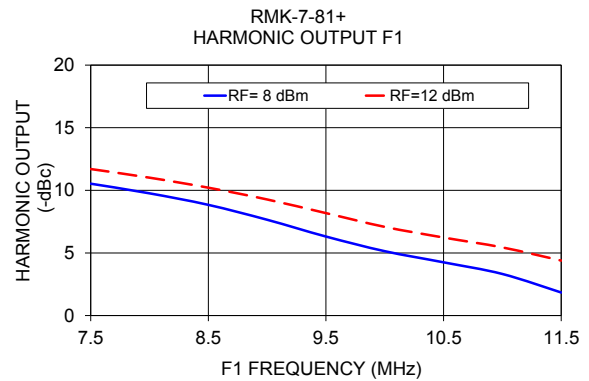
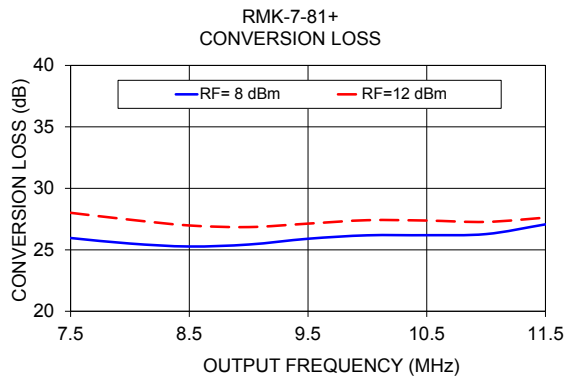
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