

# X5 Frequency Multiplier

## RMK-5-751+

50Ω    Output 500 to 750 MHz

### The Big Deal

- High rejection of adjacent harmonics, >60 dBc
- 50 Ω in/out, no tuning necessary



CASE STYLE: TT1224

### Product Overview

The RMK-5-751+ is a cost-effective X5 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 F5 output. It makes the RMK-5-751+ 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
<22 dB conversion loss	Efficient choice for converting 100 MHz source to 500 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
>60 dB rejection of F4 and F6	Proprietary internal circuitry achieves high suppression and minimizes filter requirements for undesired signals, as in wireless Tx/Rx applications including broadcast TV, SAP/SAB, medical telemetry, 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

- 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)



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### Maximum Ratings

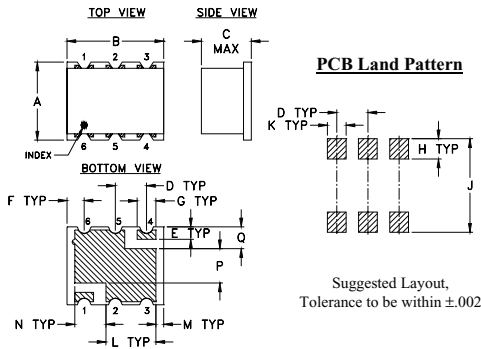
Operating Temperature	-40°C to 85°C
Storage Temperature	-55°C to 100°C
RF Input Power	21 dBm

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

### Pin Connections

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

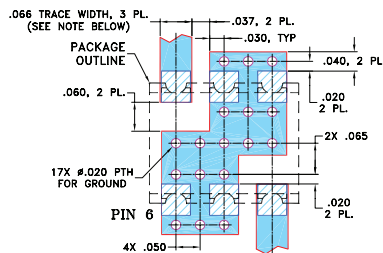
### Outline Drawing



### 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

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### Features

- low conversion loss, 22 dB typ.
- high adjacent harmonic rejection, F4, 60 dBc typ., F6, 67 dBc typ.
- aqueous washable

### Applications

- synthesizers
- local oscillators
- satellite up and down converters



Generic photo used for illustration purposes only  
CASE STYLE: TT1224

**+RoHS Compliant**  
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Reel Size	Devices/Reel
7"	10, 20, 50, 100, 200
13"	500

Available Tape and Reel at no extra cost

### Electrical Specifications at 25°C

Parameter	Min.	Typ.	Max.	Unit
Multiplier Factor		5		
Frequency Range, Input (F1)	100		150	MHz
Frequency Range, Output (F5)	500		750	MHz
Input Power	—	17.0	—	dBm
Conversion Loss	—	22	24.5	dB
Harmonic Output*	F1	-3	-1.0	—
	F2	40	62	—
	F3	-10	-6.8	—
	F4	40	60	—
	F6	40	67	—
	F7	3	7.0	—

\* Harmonics of input frequency below the power level of F5

### Typical Performance Data

Frequency	Input (MHz)	Output (MHz)	Conv. Loss (dB) F5	Harmonic Rejection Below F5, (dB) at RF Input Power 17 dBm						
				F1	F2	F3	F4	F6	F7	
100.0	500.0	21.84	6.32	70.63	-0.62	62.49	74.25	7.32		
110.0	550.0	21.00	5.45	72.18	-1.72	61.85	70.59	6.99		
120.0	600.0	20.81	4.08	81.19	-3.24	62.22	73.65	7.03		
130.0	650.0	21.34	2.16	81.77	-4.85	63.14	73.68	7.87		
140.0	700.0	21.39	0.82	73.31	-5.76	62.99	71.81	7.69		
141.0	705.0	21.44	0.60	72.45	-5.93	62.86	71.58	7.71		
142.0	710.0	21.48	0.47	71.83	-6.02	62.77	71.26	7.63		
143.0	715.0	21.51	0.26	71.06	-6.15	62.84	70.96	7.68		
144.0	720.0	21.53	0.15	70.56	-6.20	62.85	70.53	7.64		
145.0	725.0	21.55	-0.03	69.95	-6.29	62.90	70.42	7.73		
147.0	735.0	21.56	-0.31	68.73	-6.40	63.07	69.88	7.92		
148.0	740.0	21.60	-0.42	68.19	-6.44	63.08	69.42	7.90		
149.0	745.0	21.66	-0.61	67.52	-6.57	63.11	69.02	7.93		
150.0	750.0	21.73	-0.80	66.82	-6.69	63.17	68.72	7.95		

