



**SURFACE MOUNT**

# X5 Frequency Multiplier

## RMK-5-972+

50Ω 8100 to 9750 MHz

### KEY FEATURES

- Wideband Output From: 8100 to 9750 MHz
- High Harmonic Suppression:
  - F4: 55 dBc Typ.
  - F6: 52 dBc Typ.
- Input Power: +7 to +11 dBm

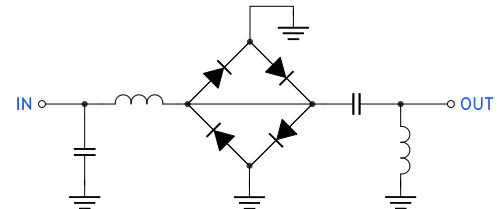


Generic photo used for illustration purposes only

### APPLICATIONS

- Synthesizers
- Local Oscillators
- Satellite Up and Down Converters

### FUNCTIONAL DIAGRAM



### PRODUCT OVERVIEW

Mini-Circuits' RMK-5-972+ frequency multiplier provides a multiplication factor of 5, converting input frequencies from 1620 to 1950 MHz to output frequencies from 8100 to 9750 MHz, supporting applications such as synthesizers, local oscillators, satellite up and down converters and more. The unit provides an input power range from +7 to +11 dBm, 28.5 dB conversion loss, and good harmonic suppression. The multiplier comes housed in a miniature, surface-mount package (0.25 x 0.31 x 0.16") ideal for dense circuit board layouts.

### ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C

Parameter	Input Frequency (MHz)	Min.	Typ.	Max.	Unit	
Multiplication Factor			5			
Frequency Range, Input (F1)		1620	-	1950	MHz	
Frequency Range, Output (F5)		8100	-	9750	MHz	
Input Power		+7	-	+11	dBm	
Conversion Loss	1620 - 1950	-	28.5	34	dB	
Harmonic Output <sup>2</sup>	F1	1620 - 1950	-12	-0.2	-	-dBc
	F2	1620 - 1950	38	60	-	
	F3	1620 - 1950	-15	-5.5	-	
	F4	1620 - 1950	38	55	-	
	F6	1620 - 1950	30	52	-	
	F7	1620 - 1950	-5	8	-	

1. Measured on Mini-Circuits Characterization Test Board TB-RMK-5-972+.

2. Harmonics of input frequency below the power level of F5.

### ABSOLUTE MAXIMUM RATINGS<sup>3</sup>

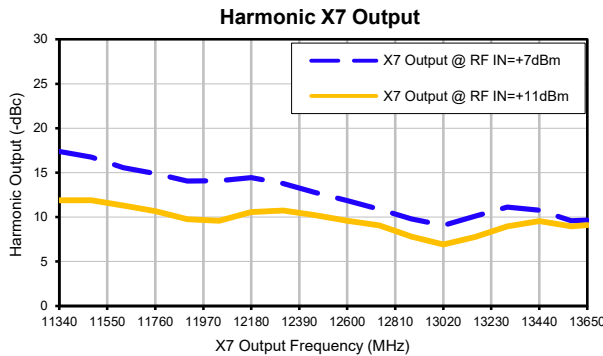
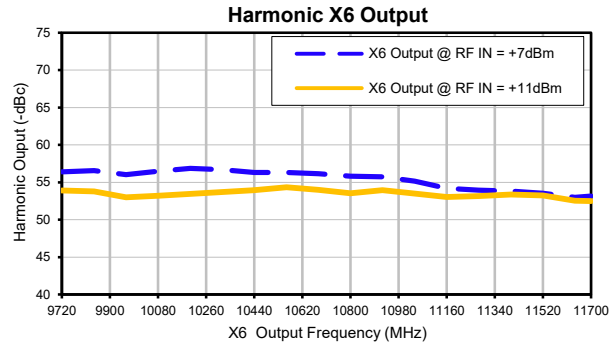
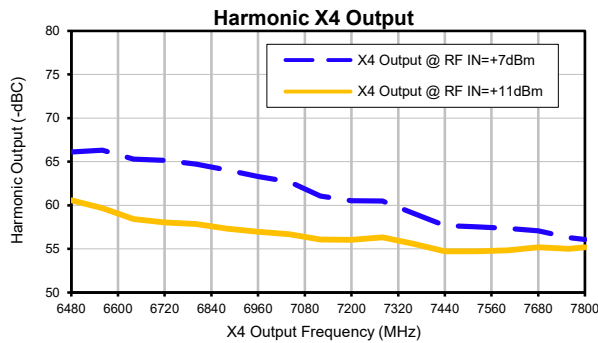
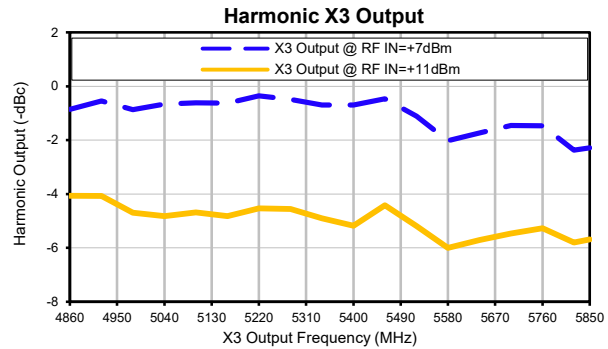
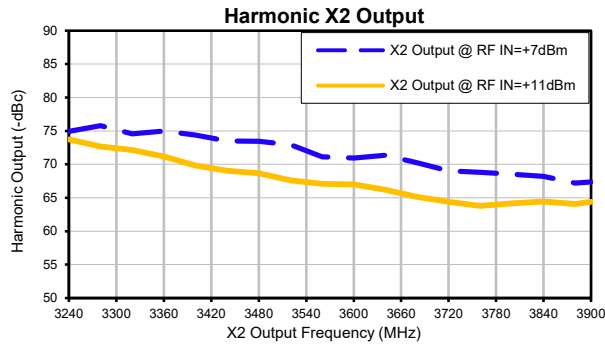
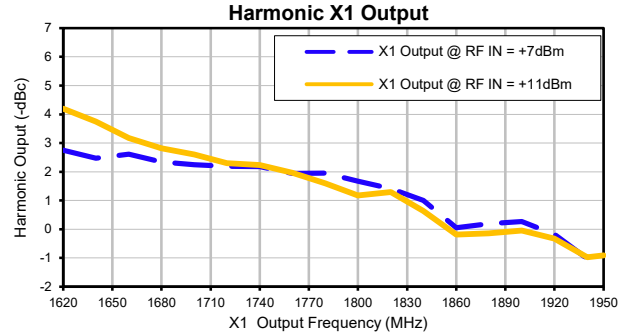
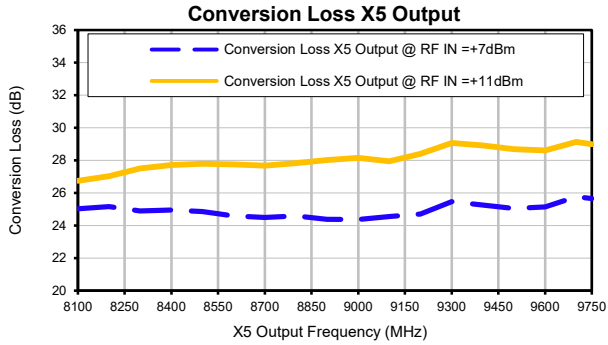
Operating Temperature	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Input RF Power	+13 dBm

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





### TYPICAL PERFORMANCE GRAPHS





### FUNCTIONAL DIAGRAM

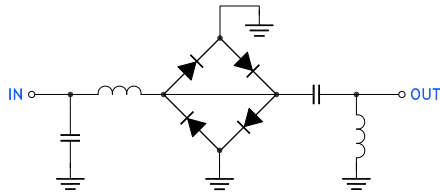
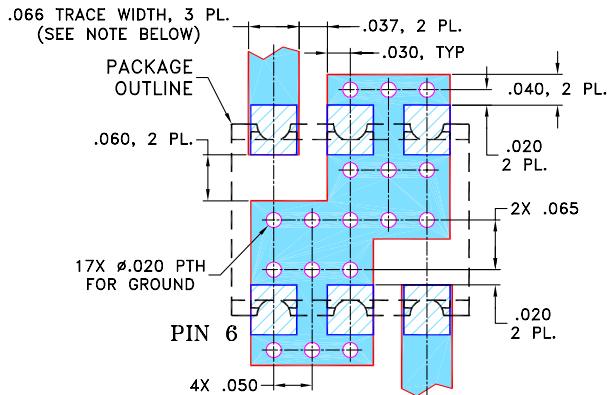


Figure 1. RMK-5-972+ Functional Diagram

### PAD DESCRIPTION

Function	Pad Number	Description
RF-IN	1	Connects to RF Input Port
RF-OUT	4	Connects to RF Output Port
GROUND	2, 3, 5, 6	Connects to Ground on PCB, (See drawing PL-258)

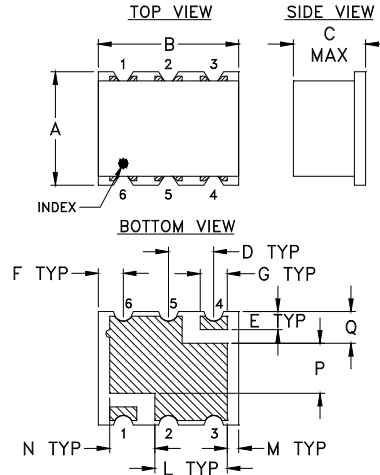
### SUGGESTED PCB LAYOUT (PL-258)



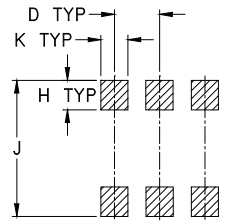
- NOTES: 1. TRACE WIDTH IS SHOWN FOR ROGERS R04350B WITH DIELECTRIC THICKNESS .030" ± .002"; COPPER: 1/2 OZ. EACH SIDE. FOR OTHER MATERIALS TRACE WIDTH MAY NEED TO BE MODIFIED.  
 2. BOTTOM SIDE OF THE PCB IS CONTINUOUS GROUND PLANE.
- DENOTES PCB COPPER LAYOUT WITH SMOBC (SOLDER MASK OVER BARE COPPER)
  - DENOTES COPPER LAND PATTERN FREE OF SOLDER MASK

Figure 2. Suggested PCB Layout PL-258

### CASE STYLE DRAWING



### PCB Land Pattern



Suggested Layout, Tolerance to be within .002

### 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

### \*PRODUCT MARKING: RMK-5-972+

\*Marking may contain other features or characters for internal lot control



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# X5 Frequency Multiplier

**RMK-5-972+**

 Mini-Circuits

50Ω 8100 to 9750 MHz

**ADDITIONAL DETAILED INFORMATION IS AVAILABLE ON OUR DASH BOARD.**

[CLICK HERE](#)

Performance Data & Graphs	Data Graphs
Case Style	TT1224 Lead Finish: Gold over Nickel Plate
RoHS Status	Compliant
Tape and Reel	TR-F2
Suggested Layout for PCB Design	PL-258
Evaluation Board	TB-RMK-5-972+
	Gerber File
Environmental Rating	ENV02T1