RGX5

Overview
Acceleration tolerant SMD AT-cut quartz crystal in ceramic package with 5.0mm x 3.2mm footprint

Description
Very small SMD AT-cut quartz crystal specifcally designed to operate in vibration prone enviroments. Parts are able to survive acceleration 20,000G and higher with minimal parameter change. Vibration G-sensitivity significantly reduced. True SMD style, ceramic package with metal lid, seamed sealed. The product is supplied on tape and reel.

Recommended Applications
GPS, Agriculture, Avionics, Guidance, Navigation, Military, Other.

Features
G-sensitivity down to 0.2ppb/G
Low aging
Up to 50,000G acceleration event survival
Very good short term stability

RGX5 Specifications

1.0 Specification References

1.1	Model Description	RGX-5
1.2	RoHS compliant	Yes

2.0 Frequency Characteristics

	Parameter	Test Condition	Value	Units
2.1	Fundamental frequency range	Nominal frequency referenced to frequency at 23°C ±2°C	12 to 26	MHz
2.2	Calibration tolerance	Frequency at 23°C ±2°C (Note 1)	10 to 20	±ppm
2.3	Frequency stability over temperature	Referenced to frequency reading at 25°C and the specified Load Capacitance (Note 2)	4 to 40	±ppm
2.4	Temperature range	Maximum operating temperature available (Note 3)	-45 to 95	°C
2.5	Frequency perturbations	Peak to peak deviation from the frequency vs. temperature 5th order curve fit. Minimum of 1 frequency reading every 3°C, over the operating temperature range	0.2 to 1	ppm
2.6	Short term stability	Root Allan Variance for 1 second Tau	1 max	ppb
2.7	Long term stability	Frequency drift over 1 year (Note 1)	1 max	±ppm
2.8	Long term stability	Frequency drift over 10 years (Note 1)	5 max	±ppm
2.9	G-Sensitivity	Gamma vector of all three axes from 30Hz to 1500Hz, typical values. Values as low as 0.2ppb/G available depending on design (Note 1, 4)	0.2 to 0.8	ppb/G
2.10	Frequency offset after acceleration event	20,000G/2ms acceleration event in the z axis. Theoretical recovery time of 100ms (Note 4)	-3 to 0	ppm

3.0 Electrical

	Parameter	Test Condition	Value	Units
3.1	Load capacitance (CL)	Frequency is calibrated to a load at room temperature. Value required to be specified (Note 5)	7 to 35	pF
3.2	Pullability	Load and the crystal design dependant (Note 6)	2 to 40	ppm/pF
3.3	Drive level	Operating specification	100 max	micro W

4.0 ESR

	Parameter	Test Condition	Value	Units
4.1	**Fundamental**	12MHz to 26MHz (Note 1)	50 max	Ohms

5.0 Environmental

	Parameter	Test Condition	Value	Units
5.1	Shock	Half sinewave acceleration of 3,000G peak amplitude for 0.3ms duration,		
5.2	Vibration	10G RMS 30Hz to 1500Hz duration of 2 hours in each axis (Note 7)		
5.3	Humidity	After 48 hours at 85°C 85% relative humidity non-condensing (Note 7)		
5.4	Thermal shock	Exposed at -40°C for 30 minutes then to 85°C for 30 minutes constantly for a period of 5 days (Note 7)		
5.5	Storage temperature	-55 to 105°C		

6.0 Manufacturing Information

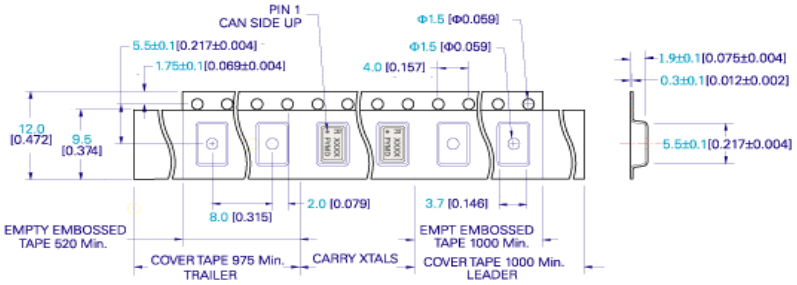
	Parameter	Test Condition
6.1	Reflow	Able to withstand solder reflow process. See reflow profile attached
6.2	Packaging description	Tape and Reel. 2000pcs per reel standard. Refer to drawing for details

7.0 Marking

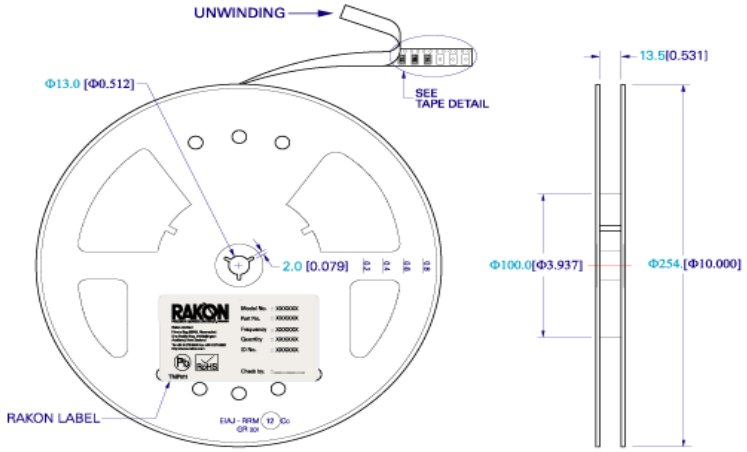
	Parameter	Test Condition
7.1	Type	Laser engraved
7.2	Line 1	Rakon Logo and the last four characters of the Rakon Part Number
7.3	Line 2	Pin 1 mark and Date Code

8.0 Specification Notes

	Parameter	Test Condition
8.1	Note 1	The maximum value is the specification. A minimum value, if present, indicates the tightest specification available
8.2	Note 2	A maximum frequency stability over the temperature range needs to be specified
8.3	Note 3	The operating temperature range needs to be specified
8.4	Note 4	The min. G-Sensitivity and max. acceleration event survival specifications cannot be met at the same time. Please contact Rakon Sales with specific requirements
8.5	Note 5	The crystal frquency is calibrated to a load between min. and max. Series Resonance options are available for this model, and under certain conditions, loads above 35pF may also be available
8.6	Note 6	A more precise min. and/or max. maybe specified should the exact pullability be of importance for a particular application
8.7	Note 7	The enviromental condition will cause less than 1ppm shift in frequency measured at 25°C



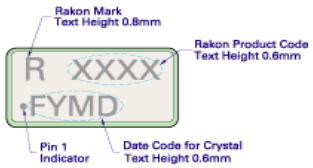
TAPE DETAIL (SCALE 2 : 1)

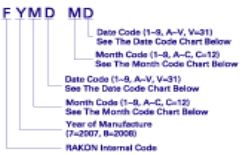


REEL DETAIL (SCALE 1 : 5)

NOTE: 1. Φ254mm REEL's MAXIMUM PACKING QUANTITY IS 2000 CRYSTAL REEL.
2. Pb LOGO NOT SHOW ON THE LABEL FOR GX-5 SERIES MODELS.

TITLE: RSX-5/RGX-5/RSX-6 TAPE & REEL	FILENAME: CAT127	REVISION: H	Tolerances: XX ±0.5, X.X ±0.2, X.XX ±0.10, X.XXX ±0.05, X° ±1.0°
RELATED DRAWINGS:		DATE: 10-Feb-09	Hole ±0.10
		SCALE: See Above	RAKON PRECISION QUARTZ CRYSTALS
		Millimetres [inch]	©2009 Rakon Limited





M - Month code

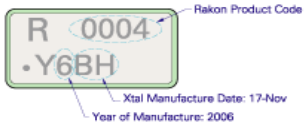
Month	Code
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	A
11	B
12	C

D - Date code

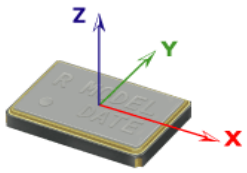
Date	Code	Date	Code	Date	Code
1	1	13	D	25	P
2	2	14	E	26	Q
3	3	15	F	27	R
4	4	16	G	28	S
5	5	17	H	29	T
6	6	18	I	30	U
7	7	19	J	31	V
8	8	20	K		
9	9	21	L		
10	A	22	M		
11	B	23	N		
12	C	24	O		

Note: 1 MUST BE DIFFERENT TO I.

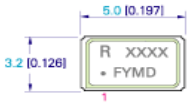
For Example:



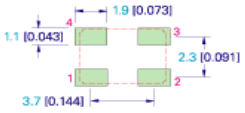
TITLE: RSX-5/RGX-5 SERIES LID MARKING	FILENAME: CAT191	REVISION: C	
RELATED DRAWINGS:		DATE: 27-Feb-07	RAKON PRECISION QUARTZ CRYSTALS
		SCALE: NTS	
		Millimetres [inch]	©2007 Rakon Limited



MODEL COORDINATE ORIENTATION

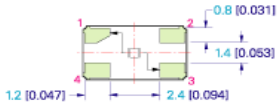


TOP VIEW



TOP VIEW
RECOMMENDED PAD LAYOUT

SIDE VIEW



BOTTOM VIEW

PIN CONNECTIONS	
1	CRYSTAL
2	GND
3	CRYSTAL
4	GND

TITLE: RGX-5 MODEL FILENAME: CAT352 REVISION: B

RELATED DRAWINGS:

DATE: 28-Feb-07

SCALE: 5 : 1

Millimetres [inch]

Tolerances:

XX	= ±0.5
X.X	= ±0.2
X.XX	= ±0.10
X.XXX	= ±0.05
X°	= ±1.0°
Hole	= ±0.10

RAKON PRECISION QUARTZ CRYSTALS