

RPT5032GX

The RPT5032GX is a miniature surface-mount, High G-Shock TCXO (Temperature Compensated Crystal Oscillator) that withstands force at an acceleration of more than 30,000g. Its robustness is derived from Rakon's patented RGX crystal. With a unique mechanical construction, the RPT5032GX survives high levels of shock and vibration while maintaining a low acceleration sensitivity of 0.8 ppb/g (typical value).

The RPT5032GX is available in an industry-standard hermetically-sealed package measuring 5.0 x 3.2 x 2 mm. At the heart of this Ultra Stable TCXO is Pluto+™, the latest in a range of in-house developed frequency control ASICs. It features improved phase noise performance which remains stable under high vibration. The wide operating temperature range of -55 to 105°C (stability < ±0.5 ppm) makes it ideal for harsh environments. With a typical power consumption of only 10 mW, it is suitable for portable, battery powered applications. The RPT5032GX is recommended where a wide temperature range and high shock tolerance are required such as in defence applications or industrial applications like down-hole drilling and data logging.

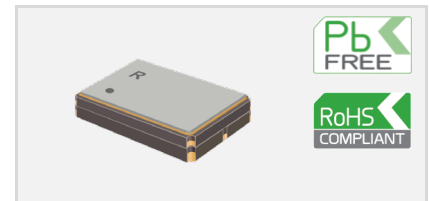
Features

- High G-Shock 30,000g
- Expanded operating temperature range: -55° to 105°C
- Low acceleration sensitivity
- Small form factor

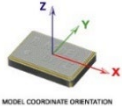
Applications

- Defence and military
- Aerospace
- Mining and oilfields
- GNSS positioning

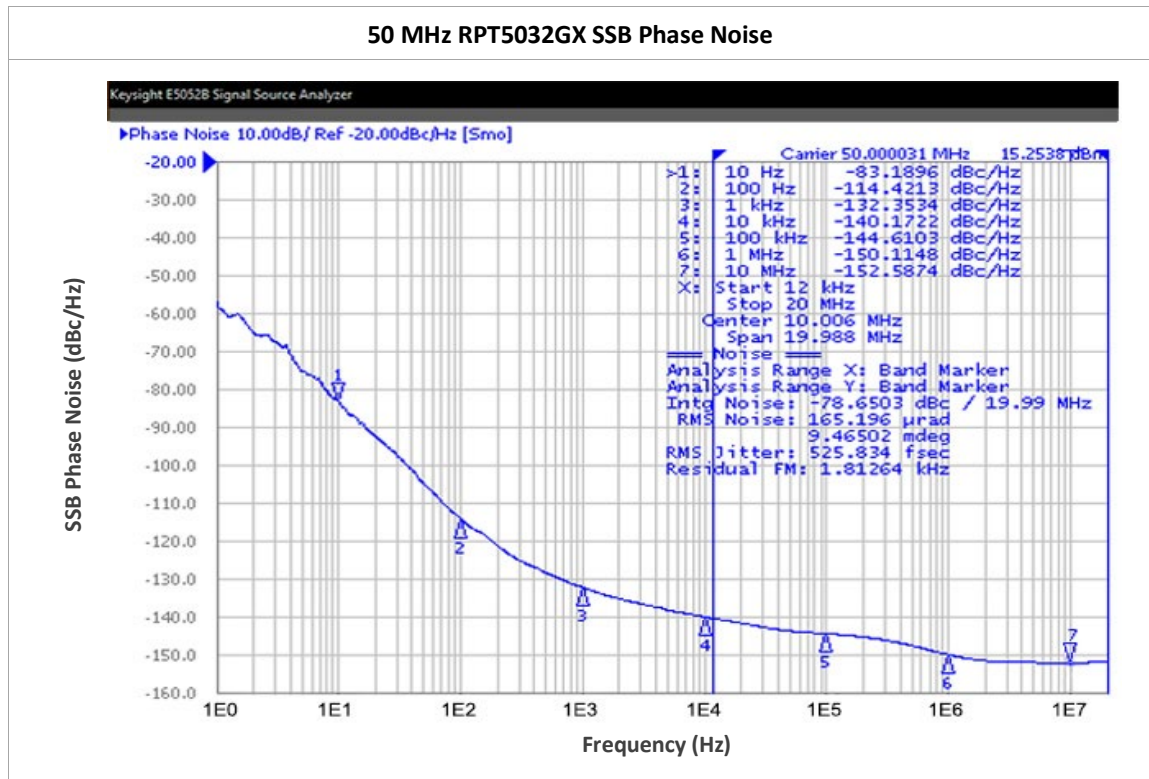
5.0 x 3.2 x 2.0 mm



Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency		10 – 50		MHz	
Frequency calibration			±1	ppm	Initial accuracy at 25 ± 1°C
Reflow shift			±1	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Operating temperature range	-55		105	°C	
Frequency stability over temperature			±0.5	ppm	Reference to (F _{MAX} + F _{MIN})/2
Slope over temperature (ΔF/ΔT)			±0.1	ppm/°C	
Supply voltage stability		±0.1		ppm	±5% variation Reference to the frequency at nominal V _{CC}
Load sensitivity		±0.1		ppm	±5pF / ±10% variation, reference to the frequency at nominal load
Long term stability (ageing @ 20 MHz, 25°C)			±1 ±3	ppm	1 year 10 years
Acceleration sensitivity		X-axis Y-axis Z-axis Γ vector, 3 to 1500Hz	0.3 0.2 0.5 0.8	ppb/g	@ 20 MHz 
Shock		30,000		g	Half sinewave acceleration of 30,000g peak amplitude for 1ms duration in z-axis
Supply voltage (V _{CC})	3.0	3.3	3.6	V	
Supply current		3.5	4.7	mA	
HC MOS output					
Output voltage low (V _{OL})			0.1V _{CC}	V	Device disabled, output in high impedance state
Output voltage high (V _{OH})	0.9V _{CC}			V	Device enabled, operating
Rise and fall time			8	ns	10% to 90% level
Duty cycle	45		55	%	At 50% level
Output load		15		pF	
Tri-state control					
Input level low			0.2V _{CC}	V	Device disabled, output in high impedance state
Input level high	0.6V _{CC}			V	Device enabled, operating
Current		2		mA	
Output enable time			100	µs	

SSB Phase Noise (Typical value at 25°C)



Model Outline and Recommended Pad Layout

TOP VIEW

SIDE VIEW

BOTTOM VIEW

RECOMMENDED PAD LAYOUT - TOP VIEW

See NOTE

To GND, External Bypass Cap 100nF, Output to Circuit, External AC Coupling Cap 10nF for CS Output

Pin Connections	
1*	Do not connect / GND / Vc
2	GND
3*	Temperature sensor output (V _{TEMP})/V _{REF} /Do not connect
4	RF output
5	Supply voltage (V _{CC})
6	Tri-state control (Enable)
* Depending on the specifications	

NOTE:

- Dimensions are in millimetres.
- The area between the pads is a keep-out area, not tracks or ground plane allowed on any layer.