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#### 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 30,000*g*. 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  $5.0 \times 3.2 \times 2$  mm. At the heart of this Ultra Stable TCXO is Pluto+<sup>TM</sup>, 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**

#### Applications

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



Small form factor

–55° to 105°C

High G-Shock 30,000g

Expended operating temperature range:

#### **Standard Specifications**

Low acceleration sensitivity

Parameter		Min.	Тур.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)			10 – 50		MHz	
Frequency calibration				±1	ppm	Initial accuracy at 25 ± 1°C
Reflow shift				±1	ppm	Pre to post reflow $\Delta F$ (measured $\geq 60$ 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 ( $\Delta F/\Delta T$ )				±0.1	ppm/°C	
Supply voltage stability			±0.1		ppm	$\pm$ 5% variation Reference to the frequency at nominal V <sub>cc</sub>
Load sensitivity			±0.1		ppm	$\pm$ 5pF / $\pm$ 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 <sub>CC</sub> )		3.0	3.3	3.6	V	
Supply current			3.5	4.7	mA	
HCMOS output Output voltage low (VOL) Output voltage high (VOH) Rise and fall time Duty cycle Output load		0.9V <sub>cc</sub> 45	15	0.1V <sub>cc</sub> 8 55	V V ns % pF	Device disabled, output in high impedance state Device enabled, operating 10% to 90% level At 50% level
Tri-state control Input level low Input level high Current Output enable time		0.6V <sub>CC</sub>	2	0.2V <sub>CC</sub> 100	· V V mA μs	Device disabled, output in high impedance state Device enabled, operating

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## SSB Phase Noise (Typical value at 25°C)

### Model Outline and Recommended Pad Layout

