RPT7050LG

The RPT7050LG is one of our most advanced ≤0.1 ppb/*g* *g*-sensitivity Ultra Stable TCXOs (US-TCXOs) in a small low profile size of 7.0 x 5.0 x 1.5 mm. Frequencies are available from 10 to 52 MHz. This TCXO/TC-VCXO features the following Rakon proprietary technologies: Pluto+2™ ASIC, XMEMS® crystal, blank mounting and assembly. These advanced solutions guarantee the ±0.2 ppm frequency stability (FvT) over extended operating temperatures -55 to 105°C – the best Fvt performance TCXO with the widest operating temperature range.

The US-TCXO is engineered for applications that withstand high vibration levels and harsh temperatures, such as defence, positioning and navigation, precision GNSS, avionics, telecommunications, and Real-Time Kinematic (RTK).

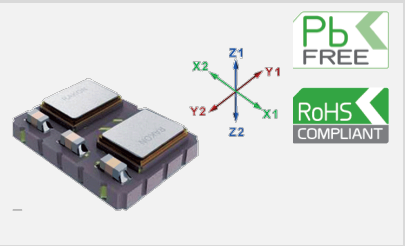
Features

- Low *g*-sensitivity typically ≤0.1 ppb/*g*
- Pluto+2™ and XMEMS® technologies
- Custom SC-cut high-Q crystal
- ±0.2 ppm frequency stability over -55 to 105°C
- Fast start-up 5 ns (HCMOS)
- Customised design available on request

Applications

- Defence
- Positioning and navigation
- Precision GNSS
- Real-Time Kinematic (RTK)
- Avionics
- Communications

7.0 x 5.0 x 1.5 mm



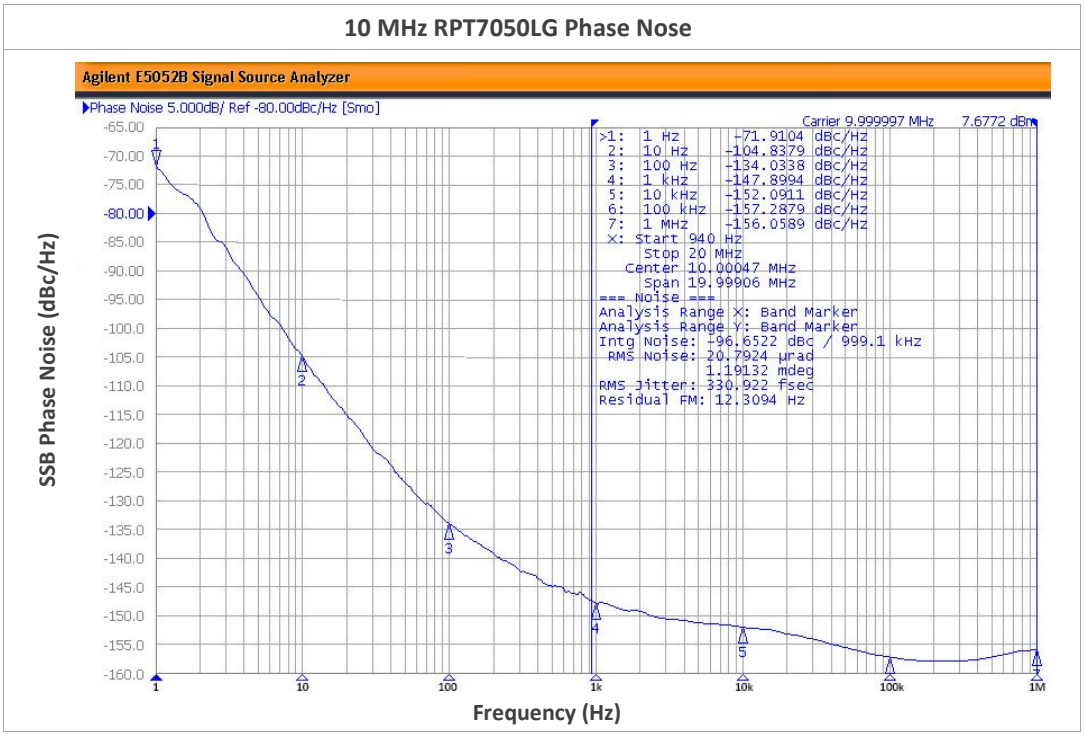
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)	10		52	MHz	
Frequency calibration			±1	ppm	At 25°C, ±2°C, at time of shipment reference to the nominal frequency
Reflow shift			±1	ppm	After 1 hour recovery at 25°C
Frequency stability over temperature			±0.2 – 0.5	ppm	Reference to (F_{MAX} + F_{MIN})/2
Operating temperature range	-55		105	°C	Operating temperature range over which temperature stability is measured
Slope over temperature (ΔF/ΔT)	20		100	ppb/°C	Temperature ramp 1°C/minute
Supply voltage stability		±25	±50	ppb	±5% variation
Load sensitivity		±25	±50	ppb	±5% variation
Long term stability 1 year 10 years			±1 / ±2 ±3 / ±5	ppm	≤26MHz / >26MHz
Acceleration sensitivity		0.1	0.2	ppb/*g*	Gamma vector over operating temperature range
Supply voltage (V_{CC})		3.3		V	±5%
Supply current		5	11	mA	The current value depends on Fn
Output voltage – DC coupled C/Sine Load resistance Load capacitance	0.8	1.1 10 10		V kΩ pF	Peak to peak voltage
Output voltage (HCMOS) Voltage level low (V_{OL}) Voltage level high (V_{OH}) Rise and fall time Duty cycle Load	 0.9 45 	 15	 0.1 5 55 	 Vs Vs ns % pF	 Measured with Vcc = 3.3V Measured at 50% level
Control voltage (Vc) range	0.5		2.5	V	
Frequency tuning ≤26MHz >26MHz	±5 ±7			ppm	
Slope		+7		ppm/V	
Input resistance	100			kΩ	
Modulation bandwidth	1			Hz	

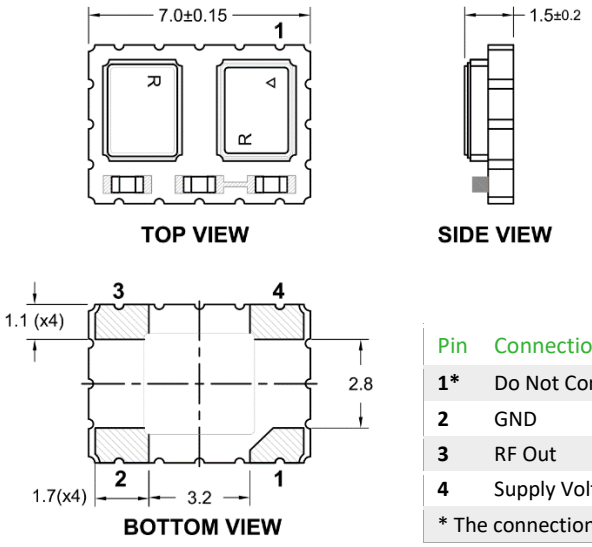
Environmental Specifications

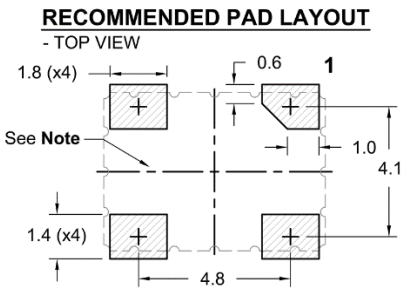
Parameter	Description
Vibration	JESD22-B103 (section 4.2.2)/MIL-STD-202, M204, 20*g*, 10 to 2000Hz
Mechanical shock	JESD22-B104 (service condition B), 5 shocks in 6 axes (30 shocks total),1500*g* peak value, 0.5ms duration, half-sine waveform

SSB Phase Noise (Typical value at 25°C)



Model Outline and Recommended Pad Layout





Pin	Connections
1*	Do Not Connect / Vc (Control Voltage)
2	GND
3	RF Out
4	Supply Voltage (Vcc)
* The connection depends on the specification	

NOTE: The area between the pads is a restricted area, no tracks or ground plane is allowed on any layer. Dimensions are in millimetres.