RPT7050D

RPT7050D uses Rakon's proprietary Pluto+™ ASIC, and a patented dual crystal resonator design, resulting in high frequency stability over a wide temperature range, paired with a better than 0.2ppb/*g* acceleration sensitivity.

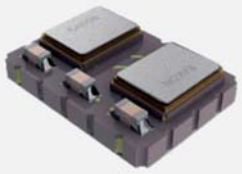
Features

- *g*-sensitivity typically ≤0.2ppb/*g*
- Excellent frequency stability over temperature performance
- Extended operating temperature up to -55/105°C
- Variants tailored to specific customer requirements

Applications

- Defense
- Guidance
- Avionics
- Precision GNSS/Positioning
- Communications

7.0 x 5.0 x 1.8 mm



Standard Specifications

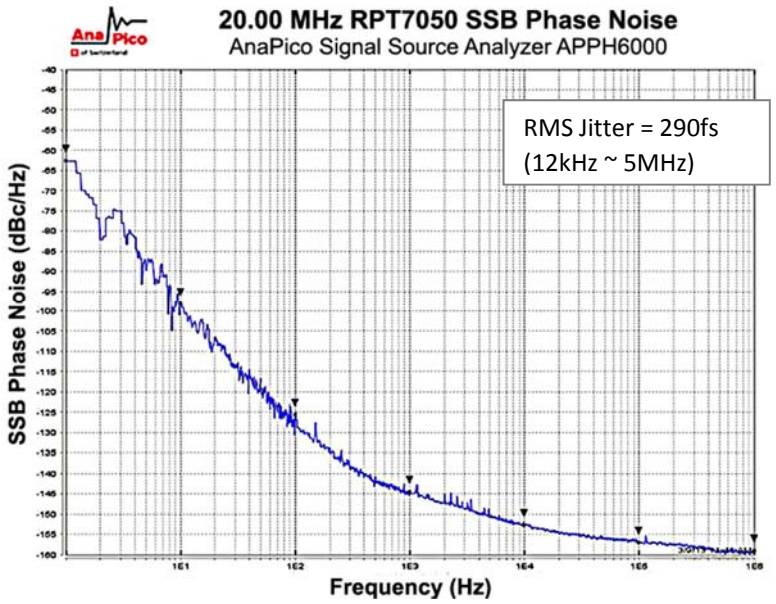
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency	16		40	MHz	
Frequency calibration			±1	ppm	At 25°C±2°C, at time of shipment reference to nominal frequency
Reflow shift			±1	ppm	After 1 hour recovery at 25°C
Frequency stability over temperature			±0.2 – 2.5	ppm	Reference to (F_{MAX} + F_{MIN})/2
Operating temperature range [1]	-40		85	°C	Operating temperature range over which temperature stability is measured
Slope over temperature (ΔF/ΔT)	20		200	ppb/°C	Temperature ramp 1°C/minute
Supply voltage stability		±0.1		ppm	±5% variation
Load sensitivity		±0.1		ppm	±5% variation
Long term stability (≤26MHz)			±1 ±3	ppm ppm	1 year 10 years
Long term stability (>26MHz)			±2 ±5	ppm ppm	1 year 10 years
Acceleration sensitivity		0.2	0.5	ppb/*g*	Gamma vector over operating temperature range
Supply voltage, V_{CC}	2.5		6	V	±5%, standard values are 3.0, 3.3 and 5.0V
Current (C/Sine)		2.5		mA	
Current (HCMOS)		4		mA	
Output voltage – C/Sine	0.8			V	Peak to peak voltage
Load resistance		10		kΩ	
Load capacitance		10		pF	
Output voltage (HCMOS)					
Voltage level low (V_{OL})			0.1	Vs	
Voltage level high (V_{OH})	0.9			Vs	
Rise and fall time			8	ns	Measured with Vcc = 3.3V
Duty cycle	45		55	%	Measured at 50% level
Load		15		pF	
Control voltage range	0.5		2.5	V	Vc
Frequency tuning					
≤26MHz	±5			ppm	
>26MHz	±7			ppm	
Slope		+7		ppm/V	
Input resistance	100			kΩ	
Modulation bandwidth	1			Hz	

[1] Wider temperature ranges available at certain frequencies.

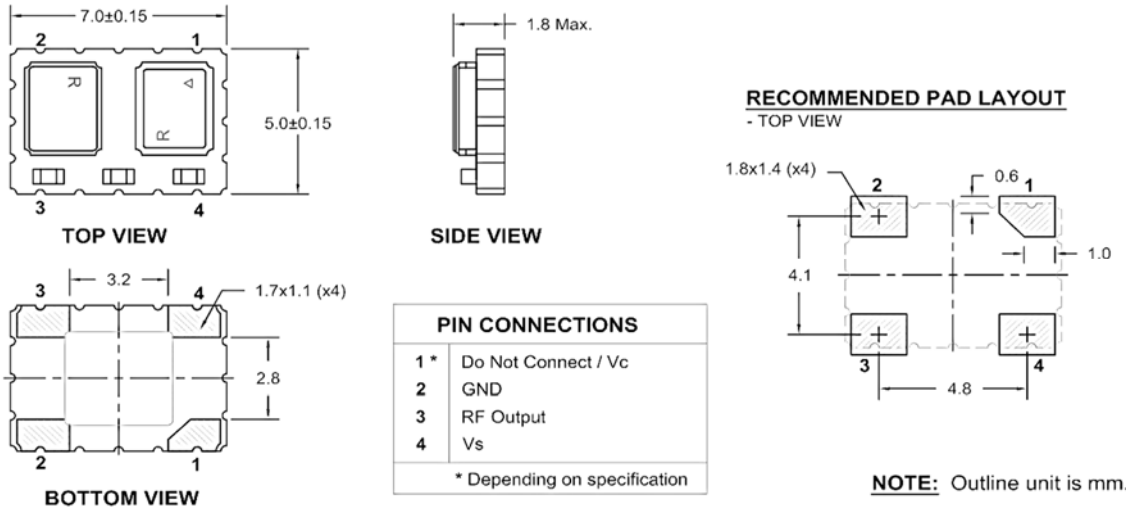
Environmental Specifications

Parameter	Description
Acceleration	MIL-STD 202, method 212A, duration 1 minute, peak acceleration… X1 & X2 axes 10,000*g*, Y1 & Y2 axes 20,000*g*, Z1 & Z2 axes 10,000*g*
Vibration, high frequency	MIL-STD 202, method 204D, 1.5 hours of swept sinusodal vibration of 20*g* / 1.5mm pk-pk amplitude from 10Hz to 2000Hz in each of three mutually perpendicular axes. Total sweep time 4.5 hours.
Shock (specified pulse)	MIL-STD 202, method 213B, half sine pulse, duration 1ms, 3 shocks in each direction along three mutually perpendicular axes (18 shocks total), X1 & X2 axes 10,000*g*, Y1 & Y2 axes 30,000*g*, Z1 & Z2 axes 5,000*g*.

SSB Phase Noise (Typical value at 25°C)



Model Outline and Recommended Pad Layout



PIN CONNECTIONS	
1 *	Do Not Connect / Vc
2	GND
3	RF Output
4	Vs

* Depending on specification