

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.

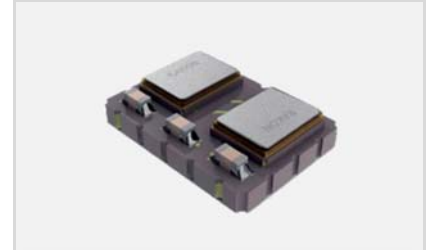
Features

- g-sensitivity typically $\leq 0.2\text{ppb/g}$
- Excellent frequency stability over temperature performance
- Extended operating temperature up to $-55/105^{\circ}\text{C}$
- 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

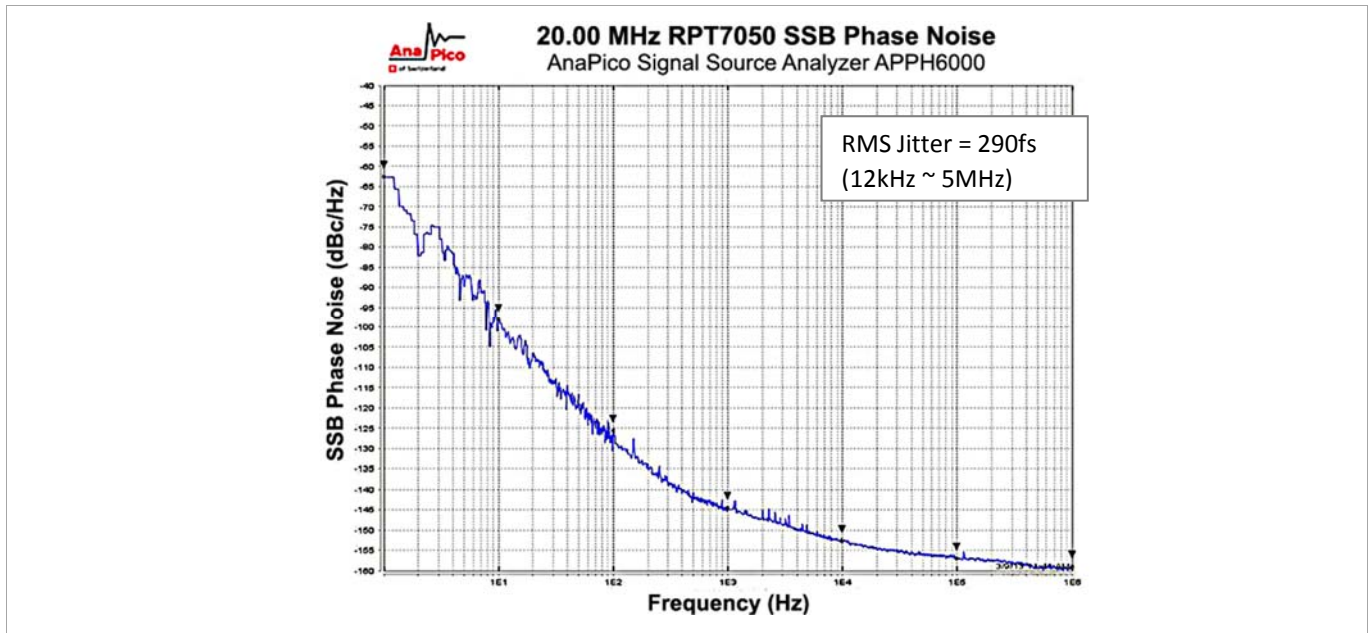
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency	16		40	MHz	
Frequency calibration			± 1	ppm	At $25^{\circ}\text{C} \pm 2^{\circ}\text{C}$, at time of shipment reference to nominal frequency
Reflow shift			± 1	ppm	After 1 hour recovery at 25°C
Frequency stability over temperature			$\pm 0.2 - 2.5$	ppm	Reference to $(F_{\text{MAX}} + F_{\text{MIN}})/2$
Operating temperature range ¹	-40		85	$^{\circ}\text{C}$	Operating temperature range over which temperature stability is measured
Slope over temperature ($\Delta F/\Delta T$)	20		200	ppb/ $^{\circ}\text{C}$	Temperature ramp $1^{\circ}\text{C}/\text{minute}$
Supply voltage stability		± 0.1		ppm	$\pm 5\%$ variation
Load sensitivity		± 0.1		ppm	$\pm 5\%$ variation
Long term stability ($\leq 26\text{MHz}$)			± 1 ± 3	ppm ppm	1 year 10 years
Long term stability ($> 26\text{MHz}$)			± 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	$\pm 5\%$, 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		k Ω	
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 $V_{\text{CC}} = 3.3\text{V}$
Duty cycle	45		55	%	Measured at 50% level
Load		15		pF	
Control voltage range	0.5		2.5	V	V_{C}
Frequency tuning					
$\leq 26\text{MHz}$	± 5			ppm	
$> 26\text{MHz}$	± 7			ppm	
Slope		+7		ppm/V	
Input resistance	100			k Ω	
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 10,000g, Y1 & Y2 axes 20,000g, Z1 & Z2 axes 10,000g
Vibration, high frequency	MIL-STD 202, method 204D, 1.5 hours of swept sinusoidal vibration of 20g / 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 10,000g, Y1 & Y2 axes 30,000g, Z1 & Z2 axes 5,000g.

SSB Phase Noise (Typical value at 25°C)



Model Outline and Recommended Pad Layout

