

## 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

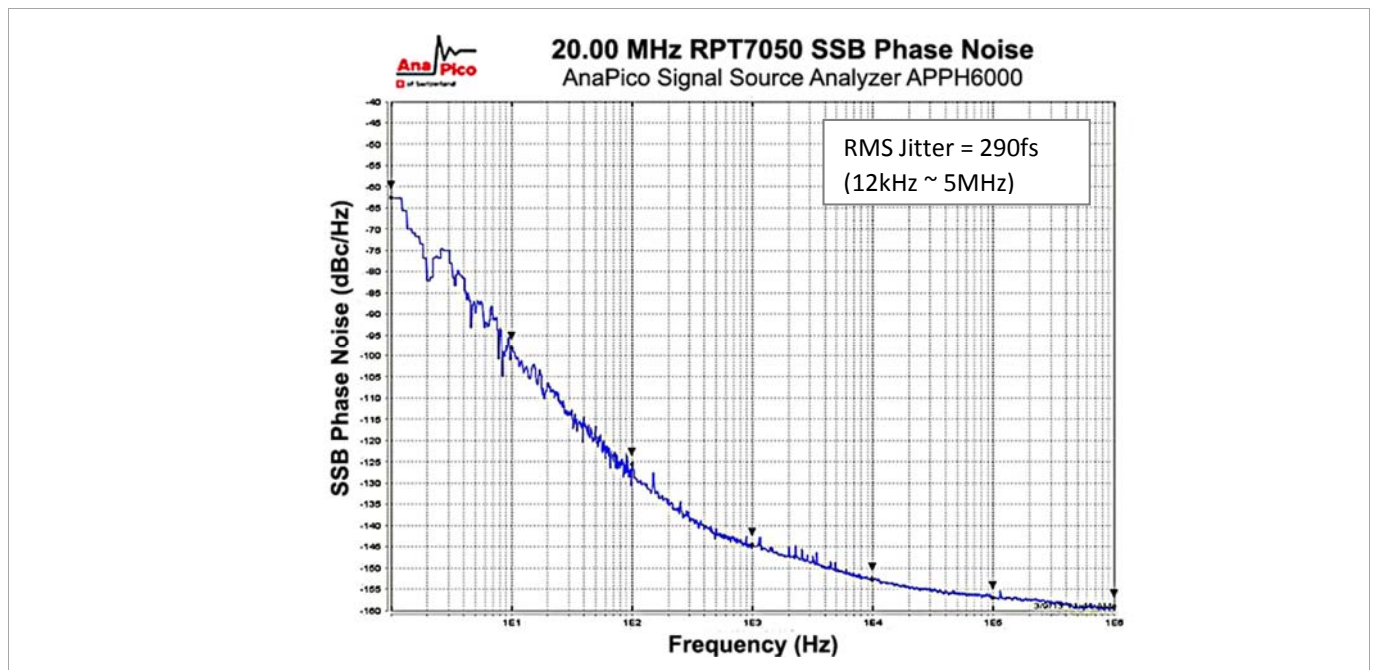
Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency	16		40	MHz	
Frequency calibration			$\pm 1$	ppm	At $25^\circ\text{C} \pm 2^\circ\text{C}$ , at time of shipment reference to nominal frequency
Reflow shift			$\pm 1$	ppm	After 1 hour recovery at $25^\circ\text{C}$
Operating temperature range <sup>1</sup>	-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		$\pm 0.1$		ppm	$\pm 5\%$ variation
Load sensitivity		$\pm 0.1$		ppm	$\pm 5\%$ variation
Long term stability ( $\leq 26\text{MHz}$ )			$\pm 1$ $\pm 3$	ppm ppm	1 year 10 years
Long term stability ( $> 26\text{MHz}$ )			$\pm 2$ $\pm 5$	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 $\Omega$	
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 $V_{CC} = 3.3\text{V}$
Duty cycle	45		55	%	Measured at 50% level
Load		15		pF	
Control voltage range	0.5		2.5	V	$V_C$
Frequency tuning					
$\leq 26\text{MHz}$	$\pm 5$			ppm	
$> 26\text{MHz}$	$\pm 7$			ppm	
Slope		+7		ppm/V	
Input resistance	100			k $\Omega$	
Modulation bandwidth	1			Hz	

<sup>1</sup> Wider temperature ranges available at certain frequencies.

### Environmental Specifications

Parameter	Description
Acceleration steady state	IEC 60068-2-7 test Ga, duration 1 minute, peak acceleration... X1 & X2 axes 10,000g, Y1 & Y2 axes 20,000g, Z1 & Z2 axes 10,000g
Vibration	IEC 60068-2-6, test Fc: 10-60Hz 0.75mm displacement, 60 – 500Hz 200m/s <sup>2</sup> (20g <sub>n</sub> ) acceleration, 1.5 hours in each of three mutually perpendicular axes at 1 octave per minute.
Mechanical shock	IEC 60068-2-27, test Ea: 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

