

RPT7050D

The 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 0.2 ppb/g acceleration sensitivity.

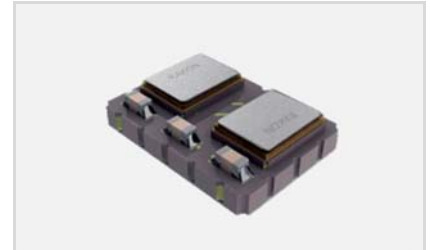
Features

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

Applications

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

7.0 x 5.0 x 1.5 mm



Standard Specifications

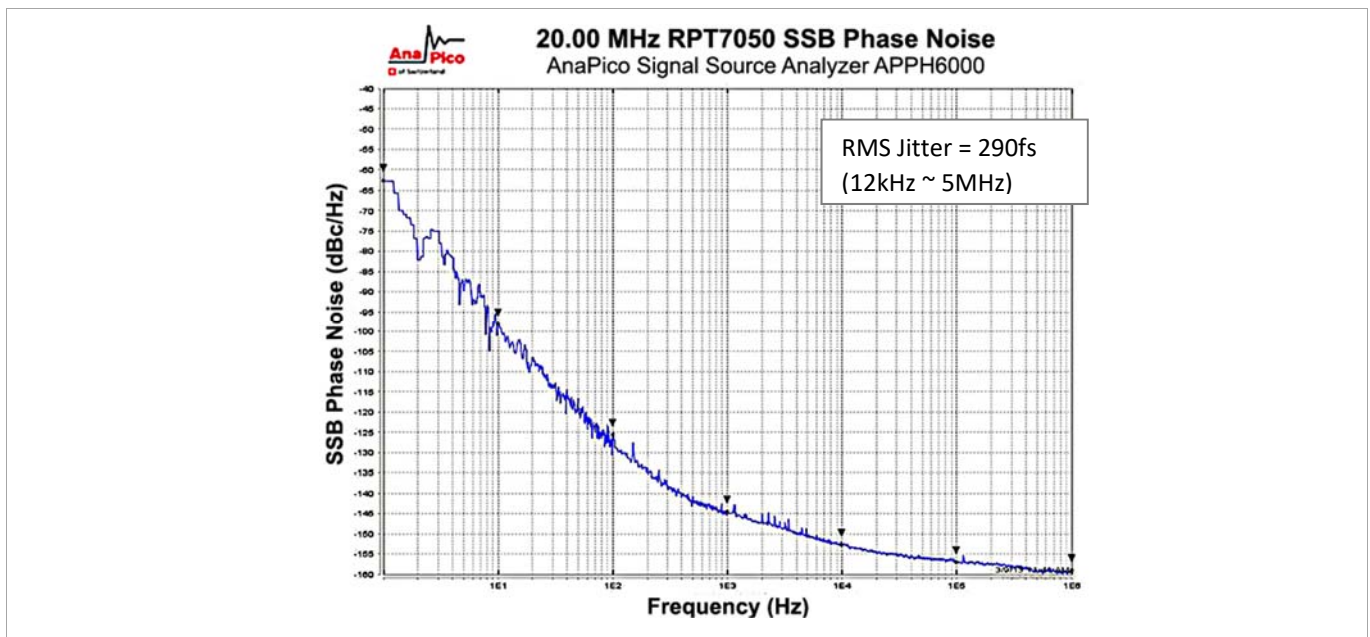
| Parameter | Min. | Typ. | Max. | Unit | Test Condition / Description |
|--|---------|-----------|--------------------|----------------|--|
| Nominal frequency | 10 | | 52 | MHz | |
| Frequency calibration | | | ± 1 | ppm | At 25°C $\pm 2^\circ\text{C}$, at time of shipment reference to nominal frequency |
| Reflow shift | | | ± 1 | ppm | After 1 hour recovery at 25°C |
| Frequency stability over temperature | | | $\pm 0.2 - 0.5$ | ppm | Reference to $(F_{\text{MAX}} + F_{\text{MIN}})/2$ |
| Operating temperature range ¹ | -55 | | 105 | °C | Operating temperature range over which temperature stability is measured |
| Slope over temperature ($\Delta F/\Delta T$) | 20 | | 100 | ppb/°C | Temperature ramp 1°C/minute |
| Supply voltage stability | | ± 0.1 | | ppm | $\pm 5\%$ variation |
| Load sensitivity | | ± 0.1 | | ppm | $\pm 5\%$ variation |
| Long term stability (≤ 26 MHz) | | | ± 1 ± 3 | ppm ppm | 1 year 10 years |
| Long term stability (> 26 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 5.0 V |
| 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 | V _s | |
| Voltage level high (V _{OH}) | 0.9 | | | V _s | |
| Rise and fall time | | | 8 | ns | Measured with V _{CC} = 3.3 V |
| Duty cycle | 45 | | 55 | % | Measured at 50% level |
| Load | | 15 | | pF | |
| Control voltage range | 0.5 | | 2.5 | V | V _c |
| Frequency tuning | | | | | |
| ≤ 26 MHz | ± 5 | | | ppm | |
| > 26 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

