

RPT7050B

An emergency distress beacon is a small battery-powered device that can be carried on-board ships (called EPIRB = Emergency Position Indicating Radio Beacon), aircraft (called ELT = Emergency Locator Transmitter) and on one's person (called PLB = Personal Locator Beacon). Once activated it transmits a signal that is detectable by government search and rescue authorities. These beacons are regulated by Cospas-Sarsat, an international organisation for the search and rescue of persons in distress. The Cospas-Sarsat system uses a constellation of satellites orbiting the globe and a network of earth stations to provide distress alert and location information to rescue teams anywhere in the world. Using the signals transmitted by the beacon, the system calculates its position to within a few km. The beacon's correct operation depends to a great extent on the stability of the reference oscillator that is used to generate the 406 MHz transmitter signal.

The RPT7050B TCXO makes use of Rakon's Pluto+2™ ASIC, an upgraded temperature-compensation chip from patented Pluto+™ ASIC which enables it to achieve critical Long Term Stability (LTS), low phase noise and wide operating temperature range. These key specifications enabled the 7 x 5 mm TCXO an ideal solution for the Second Generation Beacons (SGBs). The Pluto+2™ TCXO employs One-Time Programmable (OTP) non-volatile memory which ensures lifetime reliability under adverse conditions.

Features

- Cospas-Sarsat compliant
- LTS: 100% tested
- Test data supplied with each unit
- Clipped Sinewave and voltage control options
- Non-volatile memory for lifetime reliability

Applications

- Second Generation Beacons (SGBs)
- Emergency beacon (EPIRB, ELT, PLB)
- Argos beacon
- Personal survival radio

7.0 x 5.0 x 1.5 mm



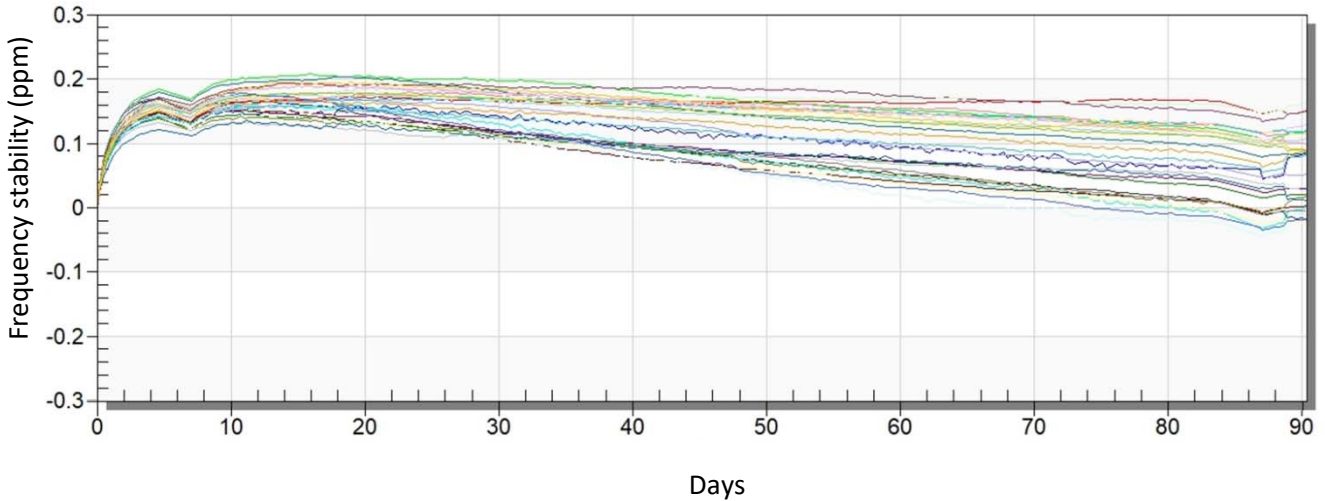
Standard Specifications

Parameter	Min.	Typ.	Max.	Unit	Test Condition / Description
Nominal frequency (Fn)		10 – 20		MHz	Standard frequencies: 10.0, 12.5, 12.6890625, 14.4 or 19.2 MHz
Frequency calibration			±0.5	ppm	Initial tolerance at 25°C
Reflow shift			±1	ppm	Pre to post reflow ΔF (measured ≥ 60 minutes after reflow)
Operating temperature range	-55 -40 -20		70 55 55	°C	Class 0 Class I Class II
Frequency stability over temperature (FVT)			±0.2	ppm	Reference to $(F_{MAX} + F_{MIN})/2$
Supply voltage stability			±0.1	ppm	±10% variation, reference to frequency at 3.3V
Load sensitivity			±0.1	ppm	±5pF variation, reference to frequency at 15pF
Long term stability (LTS) ¹			±1 ±1.5	ppm	1 year 10 years
All causes stability			±3	ppm	Reference to Fn
Supply voltage (V _{CC})		3.3		V	±10%
Supply current		3		mA	Depending on nominal frequency
Root Allan Variance			1*10 ⁻⁹		tau = 100ms
Start-up time			15	ms	90% amplitude
Oscillator output options	Clipped Sinewave: 10kΩ //10pF nominal load. HCMOS: 15pF nominal load.				

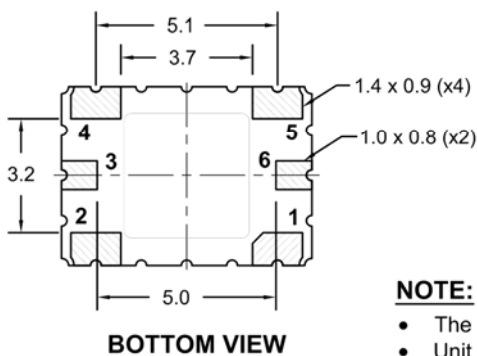
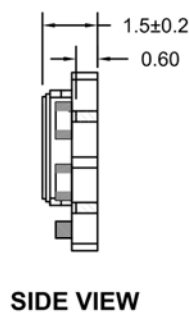
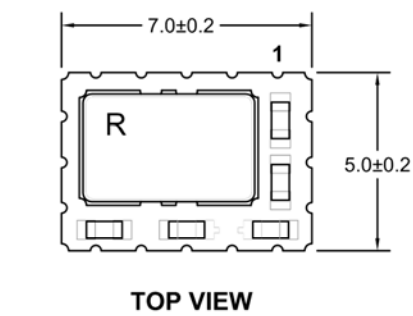
¹ 10 years at 20°C, 100% tested for ≥ 21 days.

90-Day Long Term Stability (LTS) Qualification

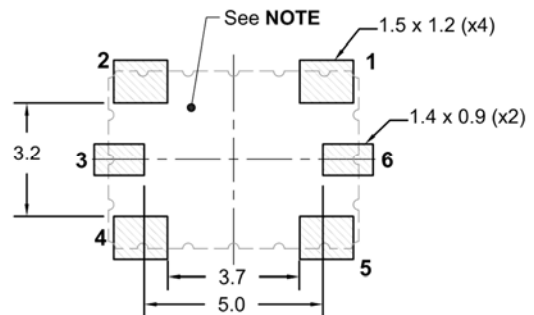
LTS Prediction Results (30 units)	SGBs Frequency Ageing Limit
±0.4 ppm/year	±0.5 ppm/year
±0.6 ppm/ 5 years	±1 ppm/ 5 years
±0.8 ppm/ 10 years	±1.5 ppm/ 10 years



Model Outline and Recommended Pad Layout



RECOMMENDED PAD LAYOUT - TOP VIEW



PIN CONNECTIONS

1 * Do Not Connect/GND/Vc	4 RF Output
2 GND	5 Supply Voltage (Vcc)
3 Do Not Connect	6 Tri-state Control (Enable)

* Depending on specification

NOTE:

- The area between the pads is a keep-out area, no tracks or ground plane allowed on any layer
- Unit is mm