

### 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 alerts and location information to rescue teams worldwide. 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 a wide operating temperature range. These key specifications enabled the 7 x 5 mm TCXO to be an ideal solution for Second Generation Beacons (SGBs). The Pluto+2™ TCXO employs One-Time Programmable (OTP) non-volatile memory which ensures lifetime reliability under adverse conditions.

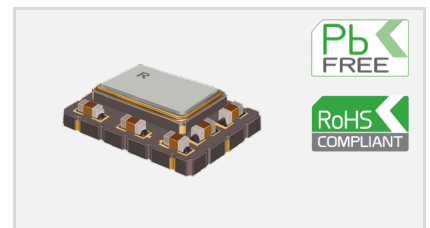
#### Features

- 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



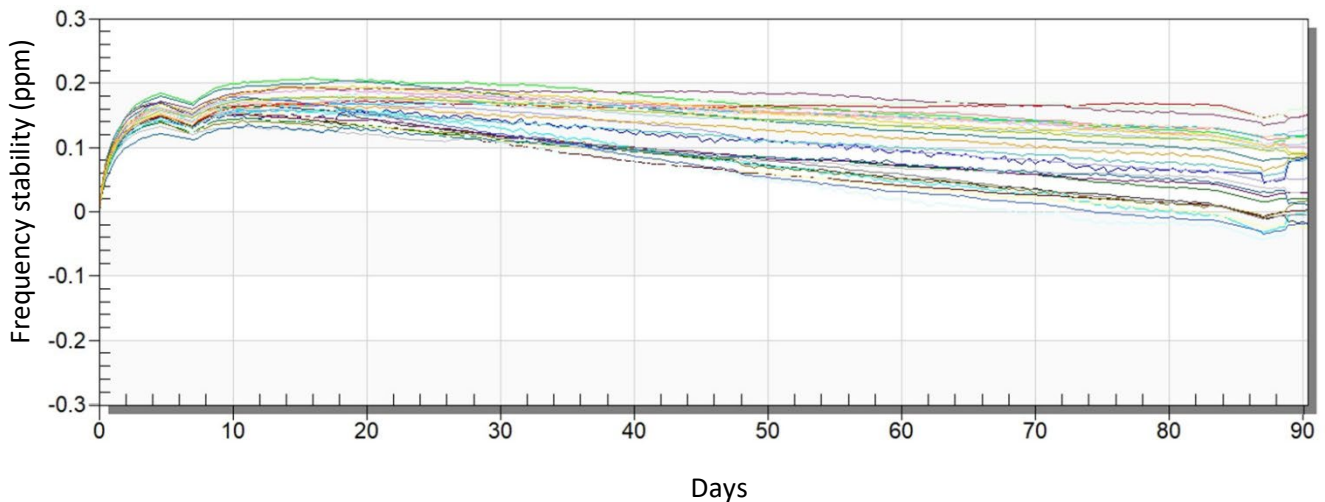
#### Standard Specifications

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 <sub>MAX</sub> + F <sub>MIN</sub> )/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) <sup>1</sup>			±1 ±1.5	ppm	1 year 10 years
All causes stability			±3	ppm	Reference to Fn
Supply voltage (V <sub>CC</sub> )		3.3		V	±10%
Supply current		3		mA	Depending on nominal frequency
Root Allan Variance			1*10 <sup>-9</sup>		tau = 100ms
Start-up time			15	ms	90% amplitude
Oscillator output options	Clipped Sinewave: 10kΩ //10pF nominal load. HCMOS: 15pF nominal load.				

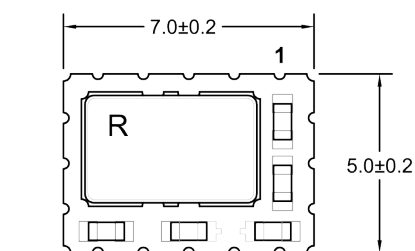
<sup>1</sup> 10 years at 20°C, 100% tested for ≥ 21 days.

## 90-Day Long Term Stability (LTS) Qualification

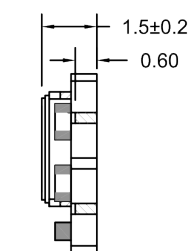
LTS Prediction Results (30 units)	SGBs Frequency Ageing Limit
±0.4 ppm/year	±0.5 ppm/year
±0.6 ppm/ 5 years	±1 ppm/ 5 years
±0.8 ppm/ 10 years	±1.5 ppm/ 10 years



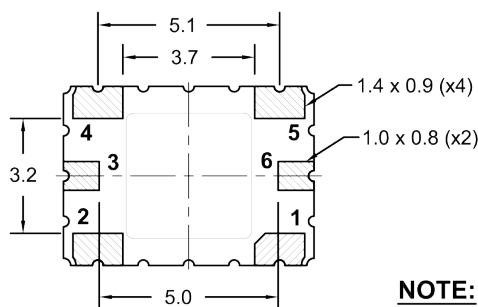
## Model Outline and Recommended Pad Layout



TOP VIEW



SIDE VIEW



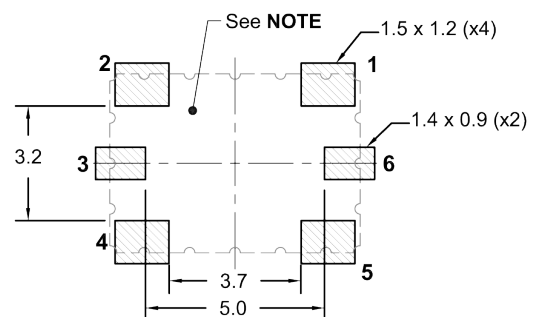
BOTTOM VIEW

### NOTE:

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

### RECOMMENDED PAD LAYOUT

- TOP VIEW



### PIN CONNECTIONS

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

\* Depending on specification