Dynamic Engineers Inc.
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**TCXO7500Z-12.8MHz-A**
Analogue Temperature Compensated Xtal Oscillator

## Features and Benefits

Meets all Medium-term stability requirements of COSPAS SARSAT : Class 2
12.8000MHz AT-strip resonator optimized for this application
CMOS output
+3.3V; 4 mA max.
Less than 1E-10 ADEV @ tau = 100ms
Less than +/- 200 ppb over -40°C to +55°C
Tri-state function

## Typical Applications

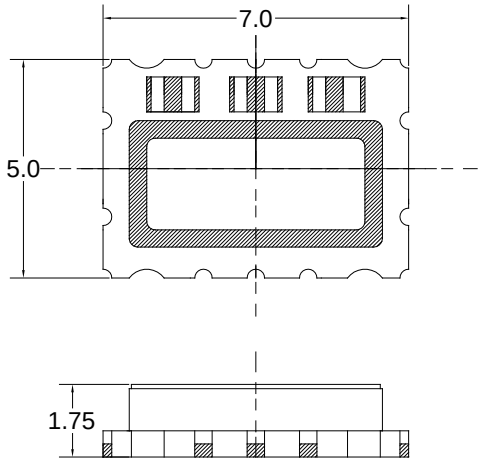
ELT Emergency Beacons
Other frequencies available for EPIRB and PLB beacon systems

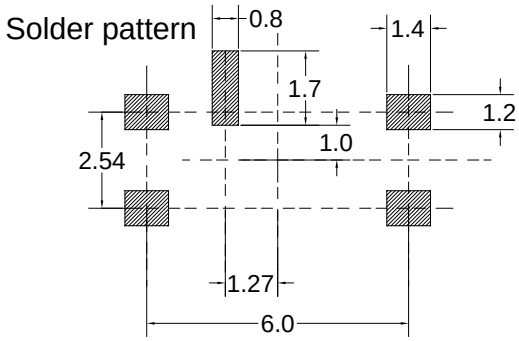
## Description

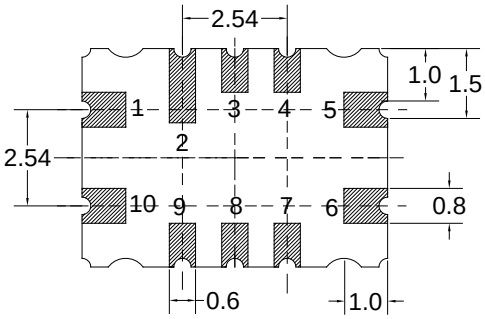
5 x 7 mm smd. TCXO platform optimized for crystal angle and compensation technique to meet the specific stability requirements of ELT ( Emergency Locator Transmitter ) applications.

## Mechanical Drawing & Pin Connections

Drawing No: MD150075-1




Pin function

#1 Do not connected
#5 GND
#6 Output
#9 Tri-state(Enable)
#10 Vdc

Do not connect #2, #3, #4, #7, #8



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## Specifications

| TCXO Specification | Sym | Condition | Value | | | Unit | Note |
|---|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | | |
| Nominal Frequency | $F_{nom}$ | | | 12.8000 | | MHz | |
| Output Waveform | | | | CMOS | | | |
| Output Level High | | | 2.97 | | | V | |
| Output Level Low | | | | | 0.33 | V | |
| Output Load | | +/-5% | | 15 | | pF | |
| Symmetry (Duty) | | @ ½ Vdc | 45 | | 55 | % | |
| Tri-state function | | pin # 6: oscillation<br>pin # 6: high impedance | pin # 9 high or open<br>pin # 9 low | | | | |
| **Power Supply** | | | | | | | |
| Supply Voltage | $V_{cc}$ | | 3.135 | 3.3 | 3.465 | V | |
| Supply Current | | | | | 4 | mA | |
| **Frequency Stability** | | | | | | | |
| VS. Temperature | | From -40°C to +55°C<br>Ref. to $(F_{MAX} + F_{MIN})/2$ | | | +/-0.2 | ppm | |
| Tolerance at +25°C | | @+25°C | | | +/-0.5 | ppm | |
| Tolerance after Reflow | | | | | +/-0.5 | ppm | |
| VS. Supply Voltage | | +/-5% change at 25°C | | | +/-0.1 | ppm | |
| VS. Load Change | | +/-5% change at 25°C | | | +/-0.1 | ppm | |
| Year Aging | | First year | | | +/-1.0 | ppm | |
| | | 10 years | | | +/-3.0 | ppm | |
| Allan Variance (ADEV) | | @ τ = 100ms | | | 0.1 | ppb | |
| Medium-Term Stability | | | IAW C/S T.007 and C/S IP TCXO | | | | |
| Mean Slope ΔF/dt after 15 min Power-up | | Steady state | | | 0.7 | ppb/min. | T = const |
| | | During temperature ramp | | | 1.7 | ppb/min. | Δ T/dt = ± 5 °C/hour |
| Residual ΔF (r.m.s.) from Slope | | | | | 2.0 | ppb | Over 18 points |

| **Environmental Conditions** | | | |
|---|---|---|---|
| **Parameter** | **Reference Std.** | | **Test Condition** |
| Operating Temperature range | -40°C to +55°C | | |
| Storage Temperature range | -55°C to +105°C | | |
| Vibration Sinusoidal | IEC 60028-2-6 | IEC 60679-1-5.6.7 | Test Fc, 30 min per axis<br>10 Hz – 55 Hz 0.75mm, 55 Hz – 2 KHz 10g |
| Shock | IEC 60028-2-27 | IEC 60679-1-5.6.8 | Test Ea, 3 x per axes 100 g,<br>6 ms half-sine pulse |
| Soldering | IEC 60028-2-20<br>IEC 60028-2-58 | IEC 60679-5..6.3 | Test Ta 235°C+/-2°C Method 1<br>Test Tb Method 1A, 5s |



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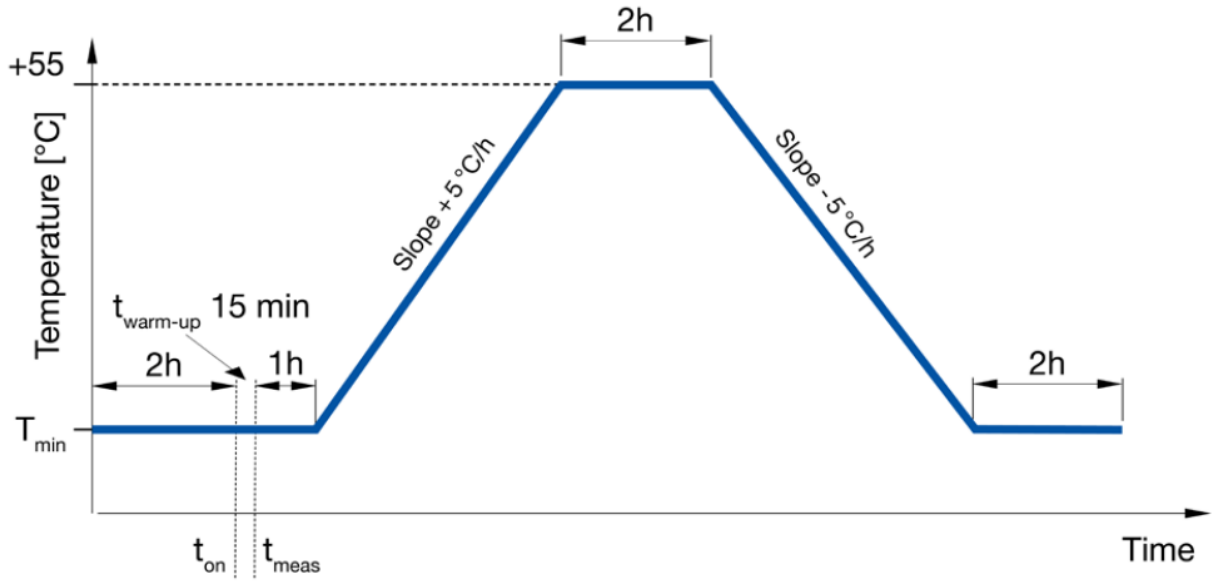
## Medium Term Stability

Frequency stability measurement procedure according the COSPAS/SARSAT T.001




Note #1: $T_{min.}$ = -40 °C (Class 1 beacon)
$T_{min.}$ = -20 °C (Class 2 beacon)
$T_{ON}$ = beacon turn-ON time after 2 hours “cold soak”
Tmeas = start time of frequency stability measurement (TON + 15 min)

Note: #2: The 2h and 1h warm-up and stabilisation times are for type approval test of complete beacon.
For testing of TCXO these times may be shortened accordingly.



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