



### Features and Benefits

- Meets all Medium-term stability requirements of COSPAS SARSAT : Class 2
- 20MHz 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

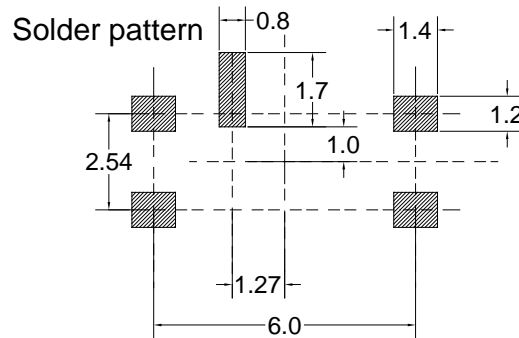
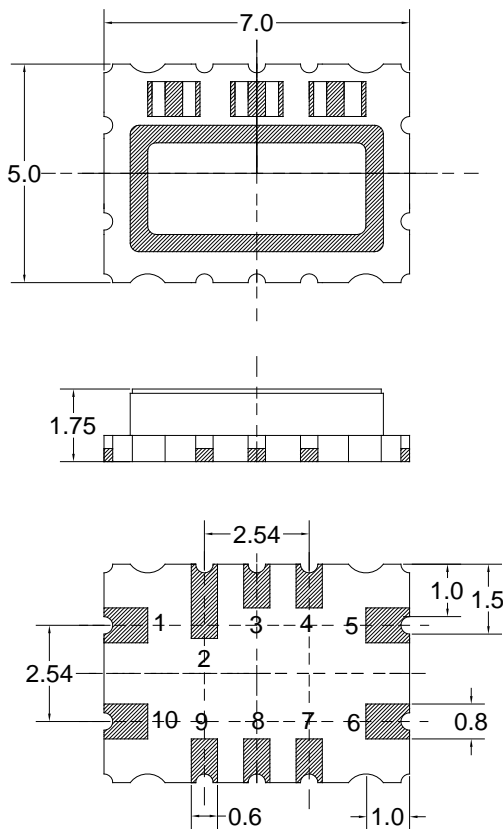
- ELT Emergency Beacons
- Other frequencies available for EPIRB and PLB beacon systems

### 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



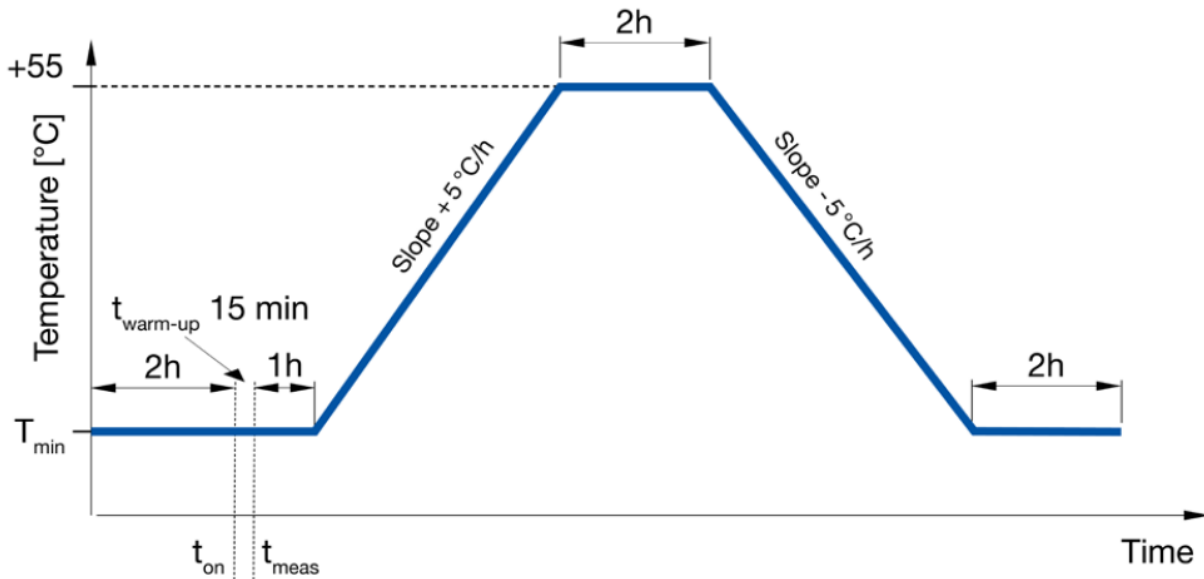
Specifications

TCXO Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Nominal Frequency	F <sub>nom</sub>			20		MHz	
Output Waveform			CMOS				
Output Level High			2.97			V	
Output Level Low					0.33	V	
Output Load		+/-5%		15		pF	
Symmetry (Duty)		@ 1/2 Vdc	45		55	%	
Tri-state function		pin # 6: oscillation pin # 6: high impedance	pin # 9 high or open pin # 9 low				
<b>Power Supply</b>							
Supply Voltage	V <sub>cc</sub>		3.135	3.3	3.465	V	
Supply Current					4	mA	
<b>Frequency Stability</b>							
VS. Temperature		From -40°C to +55°C Ref. to (F <sub>MAX</sub> + F <sub>MIN</sub> )/2			+/-0.2	ppm	
Tolerance at +25°C		@+25°C			+/-0.5	ppm	
Tolerance after Reflow		Measured after 12hours			+/-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
<b>Environmental Conditions</b>							
<b>Parameter</b>	<b>Reference Std.</b>		<b>Test Condition</b>				
Operating Temperature range	-40°C to +55°C						
Storage Temperature range	-55°C to +105°C						
Reflow Profiles	IPC/JEDEC J-STD-020C		<=260°C over 10sec. Max.				
Vibration Sinusoidal	IEC 60028-2-6	IEC 60679-1-5.6.7	Test Fc, 30 min per axis 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, 6 ms half-sine pulse				
Soldering	IEC 60028-2-20 IEC 60028-2-58	IEC 60679-5.6.3	Test Ta 260°C Method 1 Test Tb Method 1A, 5s				



### 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”
- $T_{meas}$  = start time of frequency stability measurement ( $T_{ON} + 15\text{ min}$ )

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.