## Features and Benefits

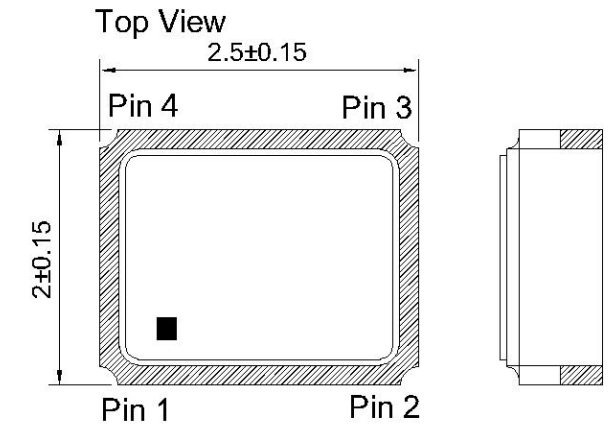
Better than +/-0.5PPM from -40°C to +85°C
16.32MHz clipped sine wave output
3.3V supply, 1.5mA maximum current

## Typical Applications

Mobile SATCOM
Mobile Radio
Hand-carry Instrument
Femto-cell

## Mechanical Drawing & Pin Connections

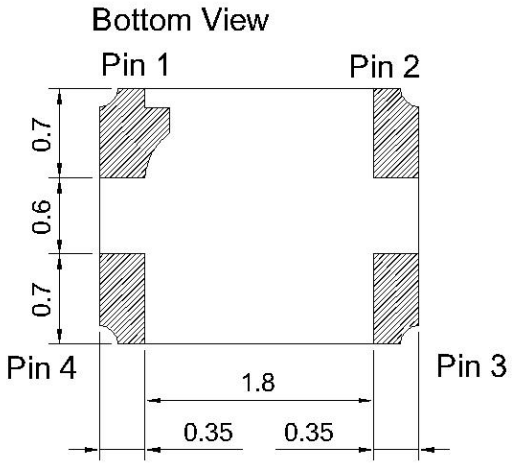
Drawing No: MD150037-1

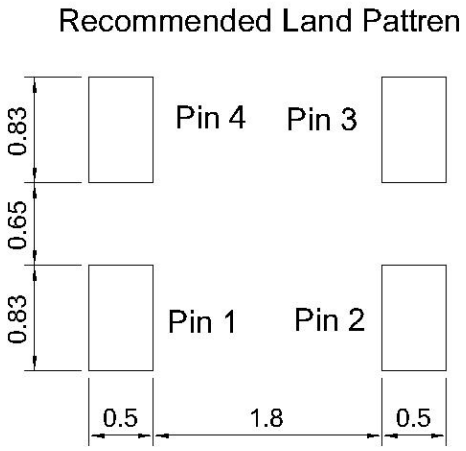



Pin Connection

| Name | Function |
|---|---|
| Pin 1 | AFC |
| Pin 2 | GND |
| Pin 3 | OUTPUT |
| Pin 4 | VCC |

Unit : mm



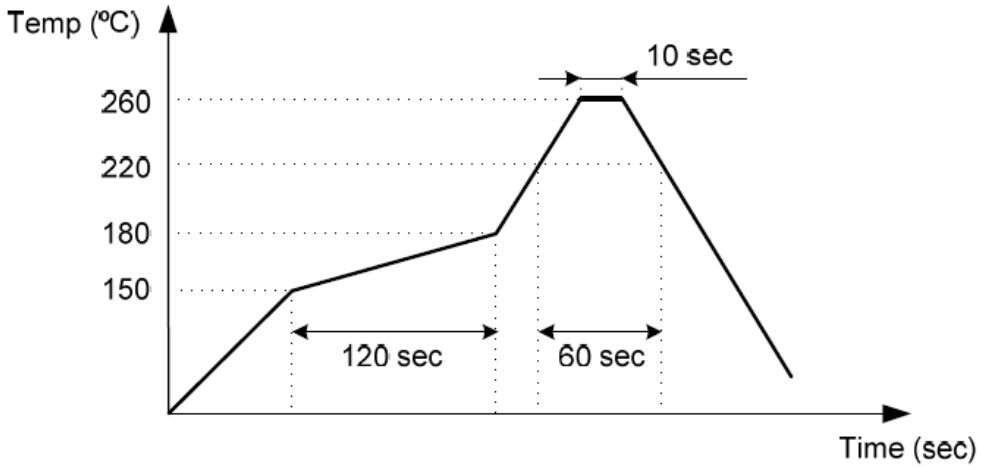



## Specification

| Oscillator Specification | Sym | Condition | Value | | | Unit | Note |
|---|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | | |
| Nominal Frequency | $F_{nom}$ | | | 16.320000 | | MHz | |
| Output Wave Form | | | | Clipped Sine Wave | | | |
| Output Level | | | 0.8 | | | V | |
| Output Load | | Resistance | 9 | 10 | 11 | Kohm | |
| | | Capacitance | 9 | 10 | 11 | pF | |
| Duty Cycle | | | 45 | 50 | 60 | % | |
| **Power Supply** | | | | | | | |
| Supply Voltage | $V_{cc}$ | | 3.135 | 3.3 | 3.465 | V | |
| Supply Current | | | | | 1.5 | mA | |
| **Frequency Control*** | | | | | | | |
| Control Voltage Range | $V_c$ | | 0 | 1.65 | 3.3 | V | |
| Tuning Range | | 3.3V | +9 | | +15 | ppm | Reference to VCON at 1.65V |
| | | 0V | -15 | | -9 | | |
| **Frequency Stability** | | | | | | | |
| VS. Temperature | | From -40°C to +85°C | | | +/-0.5 | ppm | |
| Tolerance at +25°C | | At shipping | | | +/-1.5 | ppm | |
| | | After 2times reflow | | | +/-1 | ppm | |
| VS. Supply Voltage | | +/-5% change | | | +/-0.2 | ppm | |
| VS. Load Change | | +/-10% change | | | +/-0.2 | ppm | |
| Year Aging | | First year at 25°C | | | +/-1.0 | ppm | |
| Slop of Frequency Drift over Temperature | | | | | +/-0.3 | ppm/°C | |
| Phase Noise (typ.) | | @10 Hz | | -91 | | dBc/Hz | |
| | | @100 Hz | | -115 | | | |
| | | @1 KHz | | -136 | | | |
| | | @10 KHz | | -149 | | | |
| | | @100 KHz | | -151 | | | |

| **Parameter** | **Test Methods** | **Criteria** |
|---|---|---|
| Operating Temperature range | -40°C to +85°C | |
| Storage Temperature range | -40°C to +85°C | |
| Drop Test | Height: 100cm height<br>Direction: X,Y,Z 6 directions<br>Test cycles: 3 cycles<br>Fall freely on to concrete floor<br>Mounting on test fixture(total weight=100 g) | +/-2.0 ppm |
| Mechanical Shock | Acceleration: 1000g<br>Duration: 0.5ms<br>Test cycles: 3 times for all 3 directions | +/-2.0 ppm |
| Vibration | Frequency range: 10 to 2000Hz<br>Amplitude: 1.52mm(10 to 80Hz)<br>Acceleration: 20g(80 to 2000Hz)<br>Sweep speed: 20 minutes/cycle<br>Direction: X,Y,Z 3 directions<br>Duration: 4 hours/each direction | +/-2.0 ppm |
| Gross Leak | Standard sample for automatic gross leak detector<br>Test pressure: 2kg/cm$^2$ | <1.5x10$^{-5}$ Pa m$^3$/sec |
| Fine Leak | Helium bomging 4.5 kgf/ cm$^2$ for 2 hours | <1.0x10$^{-9}$ Pa m$^3$/sec |
| Solder Ability | Preheat temperature: 125°C+/-5°C<br>Preheat time: 120 sec<br>Soldering temperature: 245°C+/-5°C<br>Duration: 5+/-1sec<br>Method: Solder bath method | 90% Coated |
| High Temp. Storage | Temperature : +125°C ± 3°C<br>Duration : 168 hours | +/- 2.0 ppm |
| Low Temp. Storage | Temperature : -40°C ± 3°C<br>Duration : 500 hours | +/- 2.0 ppm |
| High Temp＆Humidity | Temperature : 85°C ± 3°C<br>Humidity: RH 85%<br>Duration : 168 hours | +/- 2.0 ppm |
| Aging | Temperature : 85°C ± 3°C<br>Duration : 500 hours<br>Voltage input by specification | +/- 2.0 ppm |

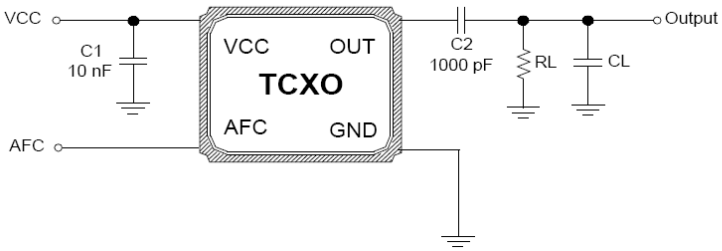
## Suggested Reflow Profile




Note 1: Period while temperature exceeds the solder melting point : 220°C should be less than 200 se

Note 2: Period while temperature stays at the top melting point : 260°C should be less than 30 sec.

## Test Circuit




### External Components

| Name | Function |
|---|---|
| C1 | AC Noise Bypass for VCC |
| C2 | DC Block for Output |
| RL | Load Resistance |
| CL | Load Capacitance |