

# Stratum 3E HCMOS Oscillator OX125 TiMax Series

# CONNOR WINFIELD



## VCOCXO

The Connor-Winfield OX125 TiMax Series is a 5V Voltage Controlled Oven Controlled Crystal Oscillator (VCOCXO) with an HCMOS output. The OX125 Series is designed for Stratum 3E applications requiring low jitter and tight frequency stability.

### Features:

Designed to meet Stratum 3E requirements  
Variable frequency (VCOCXO)  
Frequency Stability  $\pm 10$ ppb  
5.0V Operation  
HCMOS Output

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### Absolute Maximum Ratings

| Parameter            | Minimum | Nominal | Maximum | Units | Notes |
|----------------------|---------|---------|---------|-------|-------|
| Storage Temperature  | -40     | -       | 85      | °C    |       |
| Supply Voltage (Vcc) | -0.5    | -       | 7       | Vdc   |       |

### Operating Specifications

| Parameter                          | Minimum | Nominal  | Maximum | Units   | Notes |
|------------------------------------|---------|----------|---------|---------|-------|
| Center Frequency (Fo)              | -       | 10-12.8  | -       | MHz     | 1     |
| Frequency Calibration (Vc=2.5 Vdc) | -0.2    | -        | 0.2     | ppm     | 2     |
| Frequency Stability                | -10     | -        | 10      | ppb     | 3     |
| Aging: Daily                       | -1      | -        | 1       | ppb/day | 4     |
| Aging: First Year                  | -30     | -        | 30      | ppb     |       |
| Aging: Short Term (1 Sec)          | -       | 5.00E-11 | -       | RMS     | 5     |
| Aging: Long Term (20 years)        | -       | -        | 300     | ppb     |       |
| Operating Temp Range               | 0       | -        | 70      | °C      |       |
| Supply Voltage (Vcc)               | 4.75    | 5.00     | 5.25    | Vdc     |       |
| Voltage Stability ( $\pm 1\%$ )    | -0.5    | -        | 0.5     | ppb     | 6     |
| Load Stability $\pm 20\%$          | -0.5    | -        | 0.5     | ppb     | 7     |
| Power Consumption: Turn On         | -       | -        | 2.75    | W       | 8     |
| Steady-State                       | -       | -        | 1.5     |         |       |
| Start-Up Time                      | -       | -        | 500     | mS      | 9     |
| Warm Up                            | -100    | -        | 100     | ppb     | 10    |
| 2G Tip-over                        | -       | 5        | -       | ppb/G   |       |
| TDEV at 300 seconds                | -       | -        | 5       | nS      | 11    |
| TDEV at 40 seconds                 | -       | -        | 1       |         |       |

### Input Characteristics

| Parameter                         | Minimum   | Nominal | Maximum   | Units | Notes |
|-----------------------------------|-----------|---------|-----------|-------|-------|
| Control Voltage (Pin 1) Vc        | 0.5       | 2.5     | 4.5       | Vdc   |       |
| Deviation @ 25°C referenced to Fo | $\pm 0.3$ | -       | $\pm 1.0$ | ppm   | 9     |
| Input Impedance (Pin 1)           | 50k       | -       | -         | Ohm   |       |

### Notes:

- Labels will include the calibration frequency at the time of ship.
- Initial calibration @ 25°C, Vc=2.5Vdc
- Frequency vs temperature stability
- After ten days of continuous operation
- Allen Variance: 1 second, 100 average
- Frequency vs change in supply voltage
- Frequency vs change in load
- Vcc = 5.0Vdc
- From Vcc=90% of final value. No more than 16 transitions at start-up before oscillator has started.
- Measured @ 0°C, within 5 minutes, referenced one hour after turn-on.
- At time of delivery.
- HCMOS load.
- For a given off time, the time required to meet daily aging, short-term stability and TDEV requirements.

### Ordering Information

OX125 - 010.0 MHz

OCXO  
SERIES

CENTER  
FREQUENCY



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## HCMOS Output Characteristics

| Parameter                        | Minimum       | Nominal | Maximum  | Units  | Notes |
|----------------------------------|---------------|---------|----------|--------|-------|
| Load                             | 12            | 15      | 18       | pf     | 12    |
| Voltage: High (Voh)<br>Low (Vol) | Vcc-0.2V<br>- | -<br>-  | -<br>0.2 | Vdc    |       |
| Duty Cycle at 50% of Vcc         | 45            | 50      | 55       | %      |       |
| Rise / Fall Time 10% to 90%      | -             | -       | 5        | nS     |       |
| Spurious Output                  | -             | -       | -80      | dBc    |       |
| SSB Phase Noise                  |               |         |          |        |       |
| at 1 Hz offset                   | -             | -       | -90      |        |       |
| at 10 Hz offset                  | -             | -       | -115     |        |       |
| at 100 Hz offset                 | -             | -       | -130     | dBc/Hz |       |
| at 1 kHz offset                  | -             | -       | -135     |        |       |
| at 10 kHz offset                 | -             | -       | -140     |        |       |

## Restabilization Time

| Off Time     | Restabilization Time    | Notes |
|--------------|-------------------------|-------|
| < 1 Hour     | < 2 Hours               |       |
| < 6 Hours    | < 12 Hours              |       |
| < 24 Hours   | < 48 Hours              | 13    |
| 1 to 16 Days | 48 Hours + 1/4 Off Time |       |
| > 16 Days    | < 6 Days                |       |

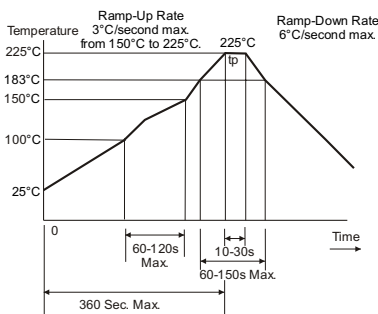
## Package Characteristics

|         |  |
|---------|--|
| Package | Metal package: solder sealed, grounded case, solder tinned pins. |
|---------|--|

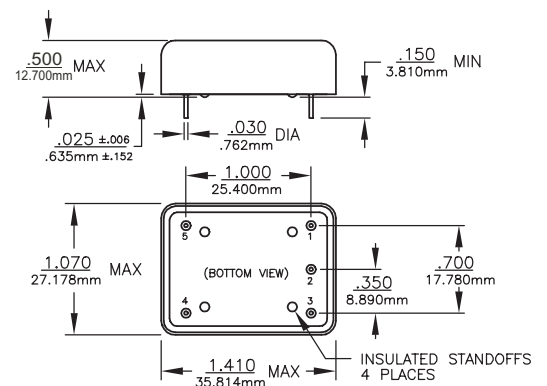
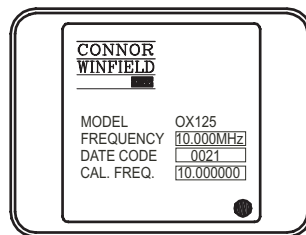
## Environmental Characteristics

|           |  |
|-----------|--|
| Shock     | 100G's, 6mS, halfsine per MIL-STD-202F, Method 213B, Test Condition C                |
| Vibration | 0.06" D.A. or 10G peak 10 to 500 Hz, per MIL-STD-202F, Method 204D, Test condition A |

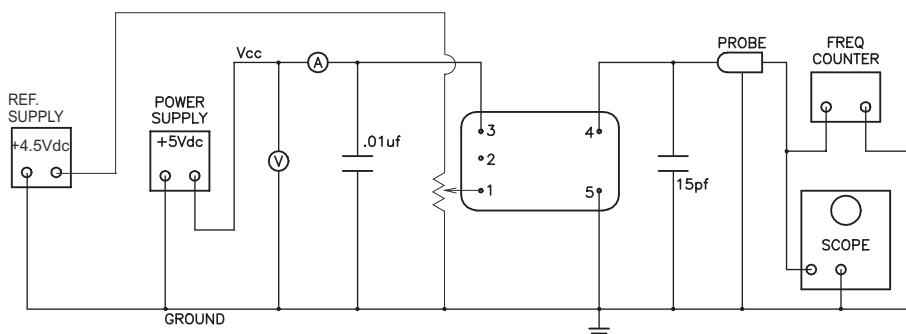
## RoHS 5-6 Solder Profile



## Package Outline



## Test Diagram



## Pin Connections

- 1: Control Voltage
- 2: No Connect
- 3: Supply Voltage
- 4: RF Output
- 5: Circuit & Package Ground

Dimensional Tolerance: ±.005 (.127mm)

|          |                     |
|----------|---------------------|
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