

# CRYSTAL CONTROLLED OSCILLATORS

## SURFACE MOUNT 3.3V HCMOS TCXO with TRI-STATE OUTPUT



### TFLB546E

ABSOLUTE MAXIMUM RATINGS

TABLE 1.0

| PARAMETER                | UNITS | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|--------------------------|-------|---------|---------|---------|-------|------|
| Storage Temperature      |       | -40     | -       | 85      | °C    |      |
| Supply Voltage           | (Vcc) | -0.5    | -       | 7       | Vdc   |      |
| Enable / Disable Voltage |       | -0.5    | -       | 7       | Vdc   |      |

OPERATING SPECIFICATIONS

TABLE 2.0

| PARAMETER                        |       | MINIMUM | NOMINAL | MAXIMUM | UNITS  | NOTE |
|----------------------------------|-------|---------|---------|---------|--------|------|
| Frequency Range                  | (Fo)  | 1.60    | -       | 50.00   | MHz    |      |
| Frequency Tolerance              |       | -4.6    | -       | 4.6     | ppm    | 1    |
| Operating Temperature Range      |       | 0       | -       | 70      | °C     |      |
| Supply Voltage                   | (Vcc) | 3.135   | 3.3     | 3.465   | Vdc    |      |
| Supply Current                   | (Icc) | -       | 8       | 20      | mA     |      |
| Jitter (BW=10Hz to 20MHz)        |       | -       | -       | 5       | ps rms |      |
| Jitter (BW=12kHz to 20MHz)       |       | -       | -       | 1       | ps rms |      |
| SSB Phase Noise at 10Hz offset   |       | -       | -70     | -       | dBc/Hz |      |
| SSB Phase Noise at 100Hz offset  |       | -       | -100    | -       | dBc/Hz |      |
| SSB Phase Noise at 1KHz offset   |       | -       | -125    | -       | dBc/Hz |      |
| SSB Phase Noise at 10KHz offset  |       | -       | -135    | -       | dBc/Hz |      |
| SSB Phase Noise at 100KHz offset |       | -       | -145    | -       | dBc/Hz |      |

INPUT CHARACTERISTICS

TABLE 3.0

| PARAMETER             | UNITS | MINIMUM   | NOMINAL | MAXIMUM   | UNITS | NOTE |
|-----------------------|-------|-----------|---------|-----------|-------|------|
| Enable Voltage (High) | (Vih) | = 70% Vdd | -       | -         | Vdc   | 2    |
| Disable Voltage (Low) | (Vil) | -         | -       | = 30% Vdd | Vdc   |      |

HCMOS OUTPUT CHARACTERISTICS

TABLE 4.0

| PARAMETER                   |       | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|-----------------------------|-------|---------|---------|---------|-------|------|
| LOAD                        |       | -       | -       | 15      | pF    |      |
| Voltage (High)              | (Voh) | 2.2     | 2.4     | -       | Vdc   |      |
| (Low)                       | (Vol) | -       | 0.3     | 0.4     | Vdc   |      |
| Current (High)              | (Ioh) | -4      | -       | -       | mA    |      |
| (Low)                       | (Iol) | -       | -       | 4       | mA    |      |
| Duty Cycle at 50% of Vcc    |       | 40      | 50      | 60      | %     |      |
| Rise / Fall Time 10% to 90% |       | -       | 3       | 5       | nS    |      |

PACKAGE CHARACTERISTICS

TABLE 5.0

|         |  |
|---------|--|
| Package | Non-hermetic package consisting of an FR4 substrate with grounded metal cover. |
|---------|--|

PROCESS RECOMMENDATIONS

TABLE 6.0

|               |  |
|---------------|--|
| Solder Reflow | The component solder used internal to this device has a melting point of 221°C. The peak temperature inside the device should be less than or equal to 220°C for a maximum of 10 seconds |
| Wash          | Ultrasonic cleaning is not recommended.  |

Note:

- 1) Inclusive of calibration, frequency vs. temperature stability, supply voltage change, load change, shock and vibration, 15 years aging.
- 2) Oscillator output is enabled with no connection on pad 6

#### DESCRIPTION

The Connor-Winfield TFLB546E is a Surface Mount Temperature Compensated Crystal Oscillator (TCXO). Operating at 3.3Vdc, the TFLB546E will maintain  $\pm 4.6$ ppm frequency tolerance over 15 years. The TFLB546E is offered in a surface mount package for automated assembly.

#### FEATURES

- 3.3V OPERATION
- OVERALL FREQUENCY TOLERANCE:  $\pm 4.6$ ppm OVER 15 YEARS.
- TEMPERATURE RANGE: 0 to 70°C
- LOW JITTER <1ps RMS
- TRI-STATE ENABLE/DISABLE
- SURFACE MOUNT PACKAGE
- TAPE AND REEL PACKAGING

#### ORDERING INFORMATION

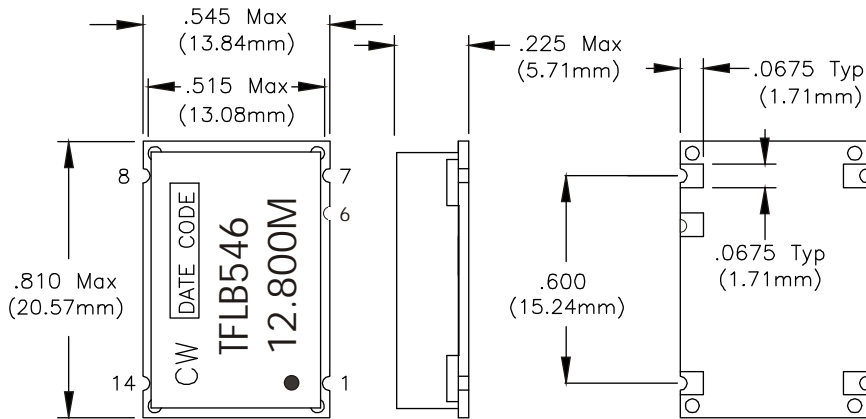
TFLB546E - 12.800MHZ

TCXO  
SERIES

CENTER  
FREQUENCY

Specifications subject to change without notice.

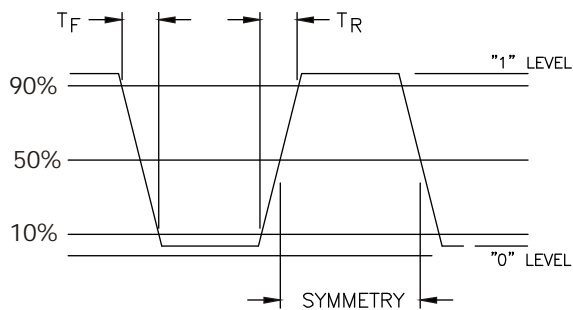
CRYSTAL CONTROLLED OSCILLATORS



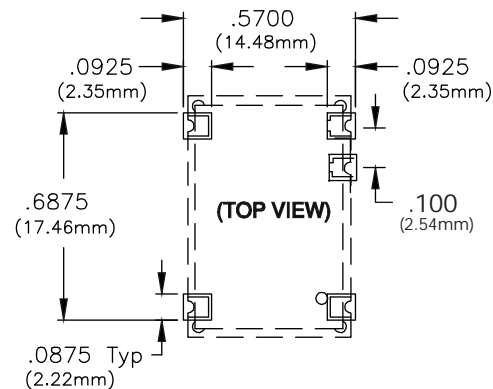
| Pin | Connection       |
|-----|------------------|
| 1   | N/C              |
| 6   | Enable / Disable |
| 7   | Ground           |
| 8   | Output           |
| 14  | Vcc              |

Dimensional Tolerance:  
±.005 (.127mm)

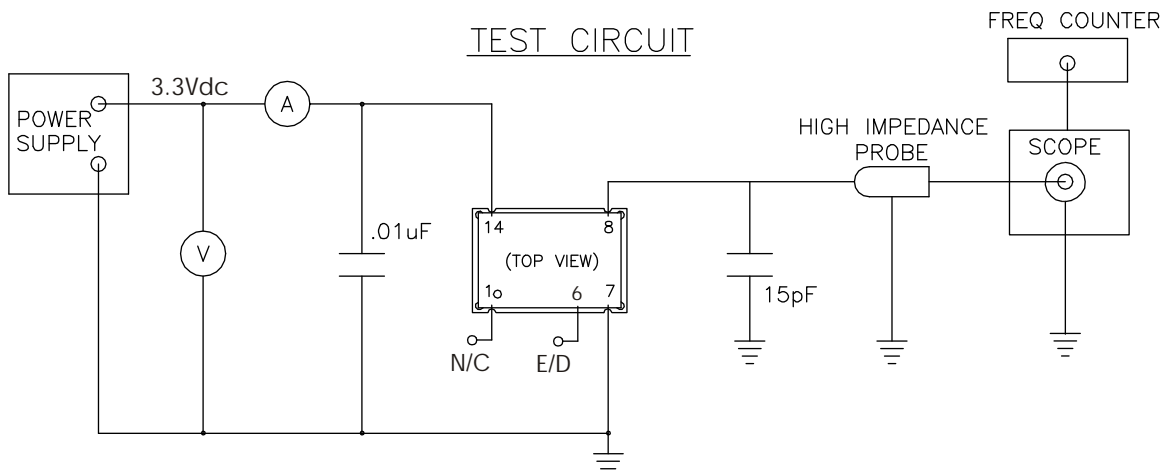
OUTPUT WAVEFORM



SUGGESTED PAD LAYOUT



TEST CIRCUIT



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