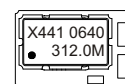


CRYSTAL CONTROLLED OSCILLATORS

3.3V SURFACE MOUNT 5.0 x 7.5mm LVPECL CLOCK OSCILLATOR



X441

ABSOLUTE MAXIMUM RATINGS

TABLE 1.0

| PARAMETER | UNITS | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|---------------------|-------|---------|---------|---------|-------|------|
| Storage Temperature | | -55 | - | 125 | °C | |
| Supply Voltage | (Vcc) | -0.5 | - | 5.0 | Vdc | |
| Input Voltage | | -0.5 | - | Vcc+0.5 | Vdc | |

OPERATING SPECIFICATIONS

TABLE 2.0

| PARAMETER | | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|--------------------------------------|-------|---------|---------|---------|----------|------|
| Center Frequency | (Fo) | 250 | - | 350 | MHz | |
| Total Frequency Tolerance | | -50 | - | 50 | ppm | 1 |
| Operating Temperature Range | | -20 | - | 70 | °C | |
| Supply Voltage | (Vcc) | 3.135 | 3.3 | 3.465 | Vdc | |
| Supply Current | (Icc) | - | 60 | 100 | mA | |
| Period Jitter (RMS) | | - | 3 | 5 | ps RMS | |
| Period Jitter (peak to peak) | | - | 20 | 30 | ps pk-pk | |
| RMS Phase Jitter (BW=12kHz to 20MHz) | | - | 0.5 | 1 | ps RMS | |
| SSB Phase Noise at 10Hz offset | | - | -40 | - | dBc/Hz | |
| SSB Phase Noise at 100Hz offset | | - | -75 | - | dBc/Hz | |
| SSB Phase Noise at 1KHz offset | | - | -110 | - | dBc/Hz | |
| SSB Phase Noise at 10KHz offset | | - | -135 | - | dBc/Hz | |
| SSB Phase Noise at 100KHz offset | | - | -140 | - | dBc/Hz | |

INPUT CHARACTERISTICS

TABLE 3.0

| PARAMETER | | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|-----------------------------|-------|---------|---------|---------|-------|------|
| Disable Input Voltage (Low) | (Vil) | - | - | 0.3Vcc | Vdc | 2 |
| Enable Input Voltage (High) | (Vih) | 0.7Vcc | - | - | Vdc | 2 |
| Output Enable Time | (tOE) | | | 2 | ms | |
| Output Disable Time | (tOD) | | | 200 | ns | |
| Standby Current | (Icc) | - | - | 30 | uA | |

LVPECL OUTPUT CHARACTERISTICS

TABLE 4.0

| PARAMETER | | MINIMUM | NOMINAL | MAXIMUM | UNITS | NOTE |
|-----------------------------|-------|---------|---------|---------|-------|------|
| LOAD | | - | - | 50 | Ohms | 3 |
| Voltage (High) | (Voh) | 2.275 | - | - | Vdc | |
| Voltage (Low) | (Vol) | - | - | 1.68 | Vdc | |
| Duty Cycle | | 45 | 50 | 55 | % | 4 |
| Rise / Fall Time 20% to 80% | | - | 0.5 | 1.0 | ns | |
| Start Up Time | | - | - | 2 | ms | |

PACKAGE CHARACTERISTICS

TABLE 5.0

| | |
|-------------------------|--|
| Package | Hermetically sealed ceramic package and metal cover. |
| PROCESS RECOMMENDATIONS | |
| Soldering Process | See solder profile page 2. |

Notes

- Includes initial tolerance, deviation over temperature, supply and load variations, shock, vibration and 20 years aging.
- When the oscillator is disabled, the outputs are at High Impedance. Output is enabled with no connection on pad 1.
- Output must be terminated into 50 ohms to Vcc - 2V or Thevenin equivalent.
- Duty Cycle measured at 50% of output swing.

DESCRIPTION

The Connor Winfield X441 is a fixed frequency, surface mount Crystal Controlled Oscillator (XO) designed for applications requiring low jitter and a +/-50ppm overall frequency stability. Operating at 3.3V supply voltage, the X441 provides LVPECL Differential Outputs with a tri-state enable / disable function.

FEATURES

- HIGH FREQUENCY CLOCK
- 3.3V OPERATION
- DIFFERENTIAL LVPECL OUTPUTS
- LOW JITTER <1ps RMS
- TOTAL FREQUENCY TOLERANCE: ±50ppm
- TEMPERATURE RANGE: -20 to 70°C
- TRI-STATE ENABLE / DISABLE FUNCTION
- SURFACE MOUNT PACKAGE
- TAPE AND REEL PACKAGING
- RoHS COMPLIANT / LEAD FREE

ORDERING INFORMATION

X441 - 312.5 MHz

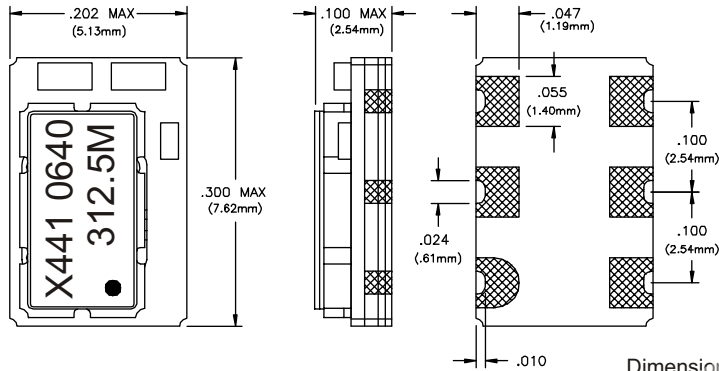
LVPECL
CLOCK
SERIES

CENTER
FREQUENCY

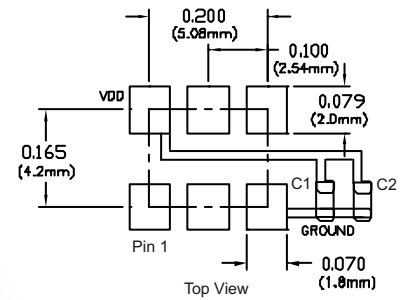
Specifications subject to change without notice.

CRYSTAL CONTROLLED OSCILLATORS

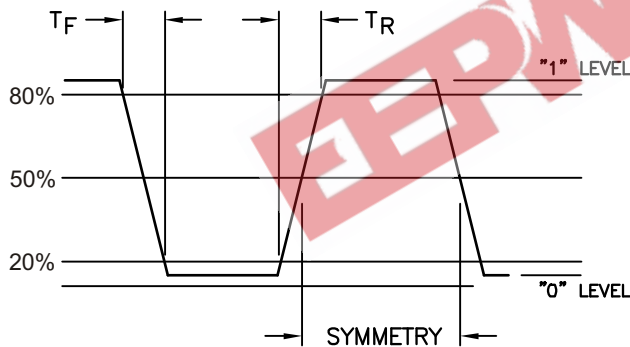
Package Outline and Dimensions



Suggested Pad Layout



Output Waveform



Pin Connections

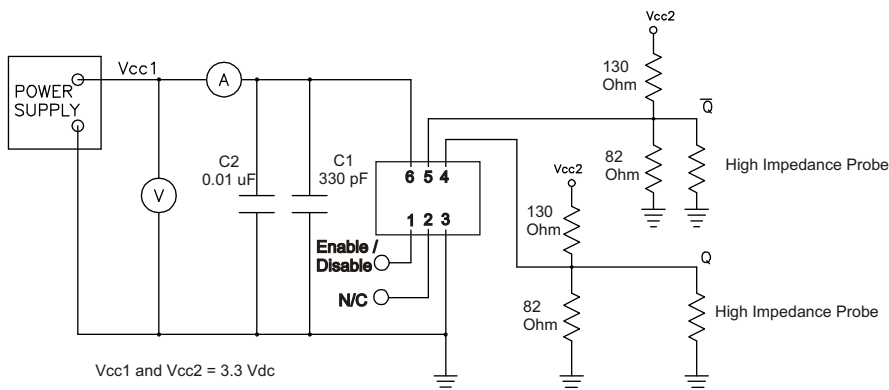
TABLE 6.0

| Pin | Connection |
|-----|------------------|
| 1 | Enable / Disable |
| 2 | N/C |
| 3 | Ground |
| 4 | Q Output |
| 5 | Q̄ Output |
| 6 | Vcc |

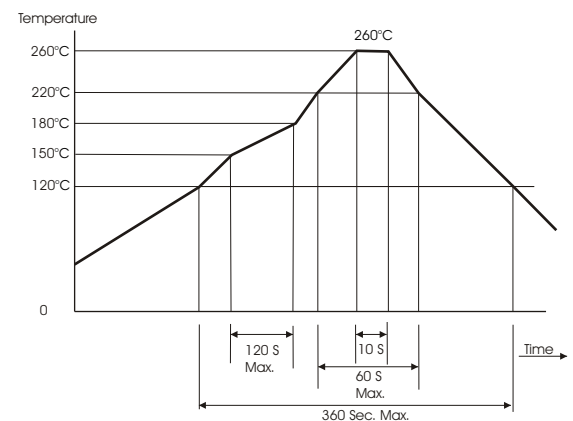
TABLE 7.0

| Enable / Disable Function (Pad 1) | Output |
|-----------------------------------|--------------------------|
| High or Open | Enable |
| Low | Disable (High Impedance) |

Test Circuit



Solder Profile



Specifications subject to change without notice.