

3.3V HCMOS Surface Mount Crystal Clock Oscillator 6113, 6123, 6133



XO

Features:

- 3.3V Operation
- Tri-State Enable / Disable Function
- RoHS Compliant
- Overall Frequency Tolerance:
 - 6113 ± 25 ppm
 - 6123 ± 50 ppm
 - 6133 ± 100 ppm
- Temperature Range: 0 to 70°C
- Power Saving Stand-By Current
- Ceramic Surface Mount Package
- Tape and Reel Packaging

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The Connor-Winfield models 6113, 6123, and 6133 are a 6 x 3.5mm, 3.3V HCMOS, Surface Mount, Ceramic, Fixed Frequency Crystal Oscillators (XO) designed for use in all applications requiring precision clocks. These oscillators feature low stand-by current (10uA) when the output is disabled. The RoHS compliant, surface mount package is designed for high-density mounting and is optimum for mass production.

Absolute Maximum Ratings

| Parameter | Minimum | Nominal | Maximum | Units | Notes |
|----------------------|---------|---------|---------|-------|-------|
| Storage Temperature | -55 | - | 125 | °C | |
| Supply Voltage (Vcc) | -0.5 | - | 7.0 | Vdc | |

Operating Specifications

| Parameter | Minimum | Nominal | Maximum | Units | Notes |
|----------------------|---------|---------|---------|-------|-------|
| Frequency Range (Fo) | 1.8 | - | 50 | MHz | |
| Frequency Tolerance | | | | ppm | 1 |
| 6113 | -25 | - | 25 | | |
| 6123 | -50 | - | 50 | | |
| 6133 | -100 | - | 100 | | |
| Operating Temp Range | 0 | - | 70 | °C | |
| Supply Voltage (Vdd) | 3.0 | 3.3 | 3.6 | Vdc | |
| Supply Current (Icc) | | | | mA | |
| 1.80 to 31.999 MHz | - | - | 12 | | |
| 32.0 to 50.0 MHz | - | - | 17 | | |

Input Characteristics

| Parameter | Minimum | Nominal | Maximum | Units | Notes |
|------------------------------|-----------|---------|-----------|-------|-------|
| Enable Voltage - (Vih) | ≥ 70% Vdd | - | - | Vdc | 2 |
| Disable Voltage - (Vil) | - | - | ≤ 30% Vdd | Vdc | |
| Enable Time | - | - | 10 | mS | |
| Disable Time | - | - | 150 | nS | |
| Output Disable Current (Icc) | - | - | 10 | uA | |

HCMOS Output Characteristics

| Parameter | Minimum | Nominal | Maximum | Units | Notes |
|-----------------------------|---------|---------|---------|--------|-------|
| Load | - | - | 15 | pF | |
| Voltage High (Voh) | 2.70 | - | - | Vdc | |
| Low (Vol) | - | - | 0.36 | Vdc | |
| Current High (Ioh) | -2 | - | - | mA | |
| Low (Iol) | - | - | 2 | mA | |
| Duty Cycle at 50% of Vcc | 40 | 50 | 60 | % | |
| Rise / Fall Time 10% to 90% | - | - | 6 | nS | |
| Start-Up Time | - | - | 10 | mS | |
| Jitter | - | - | 5 | pS RMS | |

Notes:

1. Inclusive of calibration @ 25°C, frequency vs temperature stability, supply voltage change, load change, shock and vibration, 10 years aging.
2. Oscillator output is enabled with no connection on pad 1



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Date **30 May 2002**



Package Characteristics

| | |
|---------|---|
| Package | Hermetically sealed ceramic package and metal cover |
|---------|---|

Environmental Characteristics

| | |
|--------------------|--|
| Temperature Cycle | The specimen shall meet electrical characteristics after tested 5 cycles of -55°C / 30 minutes and +125°C / 30 minutes |
| Hermetical | No bubbles appear in Flourinert (FC-43) at 125°C ±5°C for 5 minutes |
| Solvent Resistance | Marking will withstand immersion in Isopropyl Alcohol or Trichloroethylene |

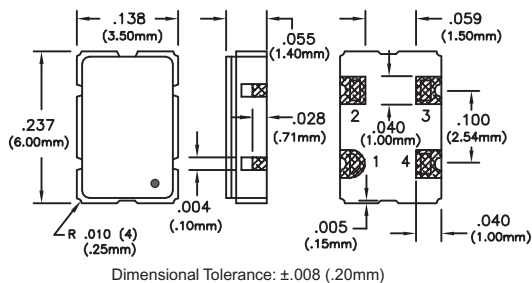
Soldering

| | |
|------------------------|---|
| General Conditions | 260°C max x 10 sec max x 2 times max or 230°C max x 180 sec max x 1 time |
| Typical Operation Data | (Vapor phase reflow) 20 to 100 sec up to 215°C, 50 sec at 215°C, then down to room temperature per 1 to 5°C / sec |

Mechanical Characteristics

| | |
|---------------|---|
| Free Drop | The specimen shall meet electrical characteristics after tested 3 times, Free Drop testing on the hard wooden board from a height of 75 cm. |
| Vibration | The specimen shall meet electrical characteristics after tested by the following conditions: 10-55Hz 1.5mm Amplitude, 55-2000 Hz 20 G's, 2 hours for each plane |
| Thermal Shock | After applied Thermal Shock of 260°C max x 10 sec max x 2 times, or 230°C max x 180 sec max, the specimen shall meet electrical characteristics |
| Solderability | (EIAJ-RCX-0102.101 Condition 1a) 1) Flux: MIL-F-14256 (WW Rosin=25%, Isopropyl Alcohol = 75%) 2) Solder: QQ-S-571 (Sn = 63%, Pb = 37%) 3) Solder bath temperature: 235°C ±5°C 4) Depth of immersion: Up to electrical terminal 5) Immersing time: Within 2 sec ±0.5 sec into solder bath |

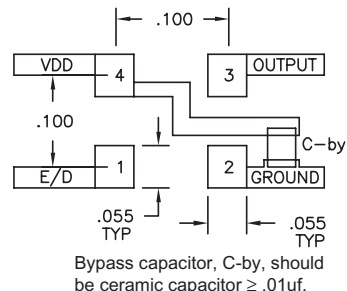
After performing the above procedures, a newly soldered coverage shall be greater than 90%



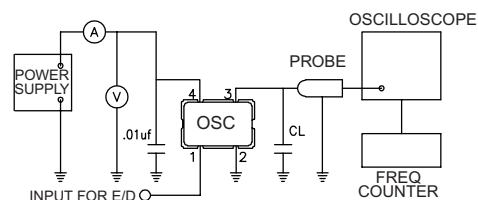
Pad Connection

- 1: Tri-State E/D
- 2: Ground
- 3: Output
- 4: VDD

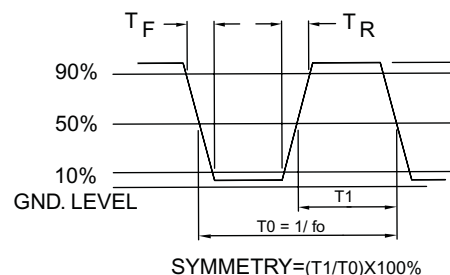
Suggested Pad Layout



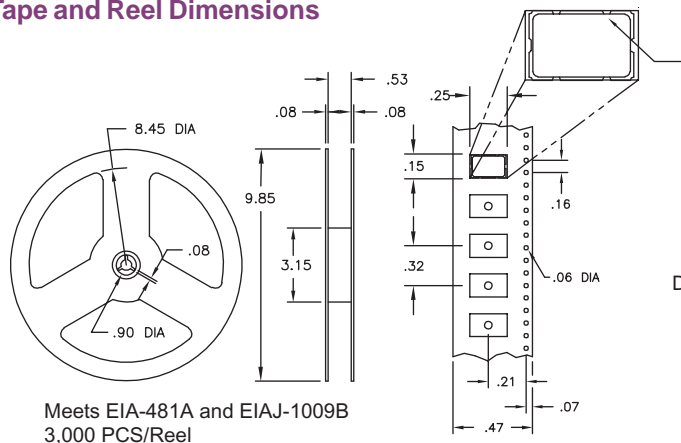
Test Circuit



Output Waveform



Tape and Reel Dimensions



Dimensional Tolerance: ±.02" (.508mm)
±.005" (.127mm)

Ordering Information

6113 - 50.00 MHz
CLOCK SERIES CENTER FREQUENCY

| | |
|----------|-------------|
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| Date | 30 May 2002 |