# CrystalFree™ Solid-State Oscillator

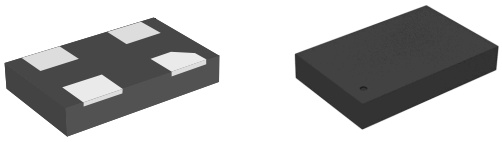
**3CN**

*Ultra Low Power Oscillators*

**PRELIMINARY DATA SHEET**

## Features

- Frequency Range: 4 to 133 MHz
- Output Type: CMOS
- Frequency Tolerance: ± 100 ppm
- Supply Voltage: 1.8 to 3.3 V
- Power Consumption: 1.9 mA (1.8 V)
- Standby Current: < 1 uA
- Standard Package: 5.0 x 3.2 x 0.85 mm
  2.5 x 2.0 x 0.85 mm
- Operating Temperature: 0 to 70 °C, -20 to 70 °C



This product is rated "Green", please contact factory for environmental compliancy information

## Specification

| Parameter | Symbol | Specifications | | | Conditions |
|---|---|---|---|---|---|
| Supply Voltage | VDD | 1.8 V± 5% | 2.5 V±10% | 3.3 V±10% | Nominal ± tolerance |
| Frequency Stability | $F_{STB}$ | ± 100 ppm | | | Total Frequency Stability* |
| Supply Current | IDD | 1.9 mA | 2.0 mA | 2.2 mA | Typical; No load condition; 75 MHz |
| Quiescent Current | $I_{STBY}$ | 1 uA | | | Maximum; STBY# = GND |
| Input LOW/HIGH level | $V_{IL}/V_{IH}$ | 0.3 VDD (max) /0.7 VDD (min) | | | At STBY# pin |
| Output LOW/HIGH level | $V_{OL}$ | 0.1 VDD (max) / 0.9 VDD (min) | | | $I_{OL}$ = - 1 mA / $I_{OH}$ = 1 mA |
| Rise/Fall Time | $T_R/T_F$ | 1.6 ns | 1.2 ns | 1.0 ns | Maximum; 20% to 80% x VDD; Output load ($C_L$) = 4 pF |
| Symmetry | SYM | 45% / 55% | | | Worst case; output frequencies ≤ 100 MHz |
| | | 40% / 60% | | | Worst case; output frequencies > 100 MHz |
| Start-up time | $T_{ST}$ | 400 us (max) | | | Output valid time after VDD meets the specified range & STBY# transition |
| Period Jitter RMS | $PJ_{RMS}$ | 17 ps | 6 ps | 5 ps | Output load ($C_L$) = 4 pF; 75 MHz; measured over 10K cycles |
| Cycle to Cycle Jitter(Pk-Pk) | $CCJ_{PP}$ | 120 ps | 50 ps | 40 ps | Output load ($C_L$) = 4 pF; 75 MHz; measured over 1K cycles |

Output Frequency ($F_{OUT}$)

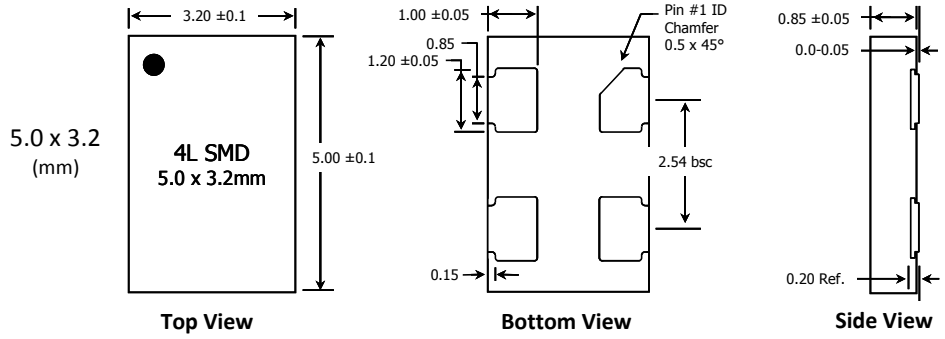
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 4.096 | 5 | 6 | 6.144 | 7.3728 | 8 | 10 | 12 | 12.5 | 12.288 | 14.31818 |
| 15 | 16 | 18.432 | 19.44 | 20 | 22.5972 | 24 | 24.576 | 25 | 30 | 33 | 33.333 |
| 36 | 37.5 | 40 | 48 | 49.152 | 50 | 60 | 62.5 | 66 | 66.66 | 72 | 74.25 |
| 75 | 80 | 98.304 | 100 | 125 | 133 | | | | | | |

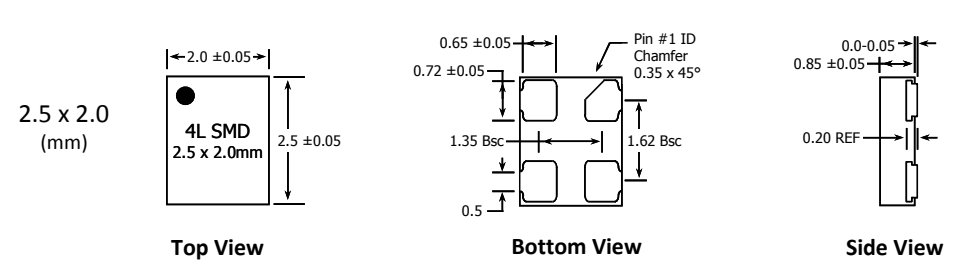
Contact IDT for additional frequencies

*Note: Above specifications are typical at room temperature (25°C ) unless otherwise specified.*

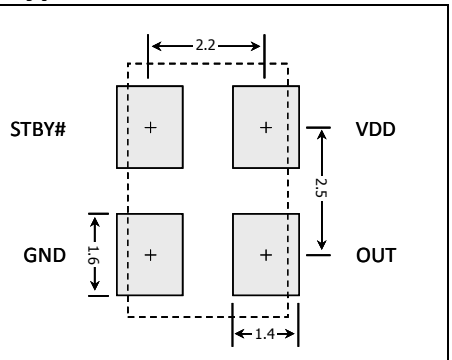
** Inclusive of initial frequency accuracy, operating temperature range, supply variation, load variation, 3 times solder reflow, shock, vibration and 10 years aging at 25°C.*

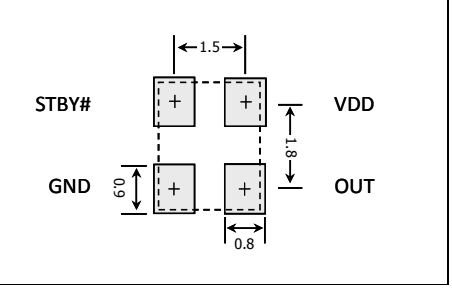
## Package Outline and Dimensions




## Typical PCB Land Pattern





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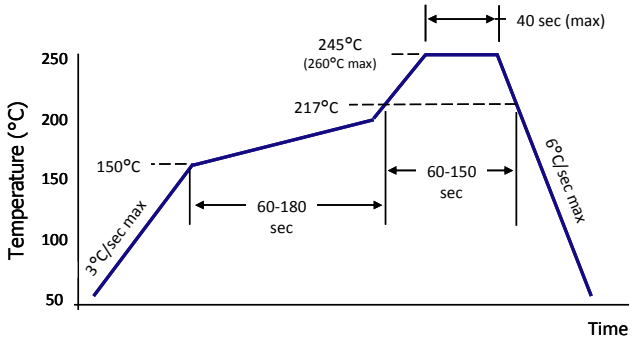
## Absolute Maximum Ratings

Stresses beyond those listed under *Absolute Maximum Ratings* may cause permanent damage to the device. These ratings are stress specifications only. Functional operation of product at these or under any condition beyond those listed in the operating specifications is not implied. Exposure to absolute maximum rated conditions may affect product reliability.

| Item | Maximum Absolute Rating |
|---|---|
| VDD | 4.6 V |
| STBY# | -0.5 V to VDD + 0.5 V |
| OUT | -0.5 V to VDD + 0.5 V |
| Storage Temperature | -65°C to 150°C |

## Solder Reflow Profile

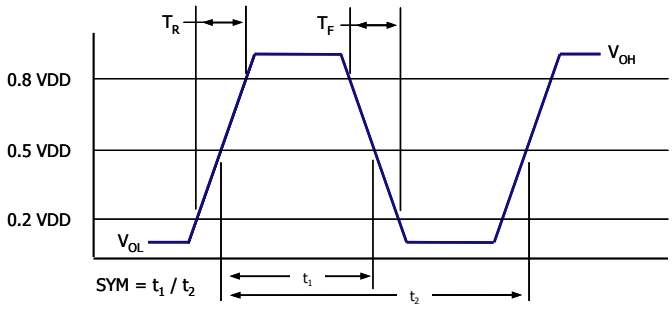



## Pin Descriptions

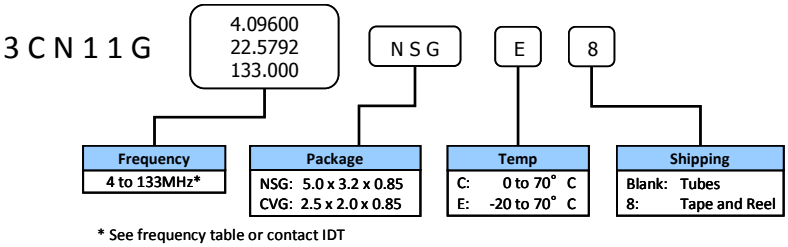
| Pin # | Name | Description |
|---|---|---|
| 1 | STBY# | Standby Mode[1] (0 = Output Disabled) |
| 2 | GND | Ground |
| 3 | OUT[2] | CMOS Output |
| 4 | VDD | Power |

1. Pulled high internally
2. Weak pull down to GND during STBY# enable and startup

## Output Waveform




## Ordering Information




* See frequency table or contact IDT

| Package Suffix | Minimum Order Quantity (MOQ) | | Factory Order Increment (FOI) | |
|---|---|---|---|---|
| | T & R | Bulk | T & R | Bulk |
| NSG | 2500 | 1260 (18 Tubes) | 2500 | 1260 (18 Tubes) |
| CVG | 3000 | 1250 (Canister) | 3000 | 1250 (Canister) |

www.IDT.com

6024 Silver Creek Valley Road
San Jose, California 95138

**Sales**
800-345-7015 (inside USA)
+1 408-284-8200 (outside USA)
Fax: 408-284-2775

**Technical Support**
crystalfreetechsupport@idt.com
+1 408-360-5656

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