



# CrystalFree™ Industrial Temp Oscillator

Active Oscillators at the price of Passive Crystals

3DN

## PRELIMINARY DATA SHEET

### Features

- Frequency Range: 4 to 133 MHz
- Output Type: CMOS
- Initial Frequency Tolerance:  $\pm 50$  ppm
- Supply Voltage: 1.8 to 3.3 V
- Power Consumption: 1.9 mA (1.8 V)
- Standby Current:  $< 1$   $\mu$ A
- Standard Package: 5.0 x 3.2 x 0.85 mm  
2.5 x 2.0 x 0.55 mm
- Operating Temperature: -40 to 85 °C



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

### Specification

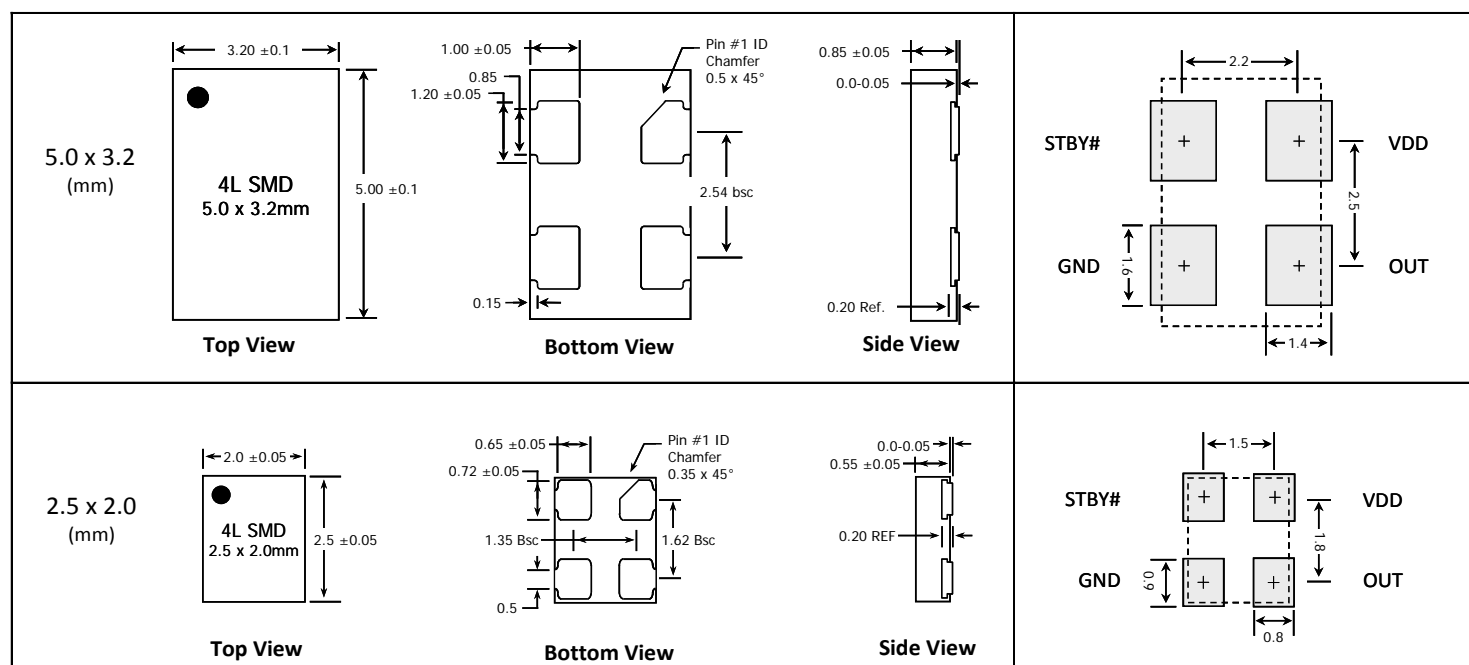
Parameter	Symbol	Specifications			Conditions
Supply Voltage	VDD	1.8 V ± 10%	2.5 V ± 10%	3.3 V ± 10%	Nominal ± tolerance
Output Frequency	F <sub>OUT</sub>	4 to 133 MHz			See ordering code
Initial Frequency Tolerance	F <sub>ITOL</sub>	± 50 ppm			25°C
Supply Current	IDD	1.9 mA	2.0 mA	2.2 mA	Typical; No load condition; 75 MHz
Quiescent Current	I <sub>STBY</sub>	1 uA			Maximum; STBY# = GND
Input LOW level	V <sub>IL</sub>	0.3 VDD (max)			At STBY# pin
Input HIGH level	V <sub>IH</sub>	0.7 VDD (min)			
Output LOW level	V <sub>OL</sub>	0.1 VDD (max)			I <sub>OL</sub> = - 1 mA
Output HIGH level	V <sub>OH</sub>	0.9 VDD (min)			I <sub>OH</sub> = 1 mA
Tolerance over Temperature	F <sub>TEM</sub>	± 400 ppm			Over specified operating temperatures
Rise/Fall Time	T <sub>R</sub> /T <sub>F</sub>	1.6 ns	1.2 ns	1.0 ns	Maximum; 20% to 80% x VDD; Output load (CL) = 4 pF
Symmetry	SYM	45% / 55%			Worst case; For frequencies ≤ 100 MHz;
		40% / 60%			Worst case; For frequencies > 100 MHz;
Start-up time	T <sub>ST</sub>	400 us			Output valid time after VDD meets the specified range & STBY# transition
Period Jitter	PJ <sub>RMS</sub>	17 ps	6 ps	5 ps	Output load (CL) = 4 pF; 75 MHz
Cycle to Cycle Jitter	CCJ <sub>MAX</sub>	120 ps	50 ps	40 ps	Output load (CL) = 4 pF; 75 MHz; measured over 12 K cycles

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



## 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.

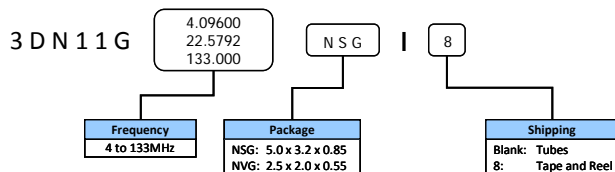
Item	Maximum Absolute Rating
VDD	4.6 V
STBY#	-0.5 V to VDD + 0.5 V
OUT	-0.5 V to VDD + 0.5 V
Storage Temperature	-65°C to 150°C

## Pin Descriptions

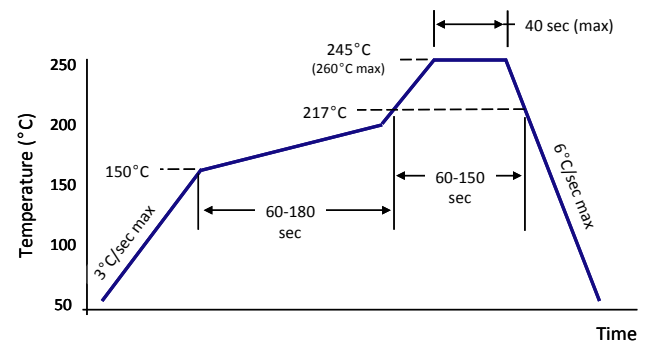
Pin #	Name	Description
1	STBY#	Standby Mode <sup>1</sup> (0 = Output Disabled)
2	GND	Ground
3	OUT <sup>2</sup>	CMOS Output
4	VDD	Power

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

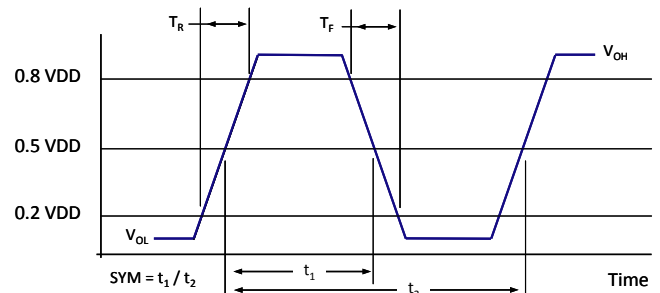
## Ordering Information



## Solder Reflow Profile



## Output Waveform



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)
NVG	3000	1250 (Canister)	3000	1250 (Canister)



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