



# CrystalFree™ Differential Oscillator

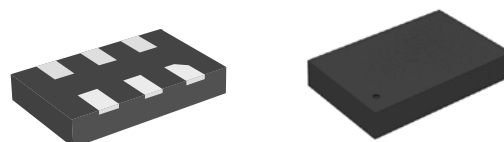
Ultra Low Power Oscillators

3LG

## PRELIMINARY DATA SHEET

### Features

- Frequency Range: 24 to 125MHz
- Output Type: LVDS / LVPECL / HCSL
- Stability:  $\pm 50$  ppm
- Supply Voltage: 2.5V, 3.3V
- Power Consumption: 10.9 mA (2.5V LVDS)
- Standby Current:  $< 1$   $\mu$ A
- Standard Package: 5.0 x 3.2 x 0.85 mm  
7.0 x 5.0 x 0.85 mm
- Operating Temperature: 0 to 70 °C



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

### Specification

Parameter	Symbol	Specifications			Specifications			Conditions		
		LVDS	LVPECL	HCSL	LVDS	LVPECL	HCSL	LVDS: 100 Ω differential termination LVPECL: 50 Ω termination to VDD-2V HCSL: 50 Ω termination to GND		
Supply Voltage	VDD	2.5 V			3.3 V			Nominal		
Frequency Stability	F <sub>STB</sub>	±50 ppm			±50 ppm			Total Frequency Stability*		
Supply Current	IDD	10.9 mA	27.6 mA	22 mA	11.3mA	34.1mA	22.7mA	100MHz		
Quiescent Current	I <sub>OE</sub>	1 uA			1 uA			Maximum; OE = GND		
Input LOW / HIGH level	V <sub>IL</sub> / V <sub>IH</sub>	0.3VDD (max) / 0.7VDD(min)			0.3VDD (max) / 0.7VDD(min)			At OE pin		
Rise / Fall Time	T <sub>R</sub> / T <sub>F</sub>	500/710ps	620/420ps	580/390ps	450/470ps	430/400ps	420/380ps	Maximum; 20/80% of V <sub>A</sub> ; Output load (CL) = 2pF		
Amplitude	V <sub>A</sub>	0.35V	0.71V	0.70V	0.35V	0.79V	0.70V	Single Ended output swing (Pk-Pk)		
Mid Level (offset)	V <sub>M</sub>	1.2 V	1.1V	0.35V	1.2 V	2 V	0.35V			
Symmetry	SYM	45 / 55%			45 / 55%			Worst case		
Start-up time	T <sub>ST</sub>	400 us			400 us			Output valid time after VDD meets the specified range & OE transition		
Period Jitter	PJ <sub>RMS</sub>	3.6 ps	2.9 ps	2.5 ps	2.9 ps	3 ps	2.6 ps	100MHz		
Cycle to Cycle Jitter	CCJ <sub>Max</sub>	33 ps	22 ps	19 ps	27 ps	29 ps	24 ps	100MHz; measured over 12k cycles		
Phase Jitter	ϕJ	1.0 ps			1.0 ps			12k to 20MHz (nominal)		
Output Frequency	F <sub>OUT</sub>	Standard Frequencies:								
		25	33.333	40	50	62.5	66.66	100	125	

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

<p>7.0 x 5.0 (mm)</p> <p>6L SMD 7.0 x 5.0mm</p> <p>Top View</p>	<p>Bottom View</p> <p>Pin #1 ID R 0.15°</p> <p>0.85 ± 0.05</p> <p>0.0-0.05</p> <p>0.25 Ref.</p> <p>0.203 Ref.</p>	<p>Typical PCB Land Pattern</p> <p>OE</p> <p>N/C</p> <p>GND</p> <p>VDD</p> <p>OUTB</p> <p>OUT</p>
<p>5.0 x 3.2 (mm)</p> <p>6L SMD 5.0 x 3.2mm</p> <p>Top View</p>	<p>Bottom View</p> <p>Pin #1 ID Chamfer 0.30 x 45°</p> <p>0.85 ± 0.05</p> <p>0.0-0.05</p> <p>0.203 Ref.</p>	<p>Typical PCB Land Pattern</p> <p>OE</p> <p>N/C</p> <p>GND</p> <p>VDD</p> <p>OUTB</p> <p>OUT</p>

## 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.

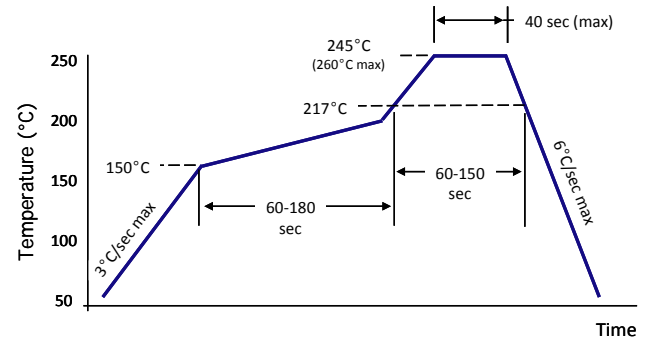
Item	Maximum Absolute Rating
VDD	4.6V
OE	-0.5V to VDD + 0.5V
OUT / OUTB	-0.5V to VDD + 0.5V
Storage Temperature	-65°C to 150°C

## Pin Descriptions

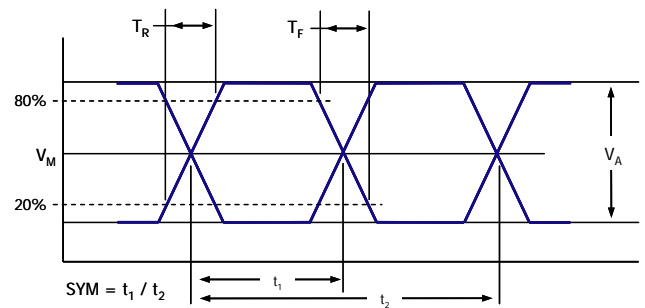
Pin #	Name	Description
1	OE <sup>1</sup>	Output enable (0 = Output Disabled)
2	N/C	Do not connect
3	GND	Ground
4	OUT <sup>2</sup>	Positive Output
5	OUTB <sup>2</sup>	Negative Output
6	VDD	Power

1. Pulled high internally  
2. Weak pull down to GND

## Solder Reflow Profile



## Output Waveform



## Ordering Information

3 L G 1	4	B	22.5792 125.000	CTG	C	8
<b>Output</b>	<b>Voltage</b>	<b>Frequency</b>	<b>Package</b>	<b>Shipping</b>		
2: HCSL 3: LVPECL 4: LVDS	B: 3.3V C: 2.5V	24 to 125MHz*	CUG: 7.0 x 5.0 x 0.85 CTG: 5.0 x 3.2 x 0.85	Blank: Tubes 8: Tape and Reel		

\* See frequency table or contact IDT

Package Suffix	Minimum Order Quantity (MOQ)		Factory Order Increment (FOI)	
	T & R	Bulk	T & R	Bulk
CUG	2500	1250 (25 Tubes)	2500	1250 (25 Tubes)
CTG	2500	1190 (17 Tubes)	2500	1190 (17 Tubes)



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