

# Oscillator (CMOS/LVPECL/LVDS/HCSL Output)

## LV3225

### 3.2 x 2.5 mm SMD LVPECL/LVDS/ HCSL Crystal Oscillator

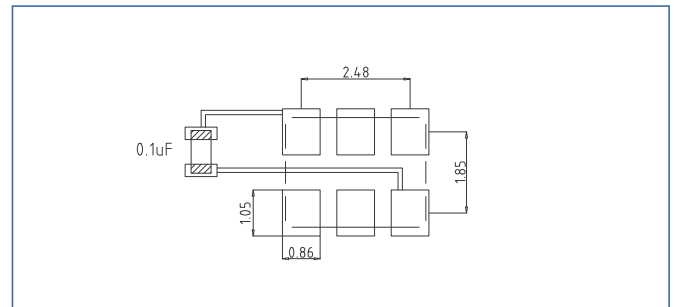
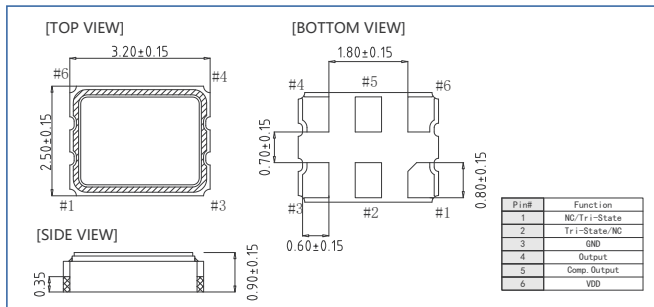
#### FEATURES

- Industry Standard 3.2 x 2.5 x 0.9 hermetically sealed ceramic package
- Very low jitter performance: typical 0.1 pS RMS from 12 kHz ~ 20 MHz
- Fundamental/3rd overtone crystal design
- Output frequency up to 250 MHz
- Tri-state enable/disable
- Up to 125°C operating temperature range

#### TYPICAL APPLICATION

- 10 Gbit Ethernet, Fiber Channel, Storage Area Network, SONET
- Enterprise Servers, Reference clocks for ADC and DAC
- Telecom

#### DIMENSIONS



#### ELECTRICAL SPECIFICATION

Parameter		LVPECL				LVDS				Unit
		3.3V		2.5V		3.3V		2.5V		
		Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)		VDD-5%	VDD+5%	VDD-5%	VDD+5%	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V
Frequency Range		10	250	10	250	10	250	10	250	MHz
Standard Frequency		25, 106.25, 125, 156.25, 161.1328, 212.5								
Supply Current	10MHz ≤ F <sub>o</sub> < 160MHz	—	75	—	75	—	50	—	50	mA
	160MHz ≤ F <sub>o</sub> < 250MHz	—	100	—	100	—	50	—	50	
Output Level	Output High	2.275	—	1.475	—	—	1.6	—	1.6	V
	Output Low	—	1.68	—	0.88	0.9	—	0.9	—	
Transition Time: Rise/Fall Time+		—	1	—	1	—	1	—	1	nSec
Startup Time		—	10	—	10	—	10	—	10	mSec
Tri-State (Input to Pin2 or Pin1)	Enable (High Voltage or Floating)	2.31	—	1.75	—	2.31	—	1.75	—	V
	Disable (Low Voltage or GND)	—	0.99	—	0.75	—	0.99	—	0.75	
Aging (@25°C, 1st Year)		—	±3	—	±3	—	±3	—	±3	ppm
Storage Temp. Range		-55	125	-55	125	-55	125	-55	125	°C
Phase Noise @ 156.25 MHz	100 Hz	-95		-90		-90		-90		dBc/Hz
	1 kHz	-125		-125		-120		-120		
	10 kHz	-140		-140		-140		-140		
RMS Phase Jitter (Integrated 12 KHz ~ 20MHz)	F <sub>o</sub> < 80MHz	—	1	—	1	—	1	—	1	pSec
	80MHz ≤ F <sub>o</sub> < 125MHz	—	0.5	—	0.5	—	0.5	—	0.5	
	125MHz ≤ F <sub>o</sub> < 170MHz	—	0.3	—	0.3	—	0.3	—	0.3	
	170MHz ≤ F <sub>o</sub> < 200MHz	—	0.5	—	0.5	—	0.5	—	0.5	
	200MHz ≤ F <sub>o</sub>	—	0.3	—	0.3	—	0.3	—	0.3	

# Oscillator (CMOS/LVPECL/LVDS/HCSL Output)

Parameter	HCSL				Unit		
	3.3V		2.5V				
	Min.	Max.	Min.	Max.			
Supply Voltage Variation(VDD)	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V		
Frequency Range	25	175	25	175	MHz		
Standard Frequency	100						
Supply Current	25MHz≤F <sub>o</sub> ≤175MHz		—	50	—	50	mA
Output Level	Output High		0.6	—	0.58	—	V
	Output Low		—	0.15	—	0.15	
Transition Time: Rise/Fall Time+		—	0.5	—	0.5	—	nSec
Startup Time		—	10	—	10	—	mSec
Tri-State (Input to Pin2 or Pin1)	Enable (High Voltage or Floating)		0.7VDD	—	0.7VDD	—	V
	Disable (Low Voltage or GND)		—	0.3VDD	—	0.3VDD	
Aging (@25°C, 1st Year)		—	±3	—	±3	—	ppm
Storage Temp. Range		-55	125	-55	125	—	°C
RMS Phase Jitter (Intergrated 12KHz ~ 20MHz)	25MHz≤F <sub>o</sub> ≤175MHz		—	0.5	—	0.5	pSec

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position.  
 + Transition times are measured between 20% and 80% of VDD.

## FREQ. STABILITY vs. TEMP. RANGE

Temp.(°C)	ppm	±25	±50
-10 ~ +60		○	○
-20 ~ +70		○	○
-40 ~ +85		△	○
-40 ~ +125		×	○

\*○: Available △: Condition X: Not available

\*Inclusive of calibration @ 25 °C, operating temperature range, input voltage variation, load variation, aging (1st year), shock, and vibration.

Note: not all combination of options are available. Other specifications may be available upon request.  
 Specifications subject to change without notice.