

OB Type

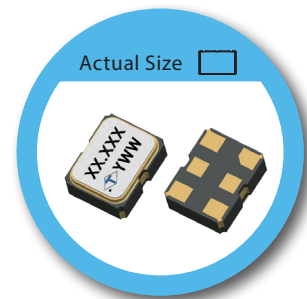
2.5 x 2.0 mm SMD LVPECL/LVDS/HCSL Crystal Oscillator

FEATURE

- Industry Standard 2.5 x 2.0 x 0.92 hermetically sealed ceramic package.
- Low jitter performance: typical 0.2 pS RMS from 12 kHz - 20 MHz.
- Fundamental/3rd overtone crystal design.
- Output frequency up to 220 MHz.
- Tri-state enable/disable

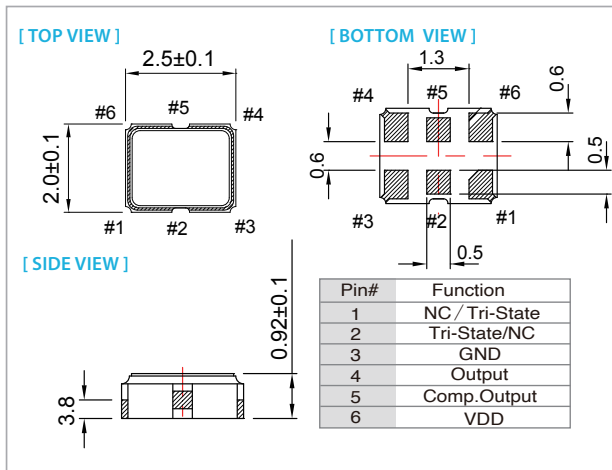
TYPICAL APPLICATION

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

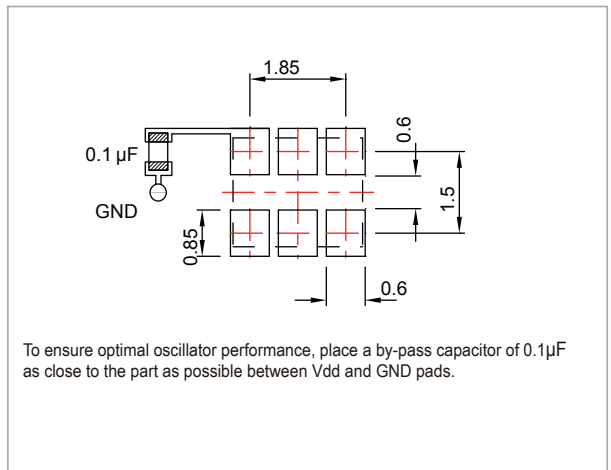


RoHS Compliant

DIMENSION (mm)



SOLDER PAD LAYOUT (mm)



ELECTRICAL SPECIFICATION

Parameter		LVPECL				LVDS						unit
		3.3 V		2.5 V		3.3 V		2.5 V		1.8 V		
		Min.	Max.	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%	VDD-5%	VDD+5%	V
Frequency Range		13.5	220	13.5	220	13.5	220	13.5	220	13.5	220	MHz
Standard Frequency		100, 125, 156.25										
Supply Current	13.5 MHz ≤ Fo < 160 MHz	—	50	—	50	—	27	—	27	—	27	mA
	160 MHz ≤ Fo < 220 MHz	—	60	—	60	—	30	—	30	—	30	
Output Level	Output High	2.275	—	1.475	—	—	1.6	—	1.6	—	1.6	V
	Output Low	—	1.68	—	0.88	0.9	—	0.9	—	0.9	—	
Transition Time: Rise/Fall Time*		—	1.0	—	1.0	—	0.5	—	0.5	—	0.5	nSec
Start Time		—	10	—	10	—	10	—	10	—	10	mSec
Tri-State(Input to Pin 2 or Pin 1)												V
Enable (High voltage or floating)		2.31	—	1.75	—	2.31	—	1.75	—	1.2	—	
Disable (Low voltage or GND)		—	0.99	—	0.75	—	0.99	—	0.75	—	0.5	
RMS Phase Jitter (Integrated 12 KHz ~ 20 MHz)												pSec
Fo < 80 MHz		—	1	—	1	—	1	—	1	—	1	
80 MHz ≤ Fo <125 MHz		—	0.5	—	0.5	—	0.5	—	0.5	—	0.5	
125 MHz ≤ Fo <170 MHz		—	0.3	—	0.3	—	0.3	—	0.3	—	0.3	
170 MHz ≤ Fo <200 MHz		—	0.5	—	0.5	—	0.5	—	0.5	—	0.5	
200 MHz ≤ Fo		—	0.3	—	0.3	—	0.3	—	0.3	—	0.3	
Phase Noise@ 156.25 MHz	100 Hz	-95		-90		-90		-90		-90		dBc/Hz
	1 kHz	-125		-125		-120		-120		-120		
	10 kHz	-140		-140		-140		-140		-140		
Aging (@ 25°C 1st year)		—	±3	—	±3	—	±3	—	±3	—	±3	ppm
Storage Temp. Range		-55	125	-55	125	-55	125	-55	125	-55	125	°C

Parameter	HCSL						unit
	3.3 V		2.5 V		1.8 V		
	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)	VDD-5%	VDD+5%	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V
Frequency Range	13.5	220	13.5	220	13.5	220	MHz
Standard Frequency	100, 125						
Supply Current							
25 MHz ≤ Fo ≤ 175 MHz	—	30	—	30	—	30	mA
Output Level							
Output High	0.55	—	0.55	—	0.4	—	V
Output Low	—	0.15	—	0.15	—	0.15	
Transition Time: Rise/Fall Time+	—	0.5	—	0.5	—	0.6	nSec
Start Time	—	10	—	10	—	10	mSec
Tri-State(Input to Pin 2 or Pin 1)							
Enable	2.31	—	1.75	—	1.26	—	V
Disable	—	0.99	—	0.75	—	0.54	
RMS Phase Jitter (Integrated 12 kHz ~ 20 MHz)							
13.5MHz ≤ Fo ≤ 220MHz	—	0.5	—	0.5	—	0.5	pSec
Aging	—	±3	—	±3	—	±3	ppm
Storage Temp. Range	-55	125	-55	125	-55	125	°C

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
-20 ~ +70	○	○
-40 ~ +85	△	○

* ○ : Available △: Conditional X: Not available

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