

OT Type 7.0 x 5.0 mm SMD LVPECL/LVDS Crystal Oscillator

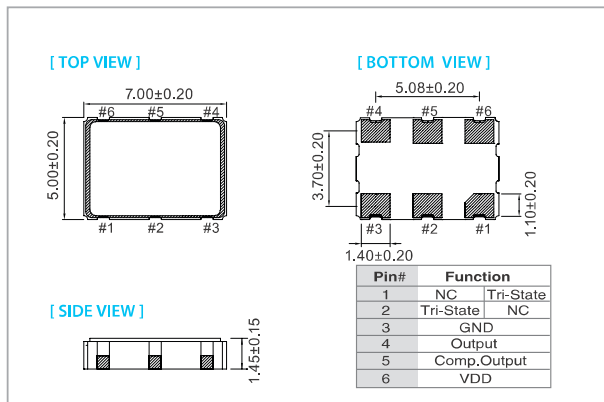
FEATURE

- Typical 7.0 x 5.0 x 1.45 mm hermetically sealed ceramic package.
- Very low jitter performance: typical 0.3 pS RMS from 12k-20MHz.
- Fundamental/3rd overtone crystal design.
- Output frequency up to 320 MHz.
- Operating temperature up to 125°C
- Tri-state enable/disable

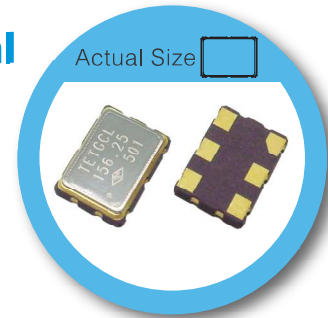
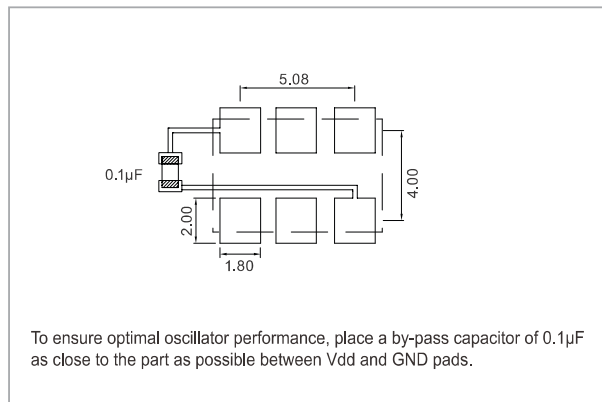
TYPICAL APPLICATION

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

DIMENSION (mm)



SOLDER PAD LAYOUT (mm)



RoHS Compliant

ELECTRICAL SPECIFICATION

Parameter	LVPECL				LVDS				unit
	3.3 V		2.5 V		3.3 V		2.5 V		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (V_{DD})	V _{DD} -5%	V _{DD} +5%	V _{DD} -5%	V _{DD} +5%	V _{DD} -5%	V _{DD} +5%	V _{DD} -5%	V _{DD} +5%	V
Frequency Range	10	320	10	320	10	320	10	320	MHz
Standard Frequency	77.76, 106.25, 125, 155.52, 156.25, 187.5, 212.5, 312.5								
Supply Current	10 MHz ≤ F _o < 160 MHz		160 MHz ≤ F _o < 250 MHz		250 MHz ≤ F _o ≤ 320 MHz				
	—	75	—	75	—	50	—	50	mA
	—	100	—	100	—	50	—	50	
	—	100	—	100	—	65	—	65	
Output Level	Output High (Logic "1")		Output Low (Logic "0")		Output High (Logic "1")		Output Low (Logic "0")		V
	2.275	—	1.475	—	—	1.6	—	1.6	
	—	1.68	—	0.88	0.9	—	0.9	—	
Transition Time: Rise/Fall Time⁺	—	1.0	—	1.0	—	1.0	—	1.0	nSec
Start Time	—	2	—	2	—	2	—	2	mSec
Tri-State(Input to Pin 2 or Pin 1)	Enable (High voltage or floating)		Disable (Low voltage or GND)		Enable (High voltage or floating)		Disable (Low voltage or GND)		V
	2.31	—	1.75	—	2.31	—	1.75	—	
	—	0.99	—	0.75	—	0.99	—	0.75	
RMS Phase Jitter (Integrated 12 KHz ~ 20 MHz)									
	F _o < 80 MHz		80 MHz ≤ F _o < 125 MHz		125 MHz ≤ F _o < 170 MHz		170 MHz ≤ F _o < 200 MHz		pSec
	—	1	—	1	—	1	—	1	
	—	0.5	—	0.5	—	0.5	—	0.5	
	—	0.3	—	0.3	—	0.3	—	0.3	
	—	0.5	—	0.5	—	0.5	—	0.5	
	—	0.3	—	0.3	—	0.3	—	0.3	
Phase Noise @ 156.25 MHz	100Hz		1 kHz		100Hz		1 kHz		dBc/Hz
	-100		-100		-100		-100		
	-130		-130		-130		-130		
	-145		-145		-145		-145		
Aging (@ 25°C 1st year)	—	±3	—	±3	—	±3	—	±3	ppm
Storage Temp. Range	-55	125	-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 V_{DD}.

FREQ. STABILITY vs. TEMP. RANGE

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

* ○: Available △: Conditional 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.

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Specifications subject to change without notice.

Model Numbering Guide – Crystal Oscillator

Available options

Type	package (mm)	Supply Voltage(V)	Tri-State Function	Freq. Stability (ppm)	Temp. Range(°C)	Output Logic and Symmetry	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
O: Oscillator	Z:2.0 x 1.6 Y:2.5 x 2.0 X:3.2 x 2.5 V:5.0 x 3.2 C:7.0 x 5.0	E: 2.8/3.0/3.3 J: 2.5 K: 1.8 P: 1.5 L: 1.2 M: 0.9	T: Fixed-Freq with Tri-State M: Multiplier Freq with Tri-State(only for V/C package) U: Ultra Low Noise design	A: ±5 B: ±10 P: ±15 C: ±20 D: ±25 E: ±30 F: ±40 G: ±50 H: ±100	E: 0~+85 I: -10~+60 C: -20~+70 D: -30~+85 L: -40~+85 J: -40~+105 H: -40~+125 F: -55~+125	J: CMOS 15pF / 50±5% K: CMOS 15pF / 50±10%					
P: Programmable Oscillator	Y: 2.5 x 2.0 X: 3.2 x 2.5	E: 2.8/3.0/3.3 J: 2.5 K: 1.8	T: Fixed-Freq with Tri-State	C: ±20 D: ±25 G: ±50 H: ±100		J: CMOS 15pF / 50±5%	A: AT Fundamental T: AT 3rd Overtone	N :Normal	F: RoHS Compliant	-	XX.XXXXXX
O: Oscillator (Differential Output)	A:3.2x2.5 W:5.0x3.2 T:7.0x5.0	E: 3.3 J: 2.5	T: Input to pin 2 (std.) R: Input to pin 1 (case by case) U: Ultra Low Jitter design (Only for T package)	D: ±25 G: ±50 H: ±100	I: -10~+60 C: -20~+70 D: -30~+85 L: -40~+85	L: LVPECL / 50±5% V: LVDS / 50±5% H: HCSL / 50±5%	Not Selectable by Customer				
O: Oscillator (Fast Delivery series)	W:5.0x3.2 T:7.0x5.0	E: 3.3 J: 2.5	M: Multiplier Freq with pin 2 Tri-State N: Multiplier Freq. with PIN 1 Tri-State	D: ±25 G: ±50 H: ±100		J: CMOS 15pF / 50±5% L: LVPECL / 50±5% V: LVDS / 50±5%					

O Y E T C C J A N F – 13.000000

*Not all combinations of options are available.

Example: OYETCCJANF-13.000000

Type	Oscillator
Package	2.5 x 2.0 mm
Supply Voltage(V)	3.3 V
Tri-State .	Fixed-Freq.
Freq. Stability	±20ppm
Temp Range	-20~+70 °C
Output	CMOS 15 pF / Symmetry 50±5%
Oscillator Mode	AT Fundamental
Appearance	Normal Appearance
Lead Free	RoHs Compliant
Frequency	13.000000 MHz