

# TP7 Series

## 7.0\*5.0mm SMD PECL/LVDS Crystal Oscillator

### FEATURE

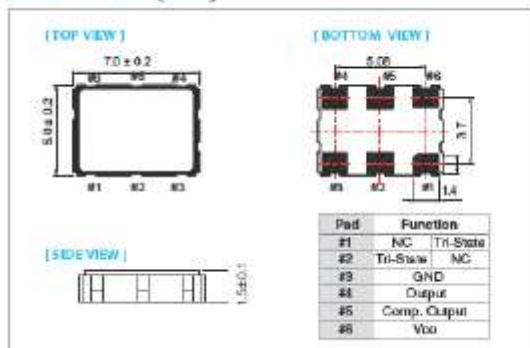
- Typical 7.0\*5.0\*1.5mm hermetically sealed ceramic package.
- Very low jitter performance: typical 0.3Ps RMS from 12k-20MHz.
- Fundamental/3<sup>rd</sup> overtone crystal design.
- Output frequency up to 320MHz
- Tri-state enable/disable



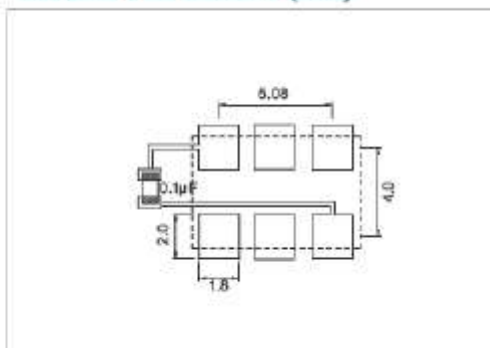
### TYPICAL APPLICATION

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

#### DIMENSION (mm)



#### SOLDER PAD LAYOUT (mm)



### ELECTRICAL SPECIFICATION

Parameter		PECL				LVDS				Unit
		3.3V		2.5V		3.3V		2.5V		
Parameter		Min	Max	Min.	Max.	Min.	Max.	Min.	Max.	Unit
Supply Voltage Variation (VDD) 5%		3.135	3.465	2.375	2.625	3.135	3.465	2.375	2.625	V
Frequency Range		19.44	320	19.44	320	19.44	320	19.44	320	MHz
Standard Frequency				77.76, 106.25, 125, 155.52, 156.25, 187.5, 212.5, 312.5						
Supply Current	80 MHz $\cong$ F0 < 160 MHz	-	75	-	75	-	50	-	50	mA
	160 MHz $\cong$ F0 < 250 MHz	-	100	-	100	-	50	-	50	
	250 MHz $\cong$ F0 $\cong$ 320 MHz	-	100	-	100	-	65	-	65	
Output Level	Output High (Logic "1")	2.275	-	1.475	-	-	1.6	-	1.6	V
	Output Low (Logic "0")	-	1.68	-	1.095	0.9	-	0.9	-	
Transition Time: Rise/Fall Time+			1.0	-	1.0	-	1.0	-	1.0	nSec
Start Time		-	3	-	3	-	3	-	3	mSec
Tri-State (Input to Pin 2 or Pin 1)										
Enable (High voltage or floating)		0.7Vdo	-	0.7Vdo	-	0.7Vdo	-	0.7Vdo	-	V

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Disable(Low voltage or GND)	-	0.3 Vdc	-	0.3 Vdc	-	0.3 Vdc	-	0.3 Vdc	
RMS Phase Jitter (Integrated 12KHz~20MHz)									
F0<80MHz	-	1.4	-	1.4	-	1.4	-	1.4	
80MHz $\cong$ F0<125MHz	-	0.9	-	0.9	-	0.9	-	0.9	pSec
125MHz $\cong$ F0<150MHz	-	0.7	-	0.7	-	0.7	-	0.7	
150MHz $\cong$ F0<200MHz	-	0.5	-	0.5	-	0.5	-	0.5	
200MHz $\cong$ F0	-	0.3	-	0.3	-	0.3	-	0.3	
Phase Noise									
100 Hz	-	-70	-	-70	-	-70	-	-70	dBc/Hz
1 KHz	-	-100	-	-100	-	-100	-	-100	
10 KHz	-	-125	-	-125	-	-125	-	-125	
Aging(@25°C 1st year)	-	$\pm$ 3	-	$\pm$ 3	-	$\pm$ 3	-	$\pm$ 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 VDD.

Packing: Tape & Reel, 1000/3000pcs per Reel.

### FREQ. STABILITY vs. TEMP. RANGE

Temp. (°C)	ppm	$\pm$ 25	$\pm$ 50
-10 ~ +60		$\Delta$	$\circ$
-20 ~ +70		$\Delta$	$\circ$
-40 ~ +85		X	$\circ$

\*  $\circ$ : Available  $\Delta$ : Conditional X: Not available

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