

# TP5 Series

## 5.0\*3.2 mm SMD PECL/LVDS Crystal Oscillator

### FEATURE

- Typical 5.0\*3.2\*1.2mm 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

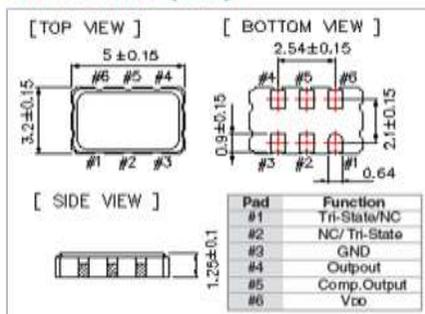


### TYPICAL APPLICATION

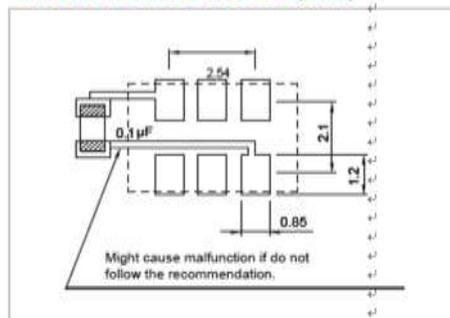
- 10G-BIT, Ethernet, Fiber Channel, Storage Area Network, SONET
- Enterprise Servers, Reference clocks for ADC and DAC
- Telecom

**RoHS Compliant Standard**

**DIMENSION (mm)**



**SOLDER PAD LAYOUT (mm)**



Parameter		PECL				LVDS				Unit
		3.3V		2.5V		3.3V		2.5V		
Parameter		Min	Max	Min.	Max.	Min.	Max.	Min.	Max.	
<b>Supply Voltage Variation (VDD) 5%</b>		3.135	3.465	2.375	2.625	3.135	3.465	2.375	2.625	V
<b>Frequency Range</b>		80	320	80	320	80	320	80	320	MHz
<b>Standard Frequency</b>		106.25, 125, 155.52, 156.25, 187.5, 212.5, 312.5								
<b>Supply Current</b>	80 MHz $\leq$ F0 < 160 MHz	-	75	-	75	-	50	-	50	mA
	160 MHz $\leq$ F0 < 250 MHz	-	100	-	100	-	50	-	50	
	250 MHz $\leq$ F0 $\leq$ 320 MHz	-	100	-	100	-	65	-	65	
<b>Output Level Output High (Logic"1")</b>		2.275	-	1.475	-	-	1.6	-	1.6	V
<b>Output Low (Logic"0")</b>		-	1.68	-	1.095	0.9	-	0.9	-	
<b>Transition Time: Rise/Fall Time+</b>		-	1.0	-	1.0	-	1.0	-	1.0	nSec
<b>Start Time</b>		-	3	-	3	-	2.4	-	3	mSec
<b>Tri-State (Input to Pin 2 or Pin 1)</b>										
<b>Enable (High voltage or floating)</b>		0.7Vdo	-	0.7Vdo	-	0.7Vdo	-	0.7Vdo	-	V
<b>Disable (Low voltage or GND)</b>		-	0.3 Vdc	-	0.3 Vdc	-	0.3 Vdc	-	0.3 Vdc	

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RMS Phase Jitter (Integrated 12KHz~20MHz)									
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)	-	$\pm 3$	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<sub>DD</sub>.

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