

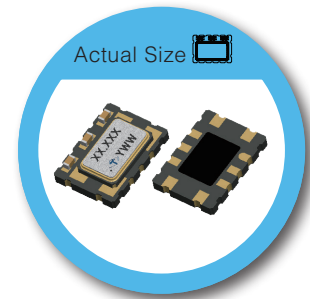
# TS Type High Precision 7.0 x 5.0 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

## FEATURE

- Typical 7.0 x 5.0 x 1.9 mm ceramic SMD package.
- High Precision for -40°C~+85°C, ±0.28ppm
- CMOS and Clipped Sine wave (without DC-cut capacitor) output optional.

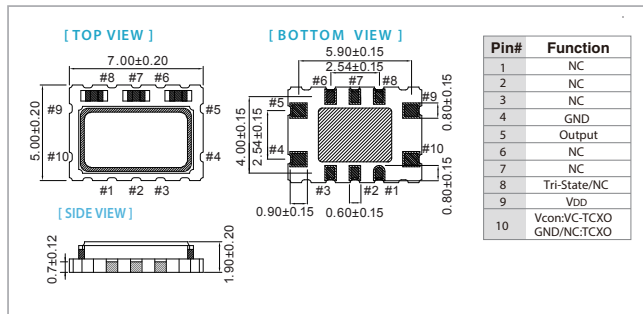
## TYPICAL APPLICATION

- Femtocell, Base Stations
- WLAN / WiMAX / WiFi, Wireless Communications
- Mobile Phone

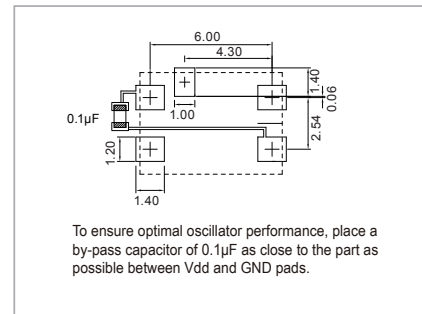


RoHS Compliant

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



## ELECTRICAL SPECIFICATION

Parameter	2.5V		3.3V		Unit
	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V <sub>DD</sub> -5%	V <sub>DD</sub> +5%	V
Frequency Range	5	52	5	52	MHz
Standard Frequency (for CMOS)	5, 6.4, 8, 8.192, 10, 12.5, 12.8, 16, 16.384, 19.44, 25				
Standard Frequency (for Clipped Sine Wave)	8.192, 10, 12.5, 12.8, 16, 16.384, 19.44, 25				ppm
Frequency Tolerance*	±2.0				
Frequency Stability					ppm
Vs Supply Voltage (±5%) change	-	±0.5	-	±0.5	
Vs Load (±10%) change	-	±0.2	-	±0.2	
Vs Aging	-	±1.0	-	±1.0	
Supply Current (CMOS output)	-	8	-	8	mA
Supply Current (Clipped Sine Wave)	-	5	-	5	
Output Level (CMOS)					V
Output Low (Logic"1")	90%V <sub>DD</sub>	-	90%V <sub>DD</sub>	-	
Output Low (Logic"0")	-	10%V <sub>DD</sub>	-	10%V <sub>DD</sub>	
Duty	45	55	45	55	%
Output Level (Clipped Sine Wave)	0.8	-	0.8	-	V <sub>p-p</sub>
Load (CMOS)	15pF		15pF		KΩ // 10pF
Load (Clipped Sine Wave)	10 KΩ // 10pF		10 KΩ // 10pF		
Control Voltage Range (VCTCXO)	0.5	2.5	0.5	2.5	V
Pulling Range (VCTCXO)	±5.0	±12.0	±5.0	±12.0	ppm
Vc Input Impedance (VCTCXO)	100	-	100	-	KΩ
Phase Noise @ 19.2MHz					dBc / Hz
100 Hz	-120		-120		
1 KHz	-140		-140		
10 KHz	-148		-148		
Start Time	-	5	-	5	mSec
Tri-State					V
Disable	-	1.5	-	0.99	
Enable	3.5	-	2.31	-	
Storage Temp. Range	-55	125	-55	125	°C

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position

\*Frequency at 25°C, 1 hour after reflow

## FREQ. STABILITY vs. TEMP. RANGE

Temp. (°C)	ppm						
	±0.05	±0.1	±0.14	±0.2	±0.28	±0.5	±2
-10 ~ +70	○	○	○	○	○	○	○
-20 ~ +70	×	○	○	○	○	○	○
-40 ~ +85	×	×	×	△	○	○	○
-40 ~ +95	×	×	×	×	×	△	○
-40 ~ +105	×	×	×	×	×	×	○

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

**Note: not all combination of options are available. Other specifications may be available upon request.**

Specifications subject to change without notice.