

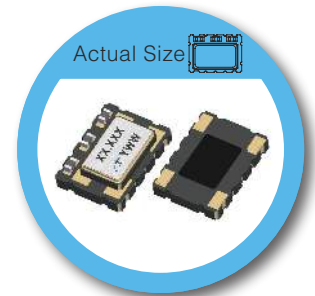
# TT-K Type High Precision and High Temperature 7.0 x 5.0 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

## FEATURE

- Typical 7.0 x 5.0 x 1.9 mm ceramic SMD package.
- High Precision and High Temperature for -40°C ~ +95°C, ±0.1ppm,  
-40°C ~ +105°C, ±0.2ppm.
- CMOS and Clipped Sine wave (without DC-cut capacitor) output optional.

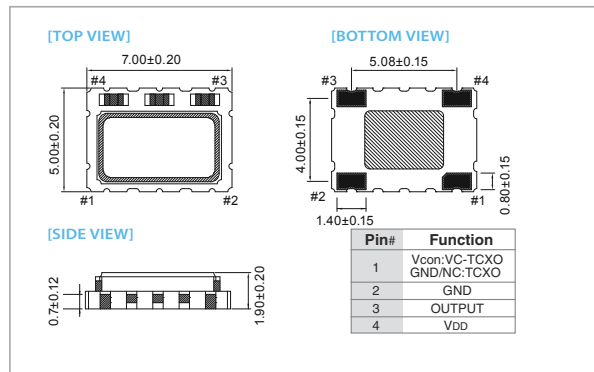
## TYPICAL APPLICATION

- Femtocell, Base Stations
- WLAN/WiMAX/WIFI, Wireless Communications

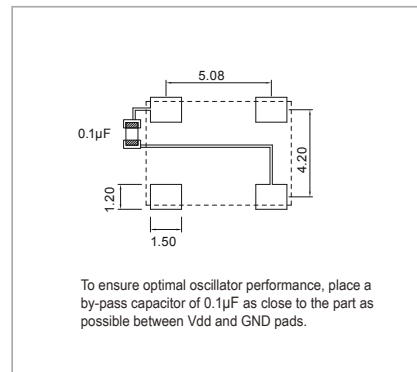


RoHS Compliant

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



## ELECTRICAL SPECIFICATION

Parameter	3.3 V		2.5V		Unit
	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V
Frequency Range	10	52	10	52	MHz
Standard Frequency	10, 19.2, 20				
Frequency Tolerance*	-	±1.5	-	±1.5	ppm
Frequency Stability					
Vs Supply Voltage (±5%) change	-	±0.1	-	±0.05	ppm
Vs Load (±10%) change	-	±0.05	-	±0.05	ppm
Vs Aging (@ 1st year)	-	±1.0	-	±1.0	ppm / year
Supply Current (CMOS output)	-	8	-	8	mA
Supply Current (Clipped Sine Wave)	-	5	-	5	mA
Output Level (CMOS)					
Output High (Logic "1")	90%VDD	-	90%VDD	-	V
Output Low (Logic "0")	-	10%VDD	-	10%VDD	V
Duty	45	55	45	55	%
Output Level (Clipped Sine Wave)	0.8	-	0.8	-	Vp-p
Load (CMOS)	15pF		15pF		
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	-	±5.0	-	ppm
Vc Input Impedance (VCTCXO)	100	-	100	-	kΩ
Phase Noise @ 20 MHz					
100 Hz			-130		dBc/Hz
1 kHz			-148		
10 kHz			-156		
Start time	-	5	-	5	mSec
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	ppm					
		±0.05	±0.1	±0.2	±0.28	±0.5	±2
-40 ~ +85	△	○	○	○	○	○	
-40 ~ +95	△	△	○	○	○	○	
-40 ~ +105	X	△	○	○	○	○	

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

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