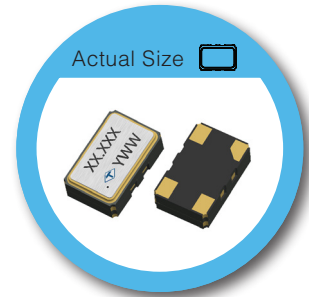


# TW Type High Precision 5.0 x 3.2 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator



RoHS Compliant

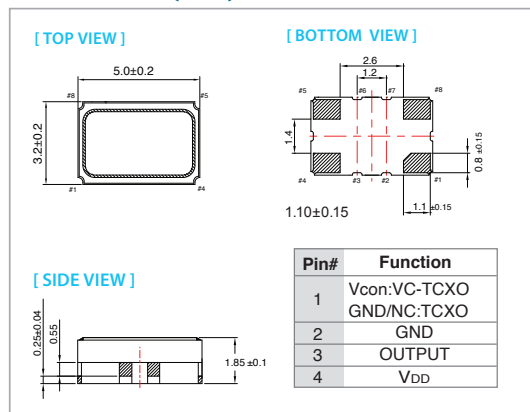
## FEATURE

- Typical 5.0 x 3.2 x 1.85 mm ceramic SMD package.
- $\pm 0.28\text{ppm}$ ,  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$  ;  $\pm 0.05\text{ppm}$ ,  $-10^{\circ}\text{C} \sim +70^{\circ}\text{C}$
- CMOS and Clipped Sine wave (without DC-cut capacitor) output optional.

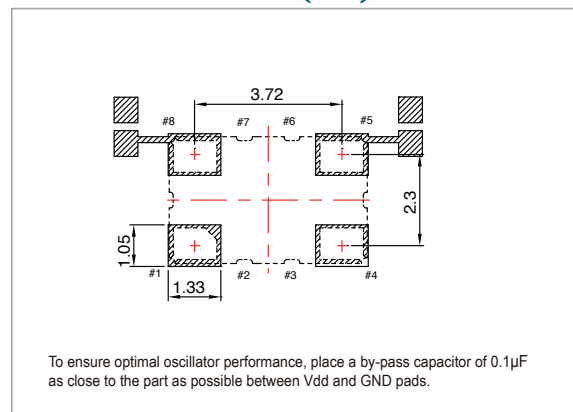
## TYPICAL APPLICATION

- Base Stations, Stratum 3
- Femtocell

## DIMENSION (mm)



## SOLDER PAD LAYOUT (mm)



## ELECTRICAL SPECIFICATION

Parameter	2.5V		3.3V		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 (for CMOS)	10, 12.8, 13, 19.2, 20, 25, 26, 30.72				
Standard Frequency (for Clipped Sine Wave)	10, 12.8, 13, 19.2, 20, 25, 26, 30.72				ppm
Frequency Tolerance*	-	$\pm 2.0$	-	$\pm 2.0$	
Frequency Stability					
Vs Supply Voltage ( $\pm 5\%$ ) change	-	$\pm 0.3$	-	$\pm 0.3$	ppm
Vs Load ( $\pm 10\%$ ) change	-	$\pm 0.2$	-	$\pm 0.2$	
Vs Aging (@ 1st year)	-	$\pm 1.0$	-	$\pm 1.0$	
Supply Current (CMOS output)					
10 MHz $\geq F_o \geq 40$ MHz	-	6	-	6	mA
40 MHz $> F_o \geq 52$ MHz	-	8	-	8	
Supply Current (Clipped Sine Wave)	-	3.5	-	3.5	V
Output Level (CMOS)	90%VDD	-	90%VDD	-	
Output High (Logic "1")	-	10%VDD	-	10%VDD	%
Output Low (Logic "0")	45	55	45	55	
Duty	0.8	-	0.8	-	Vp-p
Output Level (Clipped Sine Wave)	0.8	-	0.8	-	15pF
Load (CMOS)	15pF				
Load (Clipped Sine Wave)	10 K $\Omega$ // 10pF				V
Control Voltage Range (VCTCXO)	0.5	2.5	0.5	2.5	
Pulling Range (VCTCXO)	$\pm 5.0$	-	$\pm 5.0$	-	ppm
Vc Input Impedance (VCTCXO)	100	-	100	-	k $\Omega$
Phase Noise @ 10 MHz					
100 Hz	-125	-	-125	-	dBc/Hz
1 kHz	-145	-	-145	-	
10 kHz	-150	-	-150	-	
Start time	-	2	-	2	mSec
Storage Temp. Range	-55	125	-55	125	$^{\circ}\text{C}$

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position. \*Frequency at 25 $^{\circ}\text{C}$ , 1 hour after reflow.

## Frequency Stability vs. Temperature Range

Temp. ( $^{\circ}\text{C}$ )	ppm				
	$\pm 0.05$	$\pm 0.1$	$\pm 0.2$	$\pm 0.28$	$\pm 0.5$
-10 ~ +70	○	○	○	○	○
-20 ~ +70	×	○	○	○	○
-40 ~ +85	×	×	△	○	○

\* ○: 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.