

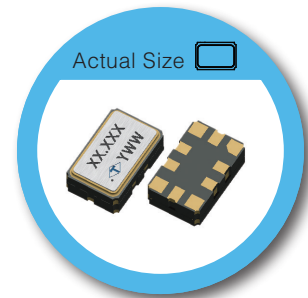
TL Type High Precision and High Temperature 5.0 x 3.2 mm SMD Voltage Controlled Temperature Compensated Crystal Oscillator

FEATURES

- Typical 5.0 x 3.2 x 1.85 mm ceramic SMD package.
- High Precision for $\pm 0.1 \text{ ppm}@-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$, $\pm 0.2 \text{ ppm}@-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$
- Frequency support from 10MHz to 52MHz
- Wide temperature range
- Tri-state Enable/Disable function
- Pb-free/RoHS compliant

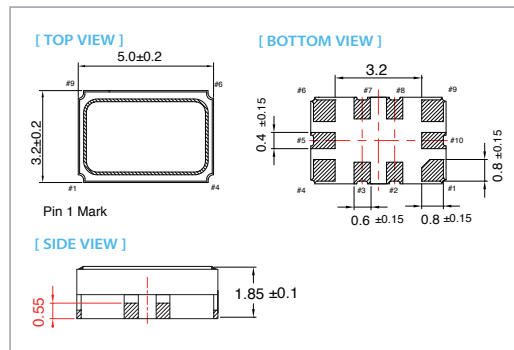
TYPICAL APPLICATIONS

- Time Synchronization
- Microwave Communication
- Test & Measurement
- Telecom Systems
- Satellite Communion

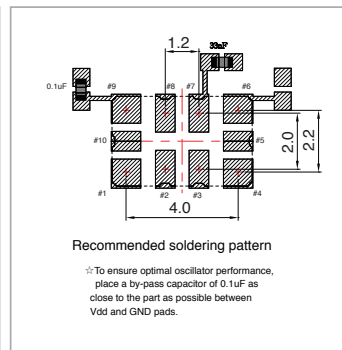


RoHS Compliant

DIMENSION (mm)



SOLDER PAD LAYOUT (mm) PIN FUNCTION



PIN#	FUNCTION
1	VCON:VC-TCXO NC:TCXO
2	NC
3	NC
4	GND
5	Tri-state
6	Fout
7	VC Filter
8	NC
9	VDD
10	GND

ELECTRICAL SPECIFICATION

Parameter		3.3V		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
Frequency Tolerance (@25°C)		-	± 1.0	-	± 1.0	ppm
Frequency Stability						
Vs Supply Voltage ($\pm 5\%$) change		-	± 0.1	-	± 0.1	ppm
Vs Load ($\pm 10\%$) change		-	± 0.05	-	± 0.05	ppm
Vs Aging (@ 1st year)		-	± 1.0	-	± 1.0	ppm
Output Waveform		CMOS				
Supply Current	10MHz $\geq$ Fo $\geq$ 38MHz	-	6.5	-	6.5	mA
	38MHz > Fo $\geq$ 52MHz	-	7.5	-	7.5	mA
Output Level	Output High	90%VDD	-	90%VDD	-	V
	Output Low	-	10%VDD	-	10%VDD	V
Transition Time (10% ~ 90%)	Rise Time	-	6.5	-	6.5	nSec
	Fall Time	-	6.5	-	6.5	nSec
Duty Cycle		45	55	45	55	%
Load		-	15	-	15	pF
Output Waveform		Clipped sine wave				
Supply Current	10MHz $\geq$ Fo $\geq$ 38MHz	-	4.5	-	4.5	mA
	38MHz > Fo $\geq$ 52MHz	-	5.0	-	5.0	mA
Output Level		0.8	-	0.8	-	Vp-p
Load		10K Ω // 10pF		10K Ω // 10pF		

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

Parameter		3.3V		2.5V		Unit
		Min.	Max.	Min.	Max.	
Tri-State Control	Enable	80%V _{DD}	-	80%V _{DD}	-	V
	Disable	-	20%V _{DD}	-	20%V _{DD}	
Startup Time		-	5	-	5	mSec
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 @ TCXO VDD=3.3V, Fout=20MHz	100Hz offset	-122		-122		dBc/Hz
	1kHz offset	-142		-142		dBc/Hz
	10kHz offset	-154		-154		dBc/Hz
	100kHz offset	-157		-157		dBc/Hz
	1MHz offset	-159		-159		dBc/Hz

FREQ. STABILITY vs. TEMP. RANGE

Temp. (°C) \ ppm	±0.05	±0.1	±0.2	±0.28	±0.5	±2.0
-10 ~ +60	○	○	○	○	○	○
-20 ~ +70	○	○	○	○	○	○
-40 ~ +85	△	○	○	○	○	○
-40 ~ +95	△	△	○	○	○	○
-40 ~ +105	×	△	○	○	○	○

* O: Available △: Conditional X: Not available

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

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

Specifications subject to change without notice.