

TS Type

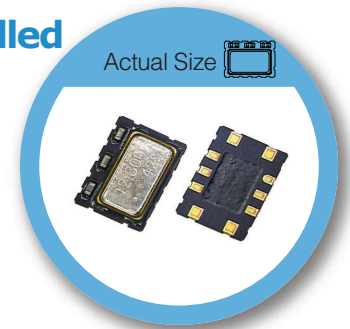
7.0 x 5.0 mm SMD High Precision Voltage Controlled Temperature Compensated Crystal Oscillator

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.

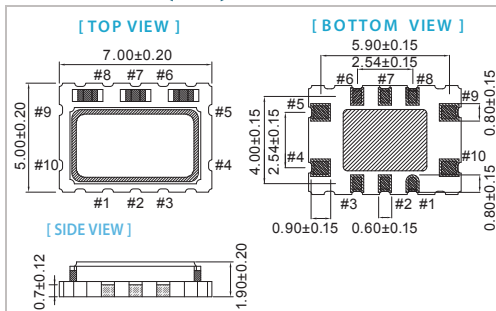
TYPICAL APPLICATION

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



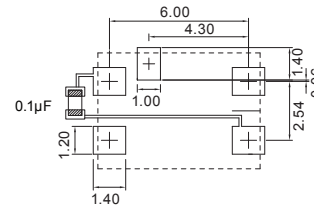
RoHS Compliant

DIMENSION (mm)



SOLDER PAD LAYOUT (mm)

Pin#	Function
1	NC
2	NC
3	NC
4	GND
5	Output
6	NC
7	NC
8	Tri-State/NC
9	VDD
10	Vcon:VC-TCXO GND/NC:TCXO



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1µF as close to the part as possible between Vdd and GND pads.

ELECTRICAL SPECIFICATION

Parameter	5.0V		3.3V		Unit
	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD)	VDD-5%	VDD+5%	VDD-5%	VDD+5%	V
Frequency Range	5	52	5	52	
Standard Frequency (for CMOS)	5, 6.4, 8, 8.192, 10, 12.5, 12.8, 16, 16.384, 19.44, 25				MHz
Standard Frequency (for Clipped Sine Wave)	8.192, 10, 12.5, 12.8, 16, 16.384, 19.44, 25				
Frequency Tolerance*	±2.0		±2.0		ppm
Frequency Stability					
Vs Supply Voltage (±5%) change	-	±0.5	-	±0.5	ppm
Vs Load (±10%) change	-	±0.2	-	±0.2	ppm
Vs Aging	-	±1.0	-	±1.0	ppm
Supply Current (CMOS output)	-	6.0	-	6.0	mA
Supply Current (Clipped Sine Wave)	-	3.5	-	3.5	mA
Output Level (CMOS)					
Output Low (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	±12.0	±5.0	±12.0	ppm
Vc Input Impedance (VCTCXO)	100	-	100	-	KΩ
Phase Noise @ 19.2MHz					
100 Hz	-120		-120		dBc / Hz
1 KHz	-140		-140		
10 KHz	-148		-148		
Start Time	-	2	-	2	mSec
Tri-State					
Disable	-	1.5	-	0.99	V
Enable	3.5	-	2.31	-	V
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	±0.28	±0.37	±0.5
-10~+60	○	○	○	○	○	○	○
-20~+70	△	○	○	○	○	○	○
-40~+85	×	×	×	○	○	○	○

*○:Available △:Conditional ×: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.