

TF Type

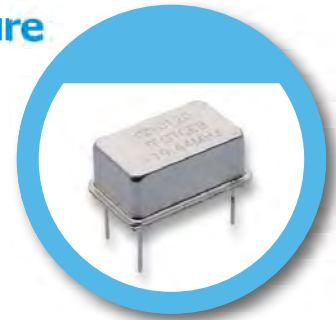
20.4 x 12.8 mm Voltage Controlled Temperature Compensated Crystal Oscillator

FEATURE

- Typical 20.4 x 12.8 x 7.8 mm.
- Hermetically Sealed 14 Pin DIP Package
- Double sealed metal case and high reliability
- VCTCXO available

TYPICAL APPLICATION

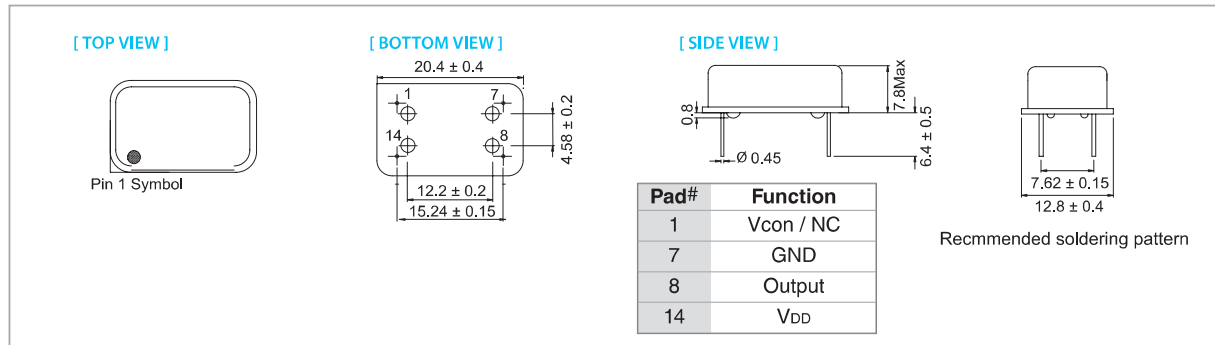
- Large-Scale equipment
- WLAN/WiMAX
- Military Communication Equipmet



RoHS Compliant

DIMENSION (mm)

SOLDER PAD LAYOUT (mm)



ELECTRICAL SPECIFICATION

Parameter	Clipped Sine Wave				CMOS				Unit
	3.3 V		2.8 V		3.3 V		2.8V		
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation (VDD) ±5%	3.135	3.465	2.66	2.94	3.135	3.465	2.66	2.94	V
Frequency Range	10	52	10	52	1.25	52	1.25	52	MHz
Frequency Tolerance*	-	±2.0	-	±2.0	-	±2.0	-	±2.0	ppm
Frequency Stability									
Vs Supply Voltage (±5%) change	-	±0.2	-	±0.2	-	±0.2	-	±0.2	ppm
Vs Load (±10%) change	-	±0.2	-	±0.2	-	±0.2	-	±0.2	ppm
Vs Aging (@ 1st year)	-	±1.0	-	±1.0	-	±1.0	-	±1.0	ppm
Supply Current					Only for clipped sine wave				
10 MHz ≤ Fo < 15 MHz	-	2.0	-	2.0					mA
15 MHz ≤ Fo < 26 MHz	-	3.0	-	3.0					
26 MHz ≤ Fo ≤ 52 MHz	-	4.0	-	4.0					
Output Level	0.8	-	0.8	-					Vp-p
Supply Current									
1.25 MHz ≤ Fo < 10 MHz					-	10	-	7	
10 MHz ≤ Fo < 15 MHz					-	15	-	10	
15 MHz ≤ Fo < 26 MHz					-	20	-	15	
26 MHz ≤ Fo ≤ 52 MHz					-	25	-	20	
Output Level	Only for CMOS								
Output High (Logic"1")					2.97 or 2.4	-	2.52 or 2.4	-	V
Output Low (Logic"0")					-	0.33 or 0.4	-	0.28 or 0.4	
Duty					40	60	40	60	%
Control Voltage Range (VCTCXO)	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5	V
Pulling Range (VCTCXO)	±5.0		±5.0		±5.0		±5.0		ppm
VC Input Impedance (VCTCXO)	100	-	100	-	100		100		kΩ
Phase noise @ 13.0 MHz									
100 Hz		-115		-115		-115		-115	
1 kHz		-135		-135		-135		-135	
10 kHz		-148		-148		-148		-148	
Start Time	-	2	-	2	-	2	-	2	mSec
Storage Temp. Range	-55	125	-55	125	-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

Output Logic	Clipped sine wave		CMOS	
	±0.5	±1.0	±0.5	±1.0
Temp. (°C)	ppm			
-20 ~ +70	○"	○	○"	○
-40 ~ +85	△"	○	△"	○

* ○ : Available △ : Conditional X : Not available

" Pulling Range < 10 ppm available

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