

TF Type

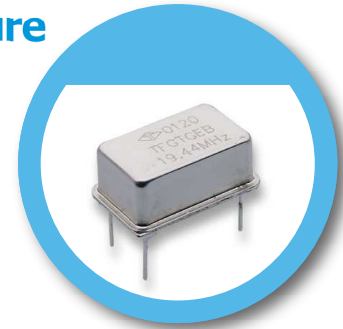
20.4 x 12.8 mm Voltage Controlled Temperature Compensated Crystal Oscillator

FEATURE

- Typical 20.4 x 12.8 x 7.8 mm.
- Compatible with 14-pin dual in line.
- Double sealed metal case and high reliability.
- VCTCXO available

TYPICAL APPLICATION

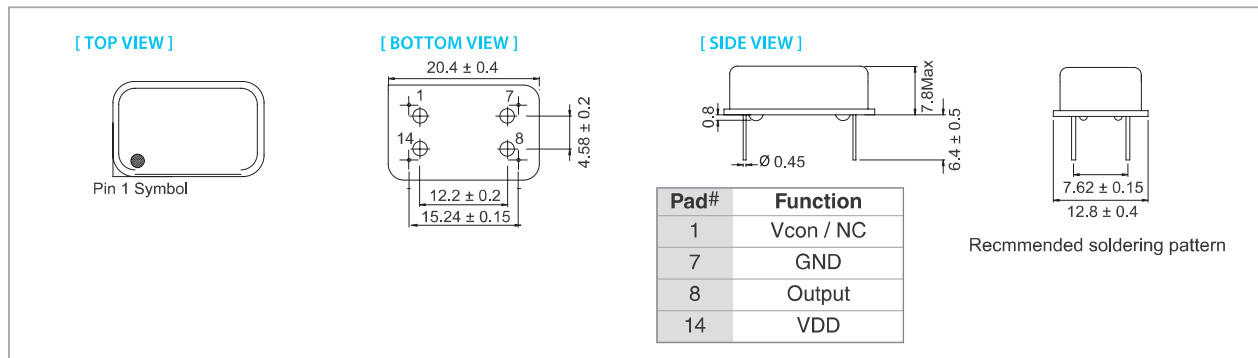
- Large-Scale equipment
- WLAN/WiMAX
- Mobile Phone



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		
Vs Aging (@1st year)	—	±1.0	—	±1.0	—	±1.0	—	±1.0	ppm	
Supply Current	10 MHz ≤ Fo < 15 MHz	—	2.0	—	2.0	Only for clipped sine wave				mA
	15 MHz ≤ Fo < 26 MHz	—	3.0	—	3.0					
	26 MHz ≤ Fo ≤ 52 MHz	—	—	—	4.0					
Output Level	0.8	—	0.8	—					Vp-p	
Supply Current	1.25 MHz ≤ Fo < 10 MHz	Only for CMOS				—	10	—	7	mA
	10 MHz ≤ Fo < 15 MHz					—	15	—	10	
	15 MHz ≤ Fo < 26 MHz					—	20	—	15	
	26 MHz ≤ Fo ≤ 52 MHz					—	25	—	20	
Output Level	Output High (Logic"1")					2.97 or 2.4	—	2.52 or 2.4	—	V
						—	0.33 or 0.4	—	0.28 or 0.4	
						40	60	40	60	
	Duty					0.5	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		dBc/Hz
	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			
0 ~ +55	○	○	○	○
-10 ~ +60	○	○	○	○
-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.

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Specifications subject to change without notice.