

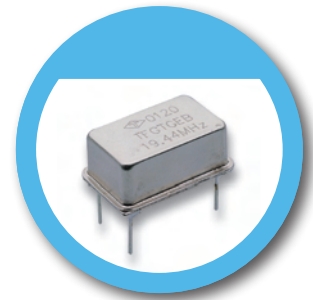
## 20.4 x 12.8 mm Voltage Controlled Temperature Compensated Crystal Oscillator – TF Type

### 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
- Packing: 132 pcs/Box

### TYPICAL APPLICATION

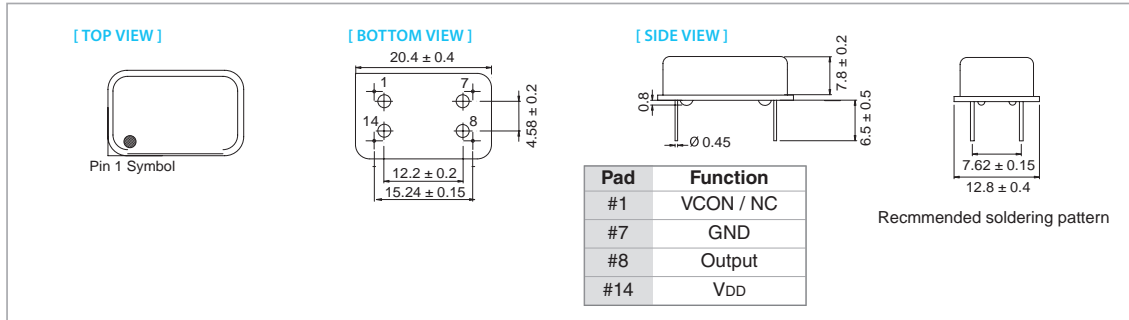
- Large-Scale equipment
- WLAN/WIMAX
- Mobile Phone



**RoHS Compliant Standard**

### DIMENSION (mm)

### SOLDER PAD LAYOUT (mm)



### ELECTRICAL SPECIFICATION

Parameter	Clipped Sine Wave				CMOS				Unit	
	5.0 V		2.8 V		5.0 V		2.8V			
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
<b>Supply Voltage Variation (VDD) 5%</b>	4.75	5.25	2.66	2.94	3.13	3.47	2.66	2.94	V	
<b>Frequency Range</b>	10	40	10	40	1.25	40	1.25	40	MHz	
<b>Frequency Tolerance*</b>	-	±2.0	-	±2.0	-	±2.0	-	±2.0	ppm	
<b>Frequency Stability</b>										
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	-	±1.0	-	±1.0	-	±1.0	-	±1.0	ppm/year	
<b>Supply Current</b>	10 MHz ≤ Fo < 15 MHz		15 MHz ≤ Fo < 26 MHz		26 MHz ≤ Fo < 40 MHz		Only for clipped sine wave			
	-	1.5	-	1.5	-	2.0				-
<b>Output Level</b>	0.8	-	0.8	-					Vp-p	
<b>Supply Current</b>	1.25 MHz ≤ Fo < 10 MHz		10 MHz ≤ Fo < 15 MHz		15 MHz ≤ Fo < 26 MHz		26 MHz ≤ Fo < 40 MHz		Only for CMOS	
	-	-	-	-	-	10	-	7		mA
	-	-	-	-	-	15	-	10		
	-	-	-	-	-	20	-	15		
<b>Output Level</b>					90%VDD or 2.4V	-	90%VDD or 2.4V	-	V	
Output High (Logic"1")					-	10% VDD or 0.4 V	-	10% VDD or 0.4 V	V	
Output Low (Logic"0")					40	60	40	60	%	
Duty									%	
<b>Control Voltage Range (VCTCXO)</b>	0.5	2.5	0.5	2.5					V	
<b>Pulling Range (VCTCXO)</b>	±5.0		±5.0						ppm	
<b>VC Input Impedance (VCTCXO)</b>	100		-						KΩ	
<b>Phase noise @ 13.0 MHz</b>	100Hz		1KHz		10KHz					
	-115		-135		-148		dBc/Hz			
<b>Start Time</b>	-	2	-	2	-	2	-	2	mSec	
<b>Storage Temp. Range</b>	-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	Temp. (°C)	Clipped sine wave		CMOS	
		ppm	±0.5	±1.0	±0.5
0 ~ +55		○	○	○	○
-10 ~ +60		○	○	○	○
-20 ~ +70		○	○	○	○
-40 ~ +85		△	○	△	○

\* ○: Available △: Conditional X: Not available

" Pulling Range < 10 ppm available