

# TF Type

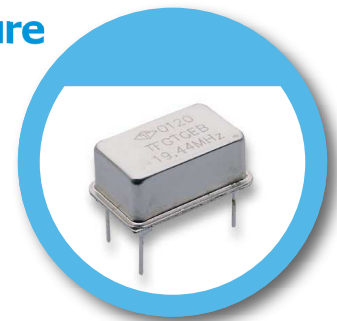
## 20.4 x 12.8 mm Voltage Controlled Temperature Compensated Crystal Oscillator

### 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

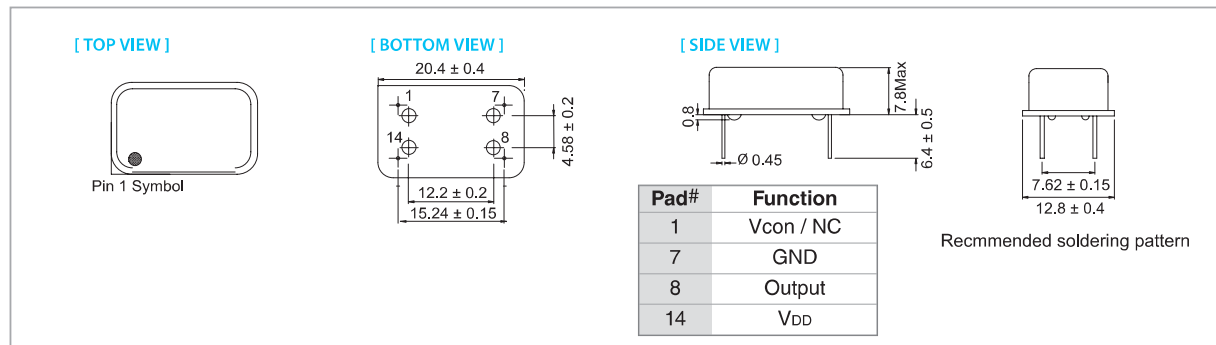
- Large-Scale equipment
- WLAN/WiMAX
- Military Communication Equipmet



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.	
<b>Supply Voltage Variation (VDD) ±5%</b>	3.135	3.465	2.66	2.94	3.135	3.465	2.66	2.94	V
<b>Frequency Range</b>	10	52	10	52	1.25	52	1.25	52	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 (@ 1st year)	-	±1.0	-	±1.0	-	±1.0	-	±1.0	ppm
<b>Supply Current</b>									
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	-	4.0					
<b>Output Level</b>	0.8	-	0.8	-					Vp-p
<b>Supply Current</b>									
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	
<b>Output Level</b>									
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	V
Duty					40	60	40	60	%
<b>Control Voltage Range (VCTCXO)</b>	0.5	2.5	0.5	2.5	0.5	2.5	0.5	2.5	V
<b>Pulling Range (VCTCXO)</b>	±5.0		±5.0		±5.0		±5.0		ppm
<b>VC Input Impedance (VCTCXO)</b>	100		100		100		100		kΩ
<b>Phase noise @ 13.0 MHz</b>									
100 Hz	-115		-115		-115		-115		dBc/Hz
1 kHz	-135		-135		-135		-135		
10 kHz	-148		-148		-148		-148		
<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

Temp. (°C)	Output Logic	Clipped sine wave		CMOS	
		±0.5	±1.0	±0.5	±1.0
-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.**

Specifications subject to change without notice.

Rev(14)02/2017  
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# Model Numbering Guide – VCTCXO / TCXO

## Available options

Type	package (mm)	Supply Voltage (V)	Pulling Range (ppm)	Freq. Stability (ppm)	Temp. Range(°C)	Output Logic And Symmetry	Oscillator Mode	Appearance	Lead Free	Dash	Freq. (MHz)
T: TCXO	Z: 2.0x1.6 Y: 2.5x2.0 X: 3.2x2.5 S: 7.0x5.0 (10Pads) A: 7.0x5.0 (4Pads) K: 14.3x8.4 F: 20.4x12.8 (Dip)	C: 5.0 E: 2.8/3.0/3.3 J: 2.5 K: 1.8 (TX / TY)	A: ± 5 B: ± 8 C: ± 10 T: TCXO  Vcon range: 0.5V to 2.5V	A: ±0.5 B: ±1.0 P: ±1.5 C: ±2.0 D: ±2.5  Q: ±0.05 M: ±0.1 J : ±0.14 R: ±0.2 K: ±0.28 L : ±0.37 T : ±4.6 (Including 20 Years Aging)	B: 0~+55 I : -10~+60 J: -10~+70 C: -20~+70 H: -30~+75 D: -30~+85 L : -40~+85	A: TTL 15pF / 50±5% J: CMOS 15pF / 50±5% K: CMOS 15pF / 50±10% S: Clipped sine wave 10KΩ//10pF	A: AT Fundamental  Not selectable by customer	N: Normal	F: RoHs Compliant	-	XX.XXXXXX
T: TCXO <small>(High Precision /Stratum 3)</small>	W: 5.0x3.2 S: 7.0x5.0 (10Pads) T: 7.0x5.0 (4Pads)	C: 5.0 E: 3.3									

T X E C D D S A N F – 26.000000

\*Not all combinations of options are available.

### Example: TXECDDSANF-26.000000

Type	VCTCXO
Package	3.2 x 2.5 mm
Supply Voltage(V)	3.0 V
Pulling Range	±10 ppm
Freq. Stability	±2.5 ppm
Temp Range	-30~+85 °C
Output	Clipped sine wave
Oscillator Mode	AT Fundamental
Appearance	Normal Appearance
Lead Free	RoHs Compliant
Frequency	26.000000 MHz