



# Dynamic Engineers Inc.

2550 Gray Falls Dr., Suite#128, Houston, TX, 77077 USA  
 TEL: 1-281-870-8822 EMAIL: Sales@DynamicEng.com

## TCXO3413 155.52 MHz SMD TCXO

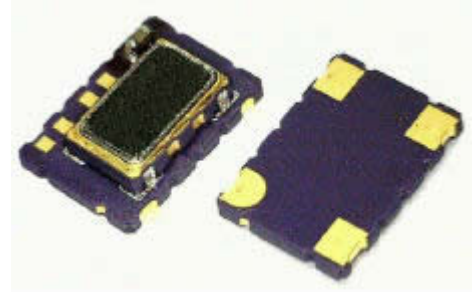
### Features

Wide Frequency Range 1.6 to 156 MHz  
 And 32.768 KHz Frequency available  
 7mm x 5mm x 2.5mm ceramic SMD  
 Compact and lightweight

### Typical Applications

Wireless / Satellite Communications  
 WLAN / WiMAX / WIFI  
 SONET / SDH / ATM

### Picture of Part

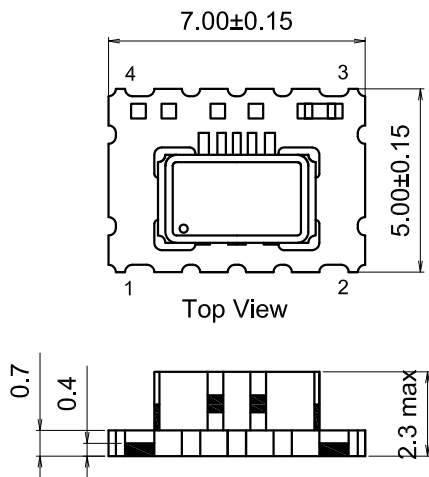


### Description

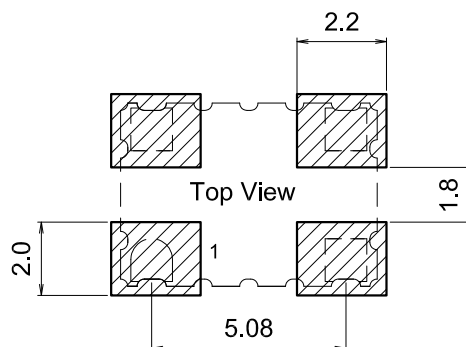
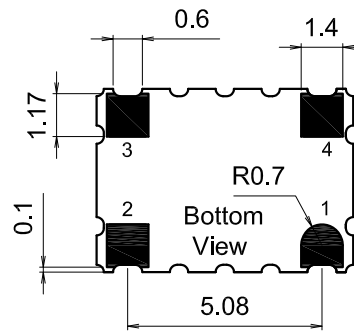
The TCXO3413 family offers a wide operating frequency range for a wide variety of applications. It's internal design allows for the same long term stability across the entire frequency band.

### Physical Dimensions & Suggested Land Pattern

Unit:mm



Pad1	Control Voltage
Pad2	Ground
Pad3	Output
Pad4	Supply Voltage



Rounded pad is pad No.1.Count counter-clockwise when looking at top view.  
 Count clockwise when looking at bottom view.Decoupling capacitor is not built-in.



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**TCXO3413**

**155.52 MHz SMD TCXO**

## Specification

TCXO Specification		Sym.	Condition	Value			Unit	Note
				Min.	Typ.	Max.		
<b>Operational Frequency Range</b>		$f_0$		1.6		156.0	MHz	
LVCMOS	Load					15	pF	
	H - level voltage	$V_H$		2.2			V	
	L - level voltage	$V_L$				0.4	V	
	Rise & Fall time		10% to 90%			8	ns	
	Duty cycle			45		55	%	
Standard Frequencies Partial List			10.0, 12.8, 13.0, 14.4, 15.36					** Standard means crystals
			16.384, 19.2, 19.44, 19.68, 20 25.0					Already designed for these
			38.88, 40.0, 77.76, 125, 155.52					Frequencies
<b>Power supply</b>								
Voltage		$V_{cc}$		3.135	3.300	3.465	V	
Current consumption		$I_{cc}$				15 30	mA	For 20 MHz or less At 125 MHz
<b>Frequency control*</b>								
Control voltage range		$V_c$		0.5	1.5	2.5	V	Positive tuning slope
Tuning range				+/- 5			ppm	
Tuning Linearity						10	%	
<b>Frequency stability</b>								
vs. temperature			-40°C to +85°C, ref 25°C	-1.0		+1.0	ppm	
vs. 5% change in supply voltage			ref $V_{cc}$ typ.	-0.300		+0.300	ppm	
Tolerance at 25C				-2.0		+2.0	ppm	Frequency 24 hrs after reflow
SSB Phase noise @ 10 MHz CMOS Typical			10 Hz			-93	dBc/Hz	
			100 Hz			-117		
			1 kHz			-137		
			10 kHz			-144		
			100 kHz			-144		
Aging	Per Year		Projected yearly aging after 30 days operation	-1.0		+1.0	ppm	
<b>Environmental, mechanical conditions.</b>								
Operating temperature range		<b>-40°C to +85°C maximum range available that is standard</b>						
Storage temperature range		<b>-55°C to 125°C</b>						
Mechanical shock		MIL-STD 202F ; Method 213b ; Test Condition E ; 1000 GG's half sine wave						
Vibration		MIL-STD 202F ; Method 204 ; 35G ; 50 to 2000 Hz						



## Ordering Information

TCXO3413-XX.XXXXXX-W

1. Field " XX.XXXXXX " is the Output Frequency to six decimals in MHz
2. Field " W " is Operating Temperature Range and Freq. Stability :
  - a. " 0 " for -20°C to +70°C and +/- 1.000 ppm
  - b. " 1 " for -30°C to +75°C and +/- 1.000 ppm
  - c. " 2 " for -30°C to +85°C and +/- 1.000 ppm
  - d. " 3 " for -40°C to +85°C and +/- 1.500 ppm
  - e. " 4 " for -40°C to +85°C and +/- 2.000 ppm

\*\*\*NOT all choices in section 2 available : Must consult factory for specific frequency and stability combination.

## Part Number Example

TCXO3413-10.000000-3

10.000000 MHz Operating Frequency

Operating Temperature of -40°C to +85°C

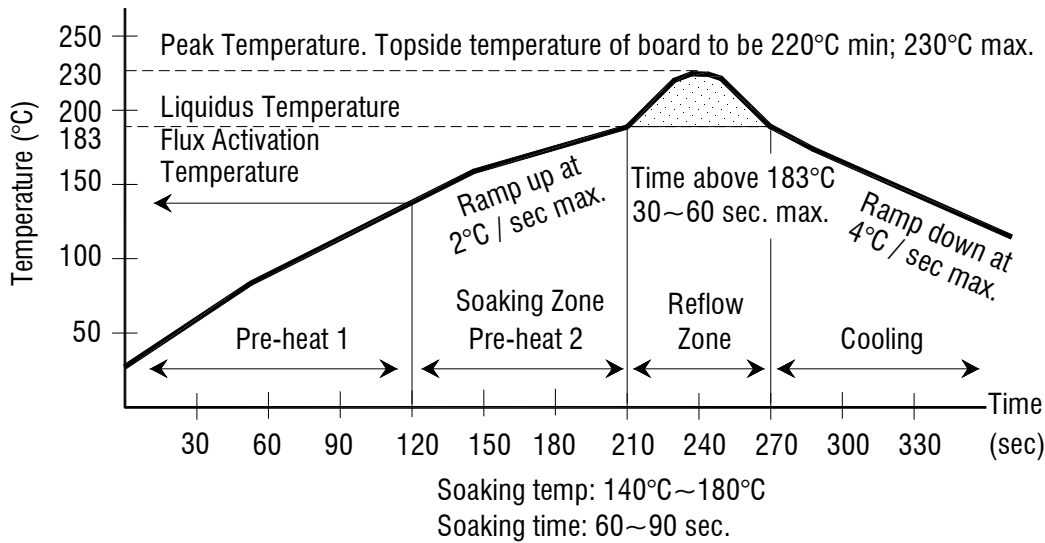
+/- 1.500 ppm Frequency Stability



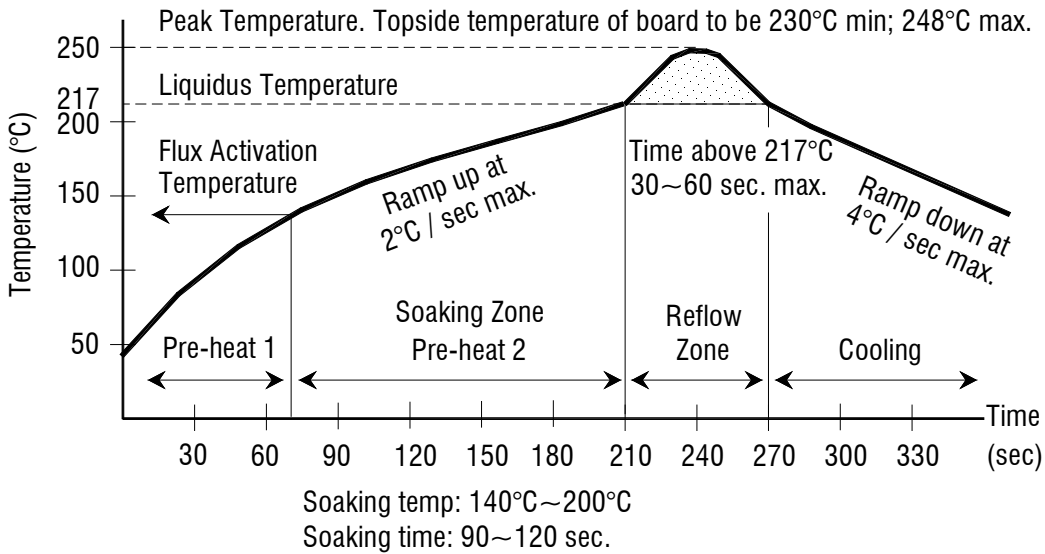
### Recommended Reflow Soldering Profile

245°C liquidus 221°C solidus solder alloy is used in the assembly of TCXO3413 products.  
Do not exceed the reflow conditions given below

Profile A (low temperature solder reflow): For Sn62 Pb36 Ag2 and Sn63 Pb37 alloy.



Profile B (high temperature solder reflow): For Sn96.5% Ag 3.5% Cu 0.5% alloy.





## Performance Graph

Phase Noise

