



## Features and Benefits

Frequency range: 32.768KHz  
Supply voltage: 1.6V/1.8V/2.5V/3.0V/3.3V  
Current: 2.0uA Max.  
Frequency stability vs. temperature:  $\pm 3.8\text{PPM}$ -8.0PPM  
Aging:  $\pm 3\text{PPM}$  per year  
Operating temperature:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
Size: 2.15x1.35x1.1 mm

## Typical Applications

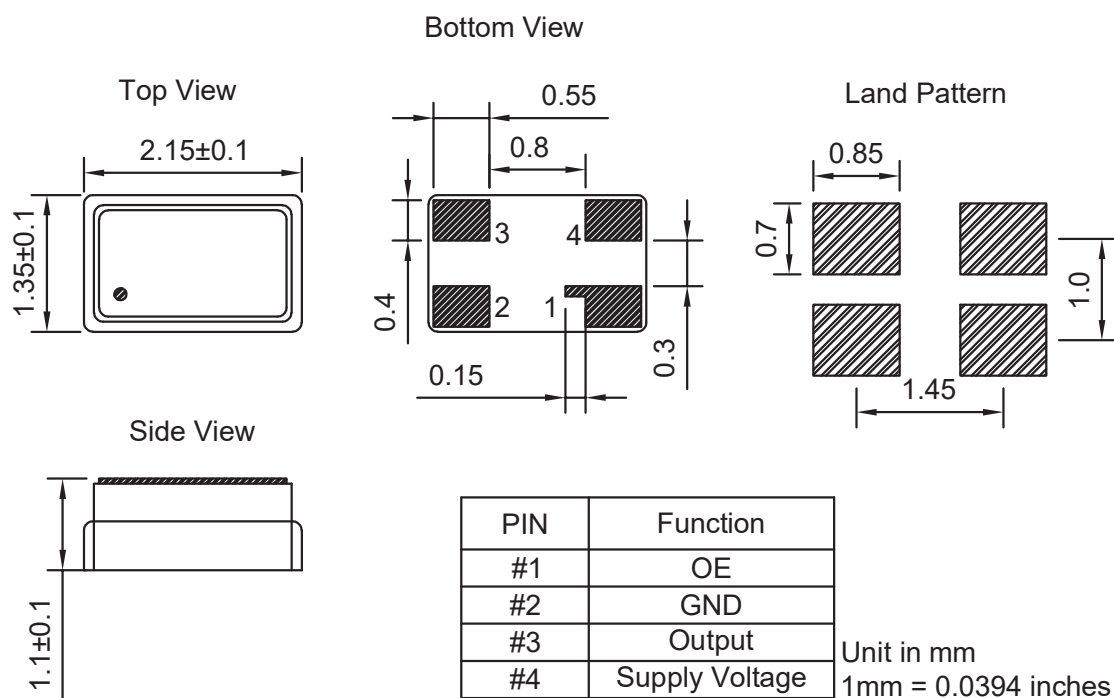
- Real Time Clocks (RTCs) Frequency Reference
- IoT
- Mobile Phones
- Ultra-Small Notebook PC
- Digital Camera
- Wearable Device
- Digital Consumer Electronics
- Sport Video Cams
- GPS Receivers

## Description

TCXO2113BL-LP-32.768KHz is the low power temperature compensated crystal oscillator. The current consumption can less than 2.0uA. It can be widely used in the low power consumption applications.

## Mechanical Drawing & Pin Connections

Drawing No: MD230036-1



**Specifications**

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	f <sub>0</sub>			32.768		KHz	
RF Output							
Output Waveform			CMOS				
Load				15		pF	
Output Level		Output high	90% V <sub>cc</sub>			V	
		Output low			10% V <sub>cc</sub>	V	
Duty Cycle		±10%		50		%	
Rise & Fall Time		Measure at 20% $\leftrightarrow$ 80% of the waveform			100	ns	
Startup Time					0.5	s	
Output Enable/Disable		Enable	0.8 V <sub>cc</sub>			V	Open connection prohibits
		Disable			0.2 V <sub>cc</sub>	V	
Power Supply							
Voltage	V <sub>cc</sub>	±5%		1.6/1.8/2.5 3.0/3.3		V	See ordering section
Current		With no load		1.0	2.0	uA	
Frequency Stability							
Initial Tolerance		@+25°C±3°C			±2.5	ppm	
Versus Temperature			±3.8			ppm	See ordering section
Versus Reflow		1 reflow and measured 24 hours afterwards			±3.0	ppm	
Versus Load Change		10% loading condition change			±0.2	ppm	
Aging@+25°C		1 <sup>st</sup> year			±3.0	ppm	
Time Error Over Time		±5PPM (-40°C to +85°C)	±0.432s/day, ±12.96s/month, ±2.628 minutes/year, w.r.t fo at +25°C				
Environmental Conditions							
Operating temperature range		-40°C to +85°C (See ordering section)					



## Ordering Information

TCXO2113BL-LP-32.768KHz	-	01	02	03
Group		Code		

For example, TCXO2113BL-LP-32.768KHz-125 denotes the TCXO has the following specifications:

Temperature Range: -10°C to +60°C  
Stability Over Temperature: ±5 ppm  
Supply Voltage: 3.3V

01	Temperature Range
Code	Specification
1	-10°C to +60°C
2	-40°C to +85°C
3	-40°C to +105°C

02	Frequency Stability
Code	Specification
1	±3.8 ppm
2	±5 ppm
3	±8 ppm

03	Supply Voltage
Code	Specification
1	1.6 V
2	1.8 V
3	2.5 V
4	3.0 V
5	3.3 V

Note: This is a general datasheet, only for reference.  
Please contact our sales to get the specific datasheet before place the formal order.