



## Features and Benefits

Frequency range: 32.768KHz  
Supply voltage: 1.5V/1.8V  
Current: 1.8uA Max.  
Frequency stability vs. temperature:  $\pm 25\text{PPM}$ -50PPM  
Aging:  $\pm 3\text{PPM}$  per year  
Operating temperature:  $-40^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$   
Size: 2.5x2.0x0.8 mm

## Typical Applications

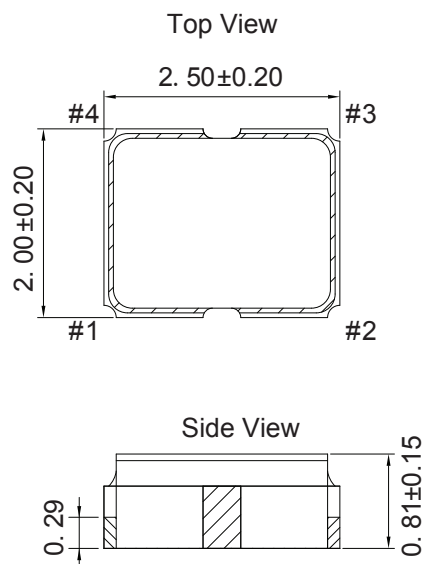
- RTC Reference Clock
- Wearable device
- Sport Video Cams
- Ultra-small Notebook PC
- Mobile Phones
- Health and Wellness Monitors

## Description

XO2520BM-ULP-32.768KHz is the ultra-low power crystal oscillator. The power consumption can be less than 1.8uA. It can be widely used in the low power consumption applications.

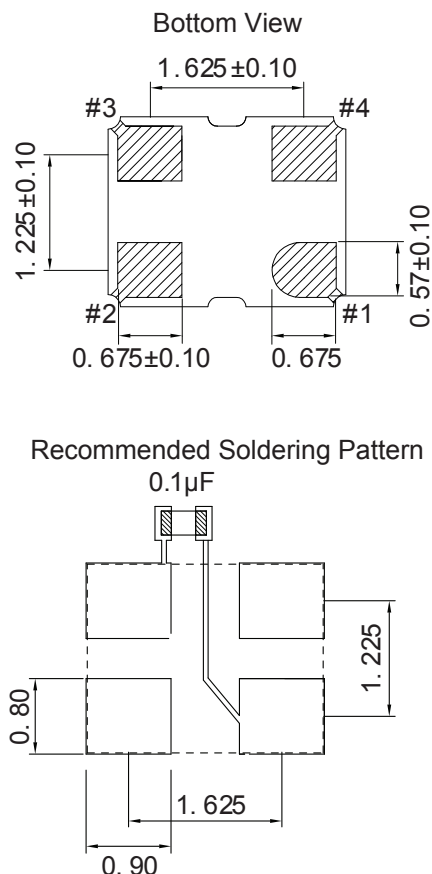
## Mechanical Drawing & Pin Connections

Drawing No: MD220021-1



Pin#	Function
1	NC
2	GND
3	Output
4	V <sub>CC</sub>

Unit in mm  
1mm = 0.0394 inches



To ensure optimal oscillator performance, place a by-pass capacitor of 0.1uF as close to the part as possible between Vcc and GND PAD



## Specifications

Oscillator Specification	Sym	Condition	Value			Unit	Note
			Min.	Typ.	Max.		
Operational Frequency	$f_0$			32.768		KHz	
<b>RF Output</b>							
Output Level High			90%V <sub>cc</sub>			V	
Output Level Low					10%V <sub>cc</sub>	V	
Rise & Fall Time		@10%-90%			10	ns	
Duty Cycle			45		55	%	
Startup Time					8	ms	
<b>Power Supply</b>							
Voltage	V <sub>cc</sub>	±5%		1.5/1.8		V	See ordering section
Current				1.4	1.8	uA	
<b>Frequency Stability</b>							
Tolerance		@+25°C, 3days average			±10	ppm	
Versus Temperature		@-40°C to +85°C with reference to +25°C, 3day average			±25	ppm	See ordering section
Versus Aging@+25°C		1 <sup>st</sup> year			±3.0	ppm	
<b>Environmental Conditions</b>							
Operating temperature range		-40°C to +85°C					
Storage temperature range		-55°C to +125 °C					



## Ordering Information

XO2520BM-ULP-32.768KHz	-	01	02	03
Group		Code		

For example, XO2520BM-ULP-32.768KHz-111 denotes the XO has the following specifications:

Temperature Range: -20°C to +70°C  
Stability Over Temperature: ±25 ppm  
Supply Voltage: 1.5V

01	Temperature Range
Code	Specification
1	-20°C to +70°C
2	-40°C to +85°C
3	-40°C to +105°C

02	Frequency Stability
Code	Specification
1	±25 ppm
2	±50 ppm

03	Supply Voltage
Code	Specification
1	1.5 V
2	1.8 V

## Frequency Stability vs. Temperature

Temperature Range [°C]	Frequency Stability	
	±25 ppm	±50 ppm
-20°C to +70°C	Available	Available
-40°C to +85°C	Available	Available
-40°C to +105°C	On Request	Available