Ultra-low Power Crystal Oscillator

#### **Features and Benefits**

Frequency range: 10MHz Supply voltage: 0.9V Current: 1.5mA Max.

Frequency stability vs. temperature: ±50PPM

Aging: ±3PPM per year

Operating temperature: -20°C to +70°C

Size: 3.2x2.5x0.95 mm

### **Typical Applications**

loT Smartphone Digital Camera Game Console Wearable Device Digital Consumer Electronics

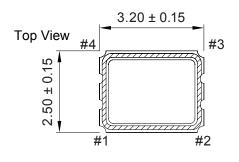
#### Description

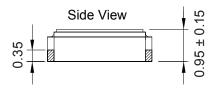
XO3225BM01-LP-10MHz-221 is the low power crystal oscillator. The power consumption can be less than 1.5mA. It can be widely used in the low power consumption applications.

## **Mechanical Drawing & Pin Connections**

**Drawing No:** 

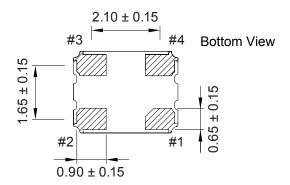
MD220023-1



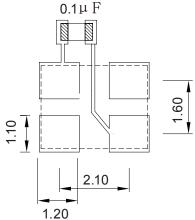


Function
Tri-state
GND
Output
Vcc

Unit in mm 1mm = 0.0394 inches



#### Recommended Soldering Pattern



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



# Dynamic Engineers Inc.

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#### XO3225BM01-LP-10MHz-211

Ultra-low Power Crystal Oscillator

## **Specifications**

Min.   Typ.   Max.	Oscillator	Sy	Condition	Value			Unit	Note		
RF Output Waveform	Specification	m		Min.	Тур.	Max.				
Output level         High         2.97         V           Load         15         pF           Duty Cycle         45         55         %           Rise & Fall Time         measured between 10% and 90% of Vcc, with an output load of 15pF         4         ns           Tri-State         (High voltage or floating) (Input to Pin1)         0.7 Vcc         V           Startup Time         Disable (Low voltage or GND)         0.3 Vcc         V           Startup Time         4         ms           Power Supply         Voltage         Vcc         ±5%         0.9         V           Current         At 15pF load         1.5         mA           Current         No load condition         0.9         mA           Stand by Current         No load condition         0.9         mA           Frequency Stability         Versus Temperature         @-20°C to +70°C         ±50         ppm           Period jitter (Pk-Pk)         40         ps           RMS phase jitter         Integrated 12KHz to 20MHz         1         ps           Aging@+25°C         1st year         ±3.0         ppm           Environmental Conditions         -20°C to +70°C         -20°C to +70°C	Operational Frequency	$f_0$			10		MHz			
Duty Level	RF Output									
Duty Cycle	Output Waveform				CMOS					
Low	Output level		High	2.97			-			
Duty Cycle			Low			0.33				
Rise & Fall Time					15					
Rise & Fall Time	Duty Cycle			45		55	%			
Tri-State (Input to Pin1)         (High voltage or floating)         0.7 V <sub>cc</sub> V           Startup Time         0.3 V <sub>cc</sub> V           Startup Time         4 ms           Power Supply           Voltage         V <sub>cc</sub> ±5%         0.9         V           Current         At 15pF load         1.5 mA         MA           Stand by Current         No load condition         0.9 mA         MA           Stand by Current         100 uA         UA           Frequency Stability           Versus Temperature         @-20°C to +70°C         ±50 ppm           Period jitter (Pk-Pk)         40 ps           RMS phase jitter         1 ps           Aging@+25°C         1st year         ±3.0 ppm           Environmental Conditions         -20°C to +70°C	Rise & Fall Time		and 90% of Vcc, with an output load of 15pF			4	ns			
Clow voltage or GND    Clow voltage or GND    Clow voltage or GND    Clow voltage or GND    Clow voltage   Voc   ±5%   Clow voltage or GND    Voc   Voc   ±5%   Clow voltage or GND    Voc   Voc			(High voltage or floating)	0.7 V <sub>cc</sub>			V			
Power Supply         Voltage         V∞         ±5%         0.9         V           Current         At 15pF load         1.5 mA           No load condition         0.9 mA           Stand by Current         100 uA           Frequency Stability           Versus Temperature         @-20°C to +70°C         ±50 ppm           Period jitter (Pk-Pk)         40 ps           RMS phase jitter         1 ps           Aging@+25°C         1st year         ±3.0 ppm           Environmental Conditions         -20°C to +70°C	,						V			
Voltage         V <sub>∞</sub> ±5%         0.9         V           Current         At 15pF load         1.5         mA           No load condition         0.9         mA           Stand by Current         100         uA           Frequency Stability           Versus Temperature         @-20°C to +70°C         ±50         ppm           Period jitter (Pk-Pk)         40         ps           RMS phase jitter         Integrated 12KHz to 20MHz         1         ps           Aging@+25°C         1st year         ±3.0         ppm           Environmental Conditions         -20°C to +70°C						4	ms			
Current         At 15pF load         1.5         mA           No load condition         0.9         mA           Stand by Current         100         uA           Frequency Stability           Versus Temperature         @-20°C to +70°C         ±50         ppm           Period jitter (Pk-Pk)         40         ps           RMS phase jitter         Integrated 12KHz to 20MHz         1         ps           Aging@+25°C         1st year         ±3.0         ppm           Environmental Conditions         -20°C to +70°C										
No load condition   0.9 mA	Voltage	$V_{cc}$			0.9		•			
No load condition   0.9 mA										
Frequency Stability       Versus Temperature     @-20°C to +70°C     ±50     ppm       Period jitter (Pk-Pk)     40     ps       RMS phase jitter     Integrated 12KHz to 20MHz     1     ps       Aging@+25°C     1st year     ±3.0     ppm       Environmental Conditions       Operating temperature range     -20°C to +70°C			No load condition							
Versus Temperature     @-20°C to +70°C     ±50     ppm       Period jitter (Pk-Pk)     40     ps       RMS phase jitter     Integrated 12KHz to 20MHz     1     ps       Aging@+25°C     1st year     ±3.0     ppm       Environmental Conditions       Operating temperature range     -20°C to +70°C						100	uA			
Period jitter (Pk-Pk)  RMS phase jitter  Aging@+25°C  Environmental Conditions  Operating temperature range  -20°C to +70°C	Frequency Stability				1			1		
RMS phase jitter  Aging@+25°C  Integrated 12KHz to 20MHz  Aging@+25°C  1st year  Environmental Conditions  Operating temperature range  -20°C to +70°C	Versus Temperature		@-20°C to +70°C			±50	ppm			
Aging@+25°C	Period jitter (Pk-Pk)					40	ps			
Environmental Conditions Operating temperature range -20°C to +70°C	RMS phase jitter					1	ps			
Environmental Conditions Operating temperature range -20°C to +70°C			1 <sup>st</sup> year			±3.0	ppm	_		
	Environmental Conditions									
Storage temperature range -55°C to +125°C	Operating temperature ra									
Clorago temporataro rango   00 0 to 1120 0	Storage temperature rang	je	-55°C to +125°C							