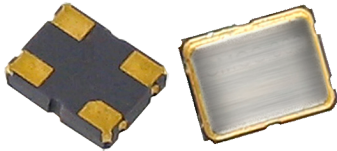


**0.9V ~ 1.5V CMOS XO**

**LXQ Series**



**Product Features**

- Low V<sub>DD</sub> Range: 0.9V ~ 1.5V
- Frequency Range: 20 ~ 54MHz
- Low Phase Jitter: <1ps RMS max.
- Low I<sub>DD</sub>: <4mA
- AEC-Q200 compliant - Grade 1
- Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- The LXQ CMOS XO series are suitable for automotive applications requiring specific change control; these parts are AEC-Q200 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.

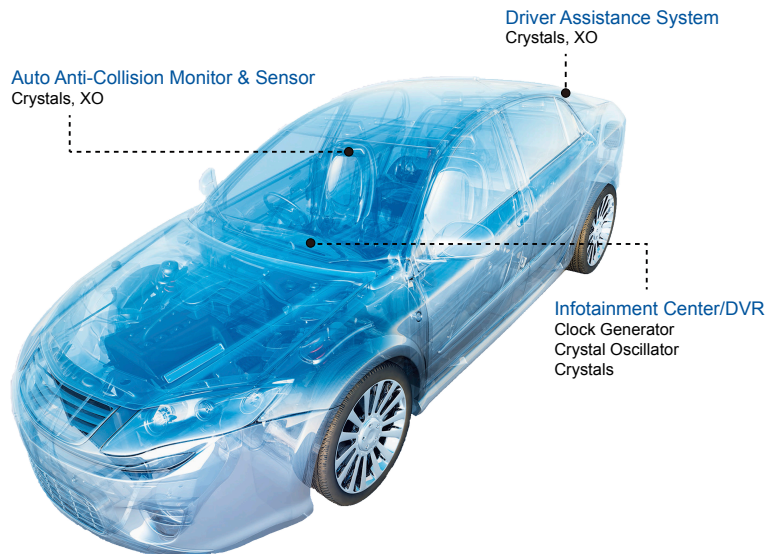
<https://www.diodes.com/quality/product-definitions/>

**Product Description**

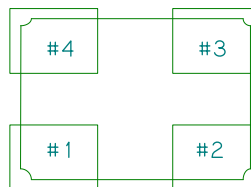
The DIODES™ LXQ XO series are high performance CMOS crystal oscillator families with very low jitter performance. They support 0.9V/1.0V/1.2V/1.5V voltages and consume very low operating current. They are designed to meet the clock source specifications for automotive applications with low voltage power rail.

**Applications**

- Automotive Equipments



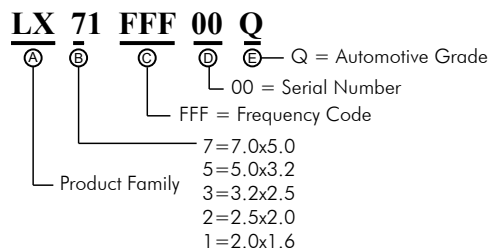
**Top View Pin Location**



**Pin Functions:**

Pin	Function
1	OE Function
2	Ground
3	Output
4	VDD

**Part Ordering Information:**



**Notes:**

1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See <https://www.diodes.com/quality/lead-free/> for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.

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**Electrical Performance**

Parameter	Min.	Typ.	Max.	Units	Notes
Output Frequency	20		54	MHz	
Supply Voltage	1.425	1.5	1.575	V	
	1.14	1.2	1.26		
	0.95	1.0	1.05		
	0.855	0.9	0.945		
Supply Current, Output Enabled			4	mA	
Supply Current, Output Disabled only			100	uA	
Frequency Stability	±20		±50	ppm	
Operating Temperature Range	-40		+125	°C	
Output Logic 0, V <sub>OL</sub>			0.2 V <sub>DD</sub>	V	
Output Logic 1, V <sub>OH</sub>	0.8 V <sub>DD</sub>			V	
Output Load			15	pF	
Duty Cycle	45		55	%	Measured 50% V <sub>DD</sub>
Rise and Fall Time			4	ns	Measured 20/80% of waveform
Jitter, Accumulated, RMS (1-σ)			6	ps	20,000 adjacent periods
Jitter, Phase RMS, at 0.9~1.0V	< 40MHz		2	ps	12kHz to 5 MHz frequency band
	>=40MHz		2		12kHz to 20 MHz frequency band
Jitter, Phase RMS, at 1.2~1.5V	< 40MHz		1		12kHz to 5 MHz frequency band
	>=40MHz		1		12kHz to 20 MHz frequency band
Jitter, pk-pk			50	ps	100,000 random periods

**Notes:**

- Stability includes all combinations of operating temperature, load changes, rated input (supply) voltage changes, initial calibration tolerance (25°C), aging (1 year at 25°C average effective ambient temperature), shock and vibration.
- For specifications other than those listed, please contact sales.

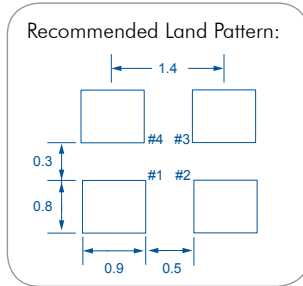
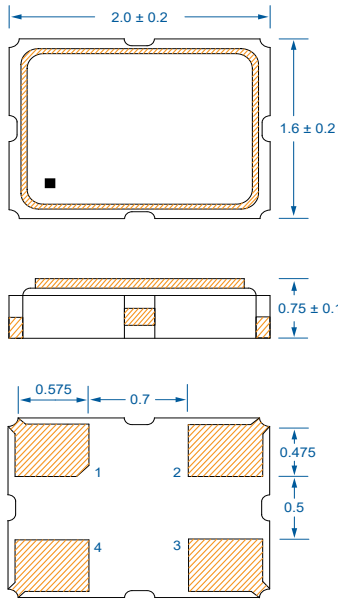
**Output Enable / Disable Function**

Parameter	Min.	Typ.	Max.	Units	Notes
Input Voltage (pin 1), Output Enable	0.7 V <sub>DD</sub>			V	or open
Input Voltage (pin 1), Output Disable (low power standby)			0.3 V <sub>DD</sub>	V	Output is Hi-Z
Output Disable Delay			50	us	
Output Enable Delay			2	ms	
Start up Time			10	ms	

**Absolute Maximum Ratings**

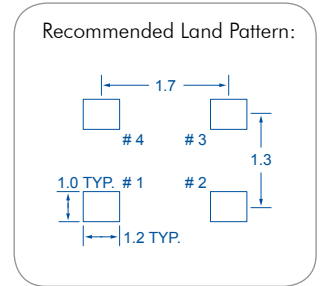
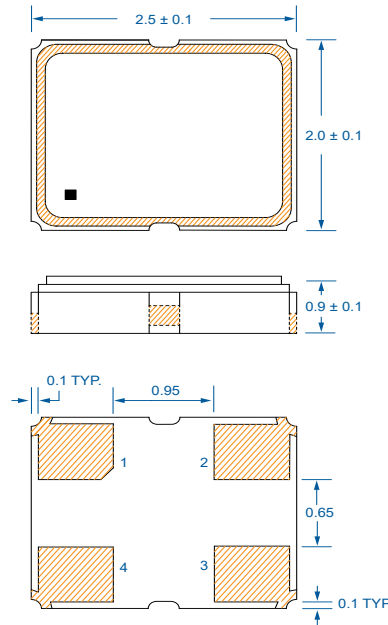
Parameter	Min.	Typ.	Max.	Units	Notes
Storage Temperature	-55		+125	°C	

**Package: 2.0x1.6** (Scale: none; dimensions are in mm)



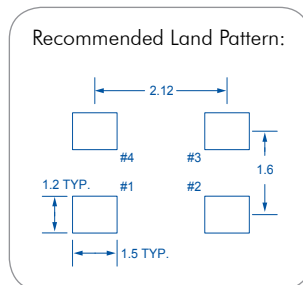
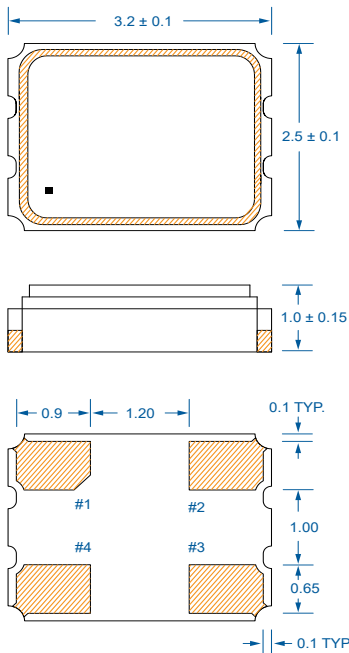
\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

**Package: 2.5x2.0** (Scale: none; dimensions are in mm)



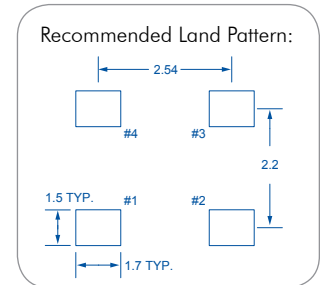
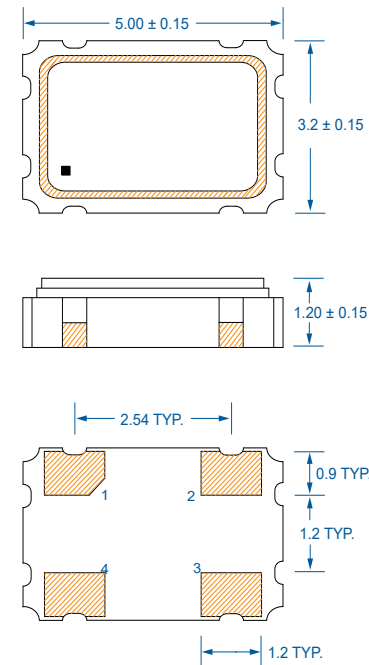
\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

**Package: 3.2x2.5** (Scale: none; dimensions are in mm)



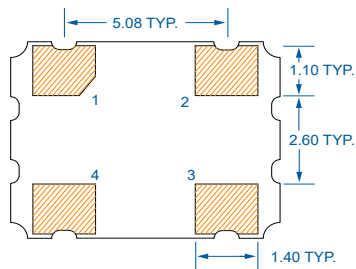
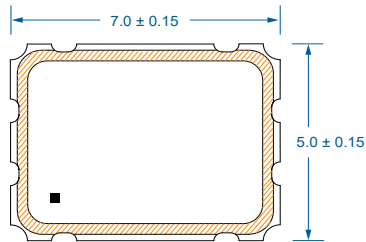
\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

**Package: 5.0x3.2** (Scale: none; dimensions are in mm)

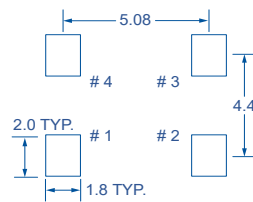


\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

**Package: 7.0x5.0** (Scale: none; dimensions are in mm)



Recommended Land Pattern:



\*Extended high frequency power decoupling is recommended (see test circuit for minimum recommendation). To ensure optimal performance, do not route RF traces beneath the package.

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