

# LOW POWER CRYSTAL OSCILLATORS

*LXO Series*  
10 kHz to 2 MHz

## FEATURES

- Laser trimmed for high accuracy
- Low power consumption
- Low aging
- CMOS compatible
- Low-profile, hermetically sealed
- Full military testing available

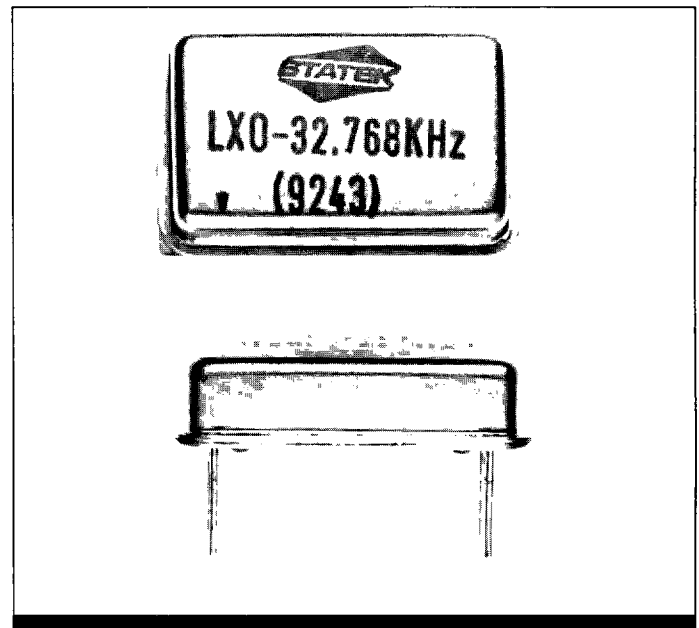
## SPECIFICATIONS, LXO-32.768 kHz

Specifications are typical at 25°C unless otherwise noted. Specifications are subject to change without notice.

Calibration Tolerance at 5V*	A: ± 10 ppm B: ± 25 ppm C: ± 100 ppm
Frequency Stability**	
0 to 50°C	-0.0025% typical (25 ppm) -0.004% maximum (40 ppm)
-20 to + 70°C	-0.007% typical (70 ppm) -0.01% maximum (100 ppm)
Voltage Coefficient	1 ppm/V typical, 3 ppm/V maximum
Current Consumption	See Figure 1
Aging	1 ppm/year typical 3 ppm/year maximum
Shock	
1000g, 1 msec, ½ sine	3 ppm maximum
Vibration	
10g rms, 10-2000 Hz	3 ppm maximum
Frequency Change vs. 10% Output Load Change	1 ppm maximum

\* Tighter tolerances available

\*\* Does not include calibration tolerance. Positive variations small compared to negative variations



## DESCRIPTION

The LXO Series has the highest accuracy and stability of all Statek oscillators. The design consists of a CMOS-compatible hybrid circuit packaged in a hermetically-sealed DIP. Permanent, precision tuning of the oscillator is accomplished by laser trimming the crystal after it has been hermetically sealed in a ceramic package and connected into the oscillator circuit. This method of fine tuning allows for very tight calibration tolerances and eliminates the need for a tuning capacitor—a major source of long-term frequency drift. The specifications and characteristics of the LXO Series vary with frequency. The characteristics of the 32.768 kHz model are presented in this data sheet. Contact the factory regarding other frequencies.

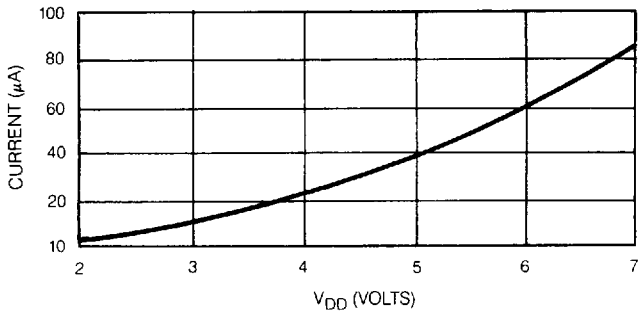


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## HOW TO ORDER LXO CRYSTAL OSCILLATORS

L X O - Frequency ( / )  
 "S" if special or custom design. Blank if Std.  
 A Calib. I=Industrial Temp.  
 B Calib. M=Military Temp.  
 C Calib.

FIGURE 1. Typical Current Consumption (for 32.768 only)



## ELECTRICAL CHARACTERISTICS, LXO-32.768 kHz

Output load = 10pF, 10MΩ V<sub>pp</sub> + 5V

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V <sub>OH</sub>	Output Voltage Hi	4.8	4.95		V
V <sub>OL</sub>	Output Voltage Lo		0.05	0.2	V
*t <sub>r</sub>	Rise Time		.16	1.0	µsec.
*t <sub>f</sub>	Fall Time		.46	1.0	µsec.
I <sub>DD</sub>	Supply Current		45	60	µA
	Duty Cycle	40	50	60	%

\*Models with faster rise & fall times available. Please consult factory.

## ABSOLUTE MAXIMUM RATINGS\*

Supply Voltage -0.3 to + 9V  
 Operating Temperature\* -20 to 70°C  
 Storage Temperature\* -45 to + 85°C

\*Military temperature range available (-55 to +125°).

FIGURE 2. Timing Diagram

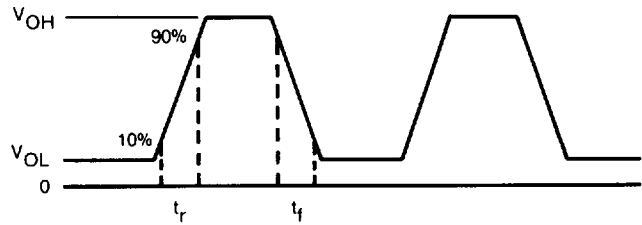
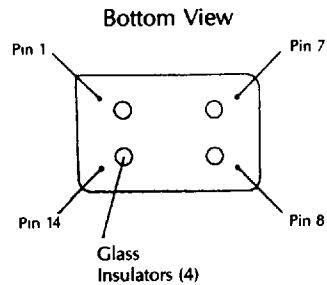
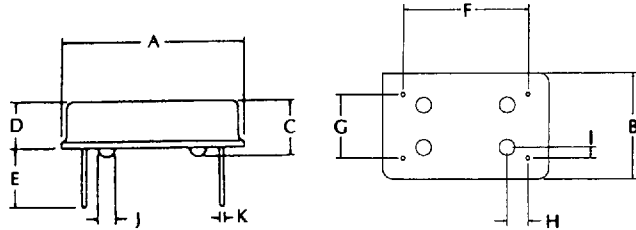


FIGURE 3. LXO Standard Package Dimensions



DIM	INCHES	mm
A	0.810 MAX.	20.57 MAX
B	0.510 MAX.	12.95 MAX.
C	0.225 MAX.	5.72 MAX.
D	0.200 MAX.	5.08 MAX.
E	0.150 MIN.	3.81 MIN.
F	0.600 ± 0.005	15.24 ± 0.127
G	0.300 ± 0.005	7.62 ± 0.127
H	0.090 TYP.	2.25 TYP.
I	0.045 TYP.	1.14 TYP.
J	0.070 TYP.	1.78 TYP.
K	0.018 ± 0.002	0.48 ± 0.030

Pin	Connection
1	NC
7	GND
8	OUTPUT
14	VDD



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