

# Low Power High Speed CMOS CRYSTAL OSCILLATORS

*LXO-1 Series*  
0.6 Hz to 2.1 MHz

## FEATURES

- Laser trimmed for high accuracy
- Low power consumption
- Fast rise/fall time
- Low aging
- High speed CMOS compatible
- Low-profile, hermetically sealed package
- Full military testing available

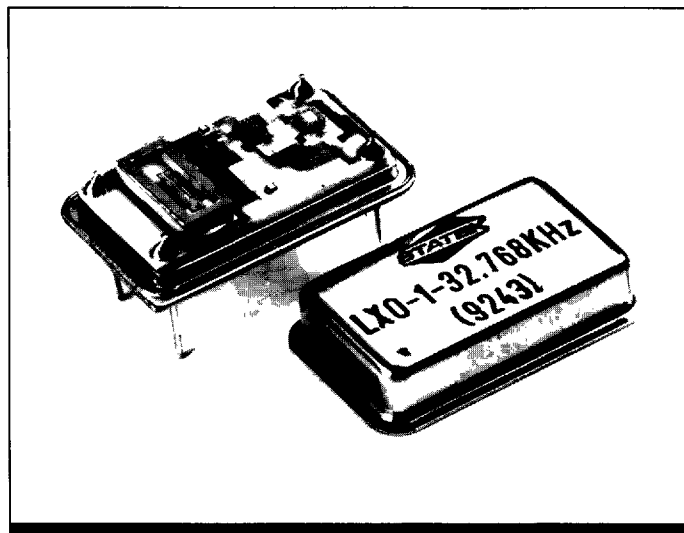
## SPECIFICATIONS

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

Calibration Tolerance at 5V*	A: $\pm 10$ ppm B: $\pm 25$ ppm C: $\pm 100$ 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-1 Series has the highest accuracy and stability of all Statek oscillators. The design consists of a high speed CMOS-compatible hybrid circuit packaged in a hermetically-sealed metal 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-1 series vary with frequency. The characteristics of the 32.768 model are presented in this data sheet. Contact the factory regarding other frequencies.



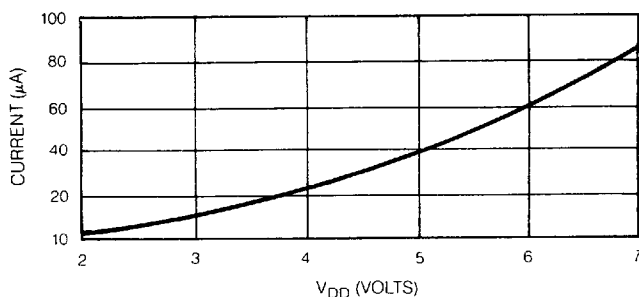
STATEK CORPORATION, 512 N. Main Street, Orange, California 92668 (714) 639-7810 FAX (714) 997-1256  
STATEK EUROPE, 155 Mildmay Road, Chelmsford, Essex CM2 0DU, England +44 245 352297 FAX +44 245 252275  
A TECHNICORP COMPANY 10112-9/94

■ 8891940 0000386 T62 ■

## HOW TO ORDER LXO-1 CRYSTAL OSCILLATORS

L X O - 1 - 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



## ELECTRICAL CHARACTERISTICS, LXO-1-32.768 kHz

Output load = 10pf. 10MΩ VDD + 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		10	20	nsec.
t <sub>f</sub>	Fall Time		10	20	nsec.
I <sub>DD</sub>	Supply Current		45	60	μA
	Duty Cycle	40	50	60	%

## ABSOLUTE MAXIMUM RATINGS\*

Supply Voltage	0.3 to +7.0V
Operating Temperature	-10° to +70°C Commercial -40° to +85°C Industrial -55° to +125°C Military
Storage Temperature	-55° to +85°C

FIGURE 2. Timing Diagram

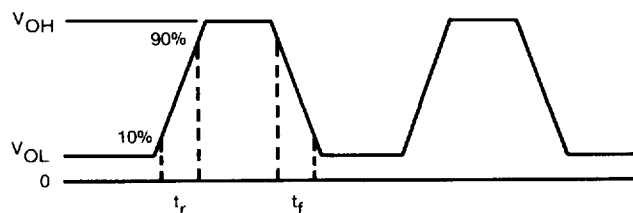
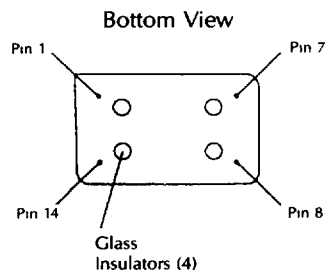
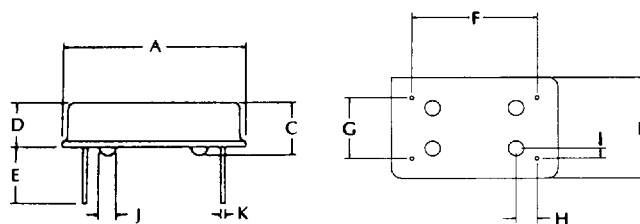


FIGURE 3. Package Dimensions



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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