



LXO1 OSCILLATOR

10 kHz to 2.1 MHz

Low Power Crystal Oscillator

DESCRIPTION

The LXO1 oscillator has the highest accuracy, stability and lowest current of all STATEK oscillators. The design consists of a 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 to the oscillator circuit. This method of fine tuning allows for very tight calibration tolerance and eliminates the need for a trimming capacitor, a major source of long-term frequency drift. The specifications and characteristics of the LXO1 vary with frequency. The characteristics of the 32.768 kHz model are presented in this data sheet.

FEATURES

- Low power consumption
- Low aging
- CMOS compatible
- Double hermetically sealed package
- Full military testing available
- 5 V operation standard
- 3.3 V and 5 V operation available
- Optional Tri-State

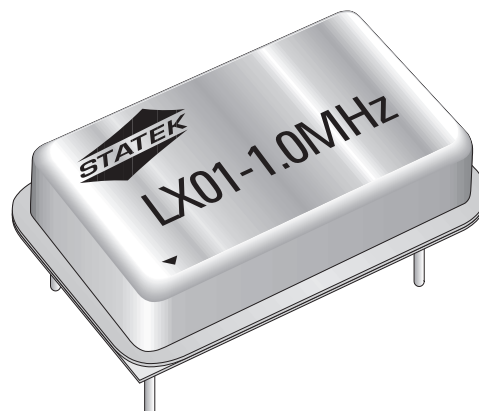
APPLICATIONS

Industrial, Computer & Communications

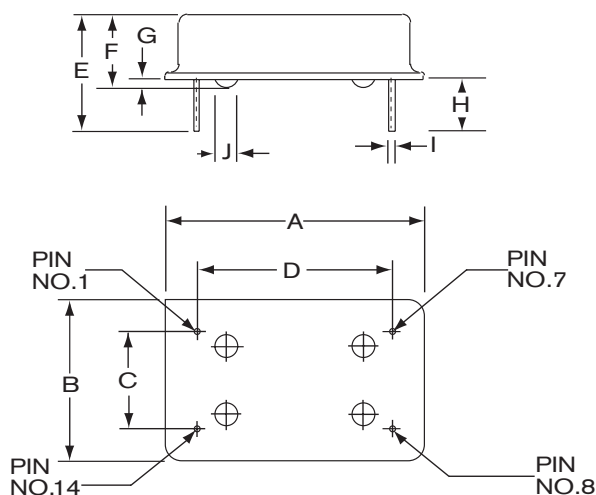
- General purpose clock oscillator
- Data Logger
- Remote sensor
- Liquid level sensing
- Medical test and diagnostics

Military

- Portable field communication
- Military high speed modem
- Flight recorder



PACKAGE DIMENSIONS



DIM	inches	mm
A	0.810 MAX.	20.57 MAX.
B	0.510 MAX.	12.95 MAX.
C	0.300 ± 0.005	7.62 ± 0.13
D	0.600 ± 0.005	15.24 ± 0.13
E	0.430 TYP.	10.92 TYP.
F	0.240 MAX.	6.10 MAX.
G	0.040 TYP.	1.02 TYP.
H	0.150 MIN.	3.81 MIN.
I	0.018 ± 0.002	0.46 ± 0.05
J	0.070 TYP.	1.78 TYP.

* Position of bumps for reference only

10112- Rev E



SPECIFICATIONS: LXO1 32.768 kHz

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

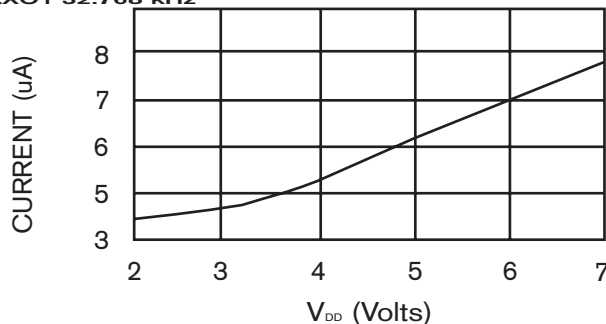
Supply Voltage (V_{DD})	5 V $\pm$ 10% (standard) (3.3 V operation also available)		
Calibration Tolerance ¹	$\pm$ 10 ppm (0.001%) $\pm$ 25 ppm (0.0025%) $\pm$ 100 ppm (0.01%)		
Frequency Stability ²			
0°C to +50°C	$\pm$ 25 ppm Typ.	(0.0025%)	
	$\pm$ 40 ppm MAX.	(0.004%)	
-20°C to +70°C	$\pm$ 70 ppm Typ.	(0.007%)	
	$\pm$ 100 ppm MAX.	(0.01%)	
Voltage Coefficient	$\pm$ 1 ppm/V Typ. $\pm$ 3 ppm/V MAX.		
Aging	$\pm$ 1 ppm/year Typ. $\pm$ 3 ppm/year MAX.		
Shock	1000 g, 1 ms, 1/2 sine $\pm$ 3 ppm MAX.		
Vibration	10 g RMS, 10-2000 Hz $\pm$ 3 ppm MAX.		
Frequency Change vs. 10% Output Load Change	$\pm$ 1 ppm MAX.		
Operating Temp. Range	-10°C to +70°C (Commercial) -40°C to +85°C (Industrial) -55°C to +125°C (Military)		

1. Tighter tolerances available

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

TYPICAL CURRENT CONSUMPTION

LXO1 32.768 kHz



HOW TO ORDER LXO1 CRYSTAL OSCILLATORS

LXO1	S	T	-	32.768K	,	10	/	I
	"S" if special or custom design. Blank if Std.	T = Tri-State Blank = Pin1 no connection		Frequency K = kHz M = MHz		*Calibration Tolerance @ 25°C (in ppm)		Temp. Range: C = -10°C to +70°C I = -40°C to +85°C M = -55°C to +125°C S = Customer Specified

*Other calibration fill in ppm.
Standard Calibration Tolerances for frequencies other than 32.768 kHz:
1) 100 ppm (0.01%)
2) 300 ppm (0.03%)
3) 1000 ppm (0.1%)

ABSOLUTE MAXIMUM RATINGS

Supply Voltage	-0.3 V to 7 V
Storage Temperature	-55°C to +125°C

ELECTRICAL CHARACTERISTICS

LXO-1 32.768 kHz

All parameters are measured at ambient temperature with a 10M Ω and 10pF load at 5V.

SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V_{OH}	Output Voltage Hi	4.8	4.95		V
V_{OL}	Output Voltage Lo		0.05	0.2	V
t_r	Rise Time (10%-90%)		12	25	ns
t_f	Fall Time (10%-90%)		12	25	ns
SYM	Duty Cycle	40	50	60	%
I_{DD}	Supply Current				
	$V_{DD}=5$ V		6.5	12	μ A
	$V_{DD}=3$ V		5	10	μ A

PIN CONNECTIONS

Pin	Connection
1	INH (Tri-State) or NC
7	V_{SS} (Gnd)
8	Output
14	V_{DD}

PACKAGING

LXO1 -Tube Pack

OUTPUT WAVE FORM

