LQXO-4 OSCILLATOR

32 kHz to 200 kHz*

Low Power Crystal Oscillator

DESCRIPTION

The LQXO-4 oscillator design consists of a CMOS-compatible hybrid circuit, packaged in a standard TO-39 metal package. Permanent, precision tuning of the oscillator 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 LQXO-4 vary with frequency. The characteristics of the 32.768 kHz model are presented in this data sheet.

*Consult factory for other frequencies.

FEATURES

- Very low power consumption
- Low aging
- CMOS compatible
- Double hermetically sealed package
- Full military testing available
- 3 Volt operation available

APPLICATIONS

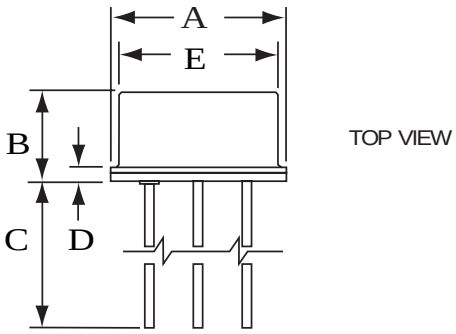
Industrial, Computer & Communications

- General purpose clock oscillator
- Tone generators
- Data loggers
- Telephone equipment
- Ultrasonic detectors
- Airborne hybrid computer
- Flight recorder

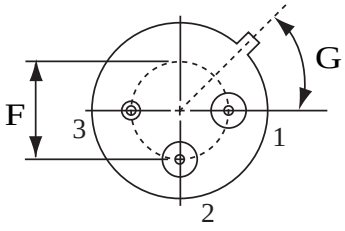
PIN CONNECTIONS

1. V_{DD}
2. Output
3. Ground

PACKAGE DIMENSIONS



TOP VIEW



BOTTOM VIEW

DIM	INCHES	mm
A	0.380 MAX.	9.65 MAX.
B	0.185 MAX.	4.70 MAX.
C	0.500 Min.	12.70 Min.
D	0.029	0.74
E	0.326 MAX.	8.28 MAX
F	0.200 Ref.	5.08 Ref.
G	45°	45°

Note:
1. All metal parts gold plated
2. Leads are 0.019 in.[0.48mm] MAX.

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SPECIFICATIONS-LQXO-4 32.768 kHz

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

Supply Voltage (V_{DD})	5V ± 10% (3.3V available)	
Calibration Tolerance*	A:	± 0.01% (100ppm)
	B:	± 0.03%
	C :	± 0.1%
Frequency Stability**	0°C to +50°C	-0.0025% Typ. ± 25 ppm
		-0.004% MAX. ± 40 ppm
	-20°C to +70°C	-0.007% Typ. ± 70 ppm
		-0.01% MAX ± 100 ppm
Voltage Coefficient	1 ppm/V Typ.	
	3 ppm/V MAX.	
Aging, first year	1 ppm/ year Typ.	
	3 ppm/ year MAX.	
Shock	1,000g, 1 msec.,1/2 sine 3 ppm MAX.	
Vibration	10g rms10-2000 Hz 3 ppm MAX.	
Frequency change vs. 10% Output Load Change	1 ppm MAX.	
Operating Temperature	-10°C to +70°C Commercial	
	-40°C to +85°C Industrial	
	-55°C to +125°C Military	

* Tighter tolerances available.

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

ABSOLUTE MAXIMUM RATINGS

Supply Voltage V_{DD}	-0.3V to 7.0V
Storage Temperature	-55°C to +125°C
Maximum Process Temp.	260°C, 10 seconds

ELECTRICAL CHARACTERISTICS

LQXO-4 32.768 kHz

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

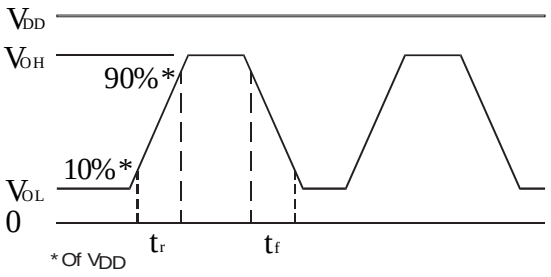
SYMBOL	PARAMETER	MIN.	TYP.	MAX.	UNIT
V	Output Voltage Hi	4.8	4.95		V
V	Output Voltage Lo		0.05	0.2	V
*t_r	Rise Time (10%-90%)		12	25	nsec.
*t_f	Fall Time (10%-90%)		12	25	nsec.
SYM	Duty Cycle	40	50	60	%
I_{DD}	Supply Current				
	V =5V		7	15	µA
	V =3V		5	10	µA

* Models with faster rise and fall time available, consult factory.

PACKAGING

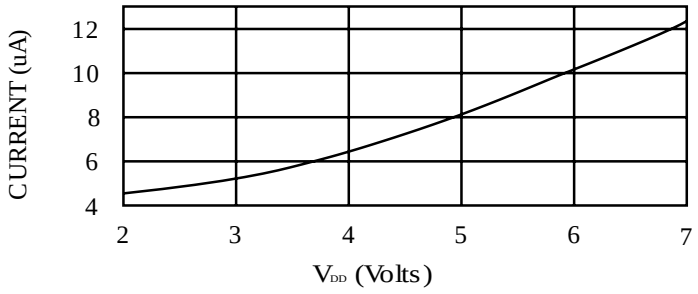
LQXO-4 - Tray Pack (Standard)

OUTPUT WAVE FORM



TYPICAL CURRENT CONSUMPTION

LQXO-4-32.768 kHz



HOW TO ORDER LQXO-4 CRYSTAL OSCILLATORS

LQXO-4 S 32.768 kHz (A / I)

- S: "S" if special or custom design. Blank if Std.
- 32.768 kHz: Frequency
- A: *Calibration Tolerance @25°C (A) (B) (C)
- I: Temp. Range: C = Commercial, I = Industrial, M = Military, S = Specify

*Other calibration fill in ppm

10141 - Rev C