



# DQXO-3 OSCILLATOR

1 Hz to 10 kHz\*

Low Power Crystal Oscillator

## DESCRIPTION

The DQXO-3 oscillator has very high accuracy, stability and low current. The design consists of a CMOS-compatible hybrid circuit, packaged in a hermetically sealed 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 DQXO-3 vary with frequency. The characteristics of the 400Hz model are presented in this data sheet.



\*Consult factory for other frequencies.

## FEATURES

- Very low power consumption
- Low aging
- CMOS compatible
- Full military testing available
- Multiple frequency output available (6-pin TO-5 package)
- Designed and manufactured in the USA

## APPLICATIONS

Industrial, Computer & Communications

- General purpose clock oscillator
- Remote data timers

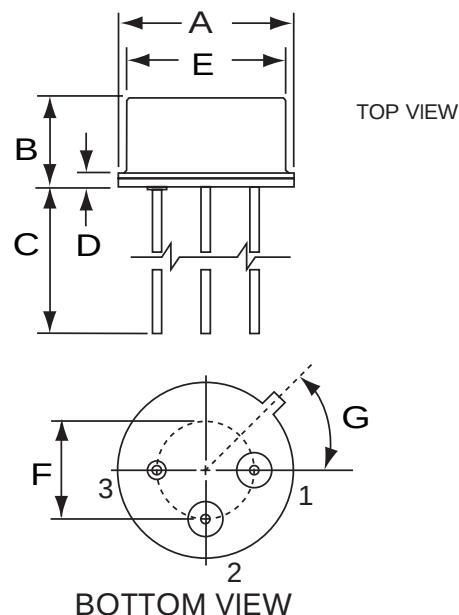
Military & Aerospace

- Process controllers
- Repeat cycle timers
- Tone generators
- Airborne hybrid computer
- Flight recorder

## PIN CONNECTIONS

- 1  $V_{DD}$
- 2 Output
- 3 Ground

## PACKAGE DIMENSIONS



| 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.

10142 - Rev C



## SPECIFICATIONS-DQXO-3 400Hz

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

|                                                |                                                                                                 |
|------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Supply Voltage ( $V_{DD}$ )                    | 5V $\pm$ 10% (3.3V available)                                                                   |
| Calibration                                    | A: $\pm$ 0.01% (100ppm)                                                                         |
| Tolerance*                                     | B: $\pm$ 0.1%                                                                                   |
|                                                | C : $\pm$ 1.0%                                                                                  |
| Frequency Stability**                          | -55°C to +125°C -350 ppm TYP.<br>-600 ppm MAX.<br>-40°C to +85°C -150 ppm TYP.<br>-300 ppm MAX. |
| Voltage Coefficient                            | 3 ppm/V TYP.<br>10 ppm/V MAX.                                                                   |
| Aging, first year                              | 10 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.<br>10% Output Load Change | 1 ppm MAX.                                                                                      |
| Operating Temperature                          | -10°C to +70°C Commercial<br>-40°C to +85°C Industrial<br>-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

### DQXO-400Hz

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

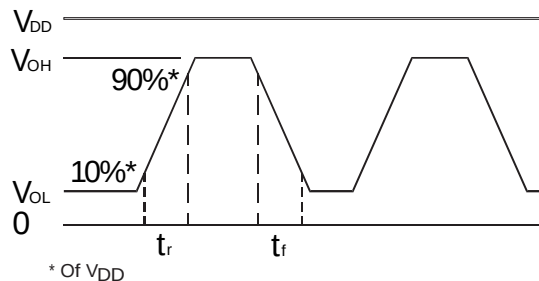
| SYMBOL   | PARAMETER           | MIN. | TYP. | MAX. | UNIT    |
|----------|---------------------|------|------|------|---------|
| V        | Output Voltage Hi   | 4.8  | 4.95 |      | V       |
| V        | Output Voltage Lo   |      | 0.05 | 0.4  | V       |
| $t_r$    | Rise Time (10%-90%) |      | 60   | 150  | nsec.   |
| $t_f$    | Fall Time (10%-90%) |      | 60   | 150  | nsec.   |
| SYM      | Duty Cycle          | 40   | 50   | 60   | %       |
| $I_{DD}$ | Supply Current      |      |      |      |         |
|          | $V_{DD} = 5V$       |      | 150  | 250  | $\mu A$ |

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

## PACKAGING

DQXO-3 - Tray Pack (Standard)

## OUTPUT WAVE FORM



## HOW TO ORDER DQXO-3 CRYSTAL OSCILLATORS

|        |                                                   |           |   |                                                   |   |                                                                                 |   |
|--------|---------------------------------------------------|-----------|---|---------------------------------------------------|---|---------------------------------------------------------------------------------|---|
| DQXO-3 | S                                                 | 400Hz     | ( | A                                                 | / | I                                                                               | ) |
|        | "S" if special or custom design.<br>Blank if Std. | Frequency |   | *Calibration Tolerance @25°C<br>(A)<br>(B)<br>(C) |   | Temp. Range:<br>C = Commercial<br>I = Industrial<br>M = Military<br>S = Specify |   |

\* Other calibration fill in ppm