Rev. H

CMOS

# AC-X1460 Series

## Description

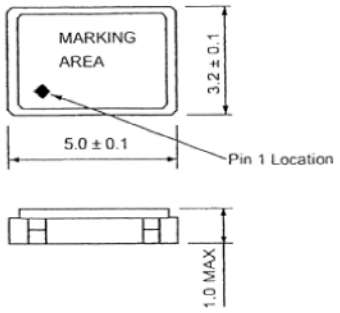
The **AC-X1460 Series** of quartz crystal oscillators provide enable/disable 3-state CMOS compatible signals for bus connected systems. Supplying Pin 1 of the AC-X1460 units with a logic "1" or open enables its Pin 3 output. In the disable mode, Pin 3 presents a high impedance to the load.

## Features

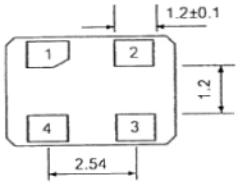
- Wide frequency range 1.8432MHz to 156.250MHz
- User specified tolerance available
- Space-saving alternative to discrete component oscillators
- 5.0V, 3.3 V, 2.5V and 1.8V operation
- High shock resistance, to 100g
- Low Jitter
- COTS/Dual use
- High Q Crystal actively tuned oscillator circuit
- No internal PLL avoids cascading PLL problems
- Metal lid electrically connects to ground to reduce EMI
- Gold plated pads
- RoHs Compliant, Lead Free Construction

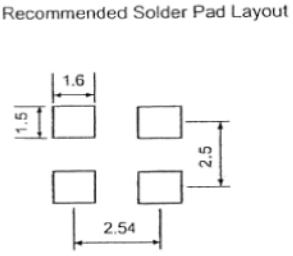
### Electrical Connection

| Pin | Connection |
|---|---|
| 1 | Enable/Disable |
| 2 | Ground |
| 3 | Output |
| 4 | $V_{DD}$ |




All dimensions are typical unless otherwise specified




Dimensions in Millimeters

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**AC-X1460 Series** Continued
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## Operating Conditions and Output Characteristics (4)

### Electrical Characteristics

| Parameter | Symbol | Conditions | Min | Typical | Max |
|---|---|---|---|---|---|
| Frequency (5) | ----- | ----- | 1.8432MHz | ----- | 156.250MHz |
| Duty Cycle | ----- | @ $V_{DD}/2$ | 45/55% | ----- | 55/45% |
| Logic 0 | $V_{OL}$ | @ 600µA | ----- | ----- | 0.1V |
| Logic 1 | $V_{OH}$ | @ 600µA | $0.9V_{CC}$ | ----- | ----- |
| Rise & Fall Time | tr,tf | 10-90%$V_O$ | ----- | ----- | 10 ns |
| Jitter, Integrated(2) | ----- | ----- | ----- | ----- | 1 psec |
| Enable Voltage | ----- | ----- | $0.7V_{CC}$ | ----- | ----- |
| Disable Voltage | ----- | ----- | ----- | ----- | $0.3V_{CC}$ |
| Frequency Stability (3) | dF/F | Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration | -100ppm | ----- | +100ppm |

### General Characteristics

| Parameter | Symbol | Conditions | Min | Typical | Max |
|---|---|---|---|---|---|
| Supply Voltage (1) | $V_{DD}$ | 5.0V±10% | 4.50V | 5.0V | 5.50V |
| | | 3.3V ±10% | 3.00V | 3.3V | 3.60V |
| | | 2.5V±10% | 2.25V | 2.5V | 2.75V |
| | | 1.8V±10% | 1.62V | 1.8V | 1.98V |
| Supply Current | $I_{DD}$ | No Load | 0.0 mA | ----- | 60 mA |
| Operating temperature | $T_A$ | ------ | 0°C | ----- | 70°C |
| Storage temperature | $T_S$ | ----- | -55°C | ----- | 125°C |
| Power Dissipation | $P_D$ | @ 5.0V | ----- | ----- | 330 mW |
| | | @ 3.3V | ----- | ----- | 216 mW |
| | | @ 2.5V | ----- | ----- | 165 mW |
| | | @ 1.8V | ----- | ----- | 119 mW |
| Load | ----- | ----- | ----- | ----- | 15pf |
| Start-up Time | $t_s$ | ----- | ----- | ----- | 10 ms |

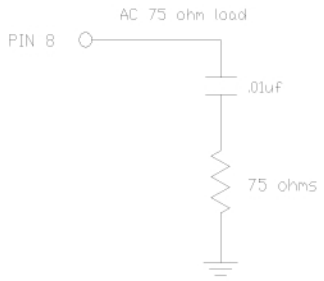
### Environmental and Mechanical Characteristics

| | |
|---|---|
| Mechanical Shock | Per MIL-STD-202, Method 213 |
| Thermal Shock | Per MIL-STD-883, Method 1011, Condition B |
| Vibration | Per MIL-STD-883, Method 2007, A |
| Hermetic Seal | Leak rate less than 2 x $10^{-8}$ atm.cc/sec of helium |

***Footnotes:***

1) External high frequency power supply decoupling required.
2) Jitter bandwidth of 12kHz to 20MHz.
3) Standard frequency stability (others available)
4) All parameters, unless otherwise specified, are at nominal conditions, ie: T=25°C, Nominal Vcc & Nominal Load.
5) Frequency Range @ 5V: 1.8432 to 75MHz.

**Test Load:**




**Creating a Part Number**

**AC - X146X - FREQ**

**Package Code**
AC 4 pad 5x3.2mm SMD

**Input Voltage**

| Code | Specification |
|---|---|
| | 5.0V |
| A | 3.3V |
| B | 2.5V |
| C | 1.8V |

Note: All frequencies may not be available at all voltages - contact factory

**Tolerance/Performance**

| | |
|---|---|
| 0 | ±100ppm 0-70°C |
| 1 | ±50ppm 0-70°C |
| 7 | ±25ppm 0-70°C |
| 9 | Customer Specific |
| A | ±20ppm 0-70°C |
| B | ±50ppm -40 to +85°C |
| C | ±100ppm -40 to +85°C |

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