



CMOS HA-A1440 Series

Description

The **HA-A1440 Series** of quartz crystal oscillators provide enable/disable 3-state CMOS compatible signals for bus connected systems. Supplying Pin 1 of the HA-A1440 units with a logic "1" or open enables its pin 5 output. In the disabled mode, pin 5 presents a high impedance to the load.

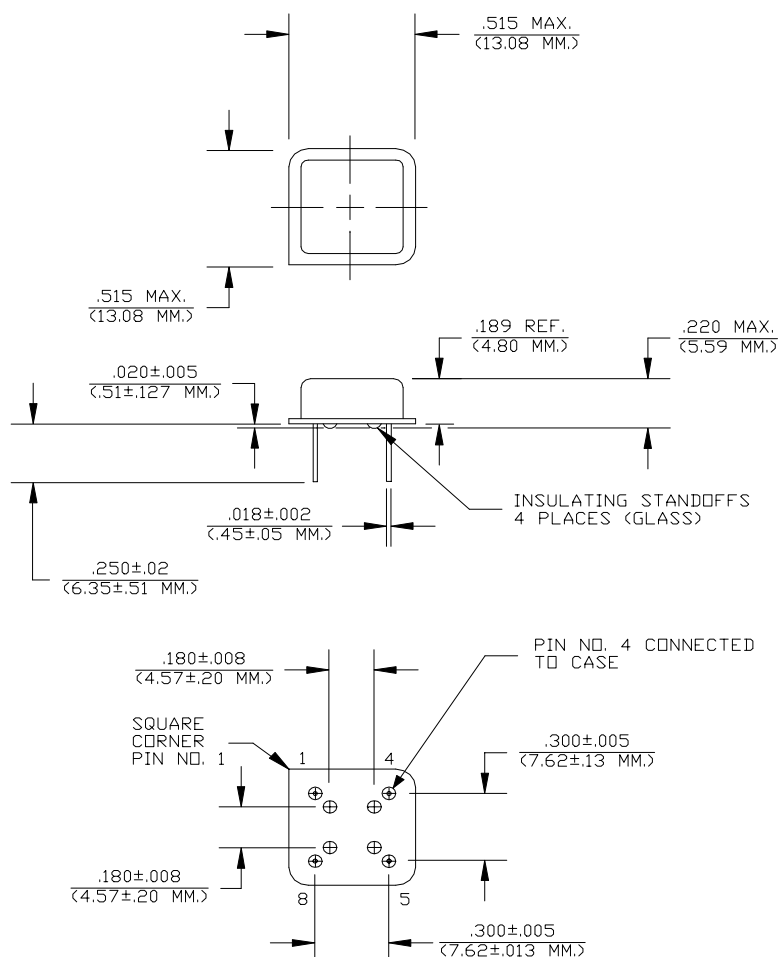
Features

- Wide frequency range— 70.1MHz to 125.0MHz
- User specified tolerance available
- Will withstand vapor phase temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- All metal, resistance weld, hermetically sealed package
- 3.3 Volt operation
- Low Jitter
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- Low power consumption
- Gold plated leads - Solder dipped leads available upon request
- RoHS Compliant, Lead Free Construction (unless solder dipped leads are supplied)

Electrical Connection

Pin Connection

1	Enable Input
4	Grd & Case
5	Output
8	V _{DD}



Dimensions are in inches and (MM)



**FREQUENCY
CONTROLS, INC.**

HA-A1440 Series Continued
CMOS

Rev. J

Operating Conditions and Output Characteristics**Electrical Characteristics**

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	70.1MHz	-----	125.0MHz
Duty Cycle	-----	@ $V_{DD}/2$	45/55%	-----	55/45%
Logic 0	V_{OL}	@ 600 μ A	-----	0.1V	0.2V
Logic 1	V_{OH}	@ 600 μ A	$V_{DD}-0.2V$	$V_{CD}-0.1V$	-----
Rise & Fall Time	tr,tf	10-90%	-----	1 ns	2 ns
TPz	-----	-----	-----	-----	100 ns
Jitter, RMS ⁽²⁾	-----	-----	-----	-----	5 psec
Frequency Stability ⁽¹⁾	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	V_{DD}	-----	3.135V	3.3V	3.465V
Supply Current	I_{DD}	No Load	0.0 mA	40mA	60mA
Output current	I_O	-----	0.0 mA	-----	± 25.0 mA
Operating temperature	T_A	-----	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	-----	-----	-----	208 mW
Lead temperature	T_L	Soldering, 10 sec.	-----	-----	300°C
Load	-----	-----	-----	-----	15pf
Start-up time	t_s	-----	-----	2 ms	10 ms

Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-833, Method 1011, Condition A
Vibration	0.060" double amplitude 10 Hz to 55 Hz, 35g's 55Hz to 2000 Hz
Soldering Condition	300°C for 10 seconds
Hermetic Seal	Leak rate less than 1×10^{-8} atm.cc/sec of helium

Footnotes:

- 1) Standard frequency stability ($\pm 20, \pm 25, \pm 50$ ppm & others available)
 2) Jitter performance is frequency dependent. Please contact factory for full characterization.
 RMS jitter bandwidth of 12kHz to 20MHz.

Creating a Part Number**HA - A144X - FREQ****Package Code**

HA Leaded 4 pin (8 pin)
 SA Leaded 4 pin (8 pin) SMD
 Gull Wing

Input Voltage

Code Specification
 A 3.3V
 5V

Tolerance/Performance

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

Test Load: