

### CMOS HA-A390 Series

### Description

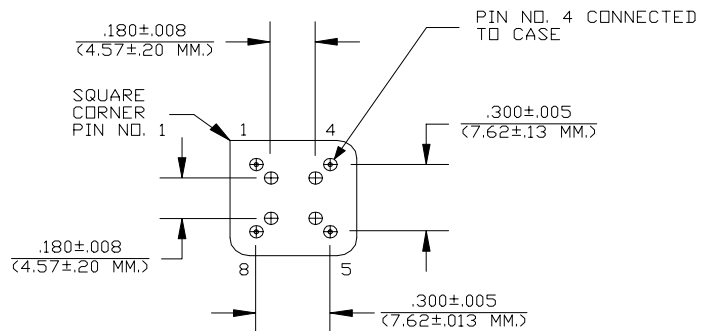
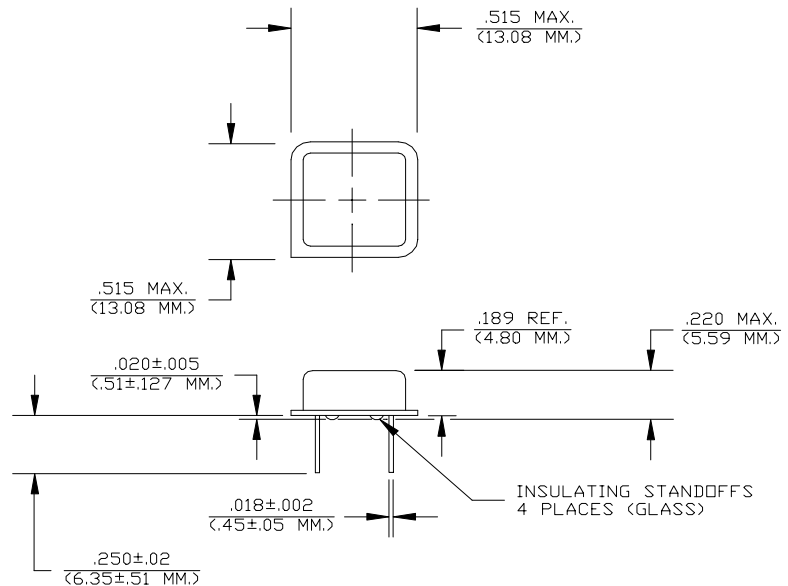
The **HA-A390 Series** of quartz crystal oscillators provide CMOS compatible signals for general purpose timing applications.

### 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 3000g
- 3.3 volt operation
- Low Jitter
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- High frequencies due to proprietary design
- All metal, resistance weld, hermetically sealed package
- Gold plated leads - Solder dipped leads available upon request

### Electrical Connection

Pin	Connection
1	N.C.
4	Grd & Case
5	Output
8	V <sub>DD</sub>



Dimensions are in inches and MM.

HA-A390 Series Continued  
CMOS

Rev. C

## 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 $\mu$ A	----	0.1V	0.2V
Logic 1	$V_{OH}$	@ 600 $\mu$ A	$V_{DD}-0.2V$	$V_{DD}-0.1V$	----
Rise & Fall Time	tr,tf	10-90% $V_O$	----	1 ns	2 ns
Jitter, RMS <sup>(2)</sup>	----	----	----	----	5 psec
Frequency Stability <sup>(1)</sup>	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	40 mA	60 mA
Output current	$I_O$	----	0.0 mA	----	$\pm 25.0$ 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	$t_s$	----	----	----	10 ms

### Environmental and Mechanical Characteristics

Mechanical Shock	Per MIL-STD-202, Method 213, Condition E
Thermal Shock	Per MIL-STD-883, 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 $1 \times 10^{-8}$ atm.cc/sec of helium

### Footnotes:

- Standard frequency stability ( $\pm 20, \pm 25, \pm 50$ ppm & others available)
- Jitter performance is frequency dependent. Please contact factory for full characterization.

Creating a Part Number	
<b>HA - A39X - FREQ</b>	
<b>Package Code</b>	<b>Tolerance/Performance</b>
HA Leaded 4 pin (8 pin)	0 $\pm 100$ ppm 0-70°C
SA Leaded 4 pin (8 pin) SMD Gull Wing	1 $\pm 50$ ppm 0-70°C
<b>Input Voltage</b>	7 $\pm 25$ ppm 0-70°C
Code Specification	9 Customer Specific
A 3.3V	A $\pm 20$ ppm 0-70°C
5V	B $\pm 50$ ppm -40 to +85°C
	C $\pm 100$ ppm -40 to +85°C

### Test Load:

