



## CMOS HS-420 Series

Rev. L

### Description

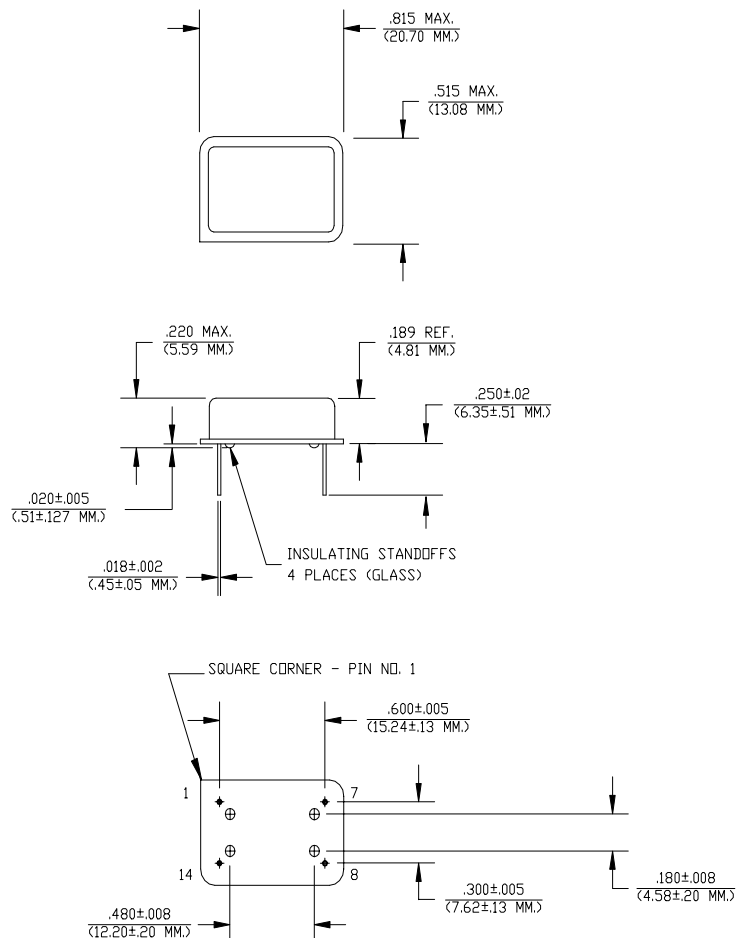
The **HS-420 Series** of quartz crystal oscillators are resistance welded in an all metal package, offering RFI shielding, and are designed to survive standard wave soldering operations without damage. Insulated standoffs to enhance board cleaning are standard.

### Features

- Wide frequency range—244.0kHz to 625.0kHz
- 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
- All metal, resistance weld, hermetically sealed package
- Capable of driving 3TTL Loads
- Low Jitter
- High Q Crystal actively tuned oscillator circuit
- Power supply decoupling internal
- No internal PLL avoids cascading PLL problems
- 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	N.C.
7	Grd & Case
8	Output
14	V <sub>DD</sub>



HS-420 Series Continued  
CMOS

Rev. L

## Operating Conditions and Output Characteristics

### Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	----	----	244.0Hz	----	625kHz
Duty Cycle	----	@ $V_{DD}/2$	45/55%	----	55/45%
Logic 0	$V_{OL}$	@ 600 $\mu$ A	----	----	0.2V
Logic 1	$V_{OH}$	@ 600 $\mu$ A	$V_{DD}-0.2V$	----	----
Rise & Fall Time	$t_{r,tf}$	10-90% $V_O$	----	7 ns	30 ns
Jitter, RMS <sup>(2)</sup>	----	----	----	----	8 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	$V_{DD}$	----	4.5V	5.0V	5.5V
Supply Current	$I_{DD}$	No Load	0.0 mA	----	9.5 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	$P_D$	----	----	----	53 mW
Lead temperature	$T_L$	Soldering, 10 sec.	----	----	300°C
Load	----	----	----	----	15pf
Start-up Time	$t_s$	----	----	1 ms	5 ms

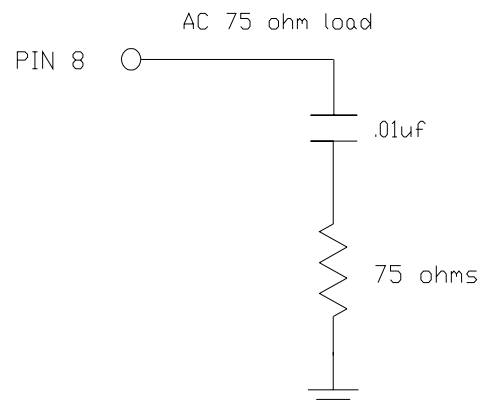
### Environmental and Mechanical Characteristics

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 $1 \times 10^{-8}$ 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. RMS jitter bandwidth of 12kHz to 20MHz.

#### Test Load:



#### Creating a Part Number

HS - A42X - FREQ

#### Package Code

HS Ledged 4 pin (14 pin)  
SM Ledged 4 pin (14 pin) SMD  
Gull Wing

#### Input Voltage

Code	Specification
A	3.3V
	5V

#### Tolerance/Performance

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