CRYSTAL CLOCK OSCILLATORS

Data Sheet 9420C

Rev. T

CMOS
HS-1420 Series

Description

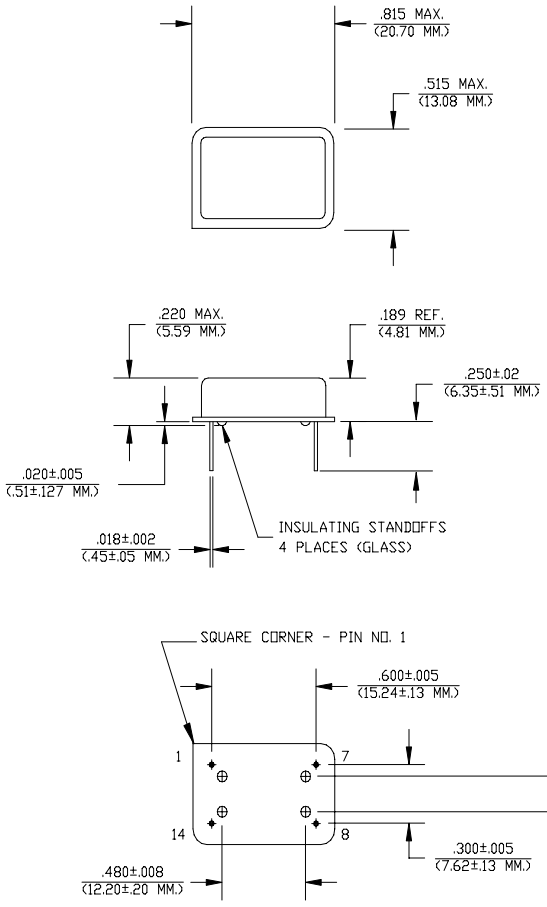
The **HS-1420 Series** of quartz crystal oscillators provide enable/disable 3-state CMOS compatible signals for bus connected systems. Supplying Pin 1 of the HS-1420 units with a logic "1" or open enables its output. In the disabled mode, output pin presents a high impedance to the load. All units are 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– 0.5MHz to 85MHz
- 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
- 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)
- COTS/Dual use

Electrical Connection

Pin	Connection
1	Enable Input
7	Grd & Case
8	Output
14	V_{DD}



Dimensions are in inches and (MM)

NEL FREQUENCY CONTROLS, INC.

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HS-1420 Series Continued
CMOS

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Operating Conditions and Output Characteristics

Electrical Characteristics

Parameter	Symbol	Conditions	Min	Typical	Max
Frequency	-----	-----	0.5MHz	-----	85.0MHz
Duty Cycle	-----	@ V_{DD} /2	45/55%	-----	55/45%
Logic 0	V_{OL}	@ 600µA	-----	-----	0.2V
Logic 1	V_{OH}	@ 600µA	V_{DD}-0.2V	-----	-----
Rise & Fall Time	tr,tf	10-90% <40MHz	-----	-----	8 ns
		40MHz or greater	-----	-----	6 ns
Tpz	-----	-----	-----	-----	25 ns
Enable/Disable Logic High Voltage	-----	-----	3.5V	-----	-----
Enable/Disable Logic Low Voltage	-----	-----	-----	-----	1.5V
Jitter, Integrated	J	Integrated from phase noise, 12kHz to 20MHz, RMS	-----	0.1 ps	-----
Jitter, Wavecrest Characterized (2)	-----	Random Period	-----	2.3ps	-----
		Accum, pk-to-pk	-----	26ps	-----
Phase Noise	£(Δf)	@ 10Hz	-----	-70 dBc/Hz	-----
		@100Hz	-----	-105 dBc/Hz	-----
		@1kHz	-----	-130 dBc/Hz	-----
		@10kHz	-----	-145 dBc/Hz	-----
		@100kHz	-----	-150 dBc/Hz	-----
		@ >1Mhz	-----	-150 dBc/Hz	-----
Frequency Stability (1)	dF/F	Overall conditions including: voltage, calibration, temp., 10 yr aging, shock, vibration	-100ppm	-----	+100ppm

General Characteristics

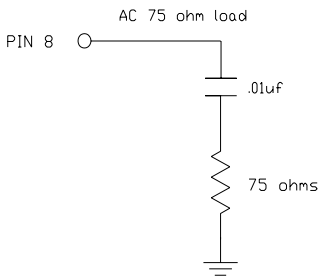
Parameter	Symbol	Conditions	Min	Typical	Max
Supply Voltage	V_{DD}	-----	4.75V	5.0V	5.25V
Supply Current	I_{DD}	No Load	0.0 mA	-----	50mA
Output current	I_O	-----	0.0 mA	-----	±16.0 mA
Operating temperature	T_A	-----	0°C	-----	70°C
Storage temperature	T_S	-----	-55°C	-----	125°C
Power Dissipation	P_D	-----	-----	-----	263 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-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 x 10^{-8} atm.cc/sec of helium

Footnotes:
1) Standard frequency stability (±20,±25,±50ppm & others available)
2) Jitter performance is frequency dependent.
Please contact factory for full characterization.

Test Load:



Creating a Part Number

HS - A142X - FREQ

Package Code
HS Leaded 4 pin (14 pin)
SM Leaded 4 pin (14 pin) SMD Gull Wing

Input Voltage
Code Specification
A 3.3V
5V

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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