CRYSTAL CLOCK OSCILLATORS

Data Sheet 0012M

Rev. J

CMOS
HS-A1440 Series

Description

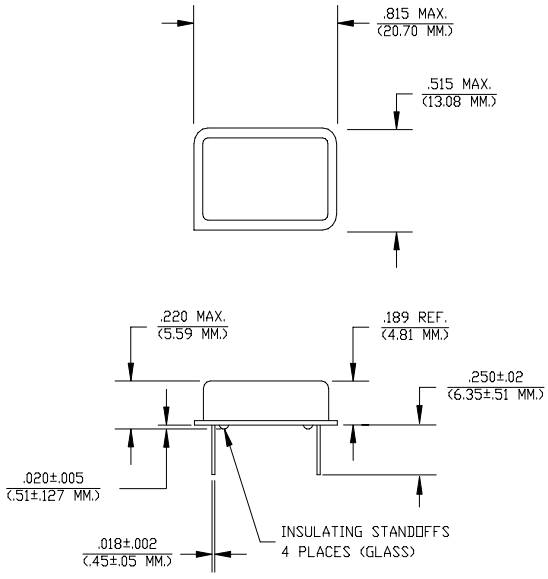
The **HS-A1440 Series** of quartz crystal oscillators provide enable/disable 3-state CMOS compatible signals for bus connected systems. Supplying Pin 1 of the HS-A1440 units with a logic "1" or open enables its pin 8 output. In the disabled mode, pin 8 presents a high impedance to the load.

Features

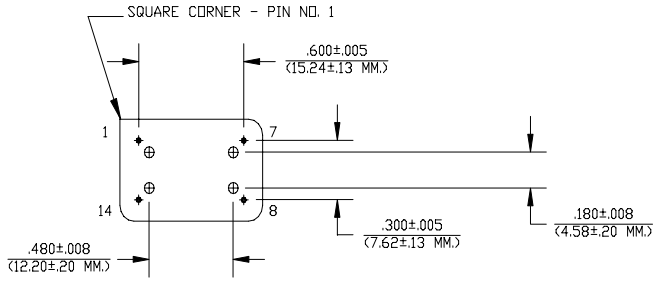
- Wide frequency range– 70.1MHz to 125.0MHz
- User specified tolerance available
- Will withstand vapor phase temperatures of 253°C for 4 minutes maximum
- Space-saving alternative to discrete component oscillators
- High shock resistance, to 1000g
- All metal, resistance weld, hermetically sealed package
- 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
7	Grd & Case
8	Output
14	V_{DD}



Dimensions are in inches and (MM)



NEL FREQUENCY CONTROLS, INC.

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HS-A1440 Series Continued
CMOS

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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}	@ 600µA	-----	0.1V	0.2V
Logic 1	V_{OH}	@ 600µA	V_{DD}-0.2V	V_{CD}-0.1V	-----
Rise & Fall Time	tr,tf	10-90%	-----	1 ns	2 ns
Tpz	-----	-----	-----	-----	100 ns
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}	-----	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-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.

Creating a Part Number

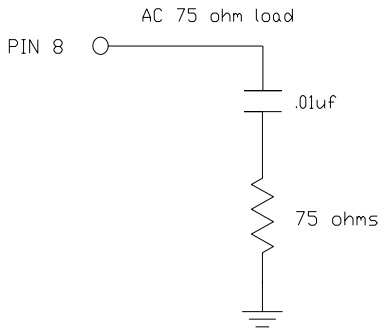
HS - A144X - FREQ

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

Test Load:



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