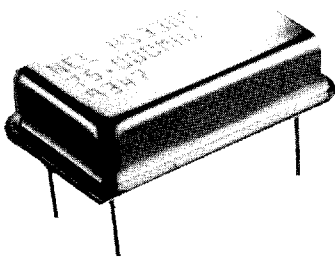


NEL Crystal Clock Oscillators

VOLTAGE CONTROLLED CRYSTAL OSCILLATORS

HS-3300 Series
(Available from 750 KHz to 75 MHz)



HS-3300 Series

Description

The **HS-3300 Series** of quartz crystal voltage controlled oscillators provides an ACmos output compatible with TTL, CMOS and HCMOS logic families.

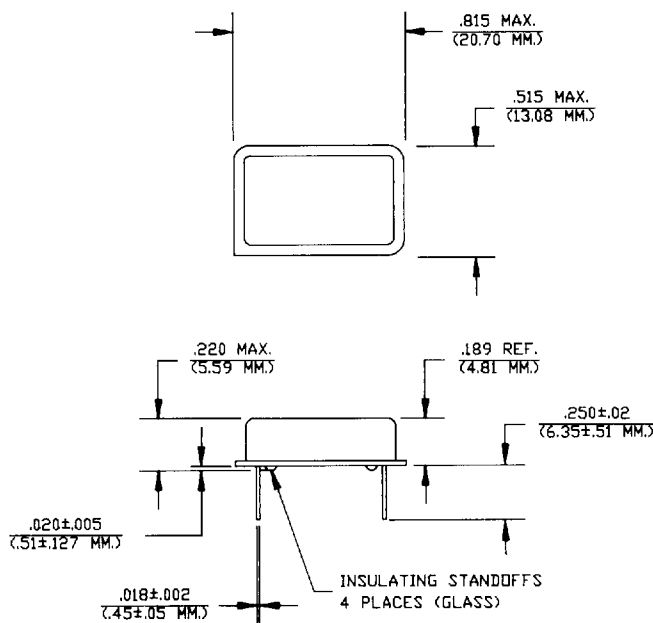
All units are resistance welded in an all metal package, offering RFI shielding, and are designed to survive standard wave soldering operations without damage. Insulated standoffs to enhance board cleaning are standard.

Suggested Applications

- ATM
- Cable TV
- Cellular Communications
- DS3
- Interactive Television
- ISDN
- Modems
- PLL Systems
- RF Modems
- Sonet - OC1, STS-1
- Stratum 4e
- Telecom - T1, T3

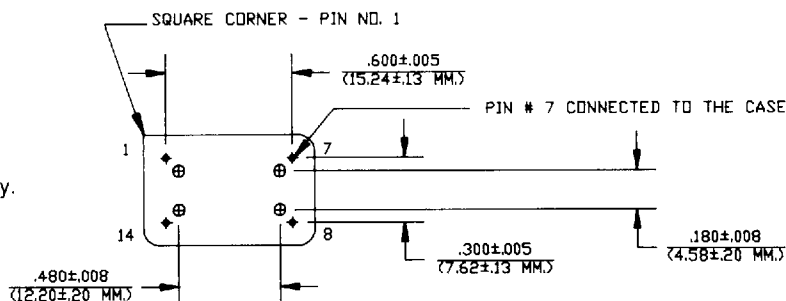
Features

- Deviation—± 300ppm with excellent linearity and incremental slope sensitivity
- Wide frequency range — 750 KHz to 75 MHz
- Wide temperature range, tight tolerance— -40°C to +85°C, ± .0025%
- Case at electrical ground
- Low power consumption
- All metal, resistance weld, hermetically sealed package
- High shock resistance, to 3,000 G's
- Compliant with Stratum 4e (ANSI) standards
- Low jitter— <100ps (on units less than 40MHz)
- Sub-harmonics <-40dBc
- Custom designs available



| Pin | Connections |
|-----|---------------------------|
| 1 | V _{CO} |
| 7 | Case Ground |
| 8 | Output |
| 14 | V _{CC} (+5.0Vdc) |

Dimensions are for reference only.
Inches (mm)



Crystal Clock Oscillators



VCXO Operating Conditions and Output Characteristics

VOLTAGE CONTROLLED CRYSTAL OSCILLATORS

HS-3300 Series
(Available from 750 KHz
to 75 MHz)

| PARAMETER | CONDITIONS | MINIMUM | MAXIMUM |
|--|-----------------------------------|-----------------------|---------|
| General Characteristics | | | |
| Supply voltage (V) | | +4.75V | +5.25V |
| Supply current (I) | | — | 50 mA |
| Operating temperature (T _A) | Functionality only | -40° C | +85° C |
| Storage temperature (T _S) | | -55° C | +125° C |
| Output Characteristics | | | |
| Frequency | V _{CO} = 2.5VDC ± 0.5VDC | 750 KHz | 75 MHz |
| Stability ⁽¹⁾ | -40° to +85° C | ±.0025% | — |
| Symmetry ⁽²⁾ | CMOS V _{DD} /2 | 40/60% | 60/40% |
| | TTL 1.5 Volts | | |
| Logic 0 (V _{OL}) | | | 0.5V |
| Logic 1 (V _{OH}) | | V _{CC} -0.5V | |
| Rise & fall time (t _r , t _f) ⁽³⁾ | CMOS 10-90% | — | 5 ns |
| | TTL 0.5 to 2.5 Volts | | |
| Start-up Time | | | 10ms |
| Control ⁽⁴⁾ | ±300ppm | 0.5VDC | 4.5VDC |
| Linearity | | -20% | +20% |
| Transfer | Positive | | |
| Input Impedance | | 50K ohms | |
| Modulation Frequency | | | |
| Range | | DC | 20KHz |

Footnotes:

- Including calibration tolerance at 25°C and V_C = 2.500 volts, supply change, load change, aging, shock and vibration. (Tighter tolerance available upon request.)
- Duty Cycle of 45/55% is available on some frequencies.
- Rise/Fall times of <3ns available above 18 MHz.
- Minimum pullability may be less at lower frequencies.

This information is believed to be reliable at the time of printing; no responsibility is assumed for inaccuracies. NEL Frequency Controls reserves the right to make changes at any time.