

**AE-X36DXXX-X Series
PECL/LVPECL UHF VCXO**

Rev. L

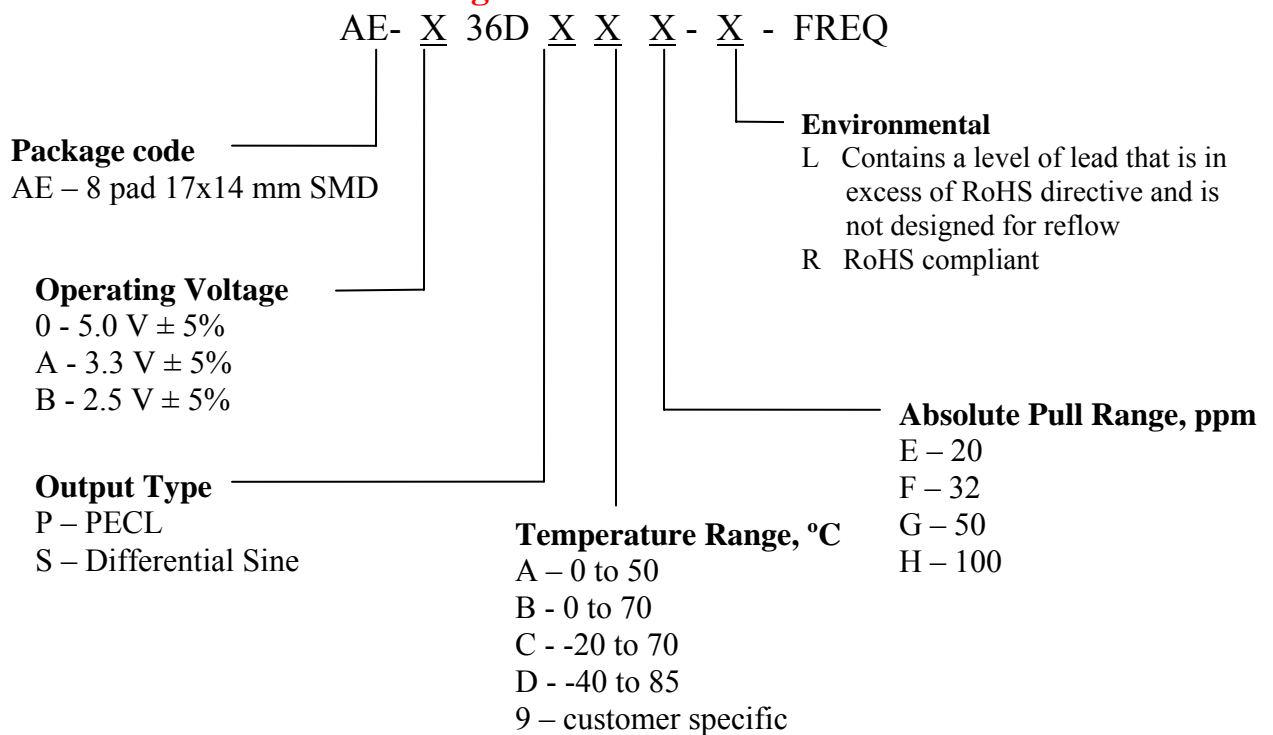
Description

The **AE-XXXX Series** of voltage controlled crystal oscillators (VCXO) provides ultra high frequency with PECL/LVPECL or differential Sine-Wave complementary outputs. The device is based on low noise analog harmonic frequency multiplication, providing exceptionally low Phase Noise and Jitter. It's packaged in a miniature, FR-4 based 17x14 mm SMD package.

Applications and Features

- Fiber Channel; 10 GbE; Infiniband; Network Processors; SONET/SDH
- High Reliability – NEL HALT/HASS qualified for crystal oscillator start-up conditions
- Extremely Low Phase Noise and Jitter
- Frequency Range to 2,500 MHz
- Absolute Pull Range (APR) to ± 1,000 ppm
- SONET ± 20 ppm overall free-run stability available
- High Shock Resistance, to 1000g
- COTS/Dual use

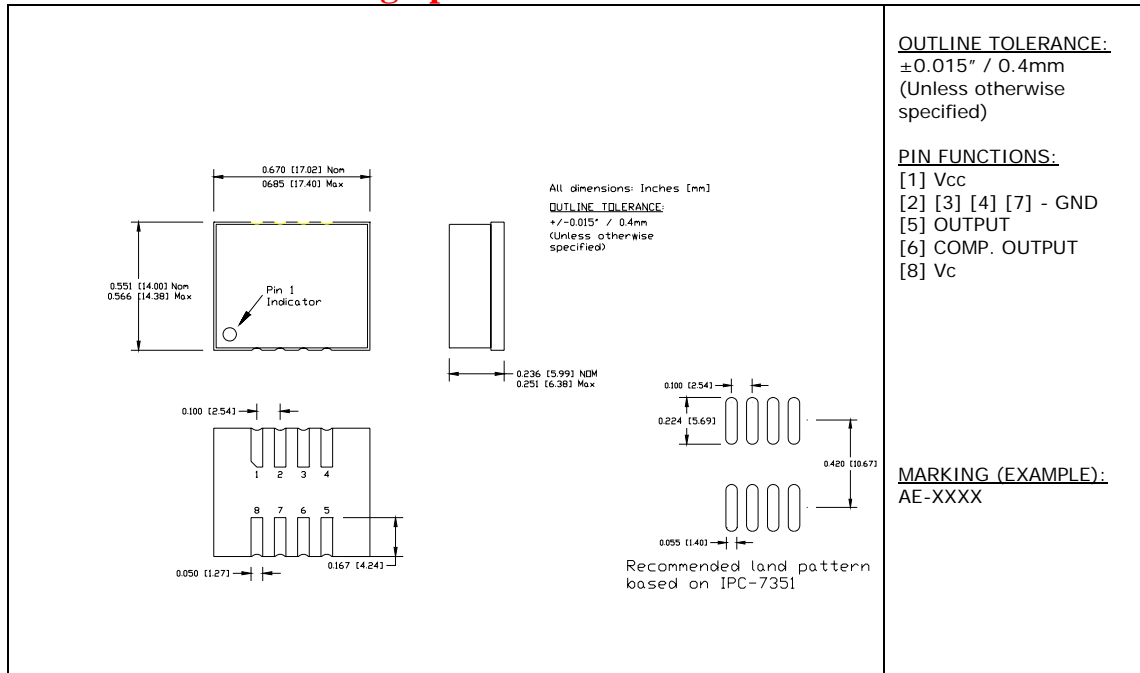
Creating a Part Number



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Drawing Specification



Absolute Maximum Ratings

| Parameter | Symbol | Value | Unit |
|-----------------------------|--------|-------------|------|
| Operating Temperature Range | To | -40 to +85 | °C |
| Storage Temperature Range | Tst | -50 to +90 | °C |
| Supply Voltage | Vcc | -0.5 to 5.5 | V |
| Control Voltage | Vc | -0.5 to 5.5 | V |



**FREQUENCY
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Electrical Parameters

| Parameter* | Symb | Conditions, Note | MIN | TYP | MAX | Unit | |
|--|----------------------------|--|---|--|--|--------|----|
| Nominal Frequency | Fo | See Note below | 250 | | 2,500 | MHz | |
| Supply Voltage | Vcc | Code 0 Code A Code B | 4.75 3.135 2.375 | 5.0 3.3 2.5 | 5.25 3.465 2.625 | V | |
| Supply current | Icc | Code 0 Code A Code B | | | 220 195 160 | mA | |
| Output Logic Type | | | | LVPECL Sine | | | |
| Load | | Output to Vcc-2V, or Thevenin Equivalent, PECL Sine – internally AC coupled | | 50 | | Ohm | |
| Output Levels | Voh Vol | PECL Sine | Vcc-1.025 | -3 dBm | Vcc-1.620 | V | |
| Duty Cycle (Symmetry), PECL | | At 50% of output voltage swing | 45/55 | 50/50 | 55/45 | % | |
| Rise/Fall Time, PECL | Tr/Tf | 20 to 80, 80 to 20% | | 0.25 | 0.3 | ns | |
| Jitter | Integrated | J | Integrated from Phase Noise, 12 KHz to 20 MHz RMS | | 0.1 | 0.2 | ps |
| | | | 100Hz to 80KHz,RMS | | | 1.0 | ns |
| | | | 50 KHz to 80 MHz | | 0.3 | | ps |
| | Wavecrest characterized | J | Random period, | | 2.5 | | ps |
| | | | Accumul., pk-to-pk | | 25 | | ps |
| | | | Determin. | | 1 | | ps |
| Phase Noise | £(Δf) | 1,500 MHz, APR 50 ppm or less | @ 10 Hz @100 Hz @1 KHz @10KHz @100KHz @>1MHz | -50 -80 -115 -130 -130 -135 | -45 -75 -110 -125 -125 -130 | dBc/Hz | |
| Sub-harmonics | | At 1,500 MHz | | -50 | -46 | dBc | |
| Frequency Stability, usually not specified – unless necessary, APR is specified to incorporate stability | ΔF/F | Overall, including temperature, aging 10 years, shock and vibration @Vc=Vcc/2; APR 50 ppm, or less | ±20 | ±30 | | ppm | |
| Control Voltage Range | Vc | | 0V | | Vcc | V | |
| Setability | Vcs | Vc to set the F at Fo; T, Vcc, load – nominal, as shipped | 0.4 Vcc | 0.5 Vcc | 0.6 Vcc | V | |
| Absolute Pull Range | APR | Over all conditions, see part # creation | 20, 32, 50, 100 | | | ppm | |
| Input impedance | Zin | @ Fmod < 100 KHz | 50 | | | KOhm | |
| Modulation Bandwidth | | At Vc = Vcc/2, -3dB | 20 | | | KHz | |

*Note: All parameters, unless noted otherwise are specified for nominal conditions, ie: ambient temperature is 25°C, Vcc – nominal.



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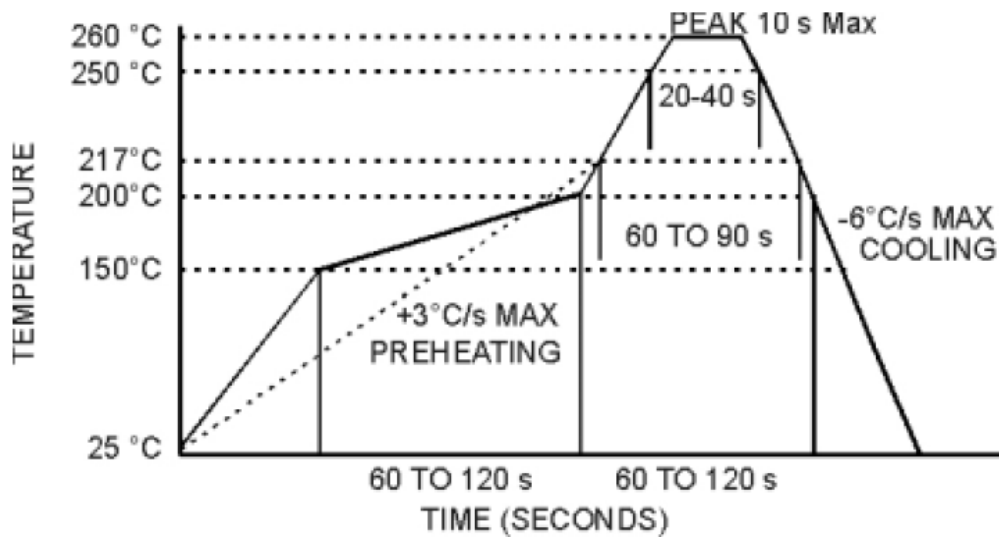
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Environmental and Mechanical Characteristics

| | |
|------------------------------|--|
| Operating temp. range | see part # table |
| Mechanical Shock | Per MIL-STD-202, Method 213, Cond. A |
| Thermal Shock | Per MIL-STD-883, Method 1011, Cond. A |
| Vibration | Per MIL-STD-883, Method 2007, Cond. A |
| Hermetic Seal | Leak rate less than 1×10^{-8} atm.cc/s of helium, crystal only. |
| Soldering conditions | See MAX reflow profile below; The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended. |

Note: For lower frequencies, please refer to NEL AB series of VCXO

MAX Reflow Profile



The device may be reflowed once. Reflowing upside down is not allowed. NO CLEAN assembly is recommended.



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