



**THE DATASHEET OF
ECX-P32CM-156.250**





ECS-P2 (2.5V) and ECS-P3 (3.3V) low jitter, low current Frequency Configurable SMD crystal controlled oscillators.

ECSpresCON™ ECX-P LVPECL Oscillator

Request a Sample



OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| Parameters | Conditions | ECS-P2 (+2.5V) | | | ECS-P3 (+3.3V) | | | Units |
|----------------------------|----------------------------------|----------------|------|----------|----------------|------|----------|-------|
| | | MIN | TYP | MAX | MIN | TYP | MAX | |
| Frequency Range | | 10.000 | | 1500.0 | 10.000 | | 1500.0 | MHz |
| Operating Temperature | Standard | 0 | | +70 | 0 | | +70 | °C |
| | Extended (N Option) | -40 | | +85 | -40 | | +85 | °C |
| Storage Temperature | | -55 | | +125 | -55 | | +125 | °C |
| Supply Voltage | V _{DD} | +2.375 | +2.5 | +2.625 | +3.135 | +3.3 | +3.465 | VDC |
| Frequency Stability * | Option A | | | ±100 | | | ±100 | ppm |
| | Option B | | | ±50 | | | ±50 | ppm |
| | Option C | | | ±25 | | | ±25 | ppm |
| | Option D | | | ±20 | | | ±20 | ppm |
| Input Current | 10.0 ~ 100.0 MHz | | | 46 | | | 48 | mA |
| | 100.1 ~ 250.0 MHz | | | 48 | | | 50 | mA |
| | 250.1 ~ 500 MHz | | | 53 | | | 55 | mA |
| | 500.1 ~ 1500.0 MHz | | | 65 | | | 68 | mA |
| Output Symmetry | @ 50% V _{DD} level | | | 48/52 | | | 48/52 | % |
| Output Load | Differential | | | | | | | |
| Output Enable | Pin 1 ** | 0.7% | | | 0.7% | | | Vdd |
| Output Disable | Pin 1 | | | 0.3% | | | 0.3% | Vdd |
| Disable Current | | | 16 | | 16 | | | mA |
| Output Enable Time | | | | 200 | | | 200 | ns |
| Output Disable Time | Pin 1 = VIL | | | 50 | | | 50 | ns |
| "0" Level | VOL | Vdd-1.85V | | Vdd-1.6V | Vdd-1.85V | | Vdd-1.6V | V |
| "1" Level | VOH | Vdd-1.03V | | Vdd-0.6V | Vdd-1.03V | | Vdd-0.6V | V |
| Rise and Fall Times | 10% V _{DD} to 90% Level | 150 | | 250 | 150 | | 250 | ps |
| Aging | @ +25°C (first year) | | | ±2 | | | ±2 | PPM |
| Start-up Time | @ +25°C (first year) | | | 10 | | | 10 | ms |
| Phase Jitter, rms | 12 KHz to 20 MHz band | | 1.0 | | | 1.0 | | pS |
| Absolute Voltage Range | | | | +3.63 | | | +3.63 | VDC |
| Moisture Sensitivity Level | | | | 1 | | | | |
| Termination Finish | | | | Au | | | | |
| ESD Sensitivity | Human Body Model | | | 3kV Max. | | | | |

*Note: Inclusive of 25°C tolerance, operating temperature, input voltage change, load change, shock and vibration.

**Note: Internal pull-up resistor active output if pin 1 is left open.

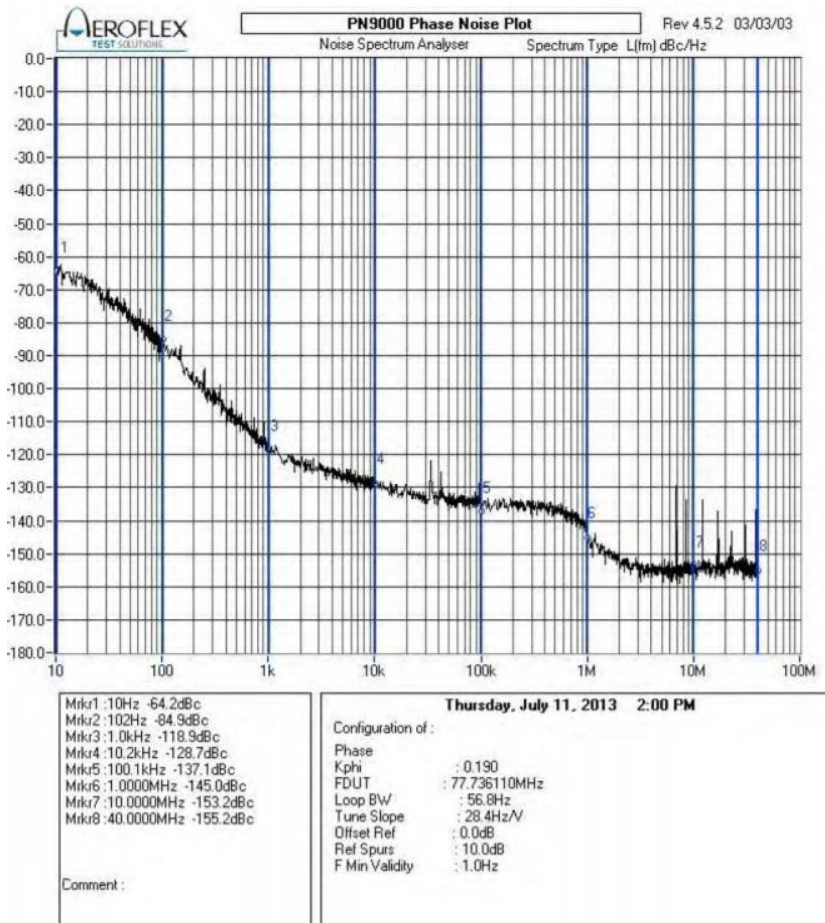
Part Numbering Guide: Example ECX-P35BN-156.250

| Series | Voltage | Package Size (mm) | Stability | Operating Temperature | Frequency | Packaging |
|--------------------------|------------------------|--|---|---|--------------------|--|
| ECX-P (LVPECL Output) | 2 = +2.5V 3 = +3.3V | 2 = 2.5 x 2 3 = 3.2 x 2.5 5 = 5 x 3.2 7 = 7 x 5 | A = ± 100 ppm B = ± 50 ppm C = ± 25 ppm D = ± 20 ppm | L = -10 ~ +70°C M = -20 ~ +70°C N = -40 ~ +85°C P = -40 ~ +105°C | Customer Specified | Blank =(Bulk) -TR=Tape & Reel (1K Min/Mult) |

Phase Noise and Jitter Data (typical)

| SSB Phase Noise Data (dBc/Hz typical) | Frequency (offset) | 77.760 | 122.880 | 125.000 | 156.250 | 212.5 | 491.520 | 622.080 | 1000 | 1250 |
|---|--------------------|--------|---------|---------|---------|-------|---------|---------|------|------|
| | 10 Hz | -64 | -68 | -63 | -55 | -62 | -61 | -48 | -52 | -42 |
| | 100 Hz | -84 | -99 | -94 | -85 | -93 | -86 | -85 | -82 | -81 |
| | 1 KHz | -118 | -113 | -113 | -109 | -105 | -100 | -101 | -93 | -93 |
| | 10 KHz | -128 | -119 | -118 | -116 | -113 | -105 | -102 | -97 | -96 |
| | 100 KHz | -137 | -120 | -119 | -118 | -115 | -105 | -103 | -97 | -97 |
| | 1 MHz | -145 | -140 | -137 | -139 | -135 | -126 | -124 | -116 | -119 |
| | 5 MHz | -152 | -142 | -146 | -146 | -143 | -137 | -133 | -127 | -129 |
| Phase Jitter pS 12 KHz ~ 20 MHz, RMS | 0.9 | 0.8 | 1.1 | 0.9 | 1.0 | 1.1 | 1.2 | 1.5 | 1.1 | |

Phase Noise Plot of ECX-H35BM-77.760 (typical)



| Package Data | |
|--------------|------------------------------|
| Item | Description |
| Lid | Metal |
| Base | Ceramic |
| Plating | Gold/Nickel Surface/Under |

Dimensions (mm)

7 = 7x5 Package

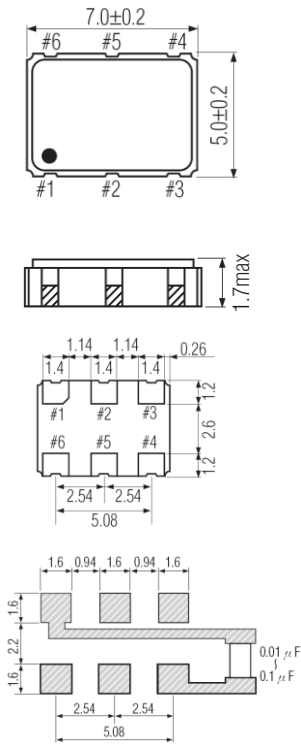


Figure 1) Top, Side, Bottom & Land

5 = 5x3.2 Package

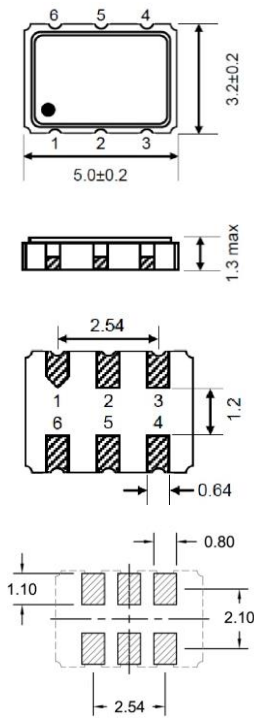


Figure 2) Top, Side, Bottom & Land

3 = 3.2x2.5 Package

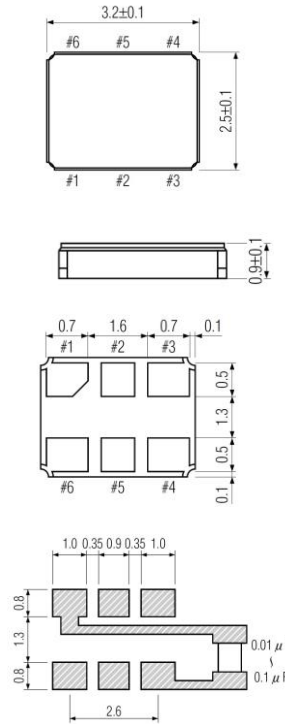


Figure 3) Top, Side, Bottom & Land

2 = 2.5x2 Package

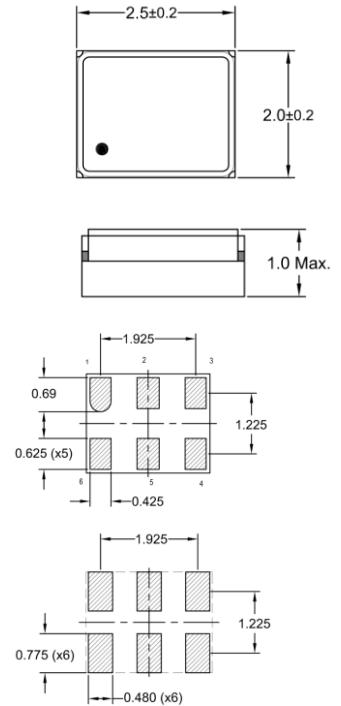
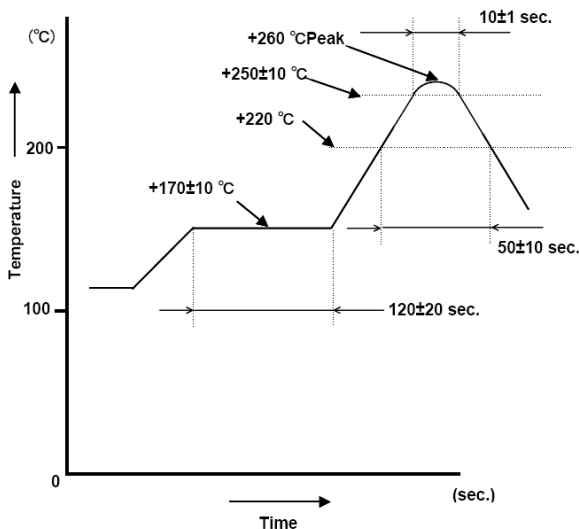


Figure 4) Top, Side, Bottom & Land

Suggested Reflow Profile



| Pin Connections | |
|-----------------|----------------------|
| Pin # | Function |
| 1 | O/E or No Connect |
| 2 | No Connect |
| 3 | Ground |
| 4 | Differential Output |
| 5 | Complementary Output |
| 6 | Supply Voltage |

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