

### OPERATING CONDITIONS / ELECTRICAL CHARACTERISTICS

| Parameters                 | Conditions           | ECX-H2 (+2.5V) |      |         | ECX-H3 (+3.3V) |      |         | Units |
|----------------------------|----------------------|----------------|------|---------|----------------|------|---------|-------|
|                            |                      | MIN            | TYP  | MAX     | MIN            | TYP  | MAX     |       |
| Frequency Range            |                      | 10.000         |      | 250.00  | 10.000         |      | 250.00  | MHz   |
| Operating Temperature      | Standard             | -10            |      | +70     | -10            |      | +70     | °C    |
|                            | Extended (N Option)  | -40            |      | +85     | -40            |      | +85     | °C    |
| Storage Temperature        |                      | -55            |      | +125    | -55            |      | +125    | °C    |
| Supply Voltage             |                      | +2.375         | +2.5 | +2.625  | +2.97          | +3.3 | +3.63   | 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 to 50.0 MHz     |                |      | 20      |                |      | 25      | mA    |
|                            | 50.1 to 150.0 MHz    |                |      | 25      |                |      | 30      | mA    |
|                            | 150.1 to 250 MHz     |                |      | 35      |                |      | 40      | mA    |
| Output Symmetry            | @ 50% Vcc level      |                |      | 48/52   |                |      | 48/52   | %     |
| Aging                      | @ +25°C (first year) |                |      | ±2      |                |      | ±2      | ppm   |
| Rise and Fall Times        | 10% Vdd to 90% level | 600            |      | 1500    | 600            |      | 1500    | ps    |
| "0" Level                  | VOL                  |                |      | 10% Vdd |                |      | 10% Vdd | VDC   |
| "1" Level                  | VOH                  | 90% Vdd        |      |         | 90% Vdd        |      |         | VDC   |
| Output Load                | HCMOS                |                |      | 15      |                |      | 15      | pF    |
| Output Enable              | Pin 1 **             | 0.7%           |      |         | 0.7%           |      |         | Vdd   |
| Output Disable             | Pin 1                |                |      | 0.3%    |                |      | 0.3%    | Vdd   |
| Output Enable Times        |                      |                |      | 200     |                |      | 200     | ns    |
| Output Disable Times       |                      |                |      | 50      |                |      | 50      | ns    |
| Phase Jitter, rms          | 12 KHz to 20 MHz     |                | 1.0  |         |                | 1.0  |         | pS    |
| ESD Sensitivity            | Human Body Model     | 3 kV Max.      |      |         |                |      |         |       |
| Absolute Voltage Range     |                      |                |      | +3.63   |                |      | +3.63   | VDC   |
| Moisture Sensitivity Level |                      | 1              |      |         |                |      |         |       |
| Termination Finish         |                      | Au             |      |         |                |      |         |       |

\*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.

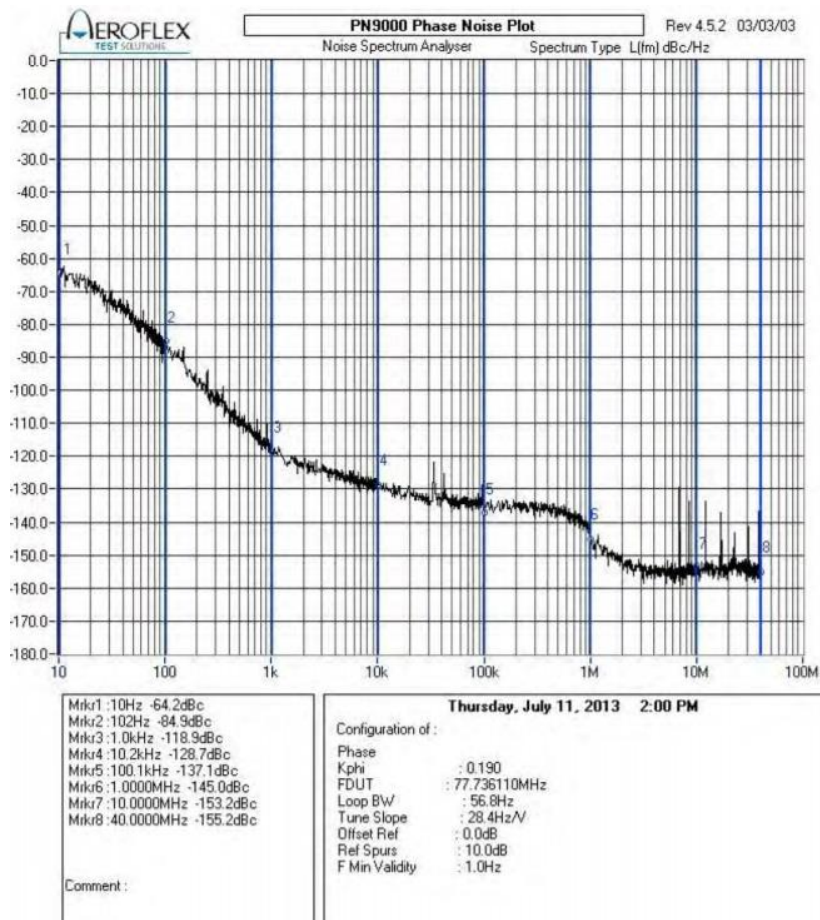
| Part Numbering Guide    |                        |                                                          |                                                               |                                                                           |                    |                            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

**Example: ECX-H35BN-156.250**

### Phase Noise and Jitter Data (typical)

| SSB Phase Noise Data (dBc/Hz typical) | Frequency (offset) | 10.000 | 20.000 | 25.000 | 27.000 | 40.000 | 50.000 | 80.000 | 155.520 | 212.500 |
|---------------------------------------|--------------------|--------|--------|--------|--------|--------|--------|--------|---------|---------|
|                                       | 10 Hz              | -93.4  | -86.2  | -85.2  | -86.5  | -87    | -84.4  | -87.1  | -87.8   | -84.7   |
|                                       | 100 Hz             | -118   | -114.2 | -110   | -108.7 | -107.1 | -106.8 | -103   | -95.5   | -96     |
|                                       | 1 KHz              | -135.4 | -129.7 | -125.6 | -125.5 | -125.4 | -122   | -118   | -112.4  | -109.1  |
|                                       | 10 KHz             | -140.7 | -133.8 | -132.3 | -134.7 | -129.5 | -127.1 | -120.5 | -116.4  | -115    |
|                                       | 100 KHz            | -137.1 | -131.2 | -130.2 | -131.1 | -121   | -123.9 | -119.5 | -108.2  | -105.7  |
|                                       | 1 MHz              | -155.9 | -153.2 | -148.8 | -146.1 | -145.8 | -144.9 | -142.7 | -136.9  | -133.2  |
|                                       | 10 MHz             |        |        |        |        |        | -155   | -151.6 | -146    | -145.8  |
| Phase Jitter pS 12 KHz ~ 20 MHz, RMS  |                    | 0.94   | 0.96   | 0.93   | 0.94   | 1.03   | 0.98   | 1.13   | 1.27    | 1.34    |

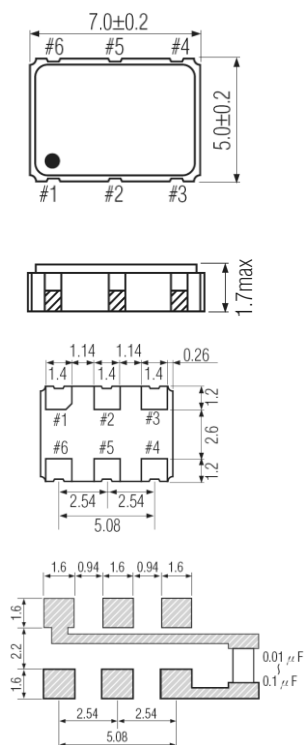
### Phase Noise Plot of ECX-H35BM-77.760 (typical)



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

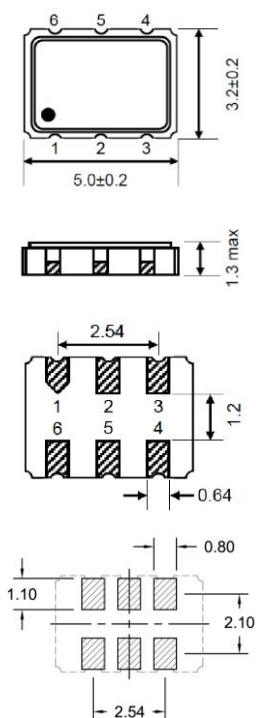
**Dimensions (mm)**

**7 = 7x5 Package**



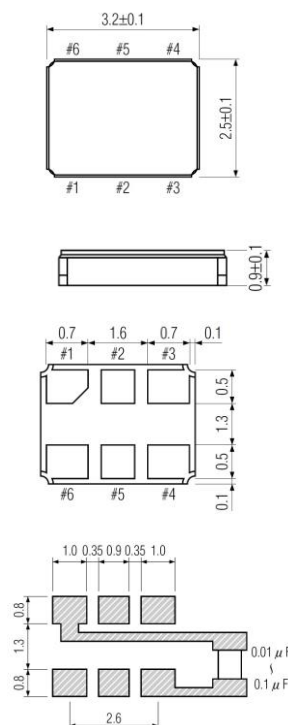
*Figure 1) Top, Side, Bottom & Land*

**5 = 5x3.2 Package**



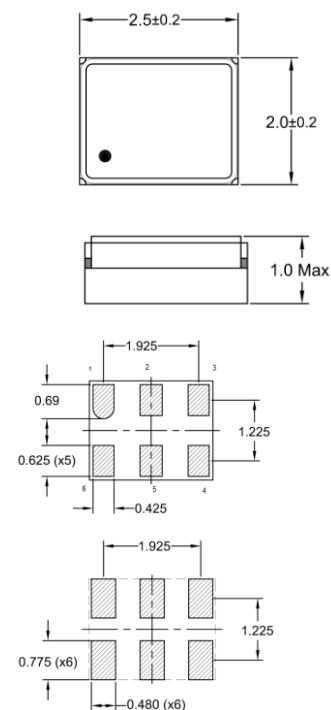
*Figure 2) Top, Side, Bottom & Land*

**3 = 3.2x2.5 Package**



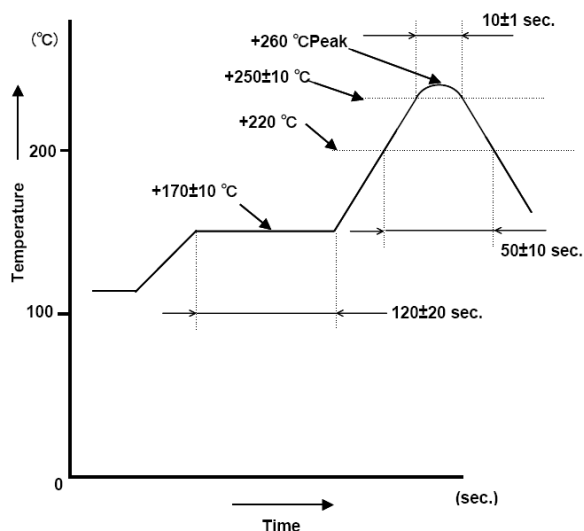
*Figure 3) Top, Side, Bottom & Land*

**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     | Output            |
| 5     | No Connect        |
| 6     | Supply Voltage    |