

## 2 Pad Ceramic Base SMD Crystal, 1.6 mm x 1.0 mm

## IL3W Series

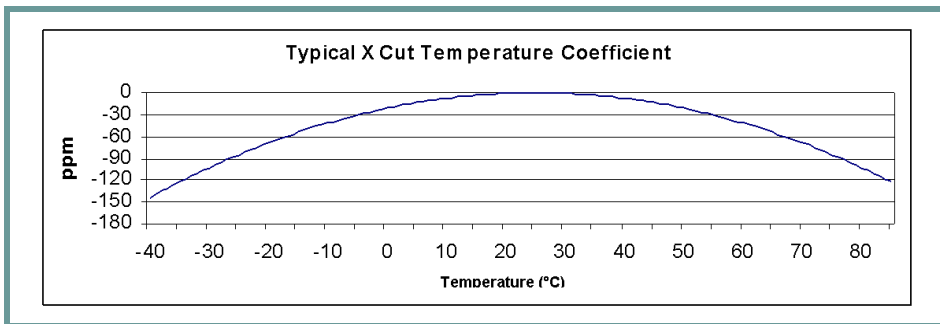
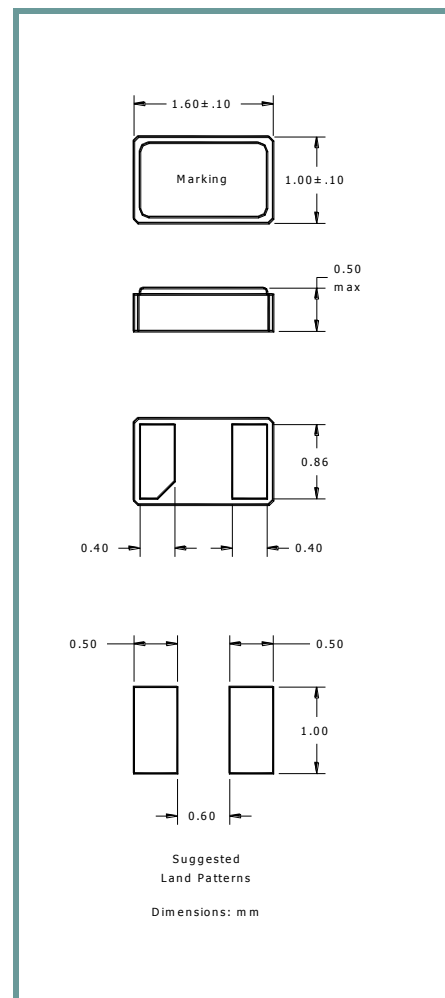
### Product Features:

2 Pad SMD Package  
RoHS Compliant  
Compatible with Leadfree Processing  
Ultra Low Profile

### Applications:

Real Time Clocks  
Metering  
Industrial Control  
Time Reference

|                                      |                                                                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------|
| Frequency                            | 32.768kHz                                                                               |
| ESR (Equivalent Series Resistance)   | 90,000 Ohms Maximum                                                                     |
| Shunt Capacitance (C0)               | 2.0pF Maximum                                                                           |
| Motional Capacitance (C1)            | 6.5fF Typical                                                                           |
| Frequency Tolerance @ 25° C ±5°C     | ±20ppm Maximum                                                                          |
| Frequency Stability over Temperature | Parabolic -0.045ppm/°C <sup>2</sup> Typical Turnover point +25°C ±5°C (See Graph Below) |
| Crystal Cut                          | X-Cut                                                                                   |
| Load Capacitance                     | 12.5pF (See Table Below)                                                                |
| Drive Level                          | 0.1μWatt Typical, 0.5μWatt Maximum                                                      |
| Aging                                | ±3ppm/year Maximum                                                                      |
| Operating Temperature Range          | -40°C to +85°C                                                                          |
| Storage Temperature Range            | -55°C to +125°C                                                                         |



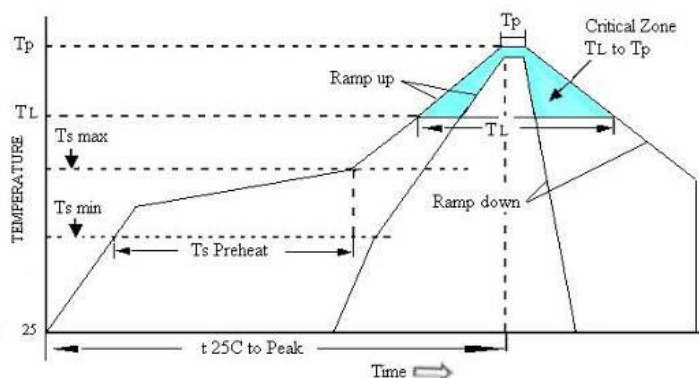
| Part Number Guide |                                     | Sample Part Number: IL3W-HX5F12.5- 32.768 KHz |                             |                 |                                             |            |
|-------------------|-------------------------------------|-----------------------------------------------|-----------------------------|-----------------|---------------------------------------------|------------|
| Package           | Stability (ppm) at Room Temperature | Stability (ppm) over Operating Temperature    | Operating Temperature Range | Mode (overtone) | Load Capacitance (pF)                       | Frequency  |
| IL3W              | H = ±20 ppm                         | X = X Cut                                     | 5 = -40°C to +85°C          | F = Fundamental | 12.5 = 12.5pF<br>9.0 = 9.0pF<br>7.0 = 7.0pF | 32.768 KHz |

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### Pb Free Solder Reflow Profile:

### Typical Circuit:



|                                               |                          |
|-----------------------------------------------|--------------------------|
| Ts max to $T_L$ (Ramp-up Rate)                | 3°C / second max         |
| Preheat                                       |                          |
| Temperature min ( $T_s$ min)                  | 150°C                    |
| Temperature typ ( $T_s$ typ)                  | 175°C                    |
| Temperature max ( $T_s$ max)                  | 200°C                    |
| Time ( $T_s$ )                                | 60 to 180 seconds        |
| Ramp-up Rate ( $T_L$ to $T_p$ )               | 3°C / second max         |
| Time Maintained Above Temperature ( $T_L$ )   | 217°C                    |
| Time ( $T_L$ )                                | 60 to 150 seconds        |
| Peak Temperature ( $T_p$ )                    | 260°C max for 10 seconds |
| Time within 5°C to Peak Temperature ( $T_p$ ) | 20 to 40 seconds         |
| Ramp-down Rate                                | 6°C / second max         |
| Time 25°C to Peak Temperature                 | 8 minutes max            |

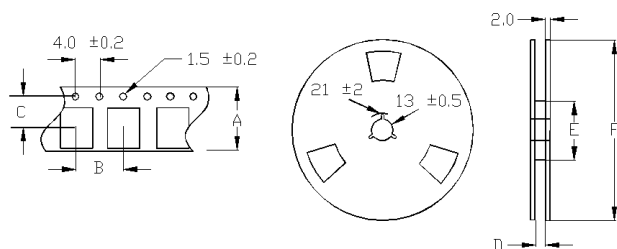
Units are backward compatible with +240°C reflow processes

### Package Information:

MSL = 1

Termination = e4 (Au over Ni over W base metal)

### Tape and Reel Information:



| Quantity per Reel | 5000       |
|-------------------|------------|
| A                 | 8.0 ± 0.3  |
| B                 | 4.0 ± 0.2  |
| C                 | 3.5 ± 0.02 |
| D                 | 9.0 ± 1.0  |
| E                 | 60 / 80    |
| F                 | 180        |

### Environmental Specifications

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Thermal Shock                | MIL-STD-883, Method 1011, Condition A                       |
| Moisture Resistance          | MIL-STD-883, Method 1004                                    |
| Mechanical Shock             | MIL-STD-883, Method 2002, Condition B                       |
| Mechanical Vibration         | MIL-STD-883, Method 2007, Condition A                       |
| Resistance to Soldering Heat | J-STD-020C, Table 5-2 Pb-free devices (except 2 cycles max) |
| Hazardous Substance          | Pb-Free / RoHS                                              |
| Solderability                | JESD22-B102 Method 2 (Preconditioning E)                    |
| Terminal Strength            | MIL-STD-883, Method 2004, Test Condition D                  |
| Gross Leak                   | MIL-STD-883, Method 1014, Condition C                       |
| Fine Leak                    | MIL-STD-883, Method 1014, Condition A1                      |
| Solvent Resistance           | MIL-STD-202, Method 215                                     |

### Marking

Line 1: I, Date Code (YWW)