

## Product Features:

- SMD Package
- Small package Footprint
- Supplied in Tape and Reel
- Compatible with Leadfree Processing
- Fundamental Mode up to 60MHz

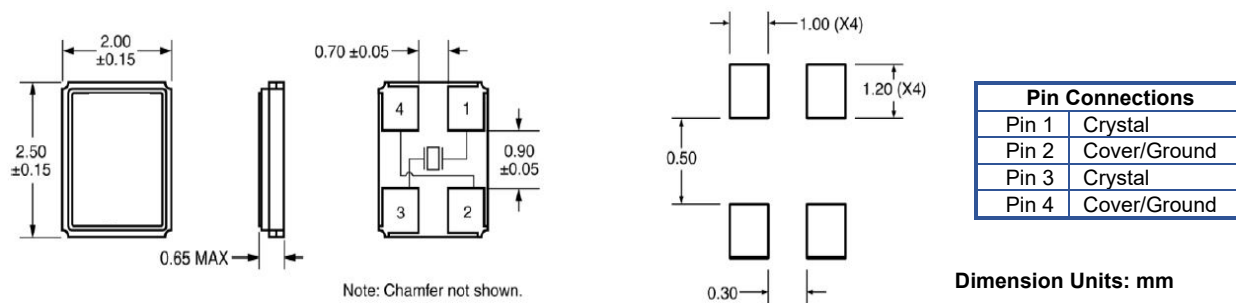
## Applications:

- PCMCIA Cards
- Storage
- PC's
- GSM Cell Phone
- Wireless Lan
- USB
- GSM Cell Phone

## Electrical Specifications:

|   |   |
|---|---|
| <b>Frequency</b>                              | 12MHz to 60MHz                                    |
| <b>Equivalent Series Resistance</b>           |   |
| 12MHz – 19.999999MHz                          | 100 Ohms Maximum                                  |
| 20MHz – 29.999999MHz                          | 80 Ohms Maximum                                   |
| 30MHz – 39.999999MHz                          | 60 Ohms Maximum                                   |
| 40MHz – 60MHz                                 | 40 Ohms Maximum                                   |
| <b>Shunt Capacitance (C0)</b>                 | 3.5pF Maximum                                     |
| <b>Frequency Tolerance (at 25°C)</b>          | ±50ppm, ±30ppm, ±25ppm, ±20ppm, ±15ppm, or ±10ppm |
| <b>Frequency Stability (over Temperature)</b> | ±50ppm, ±30ppm, ±25ppm, ±20ppm, ±15ppm, or ±10ppm |
| <b>Mode of Operation</b>                      | Fundamental                                       |
| <b>Crystal Cut</b>                            | AT Cut  |
| <b>Load Capacitance</b>                       | 8pF to 32pF or Specify                            |
| <b>Drive Level</b>                            | 100µW Maximum                                     |
| <b>Aging</b>                                  | ±3ppm/Year Maximum                                |
| <b>Operating Temperature Range</b>            | See Part Number Guide                             |
| <b>Storage Temperature Range</b>              | -40°C to +125°C                                   |

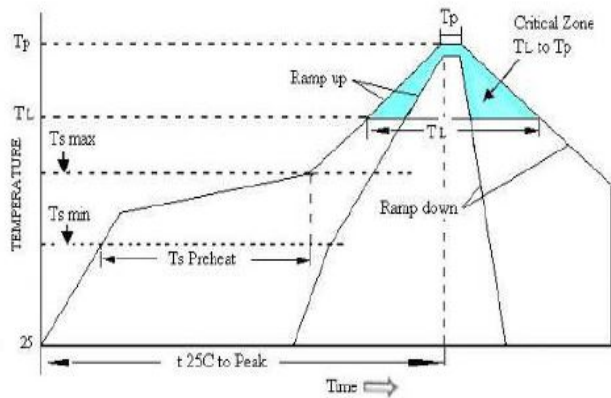
## Mechanical and Solder Pad Dimensions:



| Part Number Guide |                     | Sample Part Number: ILCX18 - FB1F18 - 20.000 MHz |                             |                    |                        |            |
|-------------------|---------------------|--|-----------------------------|--------------------|------------------------|------------|
| Package           | Frequency Tolerance | Frequency Stability                              | Operating Temperature Range | Mode of Operations | Load Capacitance       | Frequency  |
| ILCX18 -          | B = ±50 ppm         | B = ±50 ppm                                      | 0 = 0°C to +50°C            | F = Fundamental    | 8pF to 32pF or Specify | -20.000MHz |
|                   | F = ±30 ppm         | F = ±30 ppm                                      | 1 = 0°C to +70°C            |                    |                        |            |
|                   | G = ±25 ppm         | G = ±25 ppm                                      | 2 = -10°C to +60°C          |                    |                        |            |
|                   | H = ±20 ppm         | H = ±20 ppm                                      | 3 = -20°C to +70°C          |                    |                        |            |
|                   | I = ±15 ppm         | I = ±15 ppm**                                    | 5 = -40°C to +85°C          |                    |                        |            |
|                   | J = ±10 ppm*        | J = ±10 ppm**                                    | 8 = -30°C to +85°C          |                    |                        |            |
|                   |                     |  | 9 = -10°C to +50°C          |                    |                        |            |
|                   |                     | D = -10°C to +105°C*                             |                             |                    |                        |            |
|                   |                     | E = -40°C to +105°C*                             |                             |                    |                        |            |

\* Not available at all frequencies. \*\* Not available for all temperature ranges.

## Pb Free Solder Reflow Profile:



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

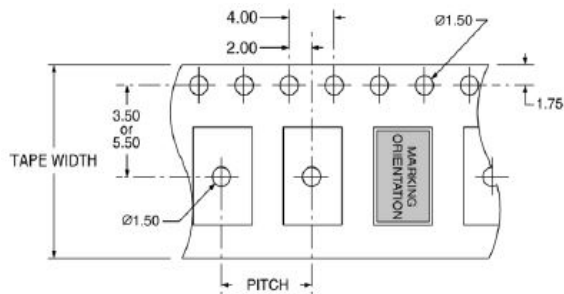
Units are backward compatible with +240°C reflow processes

## Package Information:

MSL = 1

Termination = e4 (Au over Ni over W base metallization).

## Tape and Reel Information:



|              |       |
|--------------|-------|
| PITCH        | 4.00  |
| TAPE WIDTH   | 8.00  |
| REEL DIA     | 180   |
| QTY PER REEL | 3,000 |