

## M1381 Series SPECIFICATION FOR 3.7 x 8.0 mm THROUGH HOLE TUNING FORK CRYSTAL

### FEATURES

Suitable for wave or reflow soldering  
Through Hole AT-cut crystal  
Military Temperature Range  
High Shock Resistance

### APPLICATIONS

Harsh Environments  
Communications equipment  
Metering  
Industrial

### Ordering Information:

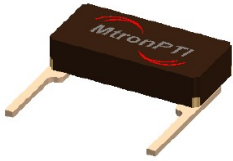
| Product Family                 | Temperature Range |                | Tolerance at +25 °C |          | Stability |                 | Load Capacitance |                    | Resistance |                     | Frequency    |
|--------------------------------|-------------------|----------------|---------------------|----------|-----------|-----------------|------------------|--------------------|------------|---------------------|--------------|
|                                | Code              | Value          | Code                | Value    | Code      | Value           | Code             | Value              | Code       | Value               |              |
| M1381                          | 2                 | -40 to +85 °C  | G                   | ±20 ppm  | Z         | Parabolic Curve | Blank            | 12.5 pF (standard) | Blank      | 60 kohm max. (std.) | 0.032768 MHz |
|                                | 4                 | -55 to +125 °C | P                   | ±100 ppm |           |                 | 9                | 9 pF               |            |                     |              |
|                                |                   |                |                     |          |           |                 | Other            | Consult factory    |            |                     |              |
| Example: M13812GZ 0.032768 MHz |                   |                |                     |          |           |                 |                  |                    |            |                     |              |
| M1381                          | 2                 |                | G                   |          | Z         |                 |                  |                    |            |                     | 0.032768 MHz |

### Electrical Specifications:

| Parameter              | Symbol         | Min.   | Typ.   | Max.   | Units               | Conditions        |
|------------------------|----------------|--|--------|--------|---------------------|-------------------|
| Mode of Oscillation    |                | Fundamental (XT cut)                           |        |        |                     |                   |
| Frequency              | F <sub>O</sub> | 0.032768                                       |        |        | MHz                 |                   |
| Frequency Tolerance    | ΔF/F           | See Ordering Information Table                 |        |        | ppm                 | @ +25 °C          |
| Frequency Stability    | ΔF/F           | Parabolic Curve                                |        |        |                     | Ref to +25 °C     |
| Turnover Temperature   | T <sub>T</sub> | +20  | +25    | +30    | °C                  |                   |
| Parabolic Curve Const. | B              | -0.032   | -0.035 | -0.039 | ppm/°C <sup>2</sup> |                   |
| Operating Temperature  | T <sub>A</sub> | See Ordering Information Table                 |        |        | °C                  |                   |
| Aging                  |                | -3   |        | +3     | ppm/year            | @ +25 °C          |
| Load Capacitance       | C <sub>L</sub> | See ordering information (standard is 12.5 pF) |        |        | pF                  |                   |
| ESR                    | R <sub>s</sub> |  | 40     | 60     | kΩ                  | standard @ +25 °C |
| Shunt Capacitance      | C <sub>O</sub> |  | 1.6    |        | pF                  | standard @ +25 °C |
| Drive Level            | D <sub>L</sub> |  |        | 1      | μW                  | standard          |
| Insulation Resistance  |                | 500  |        |        | MΩ                  |                   |

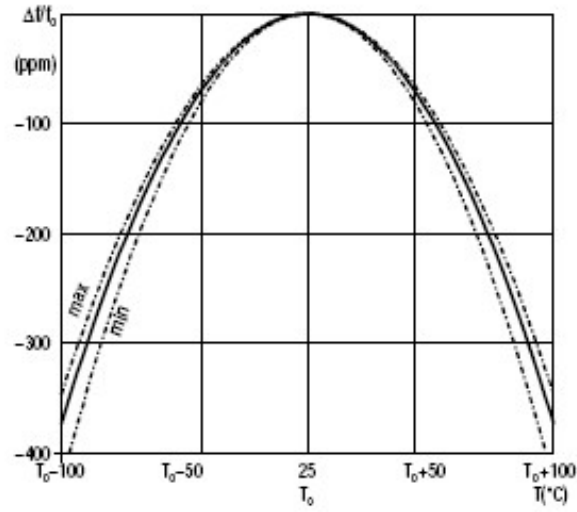
### Environmental & Package Specifications:

|                           |   |
|---------------------------|---|
| Storage Temperature       | -55°C to 125°C  |
| Mechanical Shock          | 5000g, 0.3 ms, ½ sine   |
| Vibration                 | 20g / 10-2000 Hz  |
| Gross Leak                | Per MIL-STD-202, Method 112 (30 sec. Immersion)                       |
| Fine Leak                 | Per MIL-STD-202, Method 112 (1 x 10 <sup>-8</sup> atm cc/s of Helium) |
| Resistance to Solvents    | Per MIL-STD-883, Method 2015  |
| Solderability             | Per EIAJ-STD-002  |
| Max. Soldering Conditions | +260°C for 10 secs  |
| Package                   | 3.7 x 8.0 x 1.75 mm ceramic with leads                                |



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TUNING FORK CRYSTAL**

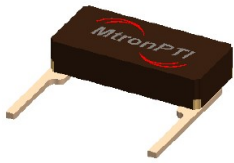
**Frequency vs. Temperature Characteristics:**



**Marking:**

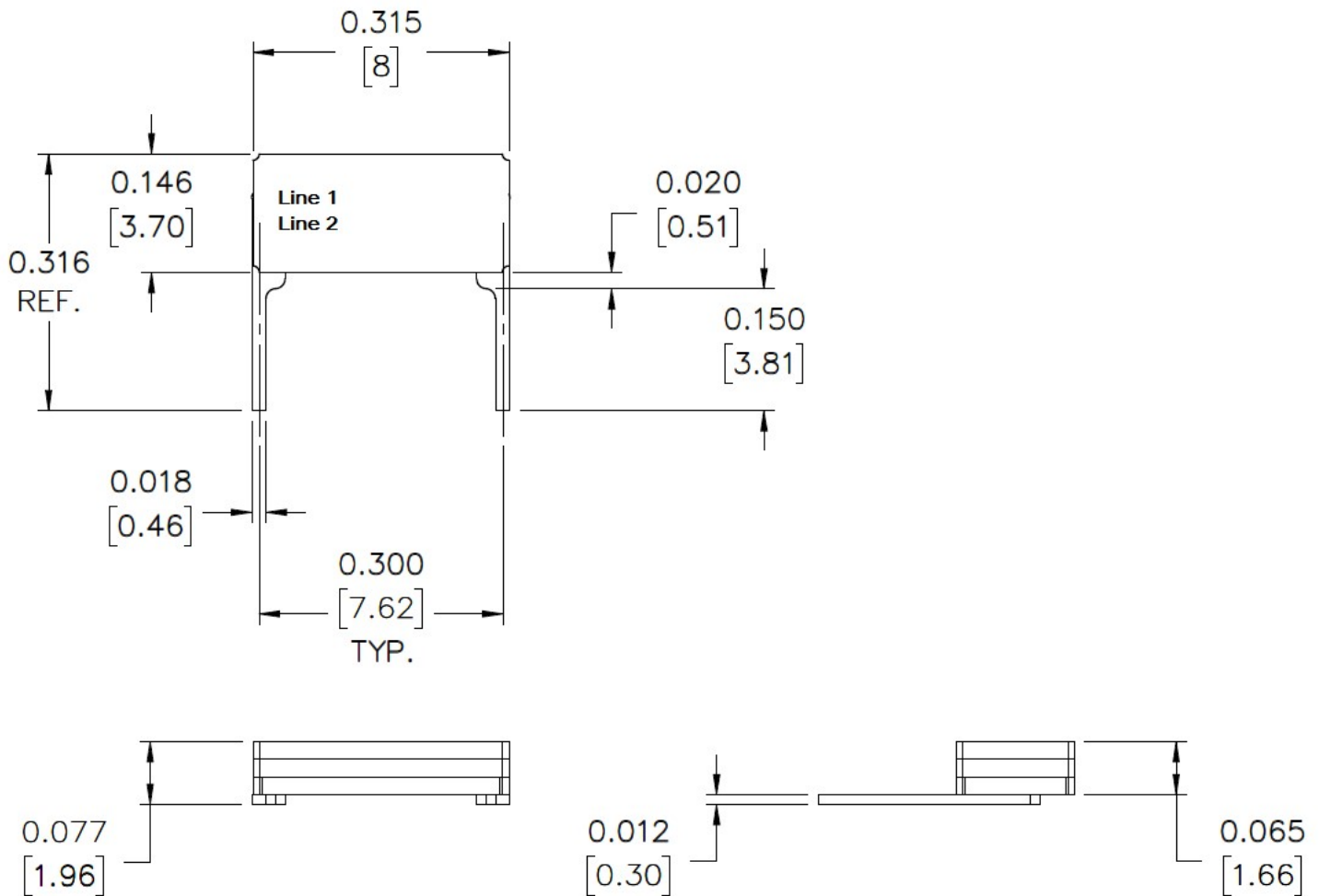
| Part Marking |          |
|--------------|----------|
| Line 1       | 32k768   |
| Line 2       | M Y WW V |

| Legend |          |
|--------|----------|
| M      | MtronPTI |
| Y      | Year     |
| WW     | Week     |
| V      | Vendor   |



## M1381 Series SPECIFICATION FOR 3.7 x 8.0 mm THROUGH HOLE TUNING FORK CRYSTAL

### Dimensions:



MtronPTI reserves the right to make changes to the product(s) and service(s) described herein without notice.  
No liability is assumed as a result of their use or application.

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