

# IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



ABM10-166-12.00MHz

2.5 x 2.0 x 0.5 mm

RoHS/RoHS II Compliant

MSL = N/A: NOT APPLICABLE (See Note #1)

## FEATURES

- Optimized for low power consumption, wearables, and IoT applications
- Guaranteed low 125Ω ESR ensures operation in power sensitive solutions
- 0.50mm max height ideally suited for height constrained designs
- Seam sealed for long-term reliability

## APPLICATIONS

- Wearables
- Internet of Things (IoT)
- Bluetooth/Bluetooth Low Energy (BLE)
- Wireless modules
- Machine-to-machine (M2M) connectivity
- Ultra-low power MCU/modules
- USB

## STANDARD SPECIFICATIONS

| PARAMETERS                                                          | MINIMUM     | TYPICAL | MAXIMUM | UNITS | NOTES          |
|---------------------------------------------------------------------|-------------|---------|---------|-------|----------------|
| Frequency                                                           | 12.000      |         |         | MHz   |                |
| Operation Mode                                                      | Fundamental |         |         |       |                |
| Operating Temperature                                               | -20         |         | +70     | °C    |                |
| Storage Temperature                                                 | -40         |         | +125    | °C    |                |
| Frequency Tolerance @+25°C                                          | -10         |         | +10     | ppm   | See Note #2    |
| Frequency Stability over the Operating Temperature ( ref. to +25°C) | -10         |         | +10     | ppm   | See Note #3    |
| Equivalent series resistance (R1)                                   |             |         | 125     | Ω     |                |
| Shunt capacitance (C0)                                              |             |         | 2       | pF    |                |
| Load capacitance (CL)                                               | 8           |         |         | pF    |                |
| Drive Level                                                         |             | 10      | 100     | μW    |                |
| Aging@25°C±3°C                                                      |             |         | ±3      | ppm   | First year     |
| Insulation Resistance                                               | 500         |         |         | MΩ    | @ 100Vdc ± 15V |

- Note#1:** Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive
- Note#2:** Referenced to crystal resonant frequency, into an oscillator loop effective load of 8pF
- Note#3:** Referenced to the measured frequency at 25°C±3°C, into an oscillator loop effective load of 8pF

REVISED: 06/21/2016



5101 Hidden Creek Lane Spicewood TX 78669  
Phone: 512-371-6159 | Fax: 512-351-8858  
For terms and conditions of sale visit:  
[www.abracon.com](http://www.abracon.com)



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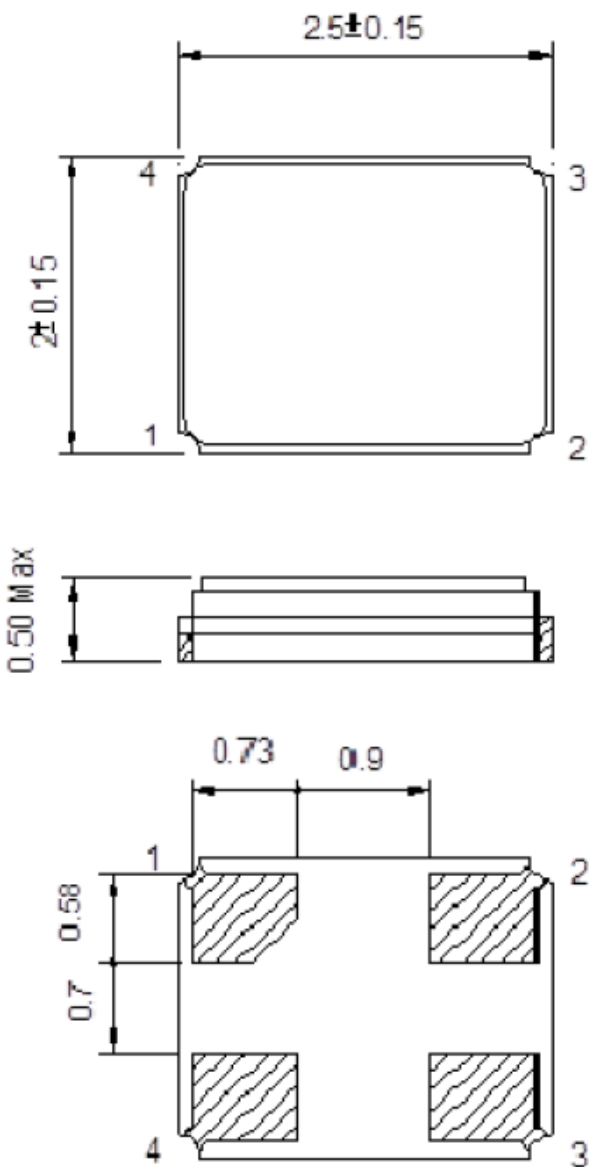
PART IDENTIFICATION AND ORDERING INFORMATION

ABM10-166-12.000MHz-



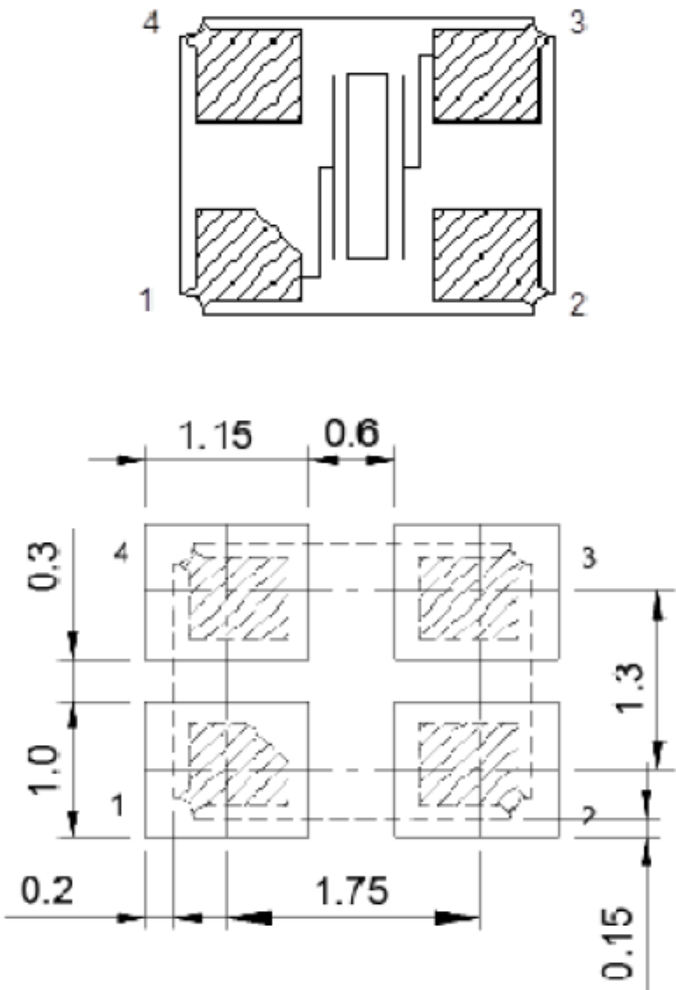
| PACKAGING   |
|-------------|
| Blank: Bulk |
| T3: 3K/Reel |

MECHANICAL DIMENSIONS (ALL DIMENSIONS ARE IN mm)



RECOMMENDED LAND PATTERN

<TOP VIEW>



UNIT: mm  
TOLERANCE: ±0.1

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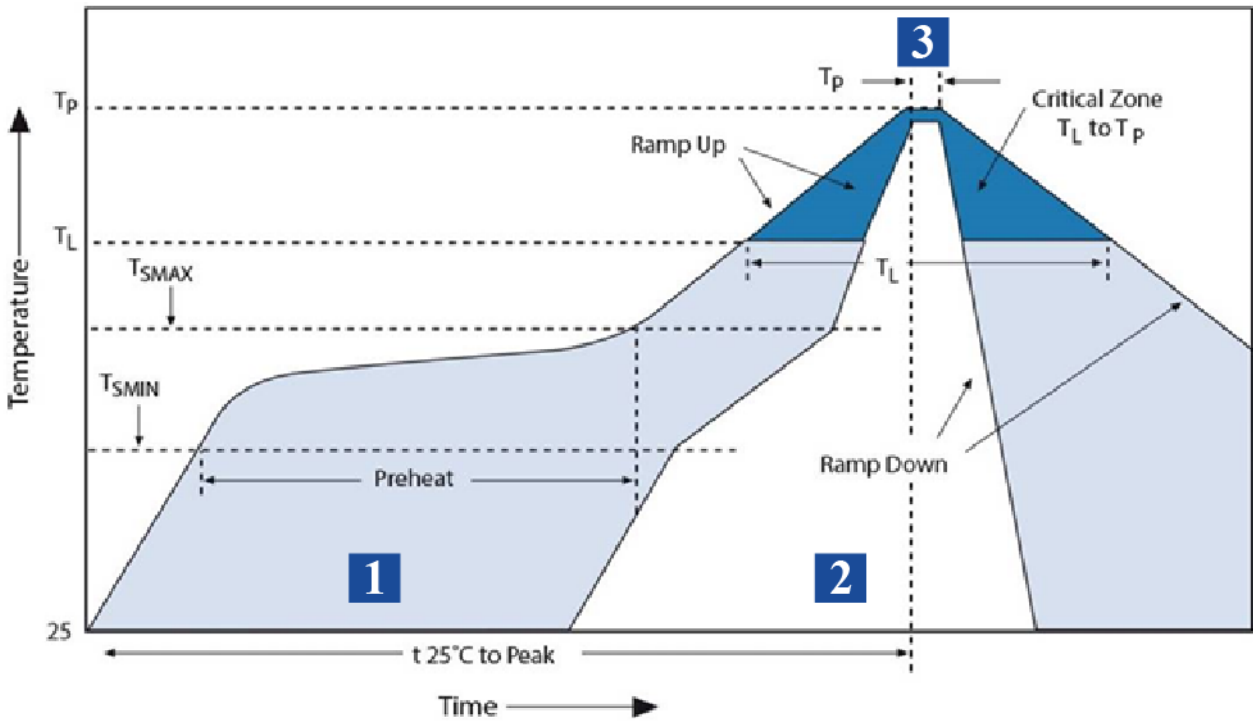
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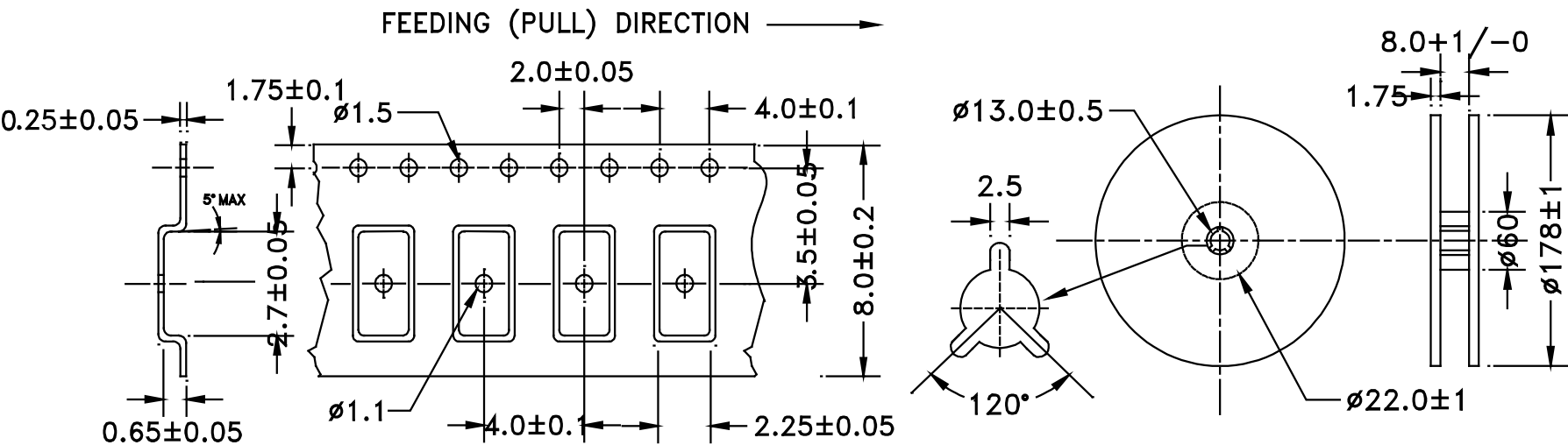
REFLOW PROFILE



| Zone | Description | Temperature                          | Time        |
|------|-------------|--------------------------------------|-------------|
| 1    | Preheat     | $T_{SMIN} - T_{SMAX}$<br>160°C~180°C | 120 sec.    |
| 2    | Reflow      | $T_L$<br>60°C                        | 60 sec.     |
| 3    | Peak Heat   | $T_p$<br>260°C                       | 10 sec. MAX |

PACKAGING

T3:3000PCS/REEL



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