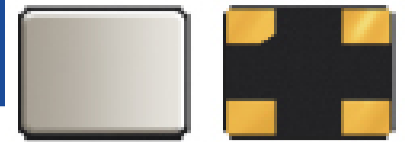


IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



2.5 x 2.0 x 0.6mm

 RoHS/RoHS II Compliant

MSL = N/A: NOT APPLICABLE

ABM10W SERIES

FEATURES

- Optimized for energy saving wearables and IoT applications
- Plated at exceptionally low plating capacitance, as low as 4pF, with optimized ESR
- 0.6 mm max height ideally suited for height constrained designs
- Seam sealed for longterm reliability

APPLICATIONS

- Wearables
- Internet of Things (IoT)
- Bluetooth/Bluetooth Low Energy (BLE)
- Wireless modules
- Machine-to-machine (M2M) connectivity
- Ultra-low power MCU
- Near Field Communication (NFC)
- ISM Band

STANDARD SPECIFICATIONS

| Parameters | Minimum | Typical | Maximum | Units | Notes |
|---|-------------|---------|---------|-------|--------------------|
| Frequency Range | 16.000 | | 50.000 | MHz | |
| Operation Mode | Fundamental | | | | |
| Operating Temperature Range | -40 | | +125 | °C | See options |
| Storage Temperature | -55 | | +125 | °C | |
| Frequency Tolerance @ +25°C | -10 | | +10 | ppm | See options |
| Frequency Stability over the Operating Temperature (ref. to +25°C) | -10 | | +10 | ppm | See options |
| Equivalent series resistance (R1) | | | 100 | Ω | 16.000 – 29.999MHz |
| | | | 70 | | 30.000 – 50.000MHz |
| Shunt capacitance (C0) | | < 1.0 | 2.0 | pF | |
| Load capacitance (CL) | | 4.0 | | pF | See options |
| Drive Level | | 10 | 100 | μW | |
| Aging (1 year) | -2 | | +2 | ppm | @ 25°C±3°C |
| Insulation Resistance | 500 | | | MΩ | @ 100Vdc ± 15V |

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ABM10W SERIES

2.5 x 2.0 x 0.6mm



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OPTIONS AND PART IDENTIFICATION

ABM10W- [] MHz - [] - [] - [] - [] - []

| Frequency in MHz |
|--|
| Please specify the Frequency in MHz (e.g. 16.000MHz) |

| Load Capacitance (pF) |
|-----------------------|
| 8: 8pF |
| 7: 7pF |
| 6: 6pF |
| 4: 4pF |

| Custom ESR if other than standard |
|---------------------------------------|
| R □: Specify a value in Ω (e.g.: R40) |

| Packaging |
|------------------|
| Blank: Bulk |
| T3: 3kpcs / reel |

| Operating Temp. |
|-----------------------|
| I: 0°C ~ 50°C |
| E: 0°C ~ +70°C |
| B: -20°C ~ +70°C |
| C: -30°C ~ +70°C |
| N: -30°C ~ +85°C |
| D: -40°C ~ +85°C |
| J: -40°C ~ +105°C (*) |
| K: -40°C ~ +125°C (*) |

| Freq. Tolerance |
|-----------------|
| 1: ± 10 ppm |
| 7: ± 15 ppm |
| 2: ± 20 ppm |
| 3: ± 25 ppm |
| 4: ± 30 ppm |
| 5: ± 50 ppm |

| Freq. Stability |
|------------------|
| U: ± 10 ppm (*) |
| G: ± 15 ppm (**) |
| X: ± 20 ppm (**) |
| W: ± 25 ppm (**) |
| Y: ± 30 ppm (**) |
| H: ± 35 ppm (**) |
| Z: ± 50 ppm |
| Q: ± 100 ppm |

(*) Only offered @ Freq. Stability options: Z & Q.

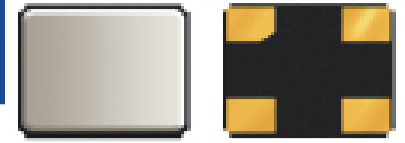
Contact ABRACON for tighter Frequency Stability.

(*) Only offered @ Operating Temp. Range options: I, E, & B

(**) Only offered @ Operating Temp. Range options: I, E, B, C, N, & D

Contact ABRACON for wider Operating Temp. Range.

IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



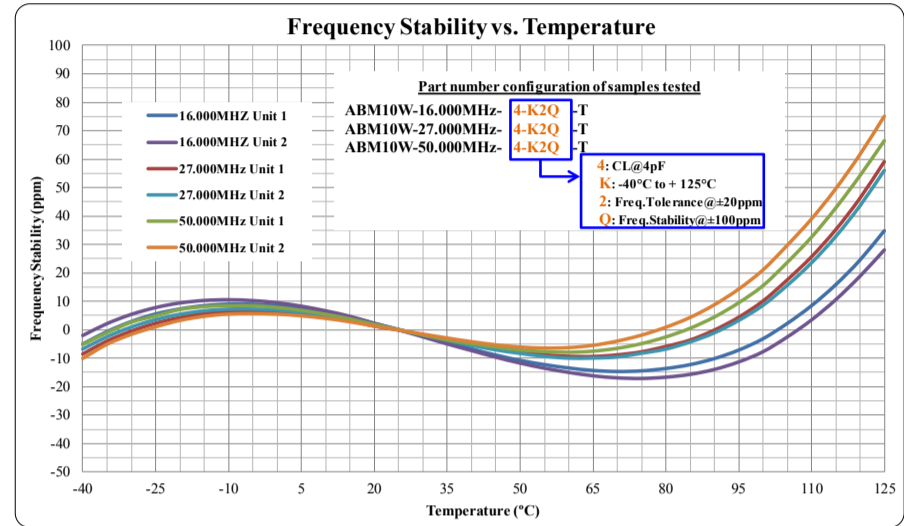
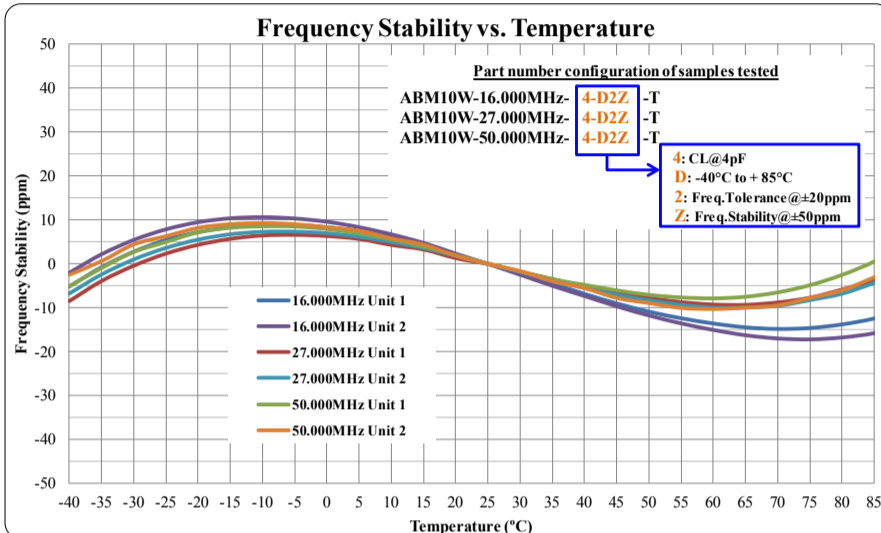
2.5 x 2.0 x 0.6mm

RoHS/RoHS II Compliant

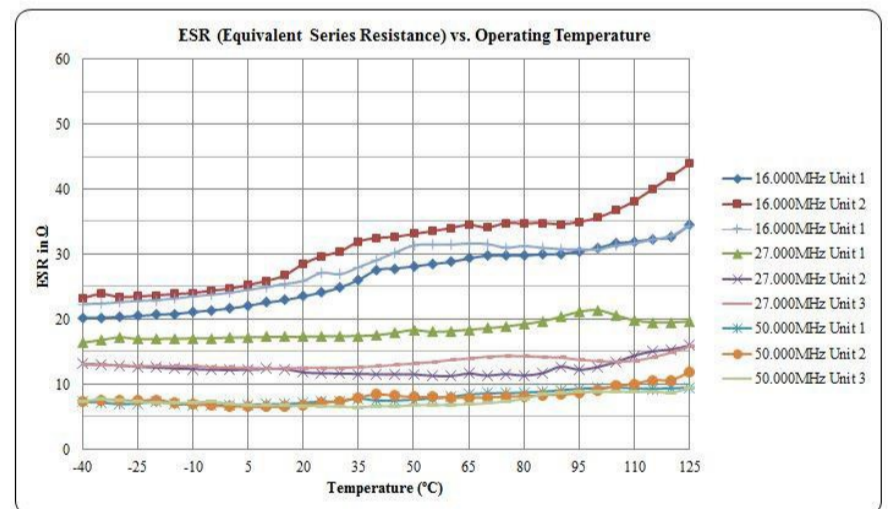
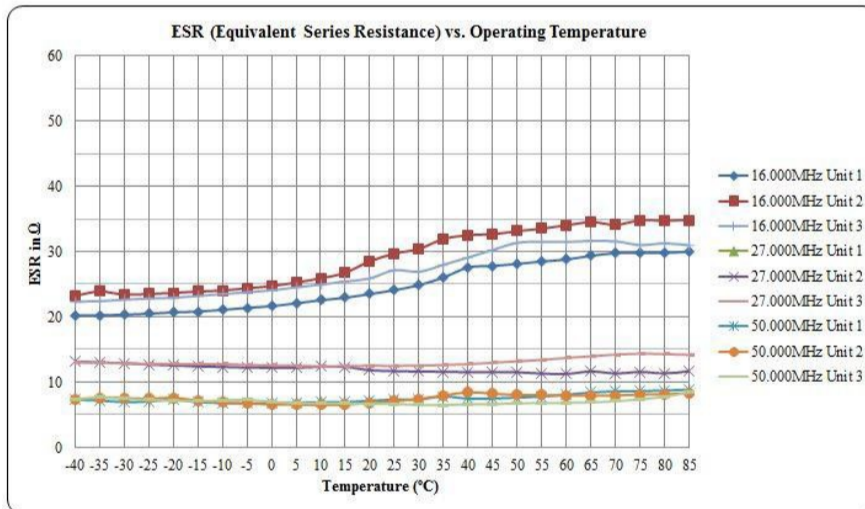
MSL = N/A: NOT APPLICABLE

ABM10W SERIES

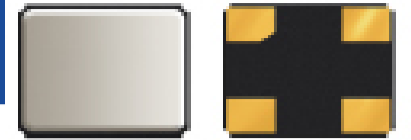
TYPICAL FREQUENCY Vs. TEMPERATURE CHARACTERISTICS



TYPICAL ESR (EQUIVALENT SERIES RESISTANCE) Vs. TEMPERATURE CHARACTERISTICS



IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



ABM10W SERIES

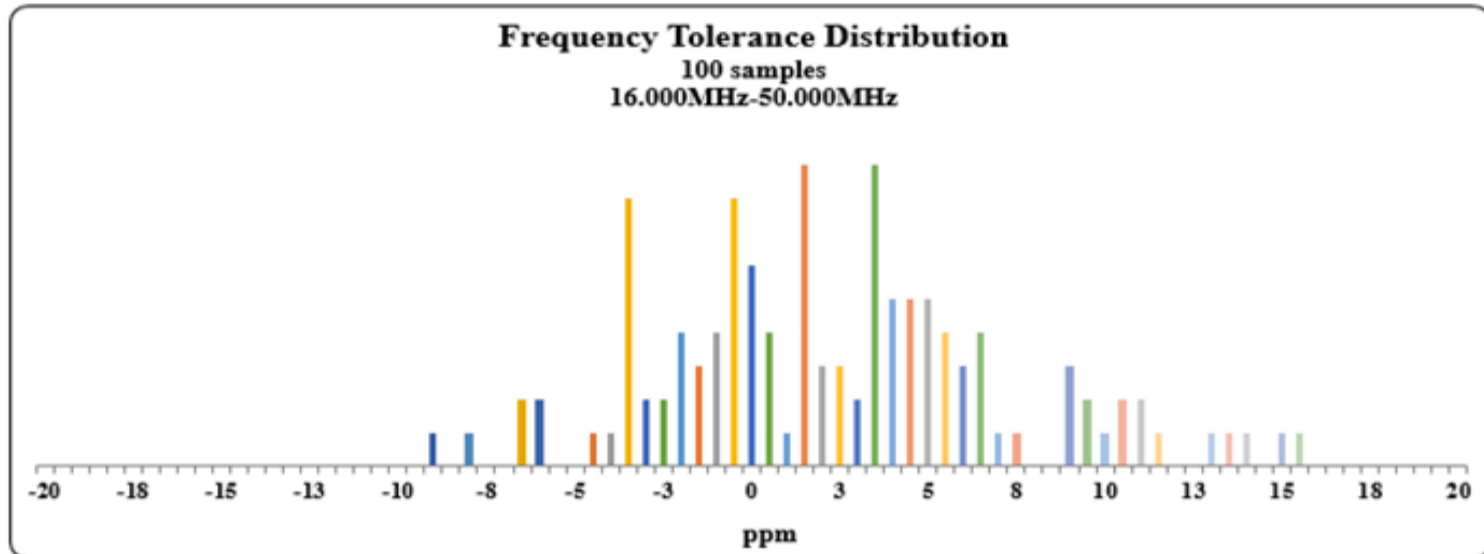
2.5 x 2.0 x 0.6mm



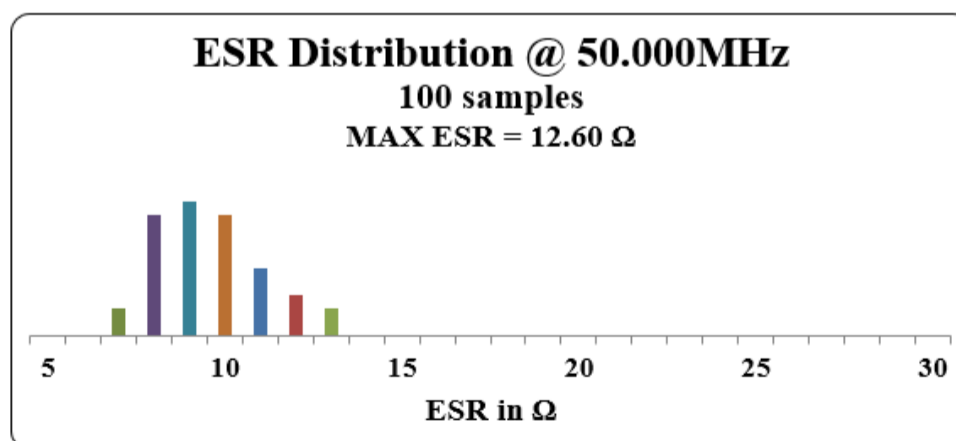
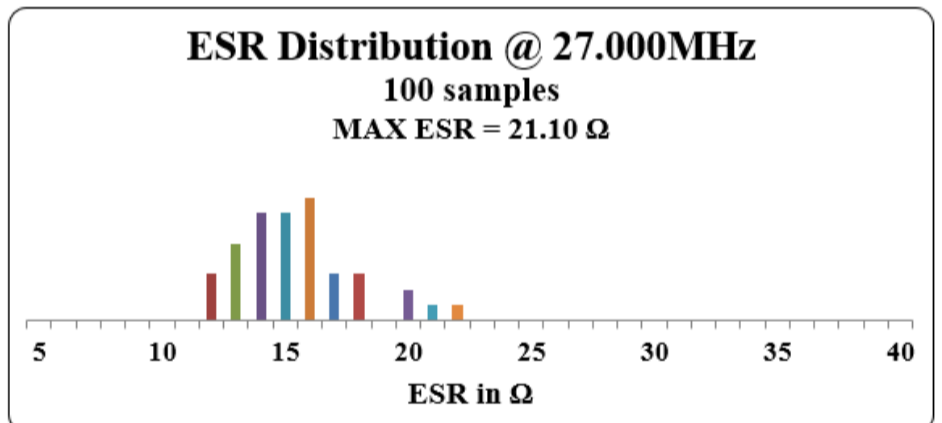
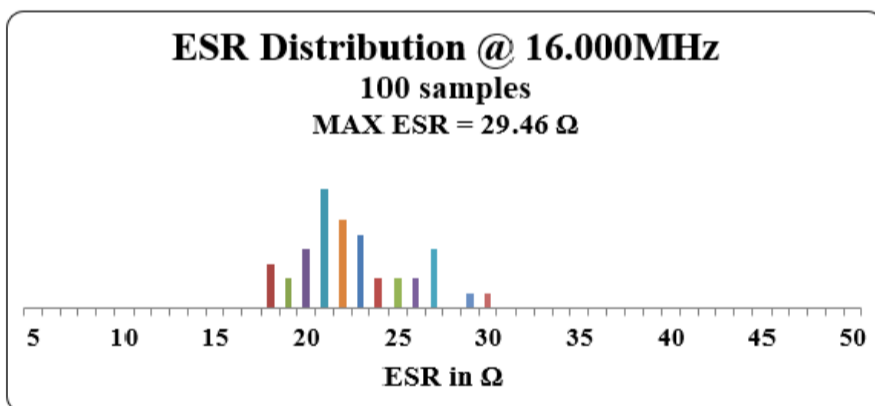
RoHS/RoHS II Compliant

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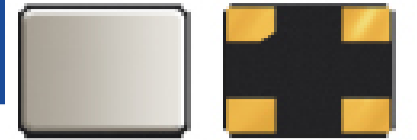
TYPICAL FREQUENCY TOLERANCE DISTRIBUTION (AT 25°C ± 3°C)



TYPICAL ESR DISTRIBUTION (AT 25°C ± 3°C)



IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



ABM10W SERIES

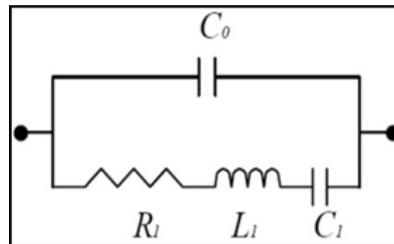
2.5 x 2.0 x 0.6mm



RoHS/RoHS II Compliant

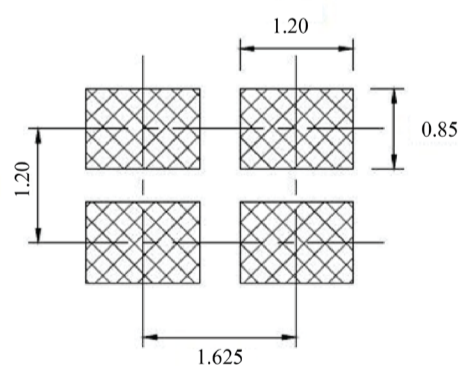
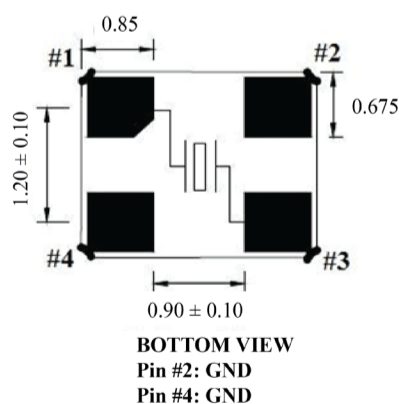
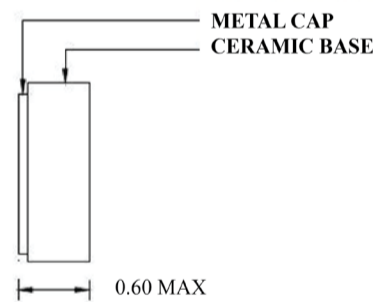
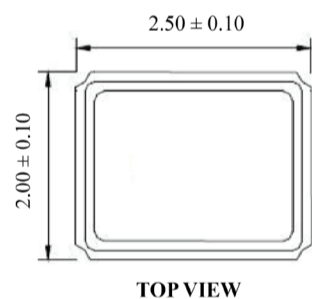
MSL = N/A: NOT APPLICABLE

SPICE MODELS (BASED ON TYPICAL VALUES AT 25°C ± 3°C)



| | | | |
|---|------------|---|------------|
| Frequency: 16.000MHz Plating Load: 4pF | | Frequency: 16.000MHz Plating Load: 6pF | |
| C0 | = 0.65 pF | C0 | = 0.65 pF |
| R1 | = 22.77 Ω | R1 | = 21.43 Ω |
| L1 | = 70.34 mH | L1 | = 70.13 mH |
| C1 | = 1.41 fF | C1 | = 1.41 fF |
| Frequency: 27.000MHz Plating Load: 4pF | | Frequency: 27.000MHz Plating Load: 6pF | |
| C0 | = 0.65 pF | C0 | = 0.66 pF |
| R1 | = 14.39 Ω | R1 | = 17.38 Ω |
| L1 | = 16.51 mH | L1 | = 16.56 mH |
| C1 | = 2.11 fF | C1 | = 2.10 fF |
| Frequency: 50.000MHz Plating Load: 4pF | | Frequency: 50.000MHz Plating Load: 6pF | |
| C0 | = 0.89 pF | C0 | = 0.87 pF |
| R1 | = 8.40 Ω | R1 | = 8.03 Ω |
| L1 | = 3.24 mH | L1 | = 3.19 mH |
| C1 | = 3.13 fF | C1 | = 3.18 fF |

MECHANICAL DIMENSIONS



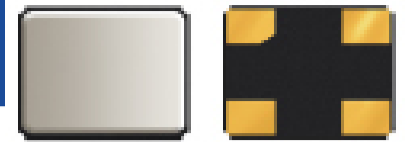
DIMENSIONS: mm

DIMENSIONS: mm

Note:

Due to material availability the Chamfer could be located on pin #1, 2 or 4. Be advised that the Chamfer location has no impact on the electrical performance of the device.

IoT OPTIMIZED LOW PROFILE QUARTZ CRYSTAL



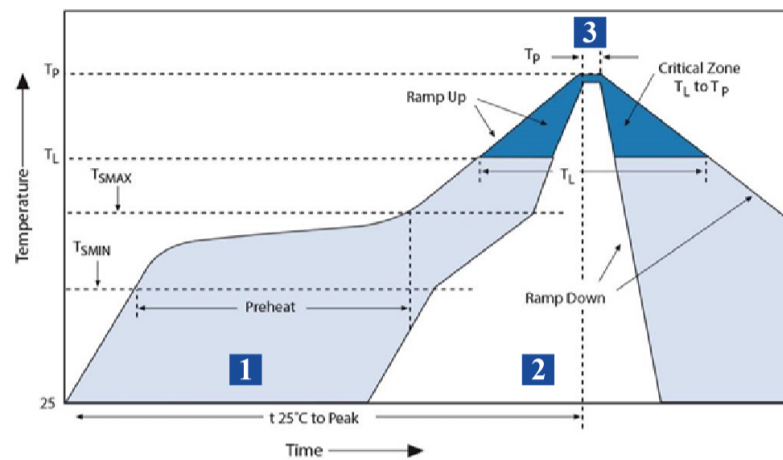
2.5 x 2.0 x 0.6mm

RoHS/RoHS II Compliant

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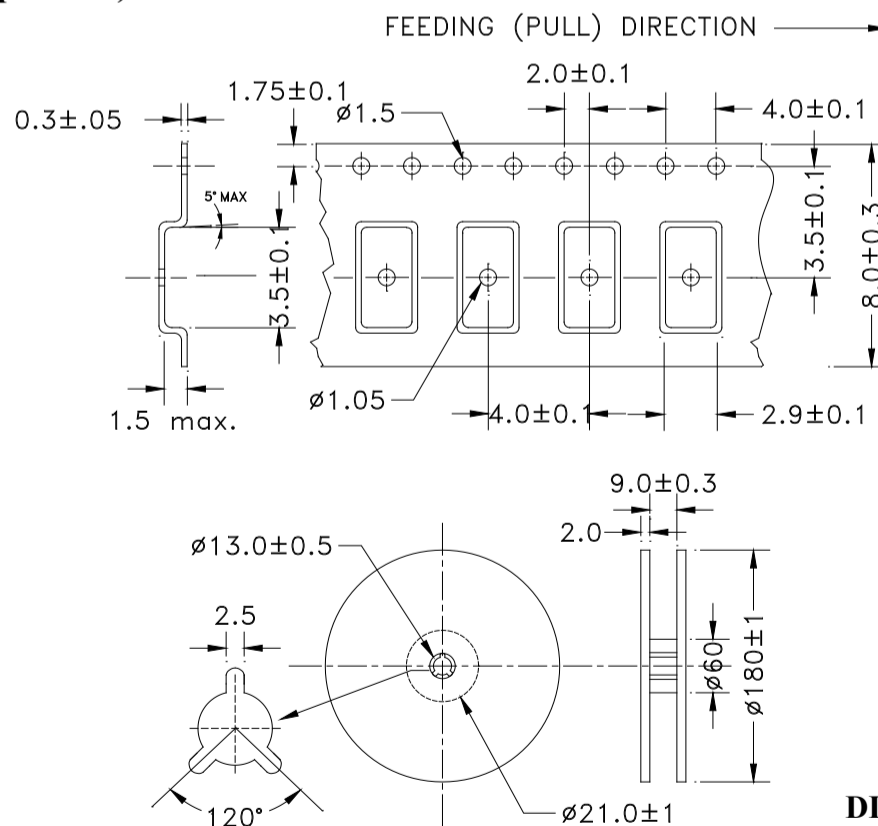
REFLOW PROFILE



| Zone | Description | Temperature | Time |
|------|-------------|---|---------------|
| 1 | Preheat | $T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C | 60 ~ 120 sec. |
| 2 | Reflow | T_L 217°C | 45 ~ 90 sec. |
| 3 | Peak Heat | T_P 260°C MAX | 10 sec. |

PACKAGING

T3: Tape and reel (3,000 pcs/reel)



DIMENSIONS: mm

REVISED: 04/04/2017