

# EC2SM-3.600M TR

[Click part number to visit Part Number Details page](#)

## REGULATORY COMPLIANCE (Data Sheet downloaded on Oct 11, 2017)



## ITEM DESCRIPTION

Quartz Crystal Resonator HC49/UP 2 Pad Surface Mount (SMD) 4.5mm Height Metal Resistance Weld Seal 3.600MHz  $\pm 50$ ppm at 25°C,  $\pm 100$ ppm over 0°C to +70°C 18pF Parallel Resonant

## ELECTRICAL SPECIFICATIONS

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Nominal Frequency             | 3.600MHz                                              |
| Frequency Tolerance/Stability | $\pm 50$ ppm at 25°C, $\pm 100$ ppm over 0°C to +70°C |
| Aging at 25°C                 | $\pm 5$ ppm/year Maximum                              |
| Load Capacitance              | 18pF Parallel Resonant                                |
| Shunt Capacitance (C0)        | 7pF Maximum                                           |
| Equivalent Series Resistance  | 200 Ohms Maximum                                      |
| Mode of Operation             | AT-Cut Fundamental                                    |
| Drive Level                   | 1mWatt Maximum                                        |
| Storage Temperature Range     | -40°C to +85°C                                        |
| Insulation Resistance         | 500 Megaohms Minimum at 100Vdc                        |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                      |
|------------------------------|--------------------------------------|
| Fine Leak Test               | MIL-STD-883, Method 1014 Condition A |
| Gross Leak Test              | MIL-STD-883, Method 1014 Condition C |
| Mechanical Shock             | MIL-STD-202, Method 213 Condition C  |
| Resistance to Soldering Heat | MIL-STD-202, Method 210              |
| Resistance to Solvents       | MIL-STD-202, Method 215              |
| Solderability                | MIL-STD-883, Method 2003             |
| Temperature Cycling          | MIL-STD-883, Method 1010             |
| Vibration                    | MIL-STD-883, Method 2007 Condition A |

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MECHANICAL DIMENSIONS (all dimensions in millimeters)

| LINE | MARKING                                                                               |
|------|---------------------------------------------------------------------------------------|
| 1    | <b>E3.6000M</b><br><i>E=Ecliptek Designator</i><br><i>M=Frequency Unit of Measure</i> |



Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are ±0.1

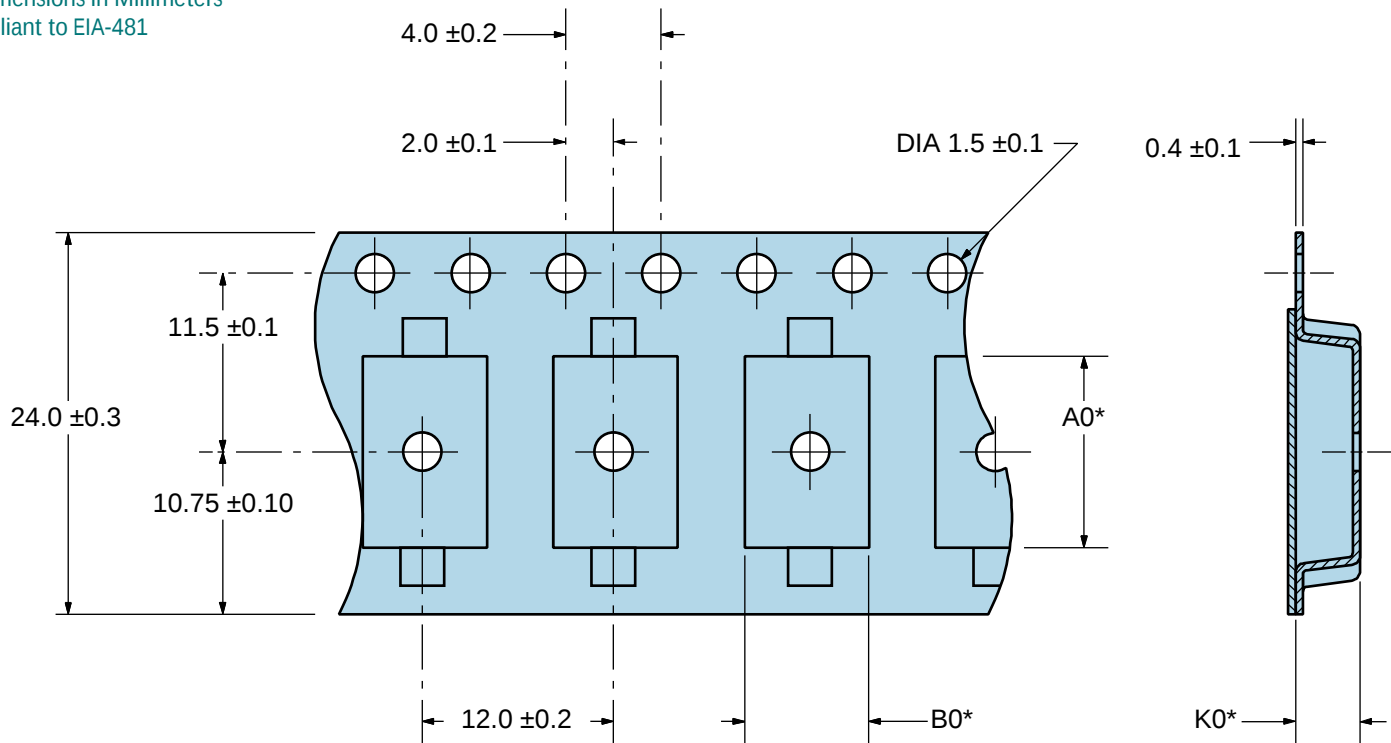
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## Tape & Reel Dimensions

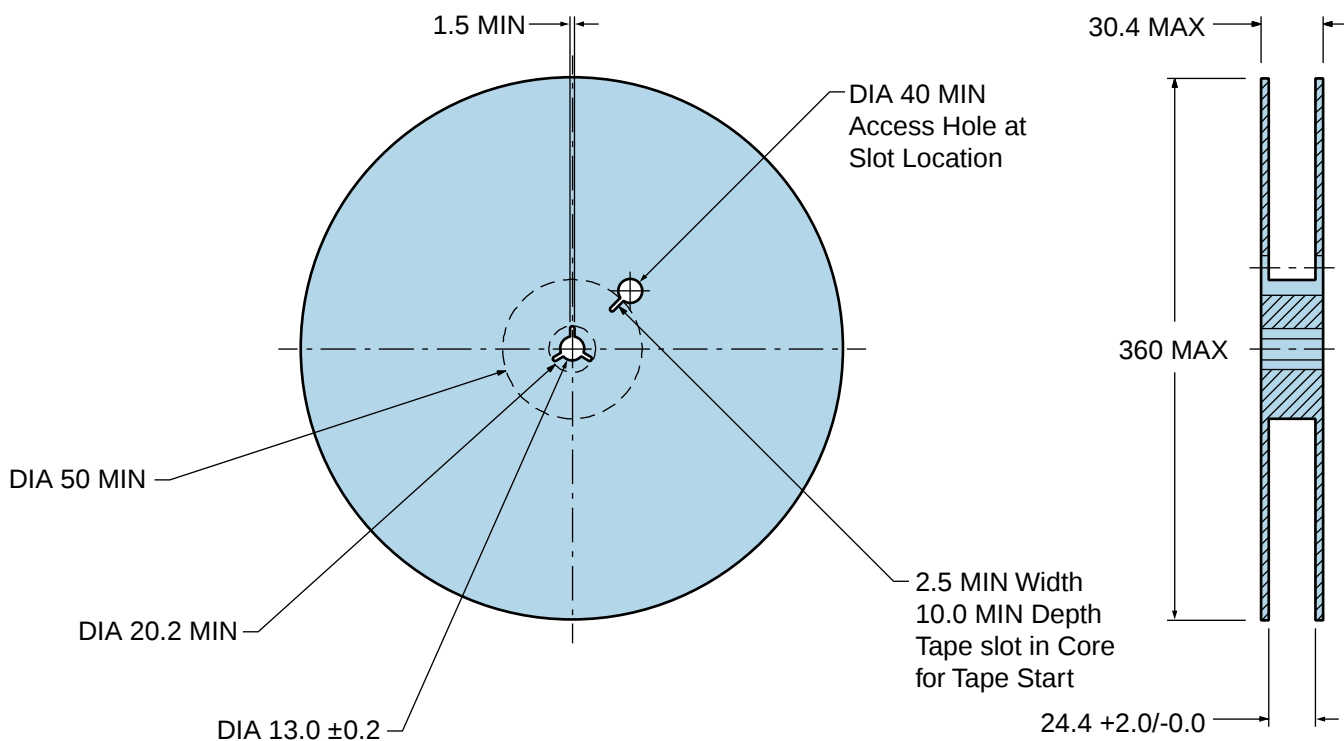
Quantity Per Reel: 1,000 units

All Dimensions in Millimeters

Compliant to EIA-481



\*Compliant to EIA 481A



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Recommended Solder Reflow Methods



High Temperature Infrared/Convection

|                                                                |                                      |
|----------------------------------------------------------------|--------------------------------------|
| <b><math>T_S</math> MAX to <math>T_L</math> (Ramp-up Rate)</b> | 3°C/Second Maximum                   |
| <b>Preheat</b>                                                 |                                      |
| - Temperature Minimum ( $T_S$ MIN)                             | 150°C                                |
| - Temperature Typical ( $T_S$ TYP)                             | 175°C                                |
| - Temperature Maximum ( $T_S$ MAX)                             | 200°C                                |
| - Time ( $t_s$ MIN)                                            | 60 - 180 Seconds                     |
| <b>Ramp-up Rate (<math>T_L</math> to <math>T_P</math>)</b>     | 3°C/Second Maximum                   |
| <b>Time Maintained Above:</b>                                  |                                      |
| - Temperature ( $T_L$ )                                        | 217°C                                |
| - Time ( $t_L$ )                                               | 60 - 150 Seconds                     |
| <b>Peak Temperature (<math>T_P</math>)</b>                     | 260°C Maximum for 10 Seconds Maximum |
| <b>Target Peak Temperature (<math>T_P</math> Target)</b>       | 250°C +0/-5°C                        |
| <b>Time within 5°C of actual peak (<math>t_P</math>)</b>       | 20 - 40 Seconds                      |
| <b>Ramp-down Rate</b>                                          | 6°C/Second Maximum                   |
| <b>Time 25°C to Peak Temperature (t)</b>                       | 8 Minutes Maximum                    |
| <b>Moisture Sensitivity Level</b>                              | Level 1                              |

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Recommended Solder Reflow Methods



Low Temperature Infrared/Convection 245°C

|                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| Ts MAX to TL (Ramp-up Rate)         | 5°C/Second Maximum                                     |
| Preheat                             |                                                        |
| - Temperature Minimum (Ts MIN)      | N/A                                                    |
| - Temperature Typical (Ts TYP)      | 150°C                                                  |
| - Temperature Maximum (Ts MAX)      | N/A                                                    |
| - Time (ts MIN)                     | 30 - 60 Seconds                                        |
| Ramp-up Rate (TL to TP)             | 5°C/Second Maximum                                     |
| Time Maintained Above:              |                                                        |
| - Temperature (TL)                  | 150°C                                                  |
| - Time (tL)                         | 200 Seconds Maximum                                    |
| Peak Temperature (TP)               | 245°C Maximum                                          |
| Target Peak Temperature (TP Target) | 245°C Maximum 2 Times / 230°C Maximum 1 Time           |
| Time within 5°C of actual peak (tP) | 10 Seconds Maximum 2 Times / 80 Seconds Maximum 1 Time |
| Ramp-down Rate                      | 5°C/Second Maximum                                     |
| Time 25°C to Peak Temperature (t)   | N/A                                                    |
| Moisture Sensitivity Level          | Level 1                                                |

Low Temperature Manual Soldering

185°C Maximum for 10 Seconds Maximum, 2 times Maximum.

High Temperature Manual Soldering

260°C Maximum for 5 Seconds Maximum, 2 times Maximum.