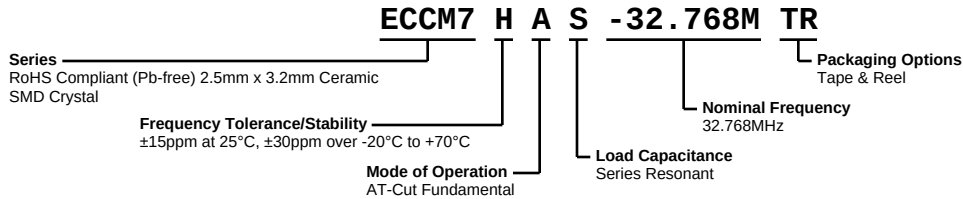


# ECCM7HAS-32.768M TR



**ECLIPTEK**  
CORPORATION



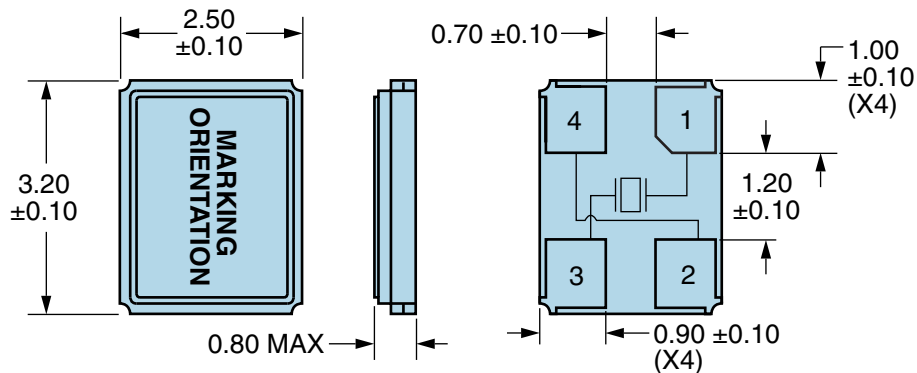
## ELECTRICAL SPECIFICATIONS

|                               |                                            |
|-------------------------------|--------------------------------------------|
| Nominal Frequency             | 32.768MHz                                  |
| Frequency Tolerance/Stability | ±15ppm at 25°C, ±30ppm over -20°C to +70°C |
| Aging at 25°C                 | ±3ppm/Year Maximum                         |
| Load Capacitance              | Series Resonant                            |
| Shunt Capacitance (C0)        | 5pF Maximum                                |
| Equivalent Series Resistance  | 60 Ohms Maximum                            |
| Mode of Operation             | AT-Cut Fundamental                         |
| Drive Level                   | 100µWatts Maximum                          |
| Crystal Cut                   | AT-Cut                                     |
| Spurious Response             | >3dB (from Fo to Fo +5000ppm)              |
| Storage Temperature Range     | -40°C to +85°C                             |
| Insulation Resistance         | 500 Megaohms Minimum at 100Vdc             |

## ENVIRONMENTAL & MECHANICAL SPECIFICATIONS

|                              |                                               |
|------------------------------|-----------------------------------------------|
| ESD Susceptibility           | MIL-STD-883, Method 3015, Class 1, HBM: 1500V |
| Fine Leak Test               | MIL-STD-883, Method 1014, Condition A         |
| Flammability                 | UL94-V0                                       |
| Gross Leak Test              | MIL-STD-883, Method 1014, Condition C         |
| Mechanical Shock             | MIL-STD-883, Method 2002, Condition B         |
| Moisture Resistance          | MIL-STD-883, Method 1004                      |
| Moisture Sensitivity         | J-STD-020, MSL 1                              |
| Resistance to Soldering Heat | MIL-STD-202, Method 210, Condition K          |
| Resistance to Solvents       | MIL-STD-202, Method 215                       |
| Solderability                | MIL-STD-883, Method 2003                      |
| Temperature Cycling          | MIL-STD-883, Method 1010, Condition B         |
| Vibration                    | MIL-STD-883, Method 2007, Condition A         |

## MECHANICAL DIMENSIONS (all dimensions in millimeters)



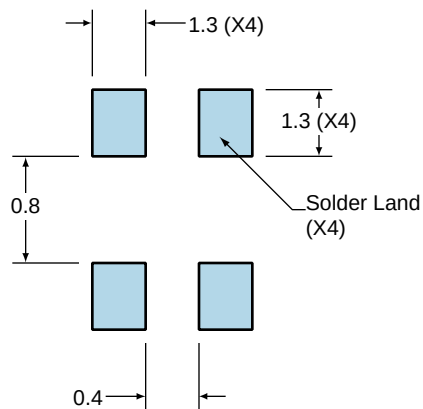
| PIN | CONNECTION   |
|-----|--------------|
| 1   | Crystal      |
| 2   | Cover/Ground |
| 3   | Crystal      |
| 4   | Cover/Ground |

| LINE | MARKING                                                    |
|------|------------------------------------------------------------|
| 1    | <b>E32.7</b><br>E=Ecliptek Designator                      |
| 2    | <b>XXXXX</b><br>XXXXX=Ecliptek<br>Manufacturing Identifier |

# ECCM7HAS-32.768M TR

## Suggested Solder Pad Layout

All Dimensions in Millimeters

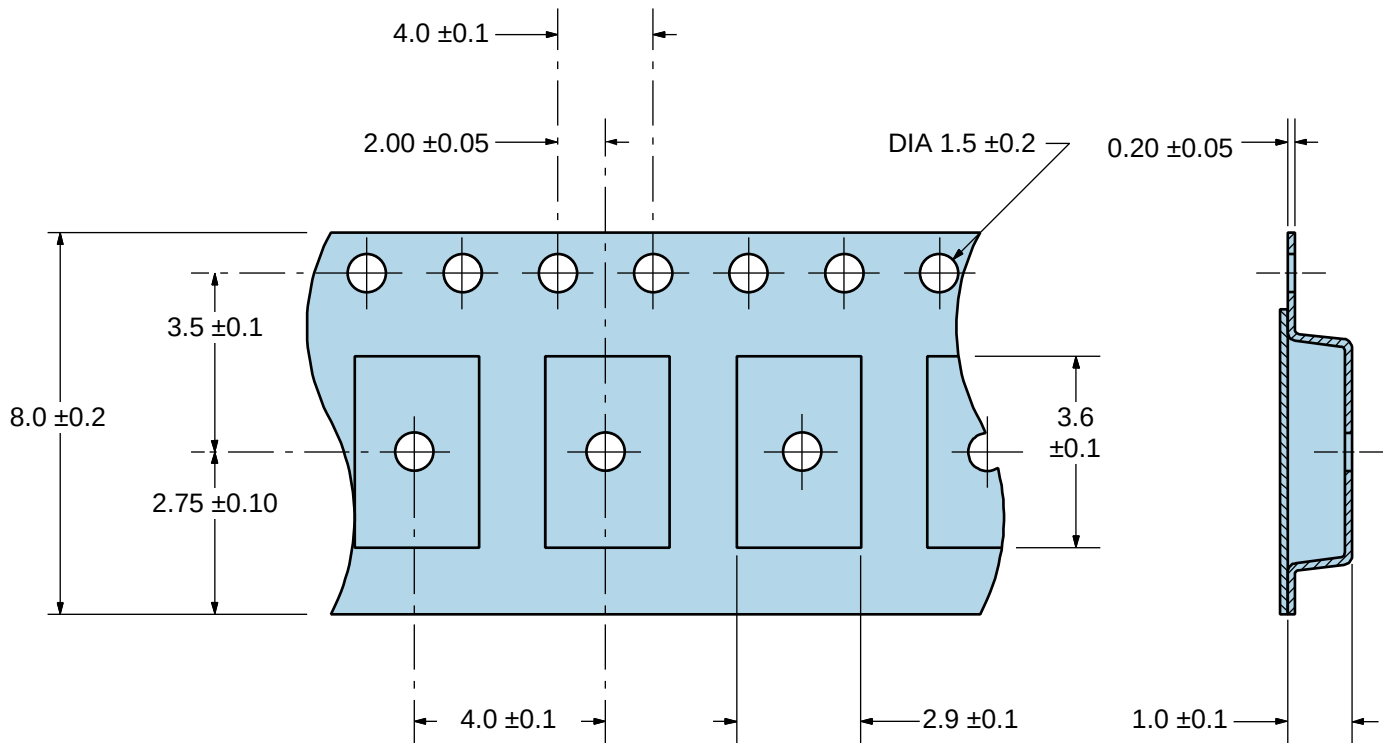


All Tolerances are  $\pm 0.1$

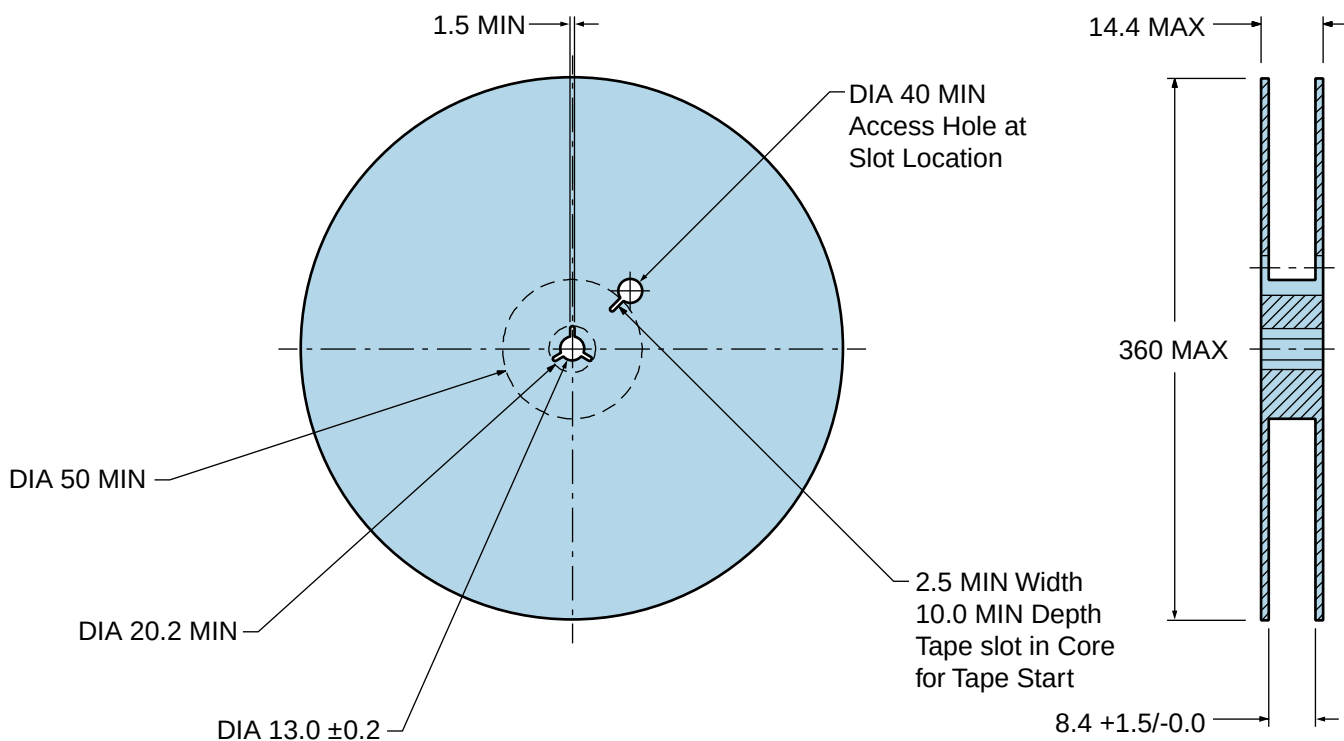
# ECCM7HAS-32.768M TR

## Tape & Reel Dimensions

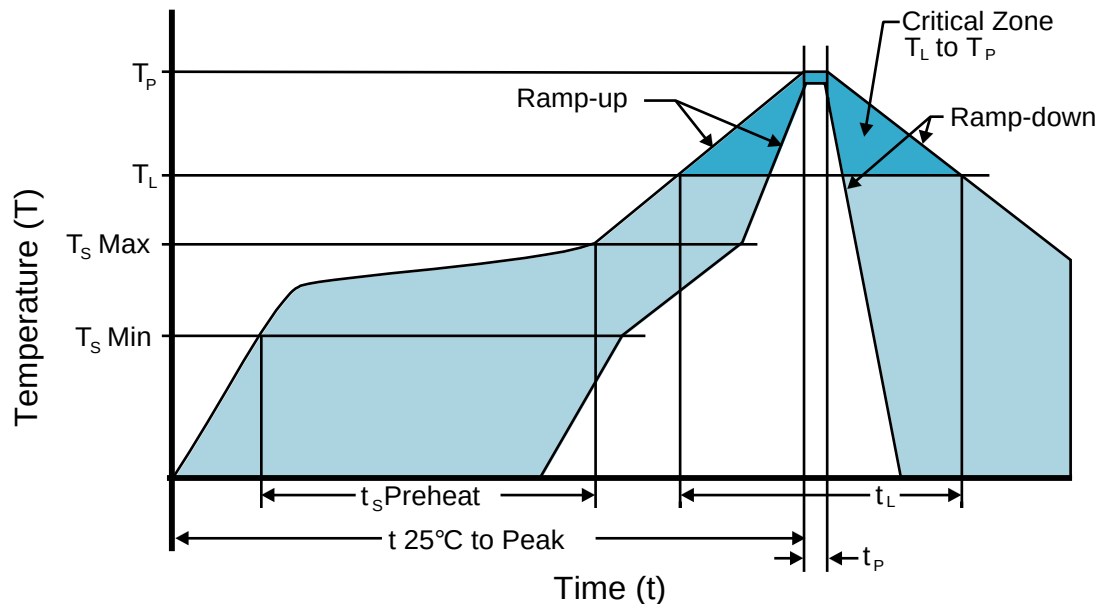
Quantity Per Reel: 3,000 units



\*Compliant to EIA 481A



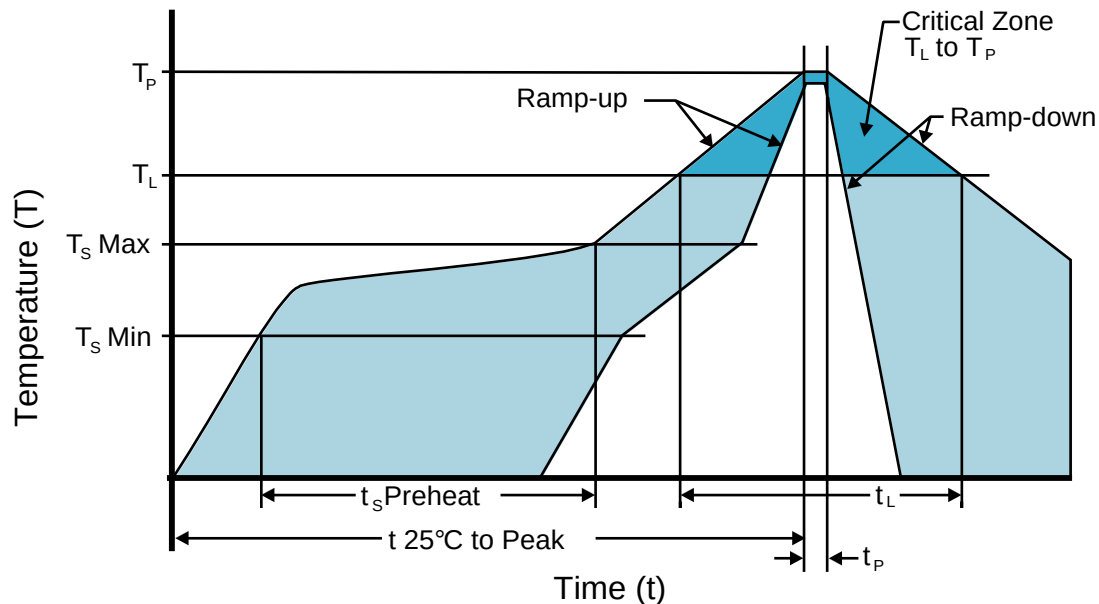
## Recommended Solder Reflow Methods



### 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                              |

## Recommended Solder Reflow Methods



### Low Temperature Infrared/Convection 245°C

$T_s$  MAX to  $T_L$  (Ramp-up Rate) 5°C/second Maximum

#### Preheat

- Temperature Minimum ( $T_s$  MIN) N/A
- Temperature Typical ( $T_s$  TYP) 150°C
- Temperature Maximum ( $T_s$  MAX) N/A
- Time ( $t_s$  MIN) 30 - 60 Seconds

Ramp-up Rate ( $T_L$  to  $T_p$ ) 5°C/second Maximum

#### Time Maintained Above:

- Temperature ( $T_L$ ) 150°C
- Time ( $t_L$ ) 200 Seconds Maximum

Peak Temperature ( $T_p$ ) 245°C Maximum

Target Peak Temperature ( $T_p$  Target) 245°C Maximum 2 Times / 230°C Maximum 1 Time

Time within 5°C of actual peak ( $t_p$ ) 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.