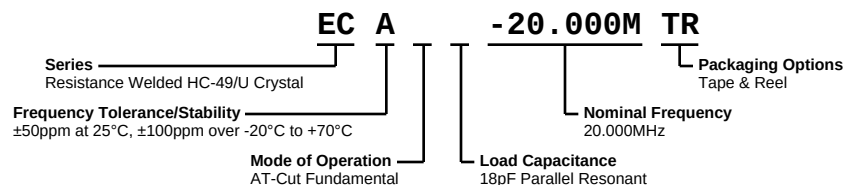


# ECA-20.000M TR



## ELECTRICAL SPECIFICATIONS

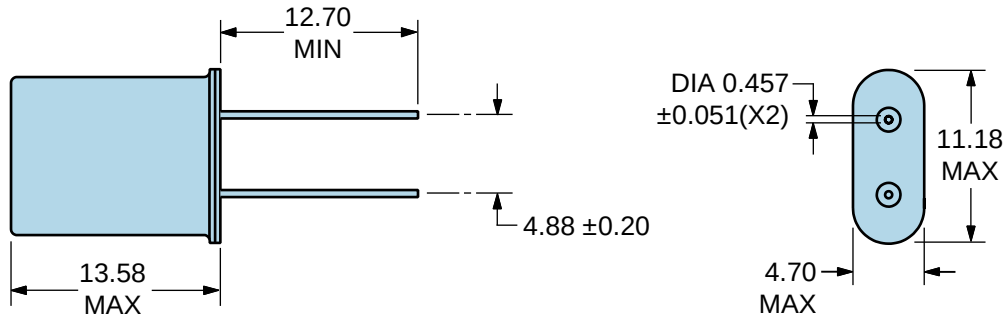
|                               |                                                                                                                |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|
| Nominal Frequency             | 20.000MHz                                                                                                      |
| Frequency Tolerance/Stability | $\pm 50\text{ppm}$ at $25^\circ\text{C}$ , $\pm 100\text{ppm}$ over $-20^\circ\text{C}$ to $+70^\circ\text{C}$ |
| Aging at $25^\circ\text{C}$   | $\pm 5\text{ppm/year}$ Maximum                                                                                 |
| Load Capacitance              | $18\text{pF}$ Parallel Resonant                                                                                |
| Shunt Capacitance (C0)        | $7\text{pF}$ Maximum                                                                                           |
| Equivalent Series Resistance  | 25 Ohms Maximum                                                                                                |
| Mode of Operation             | AT-Cut Fundamental                                                                                             |
| Drive Level                   | 2mWatts Maximum                                                                                                |
| Storage Temperature Range     | $-40^\circ\text{C}$ to $+85^\circ\text{C}$                                                                     |
| 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 |
| Lead Integrity               | MIL-STD-883, Method 2004              |
| 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 |

# ECA-20.000M TR

MECHANICAL DIMENSIONS (all dimensions in millimeters)

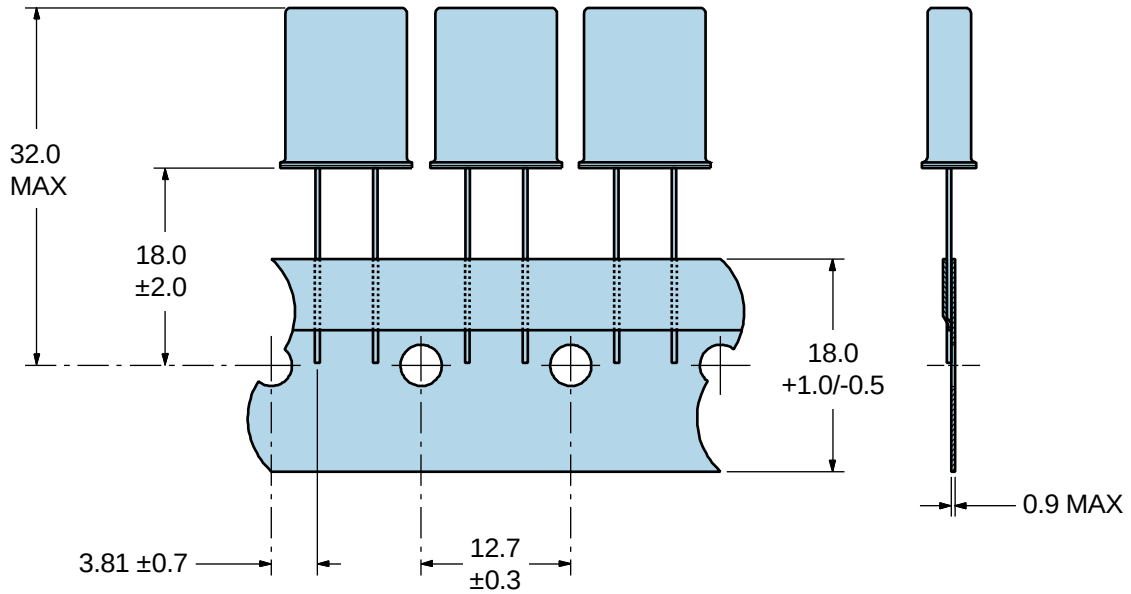


| LINE | MARKING                                                               |
|------|-----------------------------------------------------------------------|
| 1    | <b>ECLIPTEK</b>                                                       |
| 2    | <b>E20.000M</b><br><i>E=Ecliptek Designator or Blank (No Marking)</i> |
| 3    | <b>XX</b><br><i>XX=Ecliptek Manufacturing Code</i>                    |

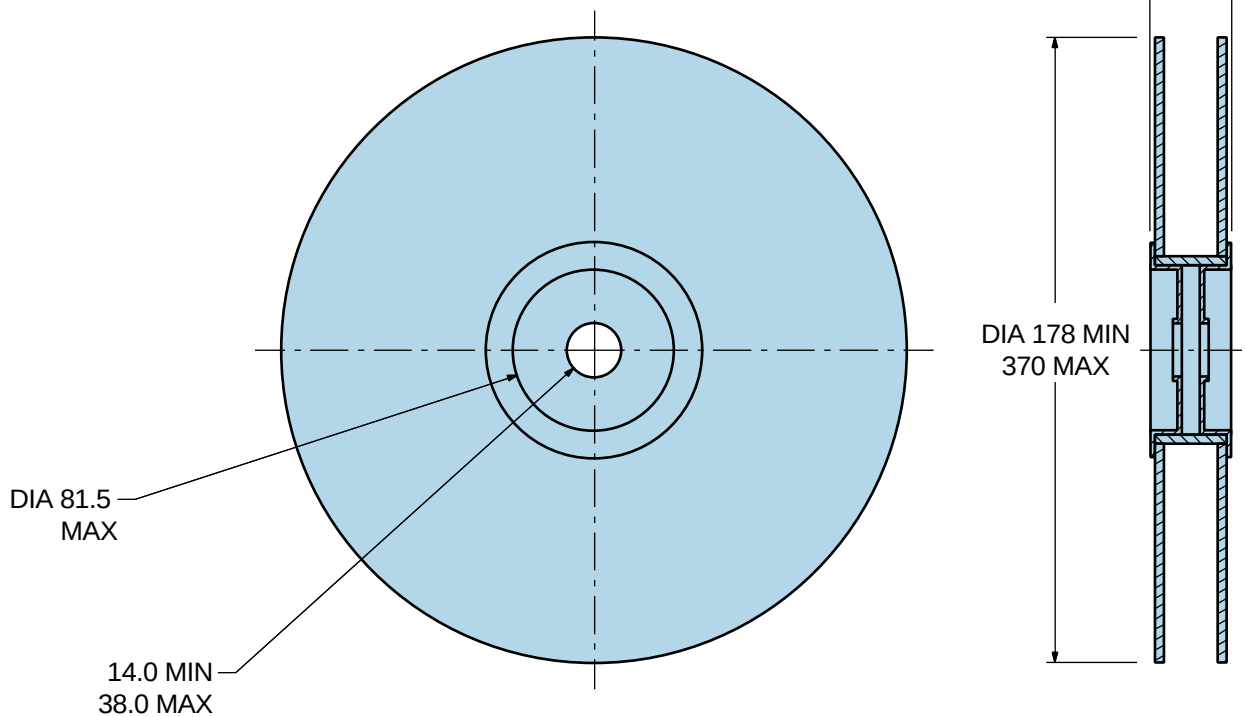
# ECA-20.000M TR

## Tape & Reel Dimensions

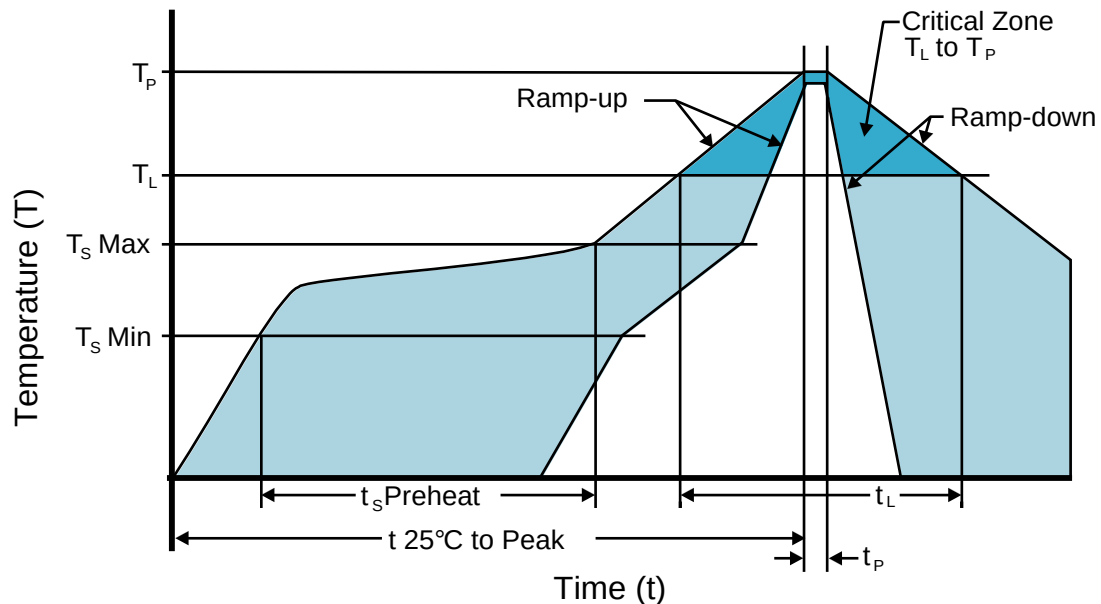
Quantity Per Reel: 1,000 Pieces



\*Compliant to EIA 468B



## Recommended Solder Reflow Methods



### High Temperature Solder Bath (Wave Solder)

**$T_s \text{ MAX}$  to  $T_L$  (Ramp-up Rate)** 3°C/second Maximum

#### Preheat

- Temperature Minimum ( $T_s \text{ MIN}$ ) 150°C
- Temperature Typical ( $T_s \text{ TYP}$ ) 175°C
- Temperature Maximum ( $T_s \text{ MAX}$ ) 200°C
- Time ( $t_s \text{ MIN}$ ) 60 - 180 Seconds

**Ramp-up Rate ( $T_L$  to  $T_p$ )** 3°C/second Maximum

#### Time Maintained Above:

- Temperature ( $T_L$ ) 217°C
- Time ( $t_L$ ) 60 - 150 Seconds

**Peak Temperature ( $T_p$ )** 260°C Maximum for 10 Seconds Maximum

**Target Peak Temperature ( $T_p \text{ Target}$ )** 250°C +0/-5°C

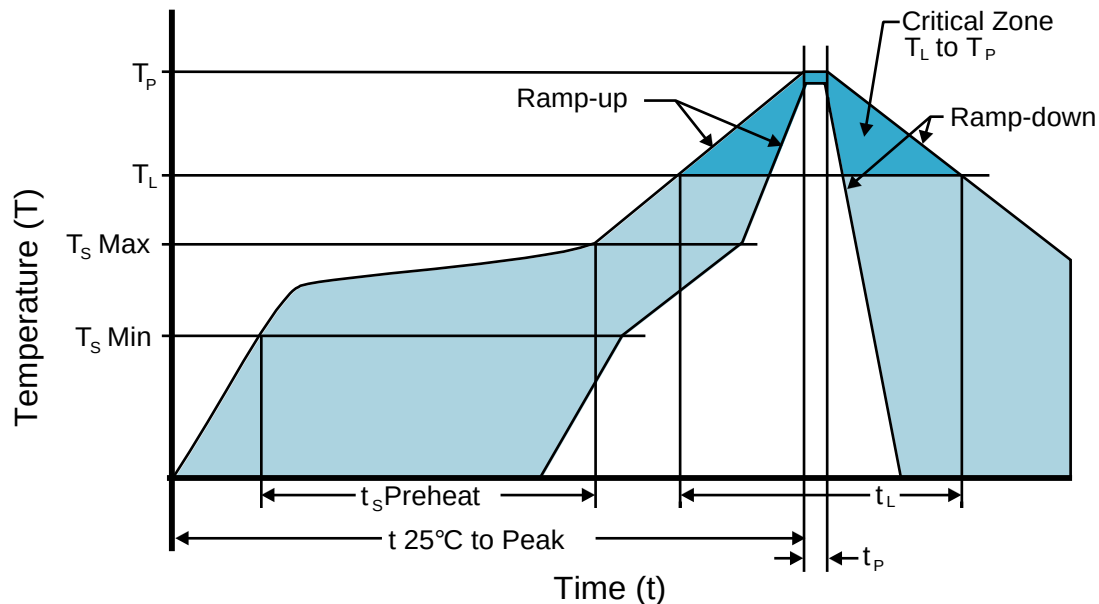
**Time within 5°C of actual peak ( $t_p$ )** 20 - 40 seconds

**Ramp-down Rate** 6°C/second Maximum

**Time 25°C to Peak Temperature (t)** 8 minutes Maximum

**Moisture Sensitivity Level** Level 1

## Recommended Solder Reflow Methods



### Low Temperature Solder Bath (Wave Solder)

T<sub>s</sub> MAX to T<sub>L</sub> (Ramp-up Rate) 5°C/second Maximum

#### Preheat

- Temperature Minimum (T<sub>s</sub> MIN) N/A
- Temperature Typical (T<sub>s</sub> TYP) 150°C
- Temperature Maximum (T<sub>s</sub> MAX) N/A
- Time (t<sub>s</sub> MIN) 30 - 60 Seconds

Ramp-up Rate (T<sub>L</sub> to T<sub>P</sub>) 5°C/second Maximum

#### Time Maintained Above:

- Temperature (T<sub>L</sub>) 150°C
- Time (t<sub>L</sub>) 200 Seconds Maximum

Peak Temperature (T<sub>P</sub>) 245°C Maximum

Target Peak Temperature (T<sub>P</sub> Target) 245°C Maximum 1 Time / 235°C Maximum 2 Times

Time within 5°C of actual peak (t<sub>p</sub>) 5 seconds Maximum 1 Time / 15 seconds Maximum 2 Times

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.