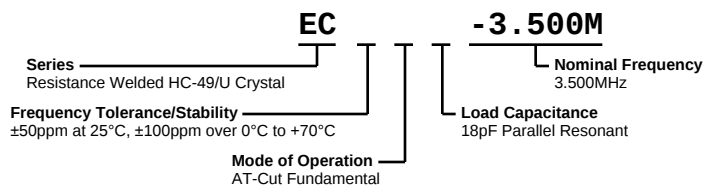


# EC-3.500M



## ELECTRICAL SPECIFICATIONS

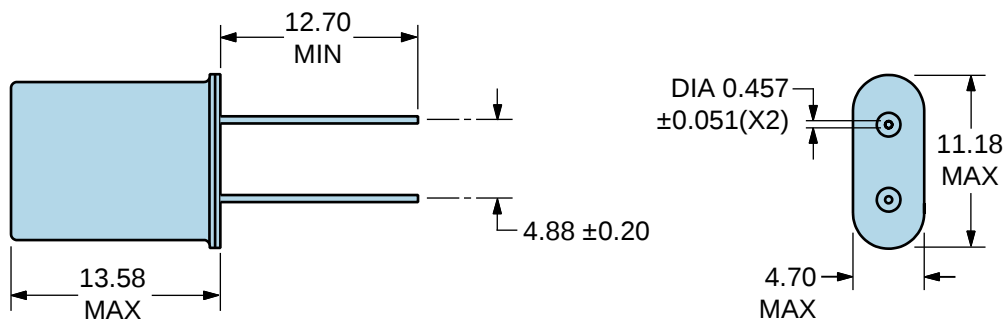
|                               |                                                                                                              |
|-------------------------------|--------------------------------------------------------------------------------------------------------------|
| Nominal Frequency             | 3.500MHz                                                                                                     |
| Frequency Tolerance/Stability | $\pm 50\text{ppm}$ at $25^\circ\text{C}$ , $\pm 100\text{ppm}$ over $0^\circ\text{C}$ 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  | $180\text{ Ohms}$ Maximum                                                                                    |
| Mode of Operation             | AT-Cut Fundamental                                                                                           |
| Drive Level                   | $2\text{mWatts}$ Maximum                                                                                     |
| Storage Temperature Range     | $-40^\circ\text{C}$ to $+85^\circ\text{C}$                                                                   |
| Insulation Resistance         | $500\text{ Megaohms}$ Minimum at $100\text{Vdc}$                                                             |

## 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 |

# EC-3.500M

MECHANICAL DIMENSIONS (all dimensions in millimeters)



| LINE | MARKING                                                              |
|------|----------------------------------------------------------------------|
| 1    | <b>ECLIPTEK</b>                                                      |
| 2    | <b>E3.500M</b><br><i>E=Ecliptek Designator or Blank (No Marking)</i> |
| 3    | <b>XX</b><br><i>XX=Ecliptek Manufacturing Code</i>                   |

## 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)

$T_S$  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 1 Time / 235°C Maximum 2 Times

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