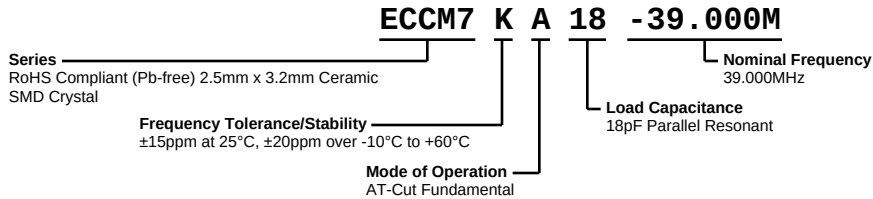


# ECCM7KA18-39.000M



**ECLIPTEK**  
CORPORATION



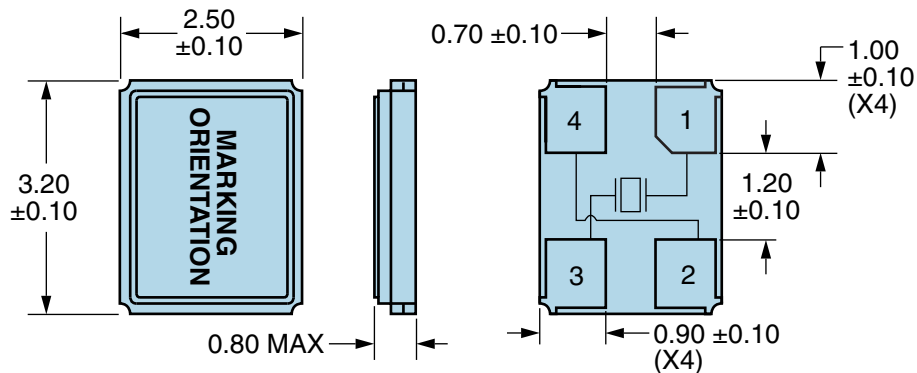
## ELECTRICAL SPECIFICATIONS

|                               |                                                                    |
|-------------------------------|--------------------------------------------------------------------|
| Nominal Frequency             | 39.000MHz                                                          |
| Frequency Tolerance/Stability | $\pm 15\text{ppm}$ at 25°C, $\pm 20\text{ppm}$ over -10°C to +60°C |
| Aging at 25°C                 | $\pm 3\text{ppm}/\text{Year}$ Maximum                              |
| Load Capacitance              | 18pF Parallel 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)



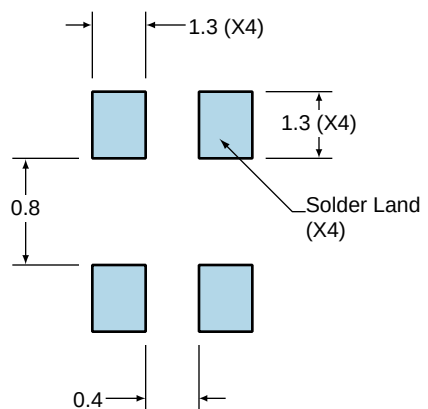
| PIN | CONNECTION   |
|-----|--------------|
| 1   | Crystal      |
| 2   | Cover/Ground |
| 3   | Crystal      |
| 4   | Cover/Ground |

| LINE | MARKING                                                   |
|------|-----------------------------------------------------------|
| 1    | <b>E39.0</b><br>E=EclipseTek Designator                   |
| 2    | <b>XXXXX</b><br>XXXXX=EclipseTek Manufacturing Identifier |

# ECCM7KA18-39.000M

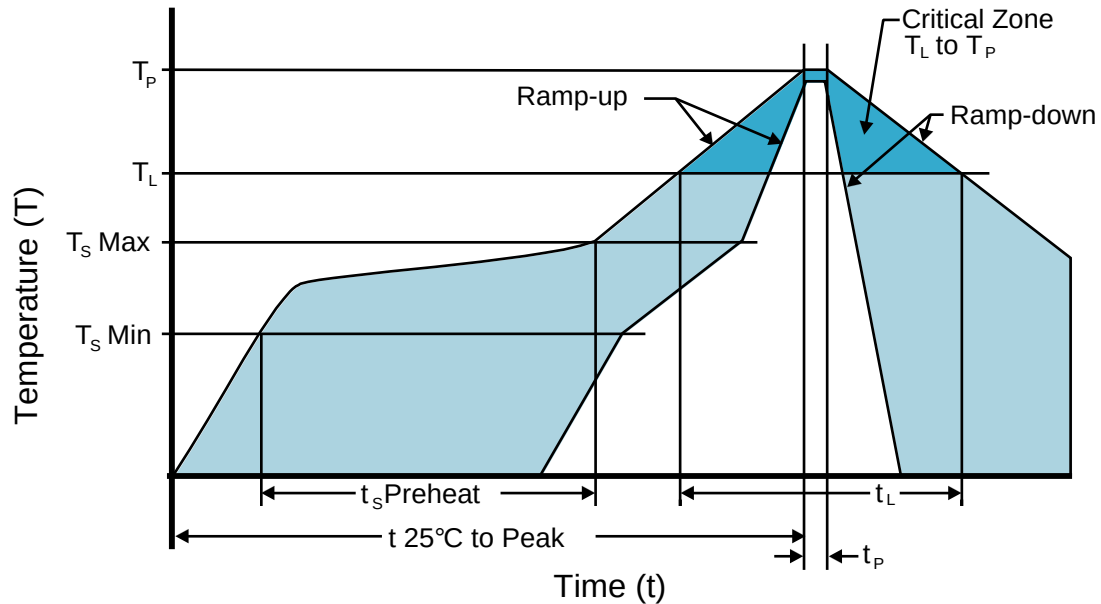
## Suggested Solder Pad Layout

All Dimensions in Millimeters



All Tolerances are  $\pm 0.1$

## Recommended Solder Reflow Methods



### High Temperature Infrared/Convection

|                                   |                    |
|-----------------------------------|--------------------|
| $T_S$ MAX to $T_L$ (Ramp-up Rate) | 3°C/second Maximum |
|-----------------------------------|--------------------|

#### Preheat

|                                    |                  |
|------------------------------------|------------------|
| - 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 |

|                                 |                    |
|---------------------------------|--------------------|
| 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 ( $T_P$ Target) | 250°C +0/-5°C |
|-----------------------------------------|---------------|

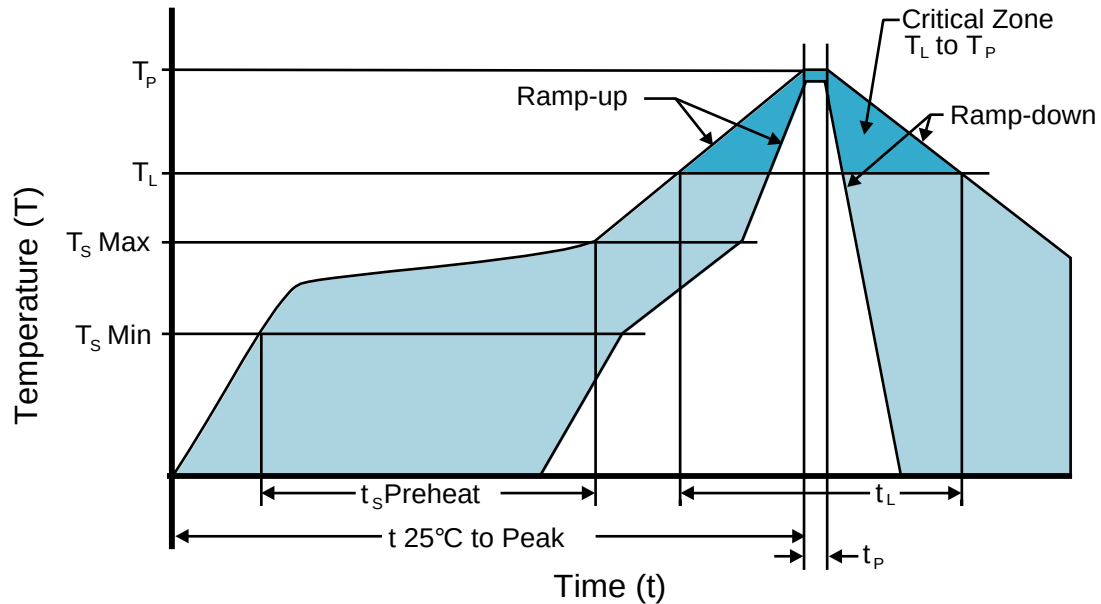
|                                          |                 |
|------------------------------------------|-----------------|
| Time within 5°C of actual peak ( $t_p$ ) | 20 - 40 seconds |
|------------------------------------------|-----------------|

|                |                    |
|----------------|--------------------|
| 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 Infrared/Convection $245^\circ\text{C}$

|                                   |                                  |
|-----------------------------------|----------------------------------|
| $T_s$ MAX to $T_L$ (Ramp-up Rate) | $5^\circ\text{C/second}$ Maximum |
|-----------------------------------|----------------------------------|

#### Preheat

|                                    |                     |
|------------------------------------|---------------------|
| - Temperature Minimum ( $T_s$ MIN) | N/A                 |
| - Temperature Typical ( $T_s$ TYP) | $150^\circ\text{C}$ |
| - Temperature Maximum ( $T_s$ MAX) | N/A                 |
| - Time ( $t_s$ MIN)                | 30 - 60 Seconds     |

|                                 |                                  |
|---------------------------------|----------------------------------|
| Ramp-up Rate ( $T_L$ to $T_p$ ) | $5^\circ\text{C/second}$ Maximum |
|---------------------------------|----------------------------------|

#### Time Maintained Above:

|                         |                     |
|-------------------------|---------------------|
| - Temperature ( $T_L$ ) | $150^\circ\text{C}$ |
| - Time ( $t_L$ )        | 200 Seconds Maximum |

|                            |                             |
|----------------------------|-----------------------------|
| Peak Temperature ( $T_p$ ) | $245^\circ\text{C}$ Maximum |
|----------------------------|-----------------------------|

|                                         |                                                                          |
|-----------------------------------------|--------------------------------------------------------------------------|
| Target Peak Temperature ( $T_p$ Target) | $245^\circ\text{C}$ Maximum 2 Times / $230^\circ\text{C}$ Maximum 1 Time |
|-----------------------------------------|--------------------------------------------------------------------------|

|                                                        |                                                        |
|--------------------------------------------------------|--------------------------------------------------------|
| Time within $5^\circ\text{C}$ of actual peak ( $t_p$ ) | 10 seconds Maximum 2 Times / 80 seconds Maximum 1 Time |
|--------------------------------------------------------|--------------------------------------------------------|

|                |                                  |
|----------------|----------------------------------|
| Ramp-down Rate | $5^\circ\text{C/second}$ Maximum |
|----------------|----------------------------------|

|                                                 |     |
|-------------------------------------------------|-----|
| Time $25^\circ\text{C}$ to Peak Temperature (t) | N/A |
|-------------------------------------------------|-----|

|                            |         |
|----------------------------|---------|
| Moisture Sensitivity Level | Level 1 |
|----------------------------|---------|

### Low Temperature Manual Soldering

$185^\circ\text{C}$  Maximum for 10 seconds Maximum, 2 times Maximum.

### High Temperature Manual Soldering

$260^\circ\text{C}$  Maximum for 5 seconds Maximum, 2 times Maximum.