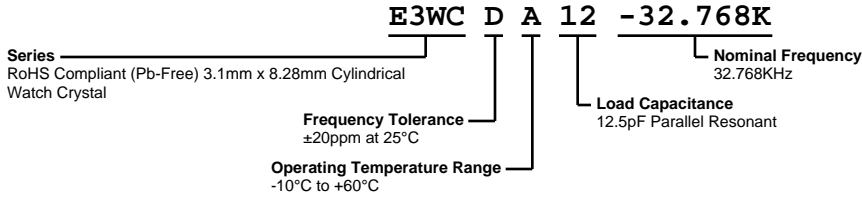


# E3WCDA12-32.768K

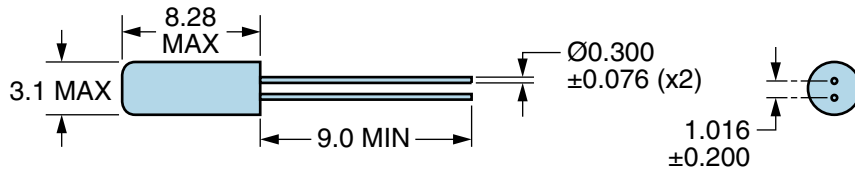


## ELECTRICAL SPECIFICATIONS

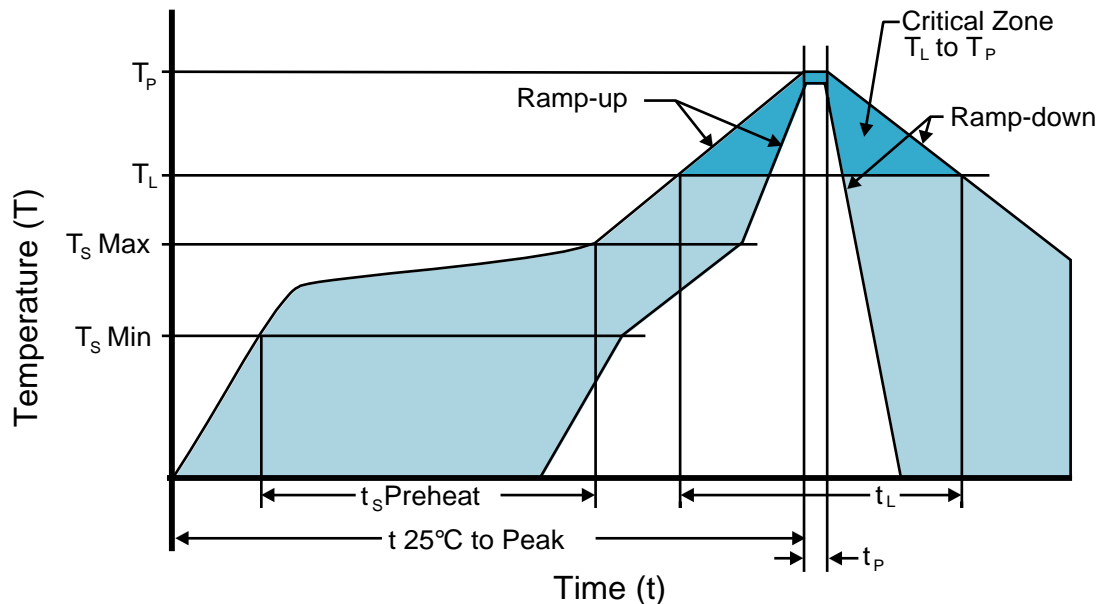
Nominal Frequency	32.768KHz
Frequency Tolerance	$\pm 20\text{ppm}$ at 25°C
Frequency Stability	Parabolic $-0.042\text{ppm}/(\text{Change in } ^\circ\text{C})^2$ Maximum
Aging at 25°C	$\pm 5\text{ppm}/\text{year}$ Maximum
Operating Temperature Range	-10°C to +60°C
Load Capacitance	12.5pF Parallel Resonant
Shunt Capacitance (C0)	0.85pF Typical, 2pF Maximum
Motional Capacitance	2.0fF Typical
Equivalent Series Resistance	35,000 Ohms Maximum
Mode of Operation	Tuning Fork, Turn Over Temperature at 25°C $\pm 5^\circ\text{C}$
Drive Level	1 $\mu\text{Watt}$ Maximum
Storage Temperature Range	-20°C to +70°C
Insulation Resistance	500 Megaohms Minimum at 100Vdc

## MECHANICAL DIMENSIONS (all dimensions in millimeters)

LINE	MARKING
1	32.768K



## Recommended Solder Reflow Methods



### High Temperature Solder Bath (Wave Solder)

**$T_S$  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

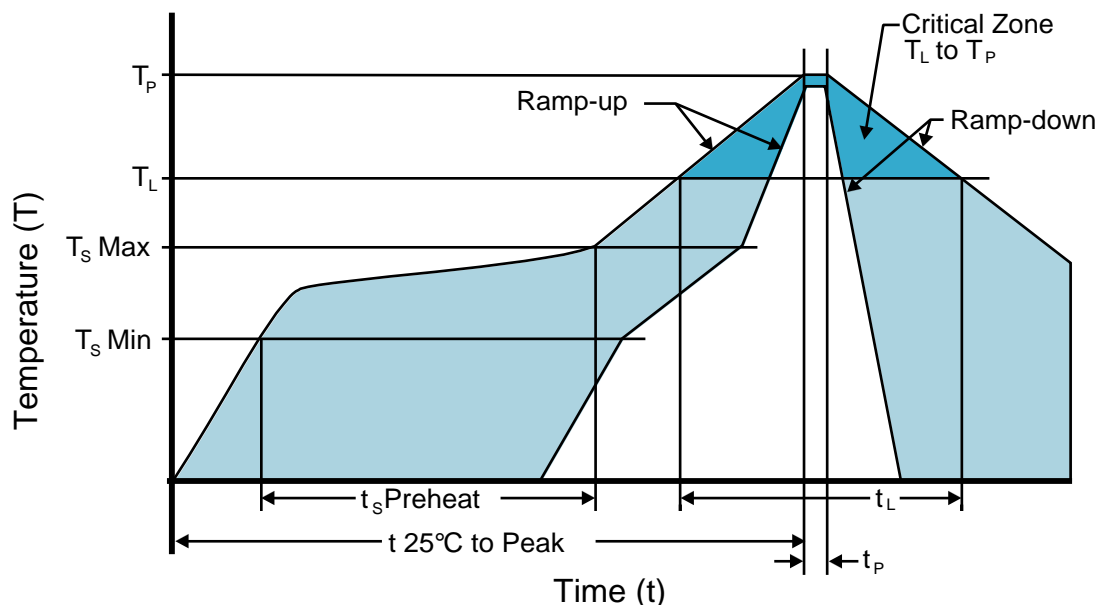
**Time within 5°C of actual peak ( $t_p$ )** 20 - 40 seconds

**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 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.