

# 32.768kHz CERAMIC SMD LVCMOS CRYSTAL OSCILLATOR

ASAK



2.0 x 1.6 x 0.7mm

ASAK



ESD Sensitive



RoHS/RoHS II Compliant

Moisture Sensitivity Level (MSL) – This product is Hermetically Sealed and not Moisture Sensitive - MSL = N/A: Not Applicable

## FEATURES:

- 32.768kHz in 2.0 x 1.6 x 0.7mm package
- Seam sealed package assures high reliability performance
- Low current consumption 240  $\mu$ A max.
- Suitable for RoHS compliant reflow

## APPLICATIONS:

- Laptop
- Digital camera
- Wireless LAN
- Bluetooth and mobile communication
- LCD
- PDA and MP3 player
- Electricity, gas and water metering

## STANDARD SPECIFICATIONS:

| Parameters                        | Minimum                                                                                           | Typical | Maximum | Units   | Notes             |
|-----------------------------------|---------------------------------------------------------------------------------------------------|---------|---------|---------|-------------------|
| Frequency Range                   | 32.768                                                                                            |         |         | kHz     |                   |
| Operating Temperature             | -10                                                                                               |         | +60     | °C      | See options       |
| Storage Temperature               | -55                                                                                               |         | +125    | °C      |                   |
| Overall Frequency Stability*      | -100                                                                                              |         | +100    | ppm     | See options       |
| Supply Voltage (Vdd)              | 2.97                                                                                              | 3.3     | 3.63    | V       | Standard          |
|                                   | 2.375                                                                                             | 2.5     | 2.625   |         | Option 1          |
|                                   | 1.71                                                                                              | 1.8     | 1.89    |         | Option 2          |
| Supply Current (I <sub>dd</sub> ) |                                                                                                   | 120     | 240     | $\mu$ A |                   |
| Output Load                       |                                                                                                   |         | 15      | pF      | LVCMOS            |
| Output Voltage                    | V <sub>OH</sub>                                                                                   | 0.9*Vdd |         | V       |                   |
|                                   | V <sub>OL</sub>                                                                                   |         | 0.1*Vdd |         |                   |
| Tri-state Function                | "1" (V <sub>IH</sub> $\geq$ 0.7*Vdd) : Oscillation<br>"0" (V <sub>IL</sub> $\leq$ 0.3*Vdd) : Hi Z |         |         |         |                   |
| Aging                             | -3                                                                                                |         | +3      | ppm     | @+25°C First year |
| Symmetry @1/2Vdd                  | 40                                                                                                | 50      | 60      | %       | Standard          |
|                                   | 45                                                                                                | 50      | 55      |         | Option S          |
| Start-up Time                     |                                                                                                   |         | 5       | ms      |                   |
| Rise/Fall Time (Tr/Tf)            |                                                                                                   |         | 60      | ns      |                   |
| Disable Current                   |                                                                                                   |         | 10      | $\mu$ A |                   |

## OPTIONS AND PART IDENTIFICATION: (Left blank if standard)

ASAK  - 32.768kHz -    -

| Supply Voltage        |
|-----------------------|
| Blank: 3.3V $\pm$ 10% |
| 1: 2.5 V $\pm$ 5%     |
| 2: 1.8 V $\pm$ 5%     |

| Operating Temp.*     |
|----------------------|
| Blank: -10°C ~ +60°C |
| E: -20°C ~ +70°C     |
| F: -30°C ~ +70°C     |
| N: -30°C ~ +85°C     |
| L: -40°C ~ +85°C     |

| Overall Freq. Stability |
|-------------------------|
| Blank: $\pm$ 100ppm     |
| J: $\pm$ 20ppm (**)     |
| R: $\pm$ 25ppm          |
| K: $\pm$ 30 ppm         |
| C: $\pm$ 50 ppm         |

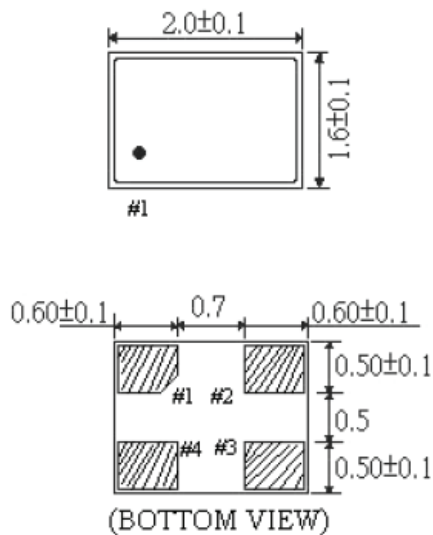
| Symmetry      |
|---------------|
| Blank: 40/60% |
| S: 45/55%     |

| Packaging      |
|----------------|
| Blank: Bulk    |
| T: Tape & Reel |

\*Contact ABRACON for extended temperature range

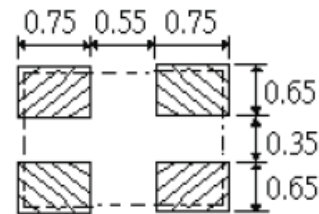
\*\* For standard temp. range -10° C to + 60° C only

➤ OUTLINE DIMENSIONS:



Dimensions: mm

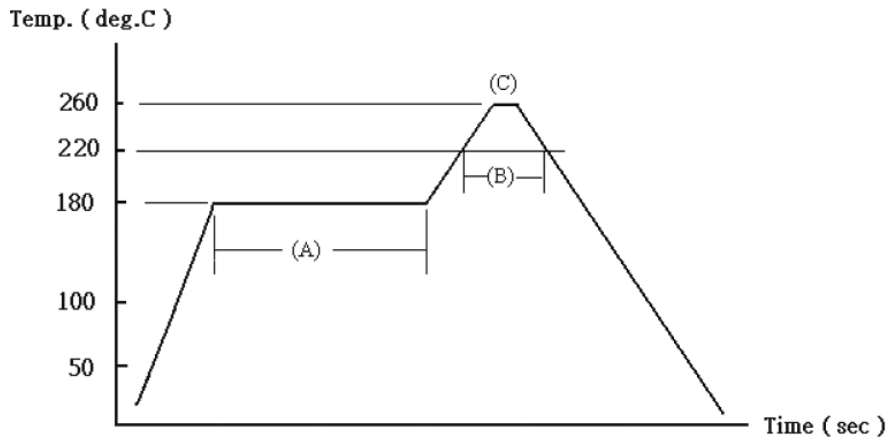
Recommended Land Pattern



Note: Recommend using an approximately 0.01uF bypass capacitor between PIN 2 and 4.

| PIN # | Function       |
|-------|----------------|
| 1     | Enable/Disable |
| 2     | GND            |
| 3     | Output         |
| 4     | Vdd            |

➤ REFLOW PROFILE:



|                      |                           |
|----------------------|---------------------------|
| (A) Preheating Area  | 180±10°C, 90±30 seconds   |
| (B) Heating Area     | 220±10°C, 30 seconds max. |
| (C) Peak Temperature | 260°C, 10 seconds max.    |
| Ramp Rate            | 3°C/second max.           |

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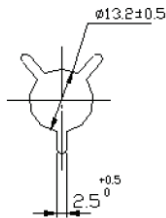
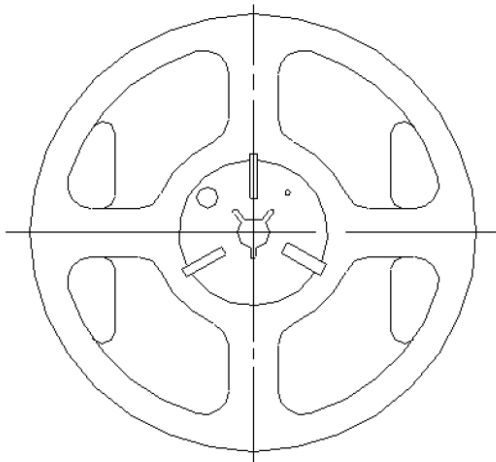
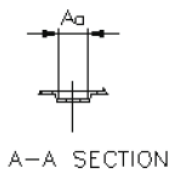
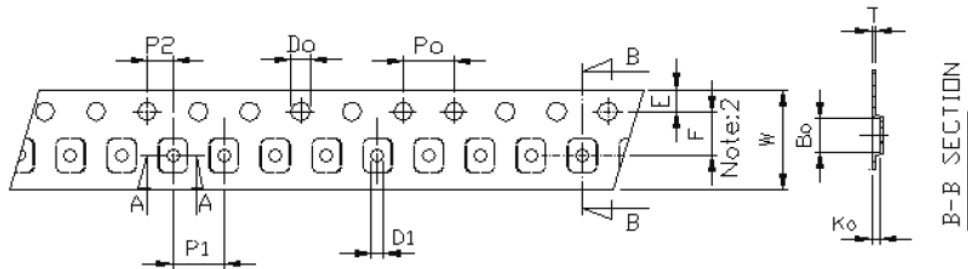
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2.0 x 1.6 x 0.7mm

## TAPE & REEL:

T= Tape and reel (1,000pcs/reel)



Dimensions: mm

| Symbol | Dimensions (mm) | Symbol | Dimensions (mm) |
|--------|-----------------|--------|-----------------|
| A0     | 1.85±0.10       | D0     | 1.50±0.05       |
| B0     | 2.25±0.10       | D1     | 1.05±0.05       |
| K0     | 0.95±0.10       | E      | 1.75±0.10       |
| P0     | 4.0±0.10        | F      | 3.50±0.05       |
| P1     | 4.0±0.10        | W      | 8.0±0.20        |
| P2     | 2.0±0.05        | T      | 0.25±0.05       |

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