

# 32.768KHz SMD Low Profile Crystal

ABS09

Request Samples



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4.1 x 1.5 x 0.9 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A



## Features

- Low frequency in small size SMD
- 0.9mm height ideal for high density circuit boards
- Ceramic package offers excellent environmental & heat resistance
- -40°C to +85°C for industrial applications

## Applications

- Wide range in communication & measuring equipment
- Commercial & Industrial applications
- Wireless communications

## Key Electrical Specifications

| Parameter                     | Specification                    |
|-------------------------------|----------------------------------|
| Nominal frequency:            | 32.768 kHz                       |
| Operating temperature:        | - 40° C to + 85°C                |
| Turn-over temperature:        | +25° C ± 5° C                    |
| Storage temperature:          | - 55° C to + 125°C               |
| Frequency tolerance:          | ± 20 ppm max.                    |
| Temperature coefficient:      | - 0.034±0.006 ppm/T <sup>2</sup> |
| Equivalent series resistance: | 70 kohms max.                    |
| Load capacitance CL:          | 12.5 pF (see options)            |
| Drive level:                  | 1.0 µW max.                      |
| Aging @ 25° C first year:     | ± 5 ppm max.                     |
| Insulation resistance:        | 500Mohms with 100Vdc ± 15V       |
| Shunt capacitance C0:         | 1.0pF typ.                       |
| Motional capacitance C1:      | 2.0fF typ.                       |

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

ABS09-32.768kHz-□-□-□

| Load Capacitance (*) |        |
|----------------------|--------|
| Blank                | 12.5pF |
| 9                    | 9pF    |
| 7                    | 7pF    |

| Freq. Tolerance |          |
|-----------------|----------|
| 1               | ± 10 ppm |
| 4               | ± 30 ppm |

| Packaging |               |
|-----------|---------------|
| Blank     | Bulk          |
| T         | Tape and Reel |

(\*) Contact ABRACON for non-standard load capacitance

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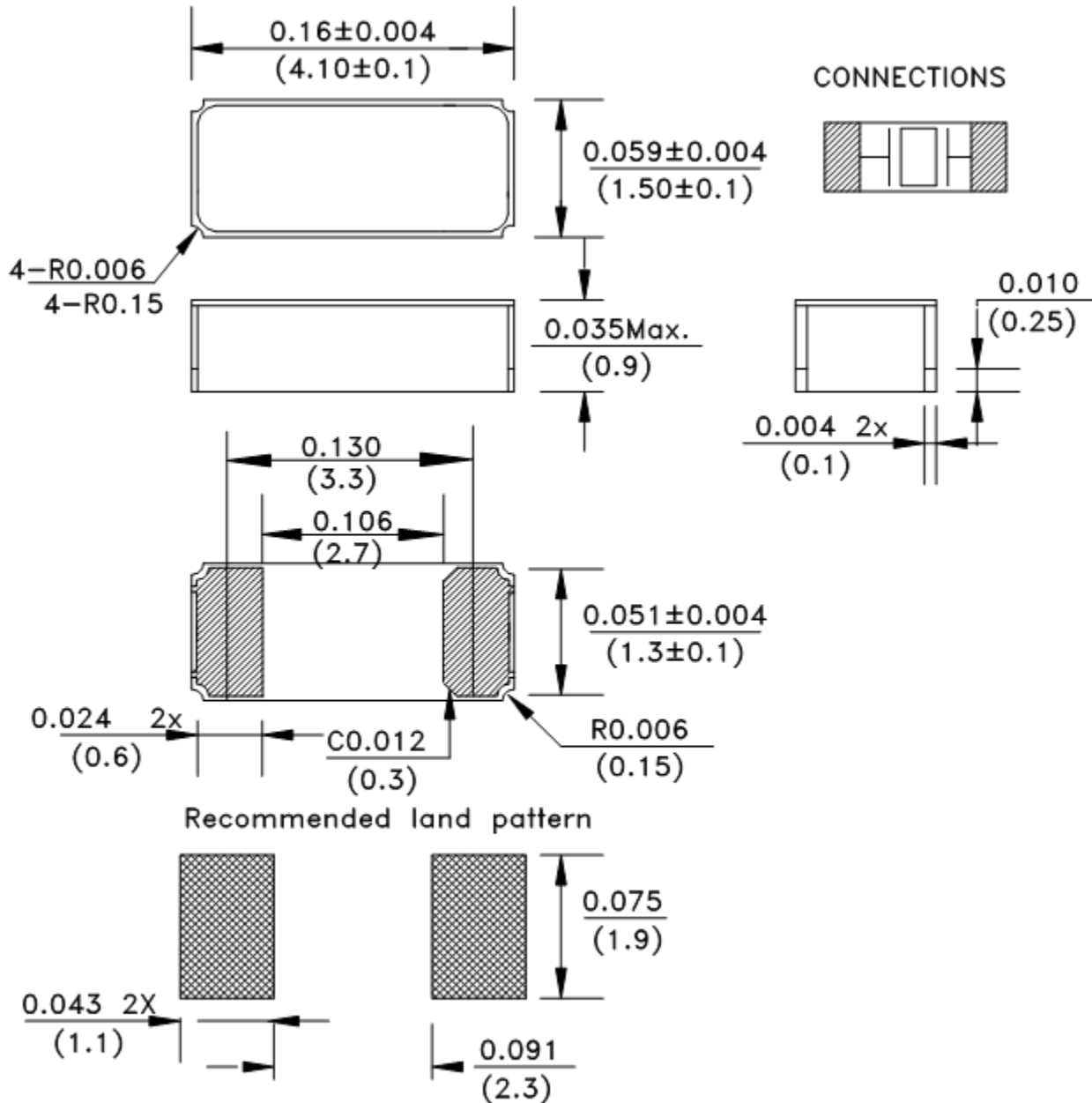
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## MECHANICAL DIMENSIONS



Dimensions: inches (mm)



5101 Hidden Creek Ln Spicewood TX 78669  
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 For terms and conditions of sales, please visit:  
[www.abracon.com](http://www.abracon.com)

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ABRACON IS  
 ISO9001-2015  
 CERTIFIED

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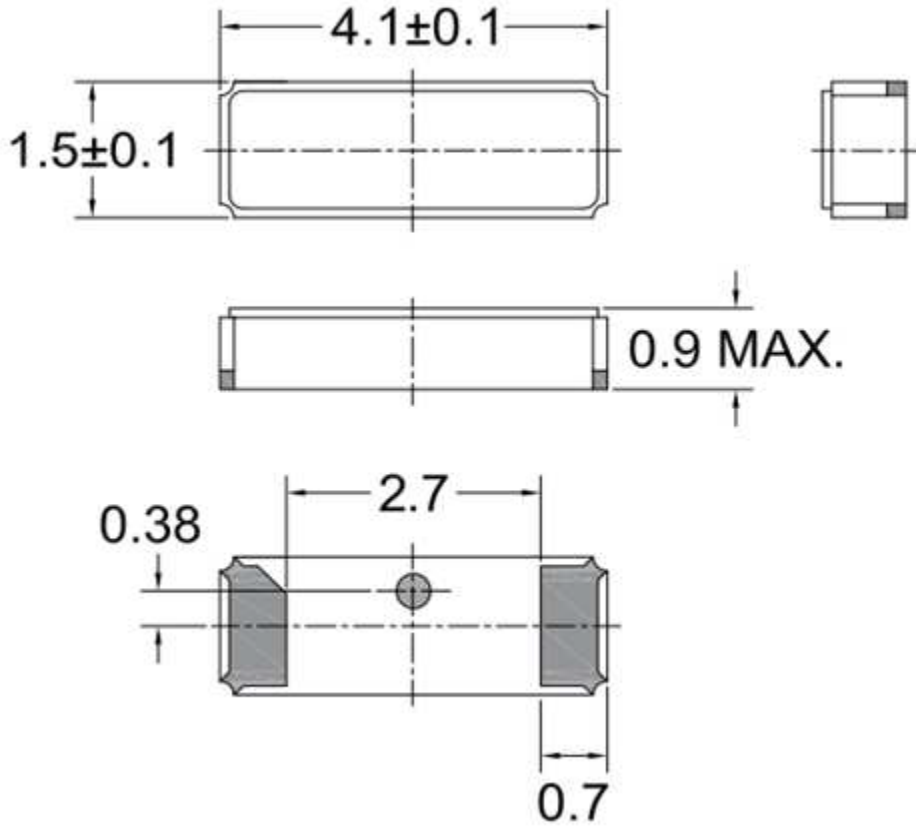
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## Alternative Packaging 1:



Dimensions: mm

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## Reflow Profile [JEDEC J-STD-020]

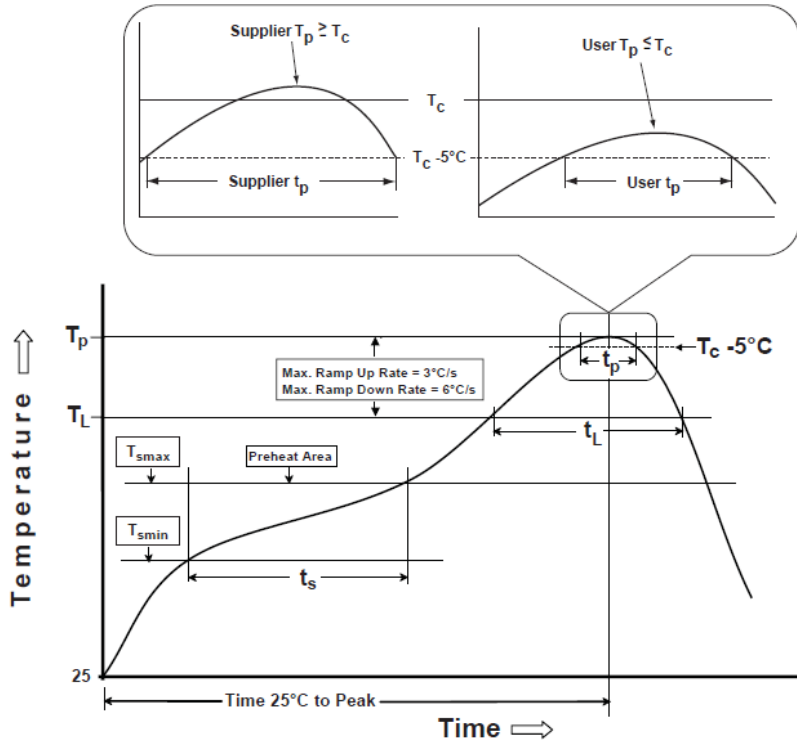


Table 1

SnPb Eutectic Process  
Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5 mm           | 235 °C                      | 220 °C                      |
| ≥2.5 mm           | 220 °C                      | 220 °C                      |

Table 2

Pb-Free Process  
Classification Temperatures ( $T_c$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|-------------------|-----------------------------|---------------------------------|------------------------------|
| <1.6 mm           | 260 °C                      | 260 °C                          | 260 °C                       |
| 1.6 mm - 2.5 mm   | 260 °C                      | 250 °C                          | 245 °C                       |
| >2.5 mm           | 250 °C                      | 245 °C                          | 245 °C                       |

| Profile Feature   | Sn-Pb Eutectic Assembly | Pb-Free Assembly |
|---|-------------------------|------------------|
| Preheat / soak  |                         |                  |
| Temperature minimum ( $T_{smin}$ )  | 100°C                   | 150°C            |
| Temperature maximum ( $T_{smax}$ )  | 150°C                   | 200°C            |
| Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )                                       | 60 - 120 sec.           | 60 - 120 sec.    |
| Average ramp-up rate ( $T_{smax}$ to $T_p$ )                                      | 3°C/sec. max            | 3°C/sec. max     |
| Liquidous temperature ( $T_L$ )   | 183°C                   | 217°C            |
| Time at liquidous ( $t_L$ )   | 60 - 150 sec.           | 60 - 150 sec.    |
| Peak package body temperature ( $T_p$ )*  | see Table 1             | see Table 2      |
| Time ( $t_p$ )** within 5°C of the specified classification temperature ( $T_c$ ) | 20 sec.                 | 30 sec.          |
| Ramp-down rate ( $T_p$ to $T_{smax}$ )  | 6°C/sec. max            | 6°C/sec. max     |
| Time 25°C to peak temperature   | 6 min. max              | 8 min. max       |
| Reflow cycles   | 2 max                   | 2 max            |

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature ( $t_p$ ) is defined as supplier minimum and a user maximum.



## Looking for pricing, stock, or lifecycle information?

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-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management