

**ECN/PCN No.: 4336**

For Manufacturer			
<b>Product Description:</b> 32.768KHZ SMD CRYSTAL	<b>Abracon Part Number / Part Series:</b> ABS07	<input type="checkbox"/> Documentation only <input checked="" type="checkbox"/> ECN <input type="checkbox"/> EOL	<input checked="" type="checkbox"/> Series <input type="checkbox"/> Part Number
<b>Affected Revision:</b> Q	<b>New Revision:</b> R	<b>Application:</b>	<input type="checkbox"/> Safety <input checked="" type="checkbox"/> Non-Safety
<b>Prior to Change:</b> <ul style="list-style-type: none"> <li>• Electrical Specifications:           <ul style="list-style-type: none"> <li>○ Equivalent series resistance (R1)=               <ul style="list-style-type: none"> <li>▪ 70kΩ MAX for -40 ~ +85°C</li> <li>▪ 70kΩ MAX for -40 ~ +125°C</li> <li>▪ 70kΩ MAX for -55 ~ +125°C</li> </ul> </li> </ul> </li> </ul>			
<b>After Change:</b> <ul style="list-style-type: none"> <li>• Electrical Specifications:           <ul style="list-style-type: none"> <li>○ Equivalent series resistance (R1)=               <ul style="list-style-type: none"> <li>▪ 70kΩ MAX for -40 ~ +85°C</li> <li>▪ 95kΩ MAX for -40 ~ +125°C</li> <li>▪ 95kΩ MAX for -55 ~ +125°C</li> </ul> </li> </ul> </li> </ul>			
<b>Cause/Reason for Change:</b> Abracon introduced additional manufacturing sources to ensure product availability and to be in a better position to meet long term customer demand.			
Change Plan			
<b>Effective Date:</b> 12/30/2022	<b>Additional Remarks:</b> N/A		
<b>Change Declaration:</b> This statement addresses both the electrical changes and the addition of additional manufacturing lines.			
<b>Issued Date:</b> 12/30/2022	<b>Issued By:</b> <i>Brooke Cushman</i> Product Engineer	<b>Issued Department:</b> Engineering	
<b>Approval:</b> <i>Thomas Culhane</i> Engineering Director	<b>Approval:</b> <i>Reuben Quintanilla</i> Quality Director	<b>Approval:</b> <i>Ying Huang</i> Purchasing Director	
For Abracon EOL only			
<b>Last Time Buy (if applicable):</b> N/A	<b>Alternate Part Number / Part Series:</b> N/A		
<b>Additional Approval:</b> N/A	<b>Additional Approval:</b> N/A	<b>Additional Approval:</b> N/A	
Customer Approval (If Applicable)			
<b>Qualification Status:</b> <div style="text-align: center;">R Approved <input type="checkbox"/> Not accepted</div> <i>Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.</i>			
<b>Customer Part Number:</b>		<b>Customer Project:</b>	
<b>Company Name:</b>	<b>Company Representative:</b>	<b>Representative Signature:</b>	
<b>Customer Remarks:</b>			

AFFECTED PART NUMBERS

ABS07-32.768KHZ  
ABS07-32.768KHZ-1  
ABS07-32.768KHZ-1-T  
ABS07-32.768KHZ-4  
ABS07-32.768KHZ-4-T  
ABS07-32.768KHZ-4P  
ABS07-32.768KHZ-4P-1-T  
ABS07-32.768KHZ-4P-H-T  
ABS07-32.768KHZ-4P-T  
ABS07-32.768KHZ-4PF-T  
ABS07-32.768KHZ-6  
ABS07-32.768KHZ-6-1  
ABS07-32.768KHZ-6-1-T  
ABS07-32.768kHz-6-4-T  
ABS07-32.768KHZ-6-H-1-T  
ABS07-32.768KHZ-6-H-T  
ABS07-32.768KHZ-6-T  
ABS07-32.768KHZ-7  
ABS07-32.768KHZ-7-1  
ABS07-32.768KHZ-7-1-T  
ABS07-32.768KHZ-7-4-T  
ABS07-32.768KHZ-7-H  
ABS07-32.768KHZ-7-H-1  
ABS07-32.768KHZ-7-H-1-T  
ABS07-32.768KHZ-7-H-T  
ABS07-32.768KHZ-7-T  
ABS07-32.768KHZ-9  
ABS07-32.768KHZ-9-1  
ABS07-32.768KHZ-9-1-T  
ABS07-32.768KHZ-9-4  
ABS07-32.768KHZ-9-4-T  
ABS07-32.768KHZ-9-H  
ABS07-32.768KHZ-9-H-1  
ABS07-32.768kHz-9-H-T  
ABS07-32.768KHZ-9-T  
ABS07-32.768KHZ-H  
ABS07-32.768KHZ-H-1  
ABS07-32.768KHZ-H-1-T  
ABS07-32.768KHZ-H-T  
ABS07-32.768KHZ-T  
ABS07-32.768KHZ-W  
ABS07-32.768KHZ-W-T  
ABS071-32.768KHZ  
ABS071-32.768KHZ-6-T  
ABS071-32.768KHZ-T

# 32.768kHz SMD Crystal

ABS07

Request Samples



Check Inventory



3.2 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
- Seam sealed ceramic package offers excellent environmental & heat resistance
- Extended temperature -55°C to +125°C for industrial applications

## Applications

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

## Key Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency	32.768			kHz	
Operation Mode	Flexural Mode (Tuning Fork)				
Operating Temperature	-40		+85	°C	Option "blank"; See options
Storage Temperature	-55		+125	°C	
Frequency Tolerance @+25°C	-20		+20	ppm	Option "blank"; See options
Temperature Coefficient:	-0.040	-0.036		ppm/T <sup>2</sup>	
Turn-over temperature:	+20	+25	+30	°C	
Equivalent series resistance (R1)			70	kΩ	-40 ~ +85°C
			95		-40 ~ +125°C
			95		-55 ~ +125°C
Shunt capacitance (C0)		0.9 ~ 1.2	2.0	pF	
Load capacitance (CL)	12.5			pF	Option "blank"; See options
Drive Level		0.1	0.5	μW	
Q value	10000	30000			
Aging	-3		+3	ppm	@25°C ± 3°C First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

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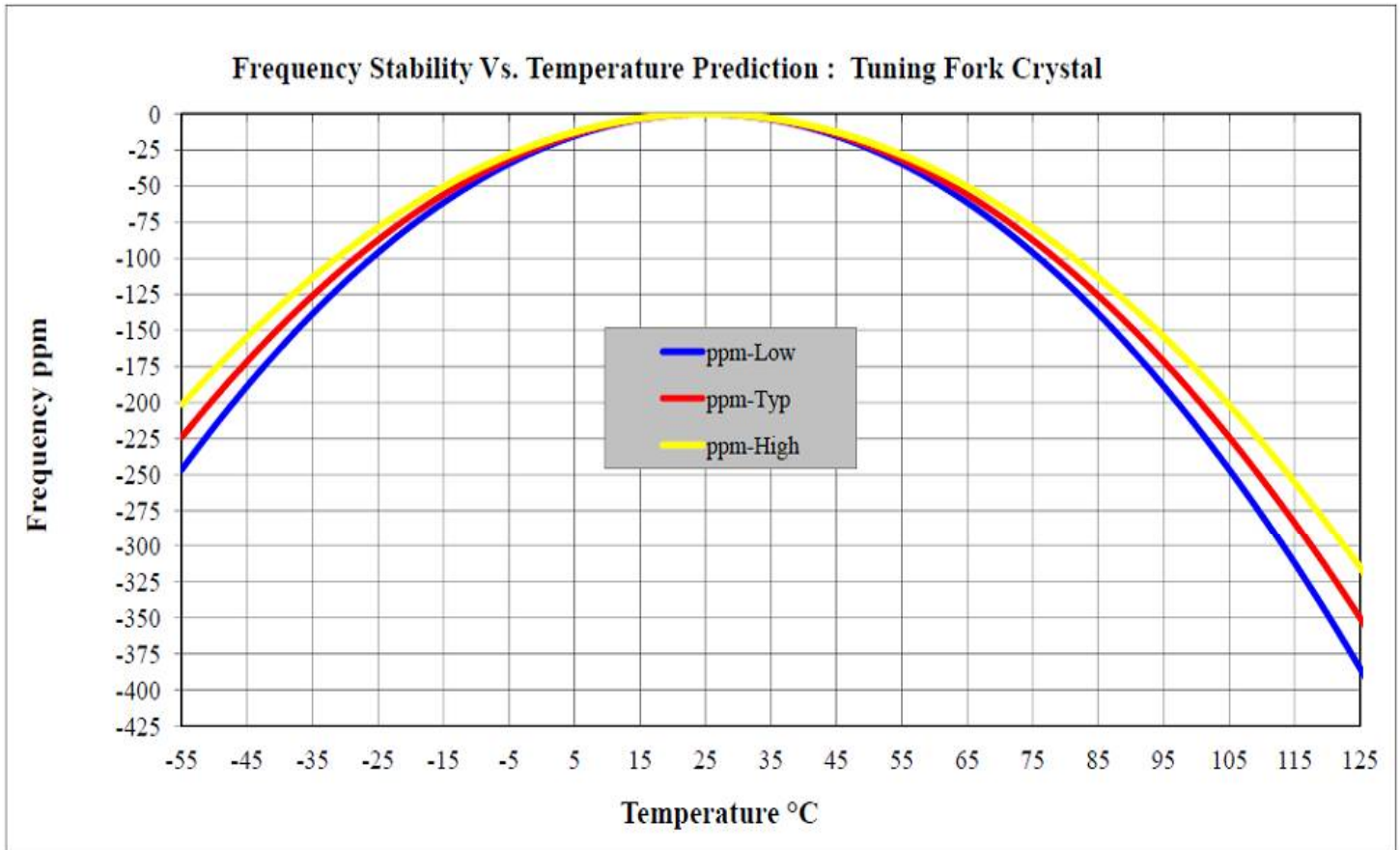
Check Inventory



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## Frequency vs. Temperature Characteristics



# 32.768kHz SMD Crystal

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## Options and Part Identification (Left blank if standard)

ABS07  - 32.768 kHz -  -  -  -

Height
Blank: 0.9mm max.
1: 0.65mm max.

Load Capacitance
Blank: 12.5pF
9: 9pF
7: 7pF
6: 6pF
4P: 4pF (*)

Operating Temp. Range
Blank: -40 ~ +85°C
H: -40 ~ +125°C
W: -55 ~ +125°C

Freq. Tolerance
Blank: ±20ppm
1: ±10ppm
4: ±30ppm

Packaging
Blank: Bulk
T: 3k pcs / reel

(\*) Only available with standard height=0.9mm max

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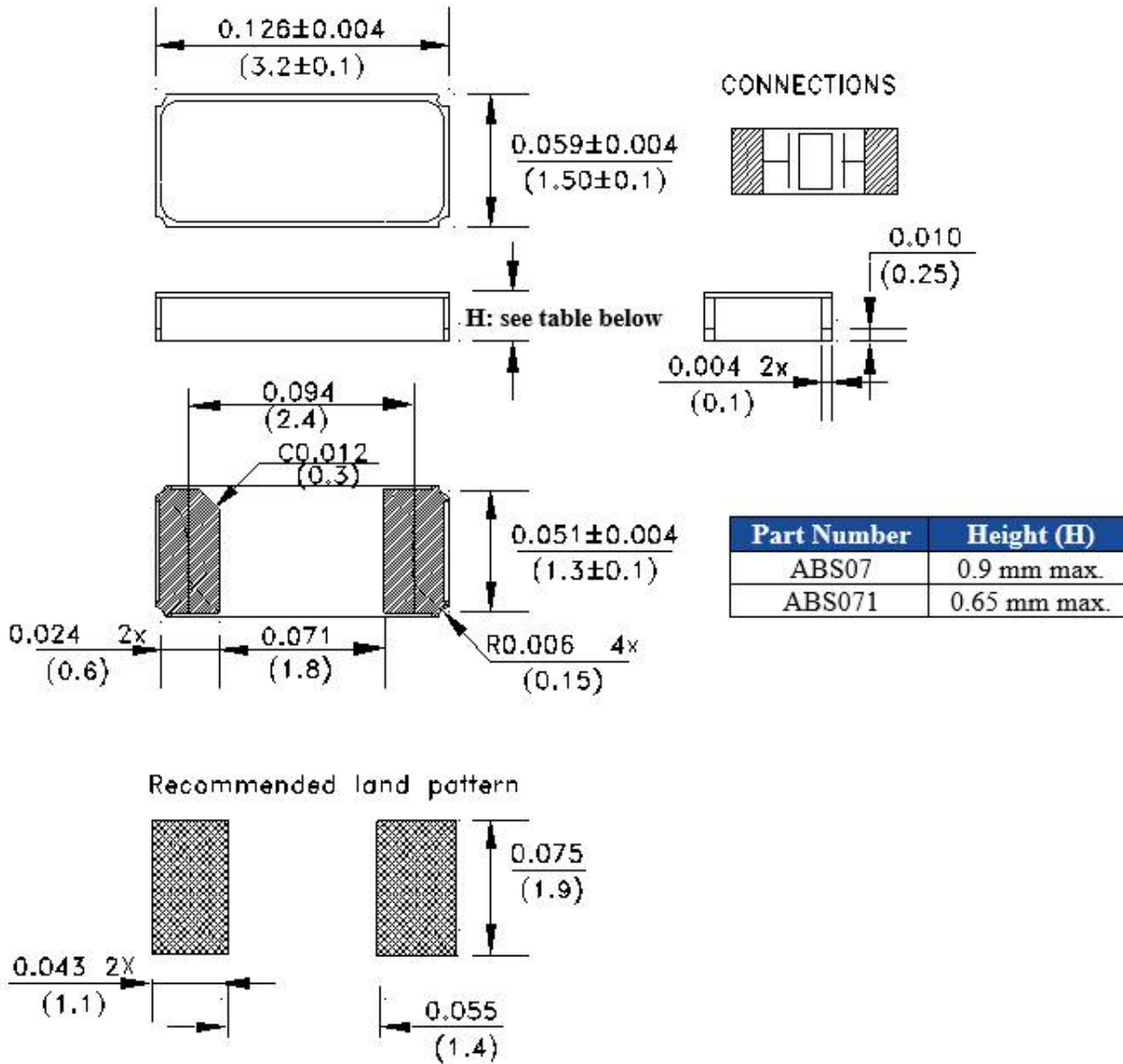
Check Inventory



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



## Mechanical Dimensions



**Note:** Due to material availability, the outline and finish color of the component may vary. This variation in no way affects the electrical performance of the product.

**Sealing Method = Seam Sealing**

**Dimensions: inches (mm)**

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

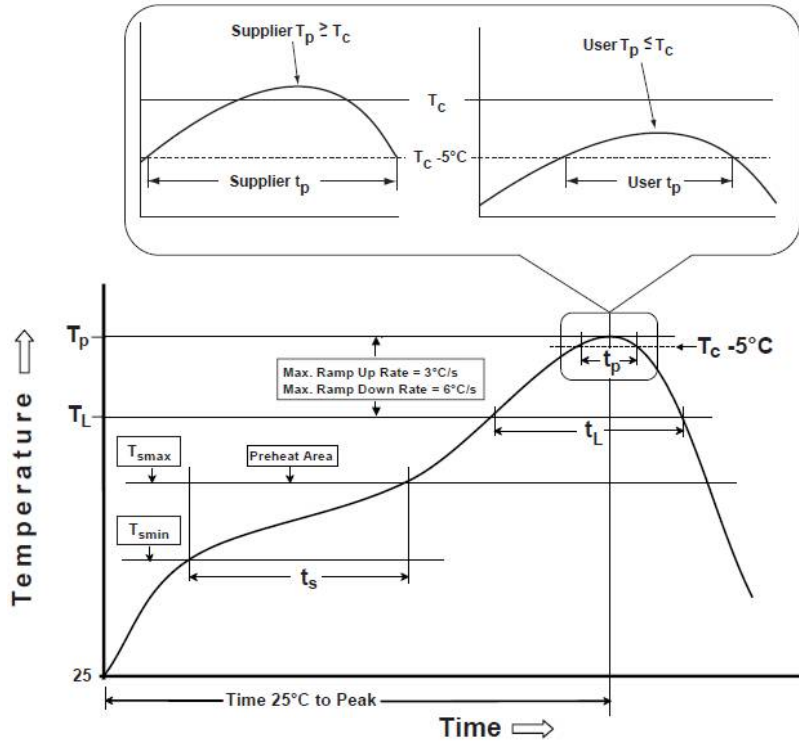


Table 1

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.

