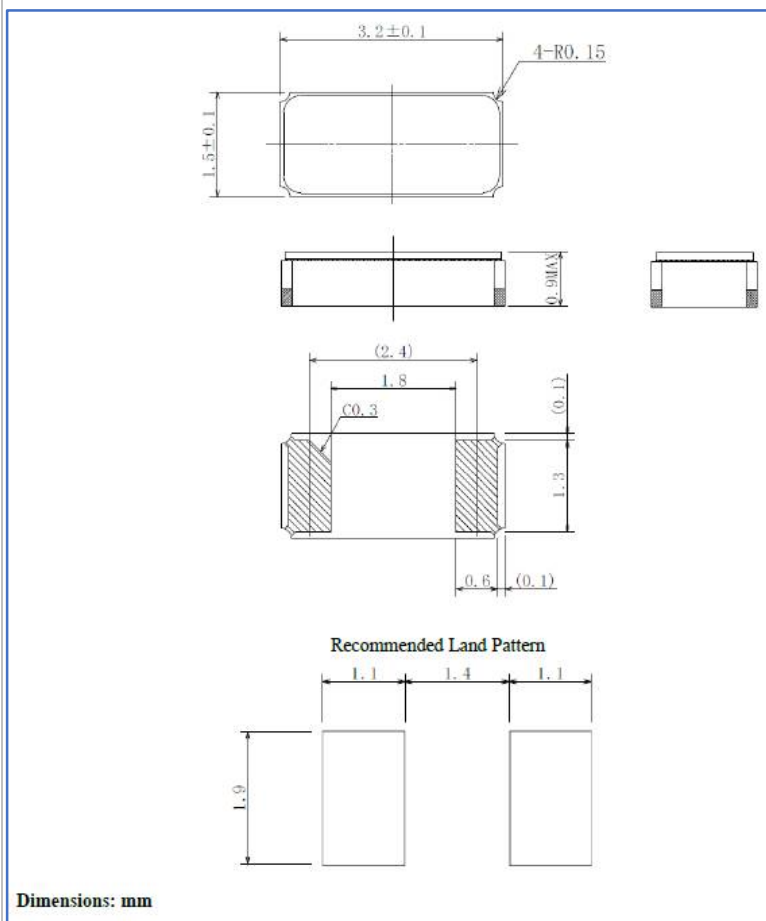


ECN/PCN No.: 4331

For Manufacturer			
Product Description: 32.768kHz SMD Low ESR Crystal	Abraccon Part Number / Part Series: ABS07-LR	<input type="checkbox"/> Documentation only <input checked="" type="checkbox"/> ECN <input type="checkbox"/> EOL	<input checked="" type="checkbox"/> Series <input type="checkbox"/> Part Number
Affected Revision: B	New Revision: C	Application:	<input type="checkbox"/> Safety <input checked="" type="checkbox"/> Non-Safety

Prior to Change:

Mechanical Dimensions:



Dimensions: mm

After Change:

Mechanical Dimensions:

- Added Alternative Mechanical Dimensions #1

<p>Recommended Land Pattern</p>	<p>Alternative Mechanical Dimensions #1:</p>
<p>Dimensions: mm</p>	<p>Dimensions: mm</p>

Cause/Reason for Change:

Abraccon introduced additional manufacturing sources to ensure product availability and to be in a better position to meet long term customer demand. Added an alternative bottom packaging structure to reflect the product produced by all manufacturing sources.

Change Plan

<p>Effective Date: 02/09/2023</p>	<p>Additional Remarks: N/A</p>
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Change Declaration:
The added bottom packaging structure does not impact the electrical performance of the device.

<p>Issued Date: 02/09/2023</p>	<p>Issued By: <i>Brooke Cushman</i> Product Engineer</p>	<p>Issued Department: Engineering</p>
<p>Approval: <i>Thomas Culhane</i> Engineering Director</p>	<p>Approval: <i>Reuben Quintanilla</i> Quality Director</p>	<p>Approval: <i>Ying Huang</i> Purchasing Director</p>

For Abraccon EOL only

<p>Last Time Buy (if applicable): N/A</p>	<p>Alternate Part Number / Part Series: N/A</p>
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Additional Approval: <div style="text-align: center;">N/A</div>	Additional Approval: <div style="text-align: center;">N/A</div>	Additional Approval: <div style="text-align: center;">N/A</div>
Customer Approval (If Applicable)		
Qualification Status: <div style="text-align: center;"> <input checked="" type="checkbox"/> R Approved <input type="checkbox"/> Not accepted </div> <p style="font-size: small; margin-top: 5px;"><i>Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.</i></p>		
Customer Part Number:	Customer Project:	
Company Name:	Company Representative:	Representative Signature:
Customer Remarks:		

32.768kHz SMD Low ESR Crystal

ABS07-LR

Request Samples



Check Inventory



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



Features

- Guaranteed ESR of 50kΩ maximum for low power designs
- 0.9mm height ideal for high density circuit boards
- Seam sealed ceramic package offers excellent environmental & heat resistance
- Extended operating temperature of -40°C to +85°C for industrial applications

Applications

- Power sensitive designs requiring low ESR crystal
- Communication & measurement equipment
- Commercial, consumer & industrial applications
- Wireless communications

Key Electrical Specifications

Parameters	Min.	Typ.	Max.	Units	Notes
Frequency	32.768			kHz	
Operation Mode	Flexural Mode (Tuning Fork)			°C	
Operating Temperature	-40		+85	°C	
Storage Temperature	-55		+125	°C	
Frequency Tolerance @+25°C	-20		+20	ppm	See options
Temperature Coefficient:	-0.040	-0.034	-0.028	ppm/°C ²	
Turn-over temperature:	+20	+25	+30	°C	
Equivalent series resistance @+25°C			50	kΩ	
Shunt capacitance (C0)		1.3		pF	
Load capacitance (CL)		6		pF	
Drive Level		0.1	0.5	μW	
Q value		25000			
Aging@25°C±3°C	-3		3	ppm	First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

32.768kHz SMD Low ESR Crystal

ABS07-LR

Request Samples



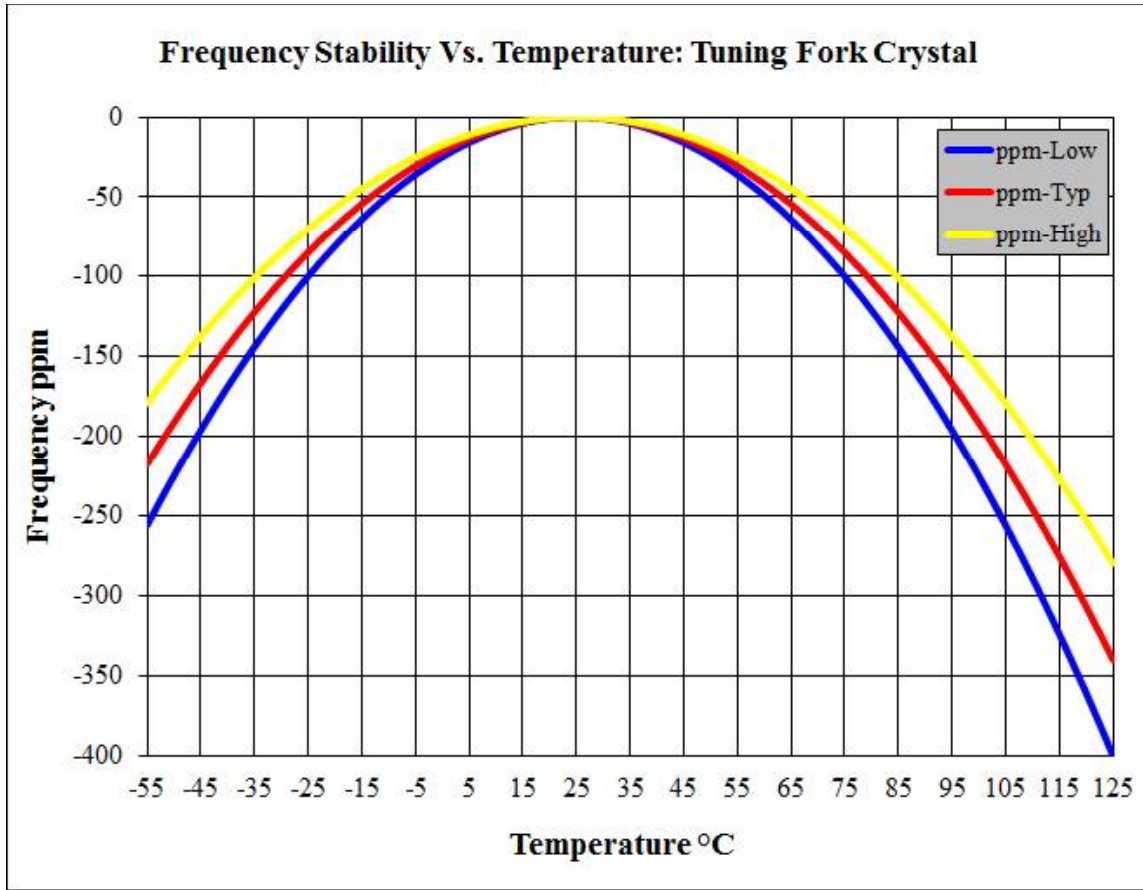
Check Inventory



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



Typical Frequency vs. Temperature Characteristics



Options and Part Identification (left blank if standard)

ABS07-LR-32.768 kHz-6- -

Freq. Tolerance
Blank: ±20ppm
I: ±10ppm

Packaging
Blank: Bulk
T: Tape & Reel (3000pcs/reel)

32.768kHz SMD Low ESR Crystal

ABS07-LR

Request Samples



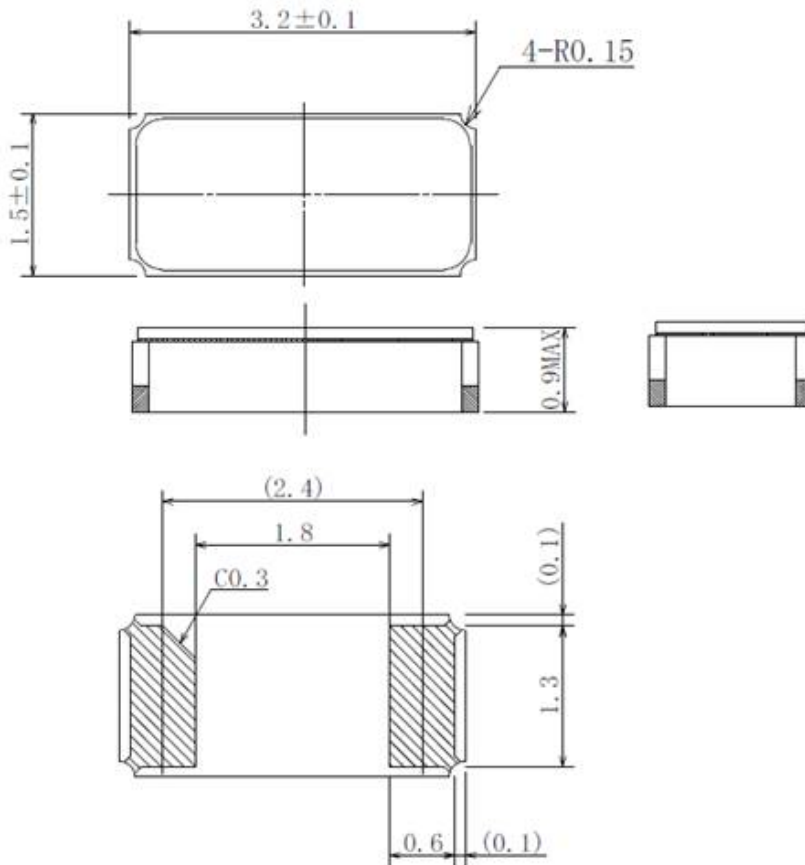
Check Inventory



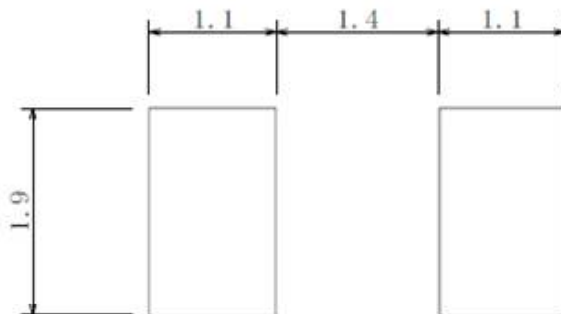
3.2 x 1.5 x 0.9 mm
RoHS/RoHS II Compliant
MSL Level = N/A



Mechanical Dimensions



Recommended Land Pattern



Dimensions: mm

32.768kHz SMD Low ESR Crystal

ABS07-LR

Request Samples



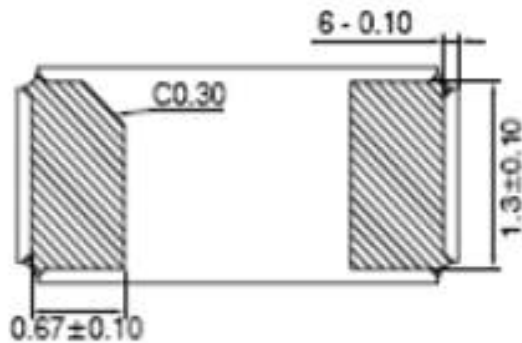
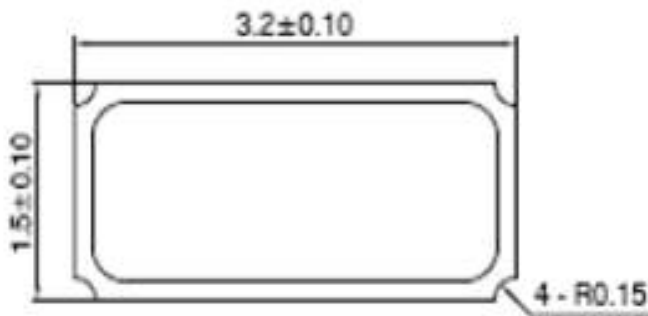
Check Inventory



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



Alternative Mechanical Dimensions #1:



Dimensions: mm

Sealing Method = Seam Sealing

32.768kHz SMD Low ESR Crystal

ABS07-LR

Request Samples



Check Inventory



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

Reflow Profile [JEDEC J-STD-020]

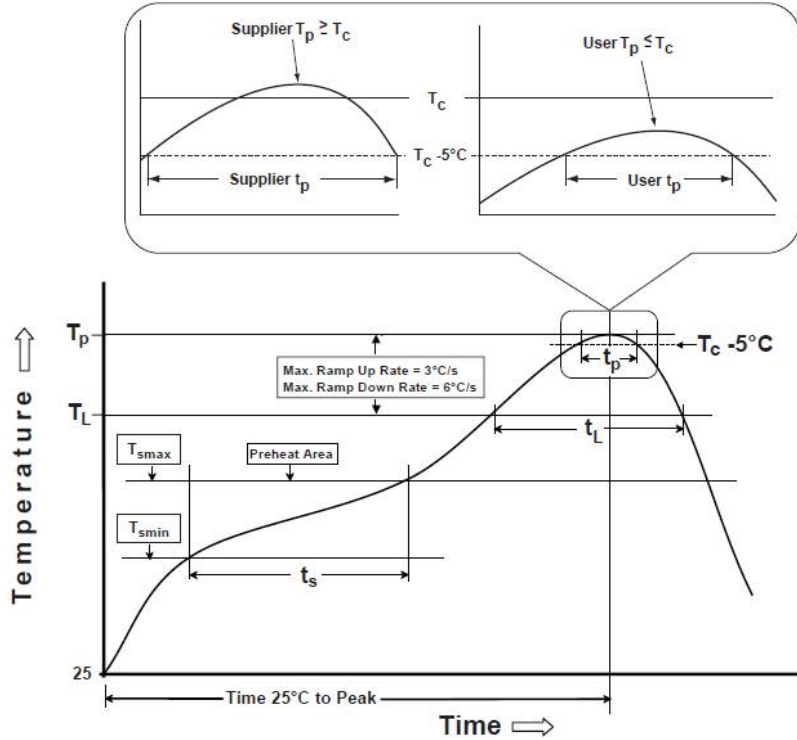


Table 1

SnPb Eutectic Process
Classification Temperatures (T_c)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥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 ³ <350	Volume mm ³ 350-2000	Volume mm ³ >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.

brand	affected part numbers
abracon	ABS07-LR-32.768kHz
abracon	ABS07-LR-32.768KHZ-6
abracon	ABS07-LR-32.768KHZ-6-1
abracon	ABS07-LR-32.768kHz-6-1-T
abracon	ABS07-LR-32.768kHz-6-T
abracon	ABS07-LR-32.768KHZ-7-1
abracon	ABS07-LR-32.768KHZ-7-T
abracon	ABS07-LR-32.768kHz-9