Engineering/Process Change Notice

ECN/PCN No.: 3656

For Manufacturer

Product Description: 32.768kHz SMD Low Profile Crystal	**Abracon Part Number / Part Series:** ABS07-120-32.768kHz-T	☐ Series ☒ Part Number
Affected Revision: D	**New Revision:** E	**Application:** ☐ Safety ☒ Non-Safety

Prior to and After Change:

Electrical Specifications

Parameter	Min.	Typ.	Max	Units	
Temperature Coefficient	-0.045	-0.035	-0.025	ppm/T²	**Before**
	-0.045	-0.035		ppm/T²	**After**

Parameter	Min.	Typ.	Max	Units	
Shunt capacitance (C0)		1.1		pF	**Before**
			1.60	pF	**After**

Parameter	Min.	Typ.	Max	Units	
Motional capacitance (Cm)		4.7		fF	**Before**
		3.0 ~ 6.0		fF	**After**

Cause/Reason for Change:

Abracon introduced additional manufacturing sources to ensure product availability and to be in a better position to meet long term customer demand. Updated electrical specifications to reflect the product produced by all manufacturing sources.

Change Plan

Effective Date: 09/11/2020	**Additional Remarks:**

Change Declaration:
This statement addresses both the electrical changes and the addition of additional manufacturing lines.

Issued Date: 09/11/2020	**Issued By:** *Brooke Cushman*	**Issued Department:** Engineering
Approval: *Thomas Culhane* Engineering Director	**Approval:** *Reuben Quintanilla* Quality Director	**Approval:** *Ying Huang* Purchasing Director

For Abracon EOL only

Last Time Buy (if applicable):	**Alternate Part Number / Part Series:**	
Additional Approval:	**Additional Approval:**	**Additional Approval:**

Customer Approval (If Applicable)		
Qualification Status: ☐ Approved ☐ Not accepted *Note: It is considered approved if there is no feedback from the customer 1 month after ECN/PCN is released.*		
Customer Part Number:	**Customer Project:**	
Company Name:	**Company Representative:**	**Representative Signature:**
Customer Remarks:		

ABS07-120-32.768kHz-T; TUNING FORK CRYSTAL

3.2 x 1.5 x 0.9 mm

32.768kHz SMD; ESR OPTIMIZED CRYSTAL

RoHS/RoHS II

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

FEATURES:

- Guaranteed ESR of 60kΩ 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:

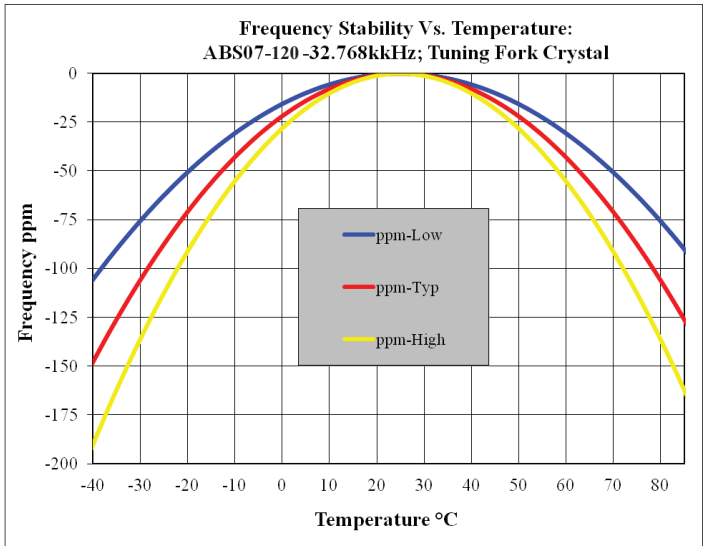
- Power sensitive designs requiring Low ESR Crystal, such as ST-Micro MCU STM32L based solutions
- Communication & measurement equipment
- Commercial, Consumer & Industrial applications
- Wireless communications
- PDA and Smartphone

STANDARD SPECIFICATIONS

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency		32.768		kHz	
Operation Mode		Tuning Fork			
Operating Temperature	-40		+85	ºC	
Storage Temperature	-55		+125	ºC	
Frequency Tolerance @+25ºC	-20		+20	ppm	Tested at 0.1uW
Temperature Coefficient:	-0.045	-0.035		ppm/T²	
Turn-over temperature:	+20	+25	+30	ºC	
Equivalent series resistance (R1)		55	60	kΩ	
Shunt capacitance (C0)			1.60	pF	
Motional capacitance (Cm)		3.0 ~ 6.0		fF	
Load capacitance (CL)		6.0		pF	
Drive Level		0.1	0.5	µW	
Q value	13000				
Aging@25ºC±3ºC	-3		3	ppm	First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V

PART IDENTIFICATION: ABS07-120-32.768 kHz-T

FREQUENCY VARIATION OVER OPERATING TEMPERATURE; RELATIVE TO MEASURED FREQUENCY AT 25ºC



Temp °C	(ppm) Low	(ppm) Typ	(ppm) High
-40	-105.63	-147.88	-190.13
-35	-90.00	-126.00	-162.00
-30	-75.63	-105.88	-136.13
-25	-62.50	-87.50	-112.50
-20	-50.63	-70.88	-91.13
-15	-40.00	-56.00	-72.00
-10	-30.63	-42.88	-55.13
-5	-22.50	-31.50	-40.50
0	-15.63	-21.88	-28.13
5	-10.00	-14.00	-18.00
10	-5.63	-7.88	-10.13
15	-2.50	-3.50	-4.50
20	-0.63	-0.88	-1.13
25	**0.00**	**0.00**	**0.00**
30	-0.63	-0.88	-1.13
35	-2.50	-3.50	-4.50
40	-5.63	-7.88	-10.13
45	-10.00	-14.00	-18.00
50	-15.63	-21.88	-28.13
55	-22.50	-31.50	-40.50
60	-30.63	-42.88	-55.13
65	-40.00	-56.00	-72.00
70	-50.63	-70.88	-91.13
75	-62.50	-87.50	-112.50
80	-75.63	-105.88	-136.13
85	-90.00	-126.00	-162.00

ABRACON LLC
5101 Hidden Creek Ln Spicewood TX 78669
Phone: 512-371-6159 | Fax: 512-351-8858
For terms and conditions of sales, please visit:
www.abracon.com

REVISED: 09-22-20

ABRACON IS ISO9001-2015 CERTIFIED

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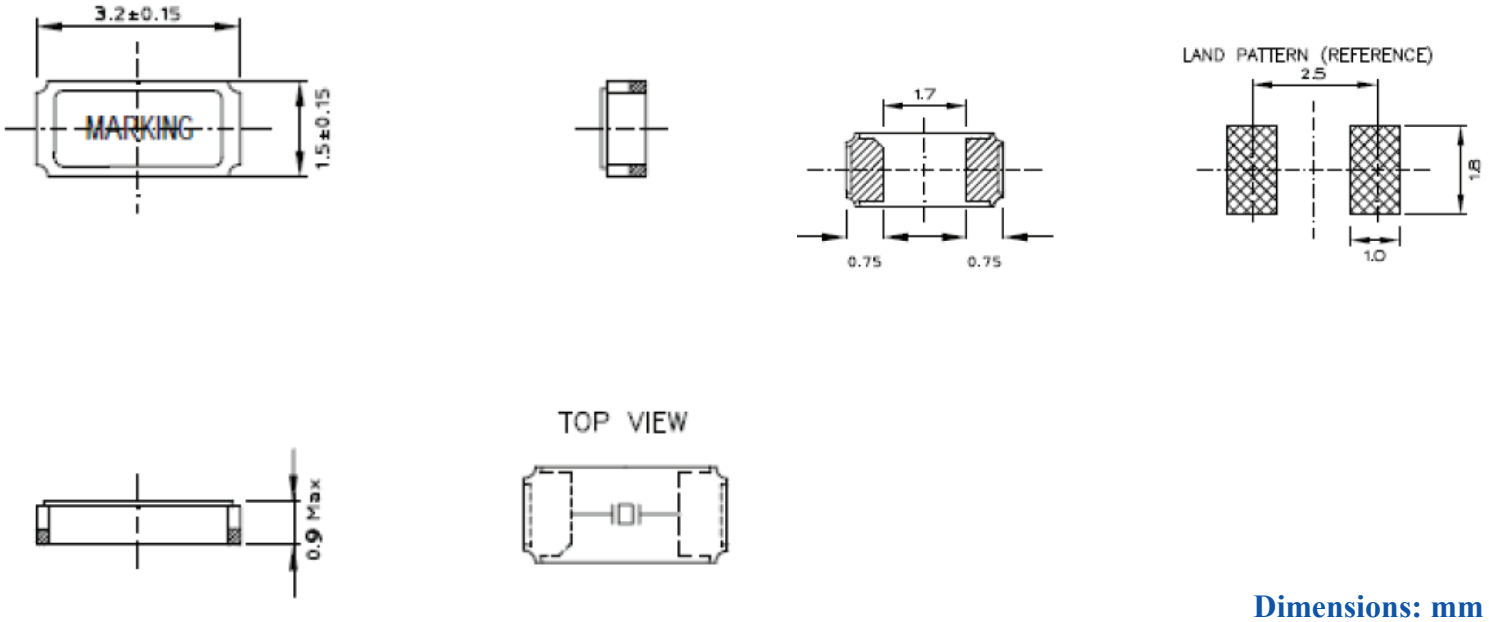
RoHS/RoHS II

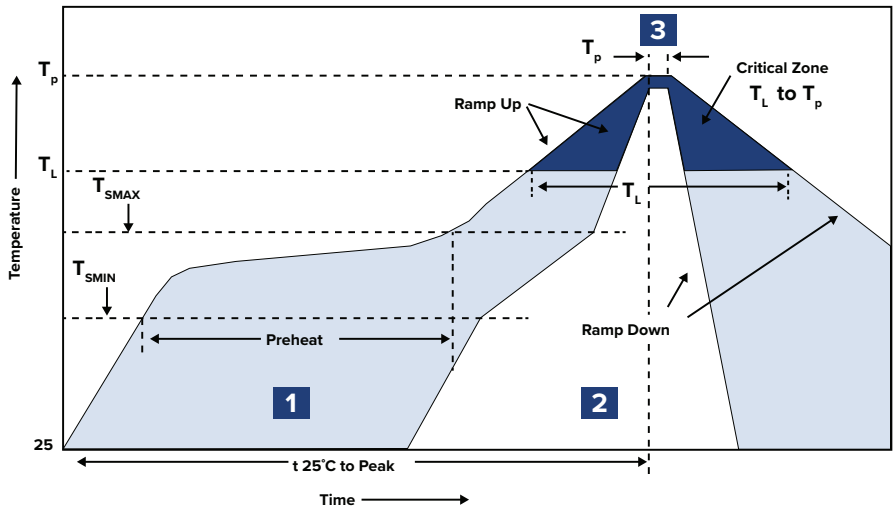
3.2 x 1.5 x 0.9 mm

OUTLINE DRAWING:



Dimensions: mm

REFLOW PROFILE:



Zone	Description	Temperature	Time
1	Preheat	T_{SMIN} ~ T_{SMAX} 150°C ~ 200°C	90 sec. Max
2	Reflow	T_L 255°C Min	60 sec. Max
3	Peak heat	T_P 260°C±5°C	10 sec. Max

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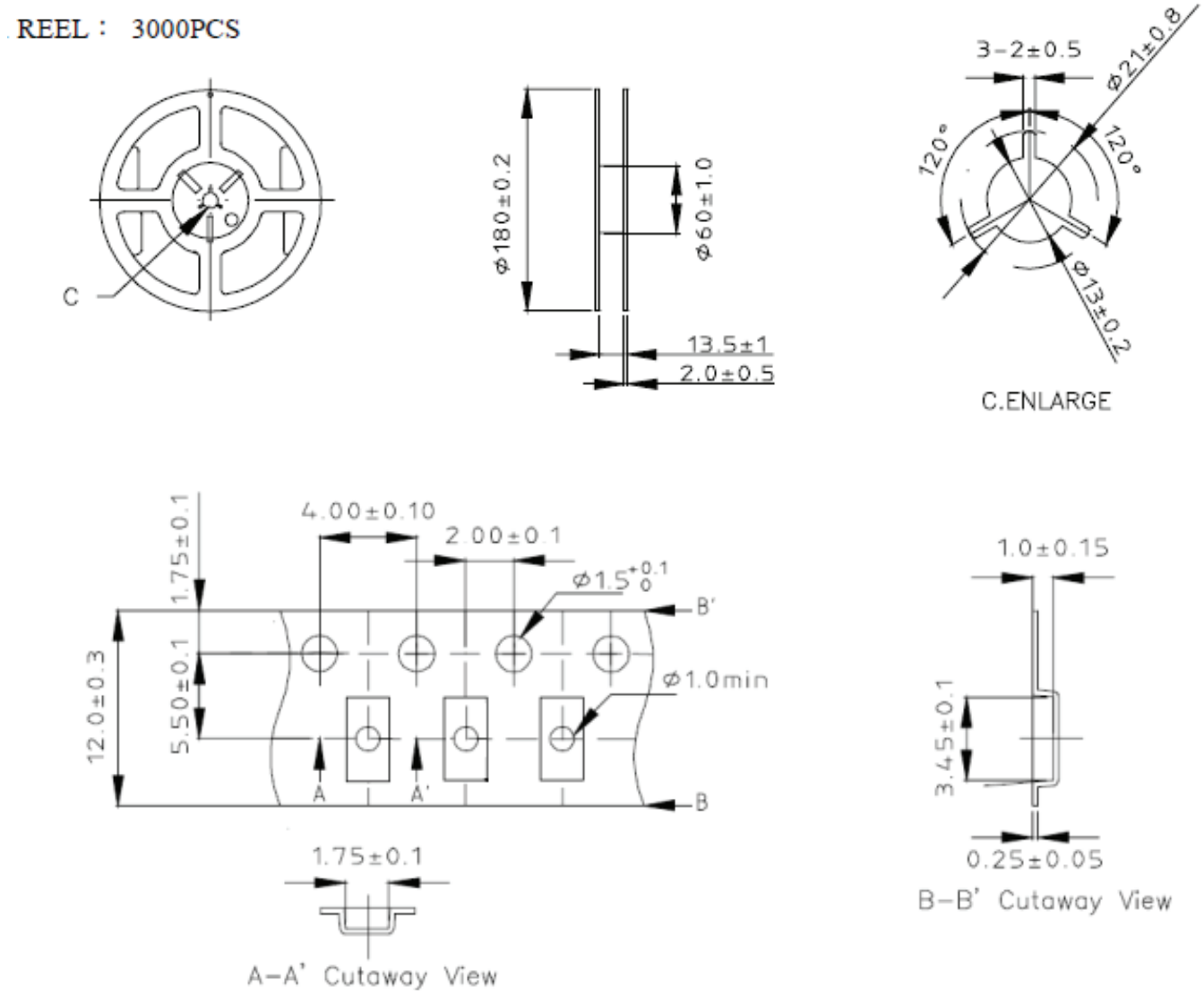
TAPE & REEL:

T=Tape and reel (3,000pcs/reel)



Dimensions: mm

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