Engineering/Process Change Notice

ECN/PCN No.: 4528

For Manufacturer			
Product Description: Low Frequency SMD Microprocessor Crystal	**Abracon Part Number / Part Series:** ABC2	☐ Documentation only ☒ ECN ☐ EOL	☒ Series ☐ Part Number
Affected Revision: P	**New Revision:** Q	**Application**:	☐ Safety ☒ Non-Safety

Prior to Change:

ABC2 Rev P

Frequency Range

3.5MHz to 36MHz Fundamental, AT

27MHz to 70MHz 3rd Overtone, AT

Table 1

Frequency Ranges	Operation mode	ESR (max)
3.200MHz ~ 3.499MHz	Fundamental	200 Ω
3.500MHz ~ 3.999MHz	Fundamental	140 Ω
4.000MHz ~ 4.399MHz	Fundamental	120 Ω
4.400MHz ~ 4.899MHz	Fundamental	100 Ω
4.900MHz ~ 5.999MHz	Fundamental	80 Ω
6.000MHz ~ 6.999MHz	Fundamental	60 Ω
7.000MHz ~ 7.999MHz	Fundamental	50 Ω
8.000MHz ~ 10.999MHz	Fundamental	45 Ω
11.000MHz ~ 11.999MHz	Fundamental	40 Ω
12.000MHz ~ 14.999MHz	Fundamental	35 Ω
15.000MHz ~ 36.000MHz	Fundamental	30 Ω
27.000MHz ~ 70.000MHz	3rd OT	100 Ω

Part Numbering Guide

Operating Temp.
Blank: -10°C ~ +60°C
B: -20°C ~ +70°C
D**: -40°C ~ +85°C

Freq. Tolerance
Blank: ± 50 ppm
2: ± 20 ppm
4: ± 30 ppm

Freq. Stability
Blank: Standard
G*: ± 15 ppm
W*: ± 25 ppm
Y: ± 30 ppm
H: ± 35 ppm
Z: ± 50 ppm
Q: ± 100 ppm

* Option B and -10 ~60°C only

** Option Y, H, Z and Q only for F≥6.0MHz; Option Z and Q only for F<6.0MHz

After Change:

ABC2 Rev Q

Frequency Range

3.2MHz to 30MHz Fundamental Mode, AT

Removal of 3rd Overtone, AT

Limit frequency range to 30MHz

ABRACON Ecliptek FOX ILSI MMD OSCILENT

Table 1

Frequency Ranges	Operation mode	ESR (max)
3.200MHz ~ 3.499MHz	Fundamental	200 Ω
3.500MHz ~ 3.999MHz	Fundamental	140 Ω
4.000MHz ~ 4.399MHz	Fundamental	120 Ω
4.400MHz ~ 4.899MHz	Fundamental	100 Ω
4.900MHz ~ 5.999MHz	Fundamental	80 Ω
6.000MHz ~ 6.999MHz	Fundamental	60 Ω
7.000MHz ~ 7.999MHz	Fundamental	50 Ω
8.000MHz ~ 10.999MHz	Fundamental	45 Ω
11.000MHz ~ 11.999MHz	Fundamental	40 Ω
12.000MHz ~ 14.999MHz	Fundamental	35 Ω
15.000MHz ~ 30.000MHz	Fundamental	30 Ω

Removal of 3rd Overtone Frequency Range, Limit frequency Range to 30MHz

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Part Numbering Guide

Operating Temp.
Blank: -10°C ~ +60°C
B: -20°C ~ +70°C
D**: -40°C ~ +85°C

Freq. Tolerance
Blank: ± 50 ppm
2: ± 20 ppm
4: ± 30 ppm

Freq. Stability
Blank: Standard
Y: ± 30 ppm
Z: ± 50 ppm
Q: ± 100 ppm

**Option Q only for F≥6.0MHz; Option Z and Q only for F<6.0MHz

Removal of Frequency Stability Options G, W, and H
Update note (**) on Operating Temperature Option D

Cause/Reason for Change:
Updated electrical specifications to reflect current production capabilities.

Change Plan

Effective Date:	**Additional Remarks:**
1/6/2022	

Change Declaration:

Issued Date:	**Issued By:**	**Issued Department:**
1/6/2022	*Stephanie Lopez*	Engineering

Approval:	**Approval:**	**Approval:**
Thomas Culhane Engineering Director	*Reuben Quintanilla* Quality Director	*Ying Huang* Purchasing Director

For Abracon EOL only

Last Time Buy (if applicable):	**Alternate Part Number / Part Series:**
N/A	N/A

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:

ABRACON Ecliptek FOX ILSI MMD OSCILENT

Low Frequency SMD Microprocessor Crystal

ABC2 Series

Request Samples | Check Inventory

11.8 x 5.5 x 1.9 mm
RoHS RoHS II Compliant
MSL Level = N/A

Features

- Low frequency in small size SMD
- 1.9mm height ideal for high density circuit boards
- Ceramic package offers excellent environmental & heat resistance
- Extended temperature -40°C to +85°C for industrial applications
- Suitable for RoHS compliant reflow

Applications

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

Key Electrical Specifications

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	3.200		30.000	MHz	Fundamental, AT
Operation Mode	Fundamental				
Operating Temperature	-10		+60	ºC	Please see available options under Part Identification section
Storage Temperature	-55		+125	ºC	
Frequency Tolerance @+25°C	-50		+50	ppm	See options
Frequency Stability over the Operating Temperature (ref. to +25°C)	-50		+50	ppm	Standard for below 6.0MHz (-10 °C to +60 °C) See options for other temperature
	-30		+30		Standard for 6.0MHz and above; (-10 °C to +60 °C) See options for other temperature
Equivalent series resistance (R1)	See table 1 below			Ω	
Shunt capacitance (C0)			7	pF	
Load capacitance (CL)		18		pF	See options
Drive Level			100	µW	
Aging@25°C±3°C			±5	ppm	First year
Insulation Resistance	500			M Ω	@ 100Vdc ± 15V

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REVISED: 01-06-23

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Low Frequency SMD Microprocessor Crystal

ABC2 Series

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11.8 x 5.5 x 1.9 mm
RoHS RoHS II Compliant
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Table

Frequency Ranges	Operation mode	ESR (max)
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Options and Part Identification (left blank if standard)

ABC2-[ ]MHz - [ ]-[ ]-[ ]-[ ]-[ ]-[ ]

Frequency in MHz
Please specify the frequency in MHz
e.g. 14.31818MHz

Load Capacitance (pF)
Please specify CL in pF or S for series

Custom ESR if other than standard
R□
□: Specify a value in Ω
(e.g.: R40)

Operating Temp.

Blank: -10°C ~ +60°C
B: -20°C ~ +70°C
D**: -40°C ~ +85°C

Freq. Tolerance

Blank: ± 50 ppm
2: ± 20 ppm
4: ± 30 ppm

Freq. Stability

Blank: Standard
Y: ± 30 ppm
Z: ± 50 ppm
Q: ± 100 ppm

Packaging

Blank: Bulk
T: Tape & Reel (1k pcs /reel)
T2: Tape & Reel (2k pcs /reel)

****Option Q only for F≥6.0MHz; Option Z and Q only for F<6.0MHz**

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MSL Level = N/A

Reflow Profile [JEDEC J-STD-020]

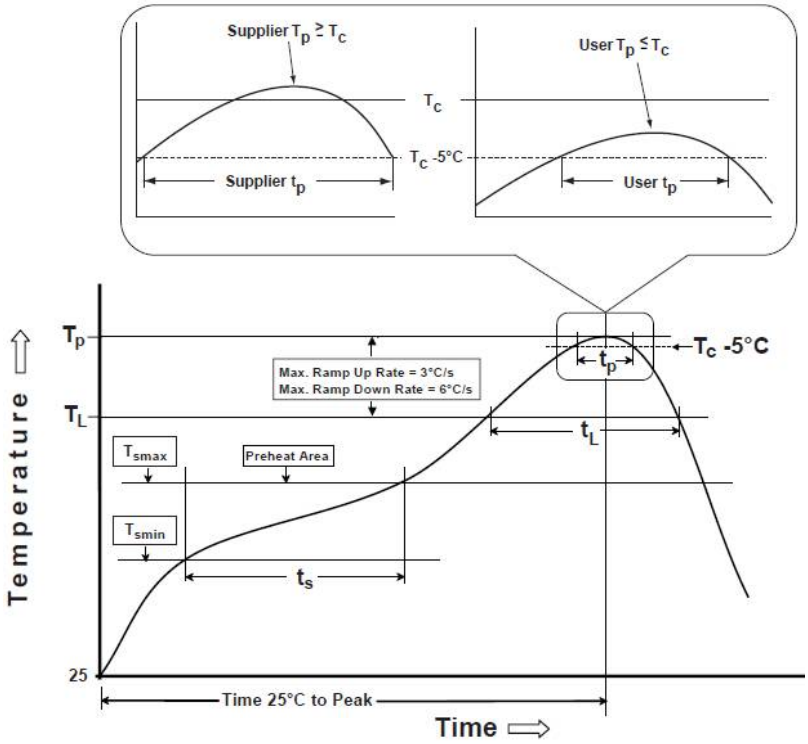


Table 1

SnPb Eutectic Process Classification Temperatures (T_c)		
Package Thickness	**Volume mm³ <350**	**Volume mm³ ≥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 mm³ <350**	**Volume mm³ 350-2000**	**Volume mm³ >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.

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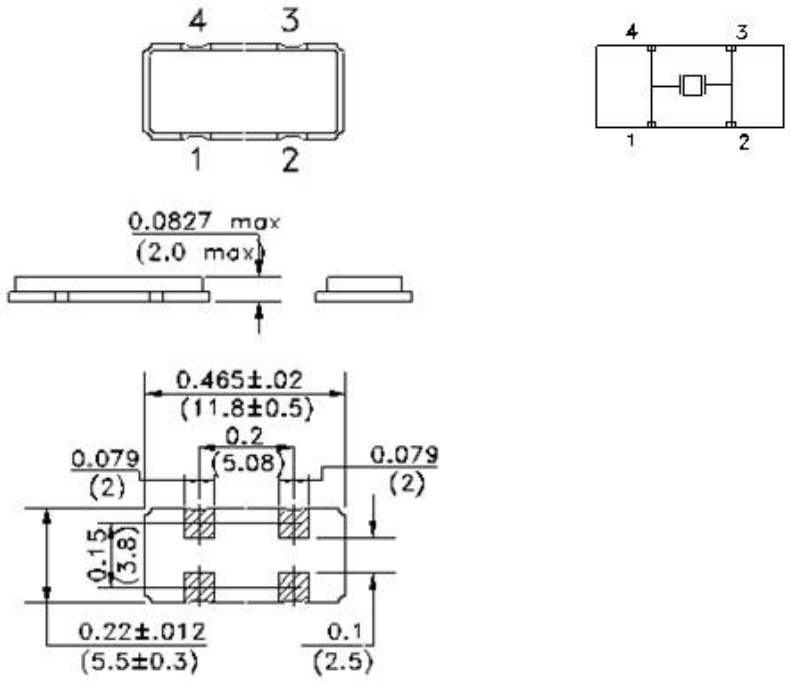
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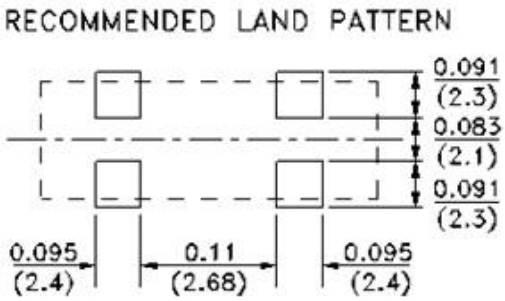
ABC2 Series

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11.8 x 5.5 x 1.9 mm
RoHS RoHS II Compliant
MSL Level = N/A

Mechanical Dimensions





Sealing Method = Glass Sealing

Dimensions: inches (mm)

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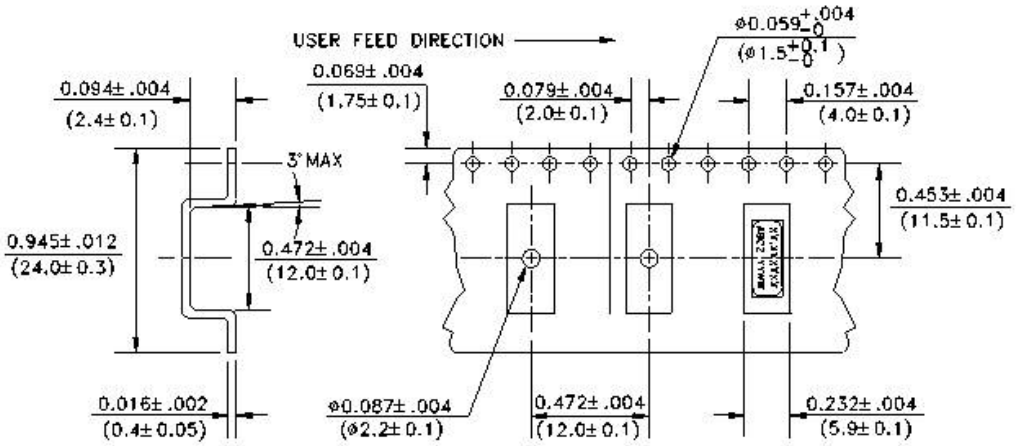
ABC2 Series

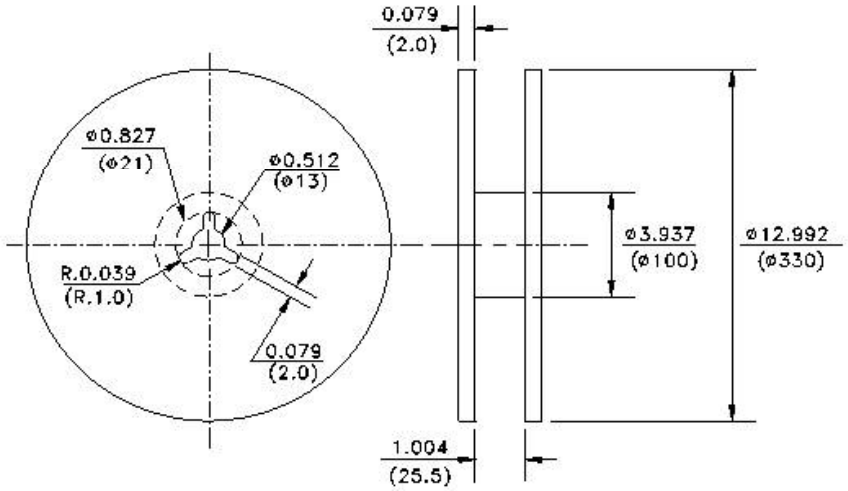
Request Samples | Check Inventory

11.8 x 5.5 x 1.9 mm
RoHS RoHS II Compliant
MSL Level = N/A

Packaging:

T: 1,000 pcs/reel
T2: 2,000 pcs/reel





Dimensions: mm

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AFFECTED PART LIST
ABC2-10.000MHZ-D4Y-T
ABC2-10.000MHz-D4Y-T
ABC2-10.000MHZ-D4Z
ABC2-10.000MHZ-DZ-T
ABC2-10.368MHZ-SD4Z
ABC2-11.0592MHZ-D4Z
ABC2-14.7456MHz-D4Y-T
ABC2-16.000MHZ-18-B4H-T
ABC2-16.000MHZ-D4Z
ABC2-18.432MHZ-D4Z
ABC2-20.000MHZ-D4Z-T
ABC2-22.1184MHZ-D4Z
ABC2-24.576MHZ-D4Z
ABC2-25.000MHZ-R50-D-4-Z
ABC2-4.000MHZ-18-B4H-T
ABC2-49.152MHZ-4-T
ABC2-6.000MHZ-20-R70-D4H
ABC2-6.000MHZ-20-R70-D-4-H-T
ABC2-7.3728MHz-D4Y-T
ABC2-8.000MHZ-D4Z
ABC2-8.000MHZ-D4Z-T
ABC2-8.000MHZ-DZ