

# ABLS-5.000MHZ-L4Q-T Datasheet



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DiGi Electronics Part Number	ABLS-5.000MHZ-L4Q-T-DG
Manufacturer	<a href="#">Abracon LLC</a>
Manufacturer Product Number	ABLS-5.000MHZ-L4Q-T
Description	CRYSTAL 5.0000MHZ 18PF SMD
Detailed Description	5 MHz $\pm$ 30ppm Crystal 18pF 120 Ohms HC-49/US

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## Purchase and inquiry

Manufacturer Product Number:

ABLS-5.000MHZ-L4Q-T

Series:

ABLS

Type:

MHz Crystal

Frequency Stability:

±100ppm

Load Capacitance:

18pF

Operating Mode:

Fundamental

Ratings:

-

Package / Case:

HC-49/US

Height - Seated (Max):

0.165" (4.20mm)

Manufacturer:

Abracon LLC

Product Status:

Active

Frequency:

5 MHz

Frequency Tolerance:

±30ppm

ESR (Equivalent Series Resistance):

120 Ohms

Operating Temperature:

-55°C ~ 125°C

Mounting Type:

Surface Mount

Size / Dimension:

0.449" L x 0.185" W (11.40mm x 4.70mm)

## Environmental & Export classification

RoHS Status:

ROHS3 Compliant

REACH Status:

REACH Affected

HTSUS:



8541.60.0030

Moisture Sensitivity Level (MSL):

Not Applicable

ECCN:

EAR99

 <b>ABRACON</b>	<b>ABLS Series HC49/US (AT49) SMD MICROPROCESSOR CRYSTAL</b>	
Date of Issue: Sept. 7 <sup>th</sup> , 2022	<b>11.4 x 4.7 x 4.2mm</b>	
<i>Page (1) of (5)</i>	<b>Abracon Drawing # 450669</b>	Revision #: AD



**1.0 Key Electrical Specifications**

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	3.579545		24.00	MHz	Fundamental AT (Standard)
	24.01		75.00		3 <sup>rd</sup> Overtone (Standard)
	24.01		50.00		Fundamental AT or BT (See options)
Operation Mode	Fundamental or 3 <sup>rd</sup> Overtone				
Operating Temperature	0		+70	°C	See options
Storage Temperature	-55		+125	°C	
Frequency Tolerance @+25°C	-50		+50	ppm	See options
Frequency Stability over the Operating Temperature ( ref. to +25°C)	-50		+50	ppm	See options (For BT cut, ±100ppm max.at -10° C to +60° C only)
Equivalent series resistance (R1)	See TABLE 1 below			Ω	
Shunt capacitance (C0)			7	pF	
Load capacitance (CL)	18			pF	Standard (See options if other than STD)
Drive Level		100	1000	μW	
Aging	-5		+5	ppm	@25°C±3°C First year
Insulation Resistance	500			MΩ	@ 100Vdc ± 15V
Drive level dependency (DLD)	Minimum 7 points tested: from 1μW to 500μW. Change in frequency (Maximum - Minimum) over DLD range < ±10ppm Change in ESR (Maximum - Minimum) over DLD range < 25% of Max ESR value. Maximum ESR over DLD range < Max ESR value.				

**TABLE 1: ESR**

FREQUENCY (MHz)	ESR (Ω)
3.579545 - 4.999 (Fund.)	180
5.000 - 5.999 (Fund.)	120
6.000 - 7.999 (Fund.)	100
8.000 - 8.999 (Fund.)	80
9.000 - 9.999 (Fund.)	60
10.000 - 15.999 (Fund.)	50
16.000 - 50.000 (Fund.)	40
24.01 - 31.999 (3rd O/T)	100
32.000 - 75.00 (3rd O/T)	80

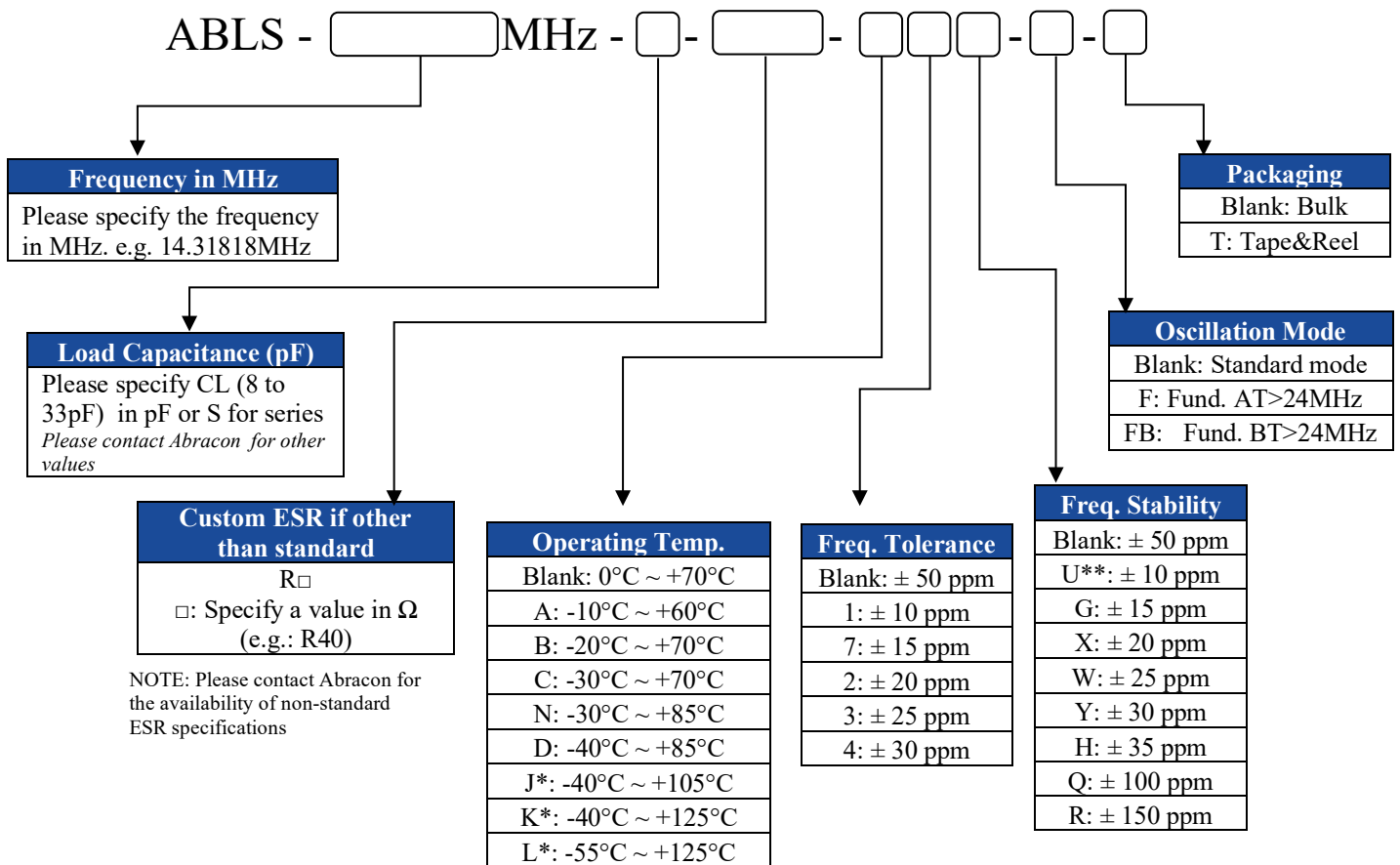
NOTE: Please contact Abracon for the availability of non-standard ESR specifications

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**2.0 ABLs series is RoHS/RoHS II Compliant and Pb free**

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

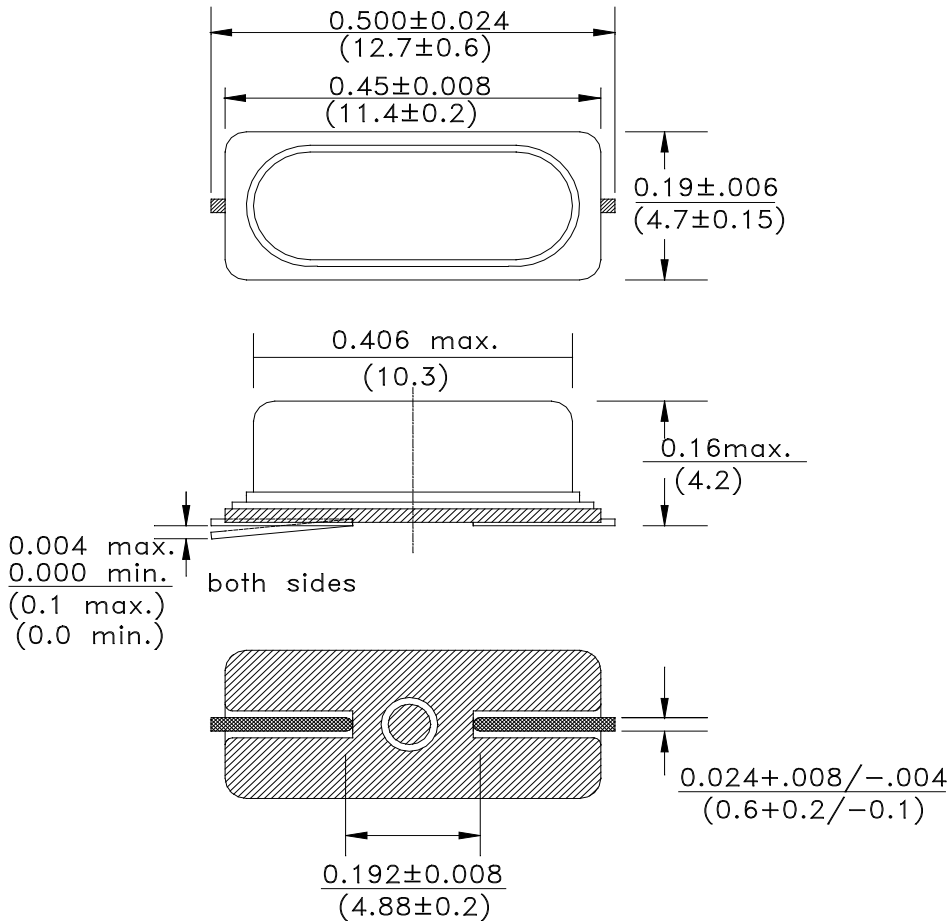
**4.0 Options and Part Identification (left blank if standard)**



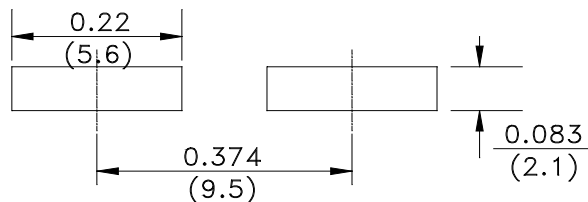
NOTE: Fundamental BT frequency stability ± 100ppm max. at -10° C to +60° C only.  
 \* Frequency stability ±50ppm, ±100ppm, ±150ppm only. Contact ABRACON for tighter frequency stability.  
 \*\* For -10 to +60C only.

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**5.0 Mechanical Dimensions**





**Recommended land pattern**

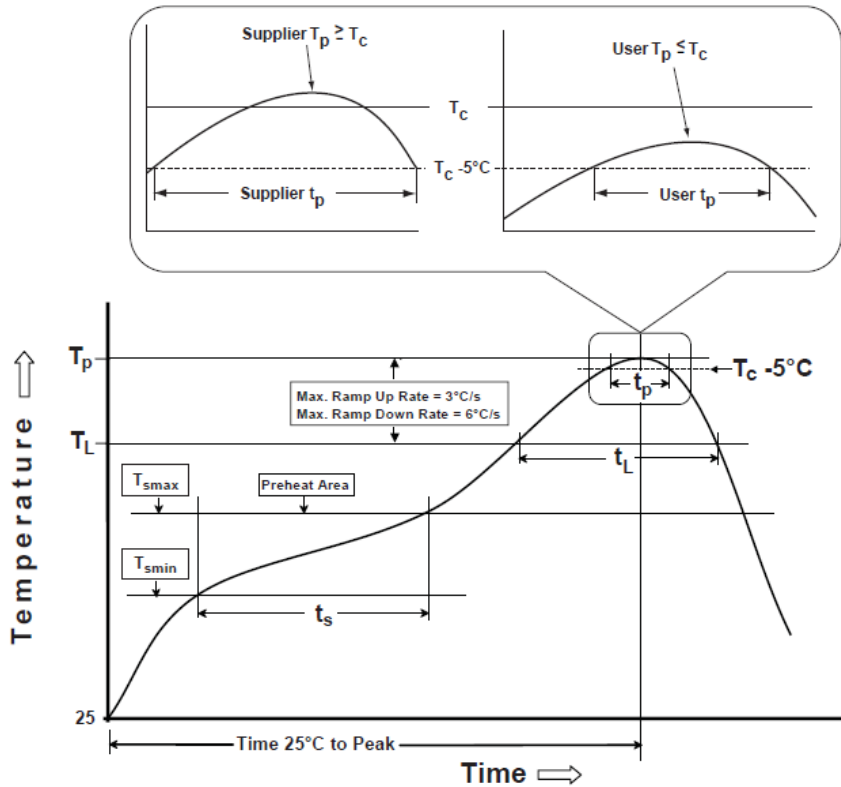


**Dimensions: inches (mm)**

**6.1 Sealing Method = Resistance Weld Sealing**

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**7.1 Reflow Profile [JEDEC J-STD-020]**



**Table 1**

SnPb Eutectic Process Classification Temperatures (T <sub>c</sub> )		
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 <sub>c</sub> )			
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

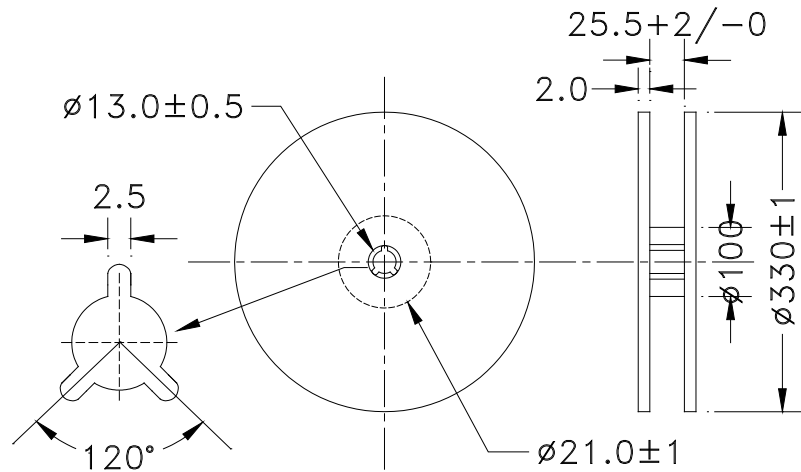
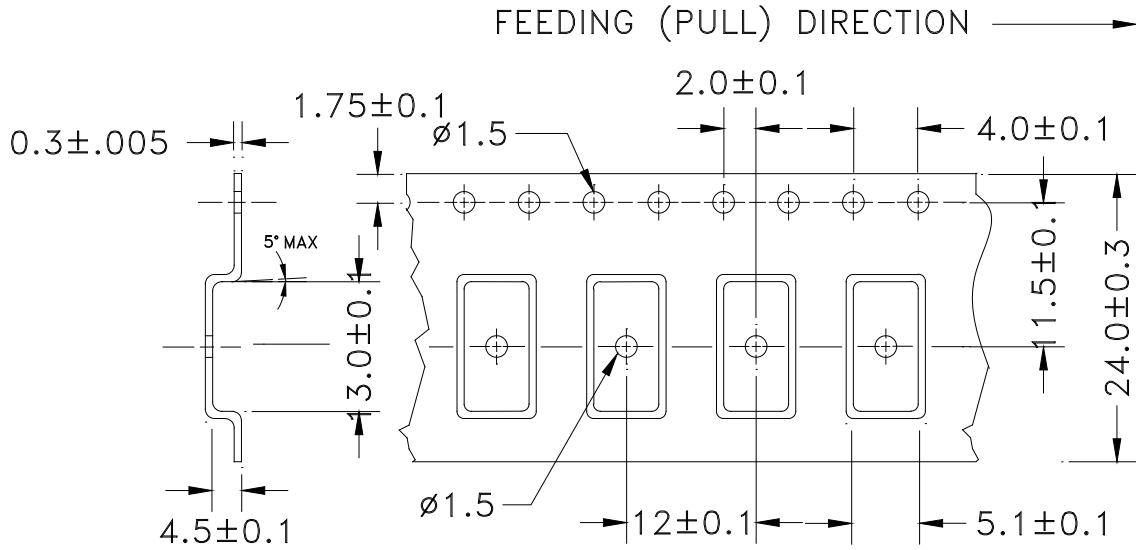
Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat / soak		
Temperature minimum (T <sub>smin</sub> )	100°C	150°C
Temperature maximum (T <sub>smax</sub> )	150°C	200°C
Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60 - 120 sec.	60 - 120 sec.
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/sec. max	3°C/sec. max
Liquidous temperature (T <sub>L</sub> )	183°C	217°C
Time at liquidous (t <sub>L</sub> )	60 - 150 sec.	60 - 150 sec.
Peak package body temperature (T <sub>p</sub> )*	<b>see Table 1</b>	<b>see Table 2</b>
Time (t <sub>p</sub> )** within 5°C of the specified classification temperature (T <sub>c</sub> )	20 sec.	30 sec.
Ramp-down rate (T <sub>p</sub> to T <sub>smax</sub> )	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<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\*Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as supplier minimum and a user maximum.

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**8.0 Packing**  
**T = Tape and Reel (1000pcs/reel)**



**Dimensions: mm**

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