

# HC49/US (AT49) LOW PROFILE SMD MICROPROCESSOR CRYSTAL



11.4 x 4.7 x 2.5mm

**ABLS3**



**RoHS**  
Compliant

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

## FEATURES:

- Suitable for RoHS compliant reflow
- Low height reduced to 2.5 mm
- Tight stability & extended temperature options

## APPLICATIONS:

- Computers, Modems, Microprocessors
- Wireless Applications

## STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	6.000000	-----	24.000000	MHz	Fundamental AT (Standard)
	24.000001	-----	50.000000		Fundamental AT or BT (See options)
	24.000001	-----	70.000000		3 <sup>rd</sup> Overtone (Standard)
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)
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 - 70.00 (3rd O/T)	80

**REVISED: 06.01.2018**



5101 Hidden Creek Lane Spicewood TX 78669  
 Phone: 512-371-6159 | Fax: 512-351-8858  
 For terms and conditions of sale please visit:  
[www.abracon.com](http://www.abracon.com)

ABRACON IS  
 ISO9001-2015  
 CERTIFIED

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## ➤ OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

ABLS3 -  MHz -  -  -  -  -

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

**Packaging**  
Blank: Bulk  
T: Tape & Reel

**Load Capacitance (pF)**  
Please specify CL (Minimum 10pF) in pF or S for series

**Oscillation Mode**  
F: Fund. AT>24MHz  
FB: Fund. BT>24MHz

**Custom ESR if other than standard**  
R<sub>Ω</sub>  
☒: Specify a value in Ω (e.g.: R40)

**Operating Temp.**  
A: -10°C ~ +60°C  
B: -20°C ~ +70°C  
C: -30°C ~ +70°C  
N: -30°C ~ +85°C  
D: -40°C ~ +85°C

**Freq. Tolerance**  
H5: ± 5 ppm  
1: ± 10 ppm  
7: ± 15 ppm  
2: ± 20 ppm  
3: ± 25 ppm  
4: ± 30 ppm

**Freq. Stability**  
U\*: ± 10 ppm  
G: ± 15 ppm  
X: ± 20 ppm  
W: ± 25 ppm  
Y: ± 30 ppm  
H: ± 35 ppm  
Q: ± 100 ppm  
R: ± 150 ppm

NOTE: Fundamental BT frequency stability ± 100ppm max. at -10° C to +60° C only.

\* -10 to +60C only.

Contact ABRACON for tighter frequency stability.

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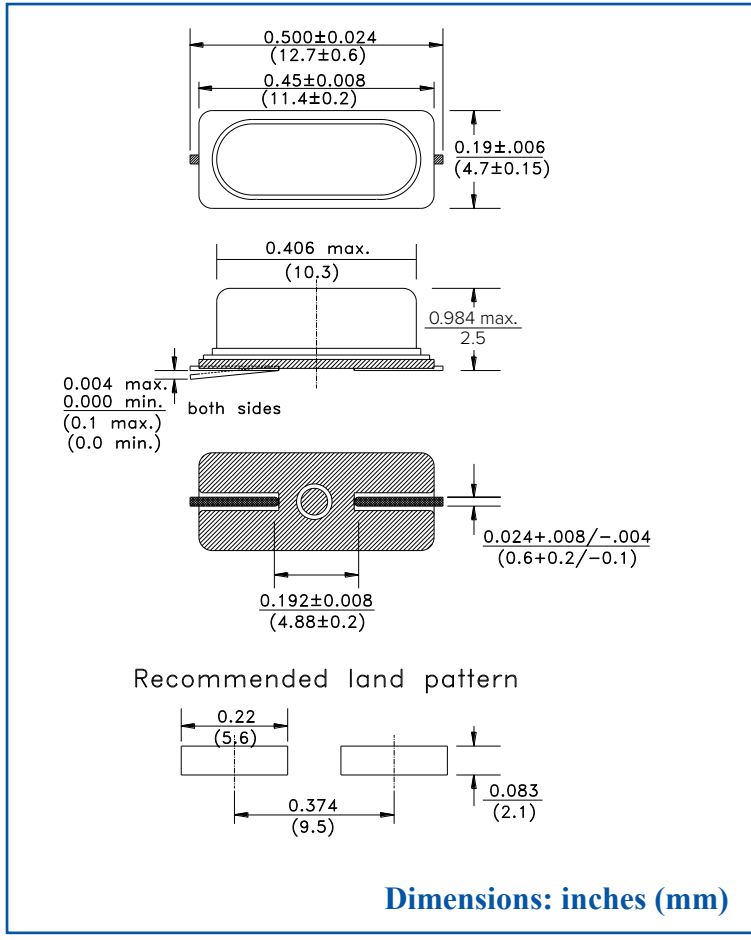


11.4 x 4.7 x 2.5mm

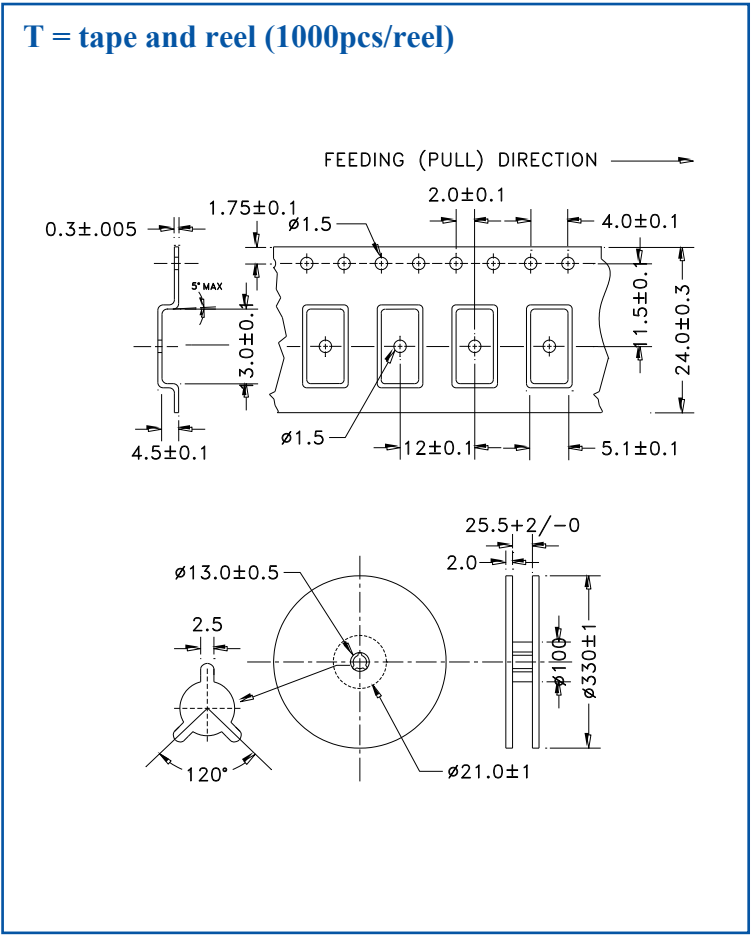
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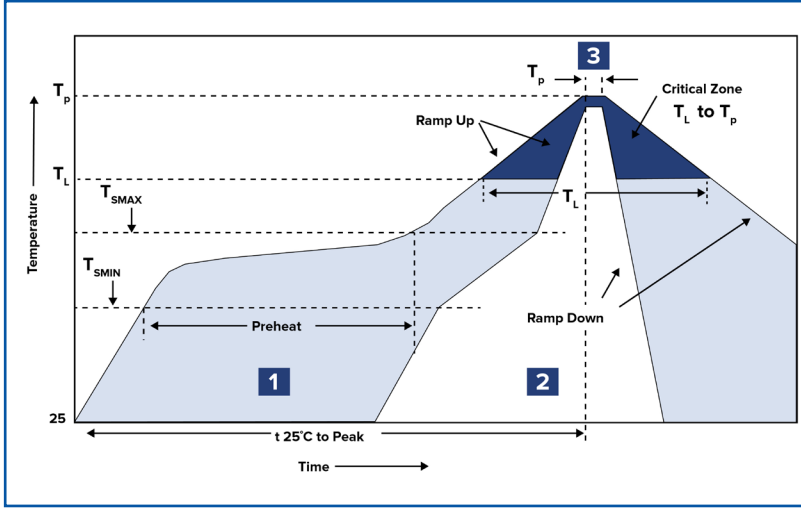
## OUTLINE DRAWING:



## TAPE & REEL:



## REFLOW PROFILE:



Zone	Description	Temperature	Time
1	Preheat	T <sub>S</sub> MIN ~ T <sub>S</sub> MAX 150°C ~ 180°C	60 ~ 120 sec.
2	Reflow	T <sub>L</sub> 230°C	30 ~ 40 sec.
3	Peak Heat	T <sub>p</sub> 260°C±5°C	10 sec. MAX.

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