

# HC/49US (AT49) LOW PROFILE SURFACE MOUNT MICROPROCESSOR CRYSTAL

**ABLS2**



**RoHS**  
Compliant



11.4 x 4.7 x 3.3 mm

**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 3.3mm
- Available suitable for thin equipment
- Tight stability & extended temperature

**APPLICATIONS:**

- Computers, Modems, Microprocessors
- Wireless Applications

**STANDARD SPECIFICATIONS:**

Parameters	Minimum	Typical	Maximum	Units	Notes
Frequency Range	3.579545	-----	24.00	MHz	Fundamental AT (Standard)
	24.01	-----	50.00		Fundamental AT or BT (See options)
	24.01	-----	70.00		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**

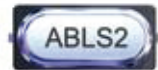
FREQUENCY (MHz)	ESR (Ω)
3.579545 - 4.999 (Fund.)	180
5.000 - 5.999 (Fund.)	120
6.000 - 7.999 (Fund.)	100
8.000 - 8.999 (Fund.)	80
9.000 - 9.999 (Fund.)	60
10.000 - 15.999 (Fund.)	50
16.000 - 50.000 (Fund.)	40
24.01 - 31.999 (3rd O/T)	100
32.000 - 70.00 (3rd O/T)	80

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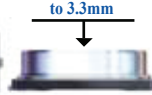
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Reduced height to 3.3mm



11.4 x 4.7 x 3.3 mm

## Options and Part Identification

(left blank if standard)

ABLS2 -  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  
□: 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
J*: -40°C ~ +105°C
K*: -40°C ~ +125°C
L*: -55°C ~ +125°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

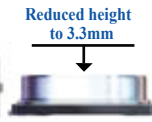
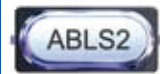
NOTE: Fundamental BT frequency stability ± 100ppm max. at -10° C to +60° C only.  
\* Frequency stability ±50ppm, ±100ppm, ±150ppm only. Contact ABRACON for tighter frequency stability.  
\*\* Contact ABRACON for availability of ±10ppm with other Operating Temperature options.

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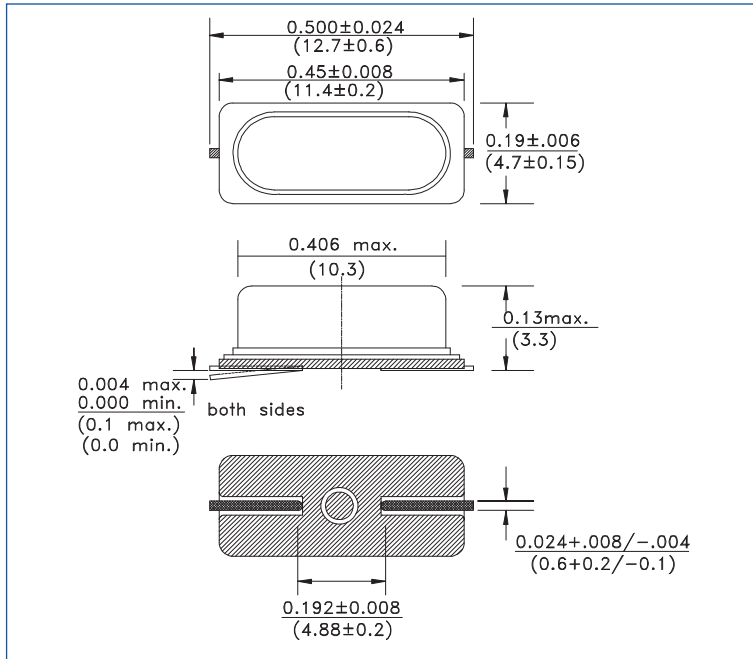


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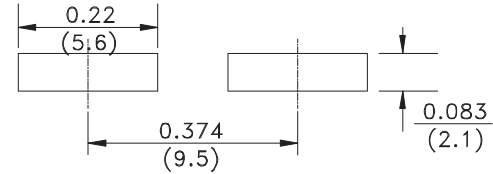


11.4 x 4.7 x 3.3 mm

## OUTLINE DRAWING:

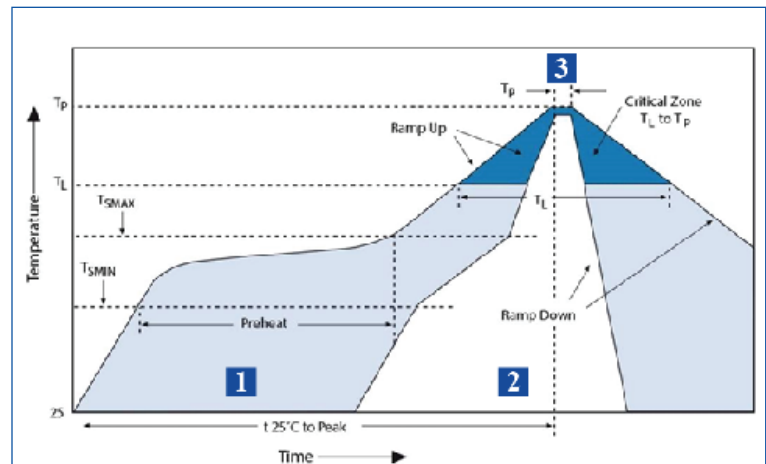
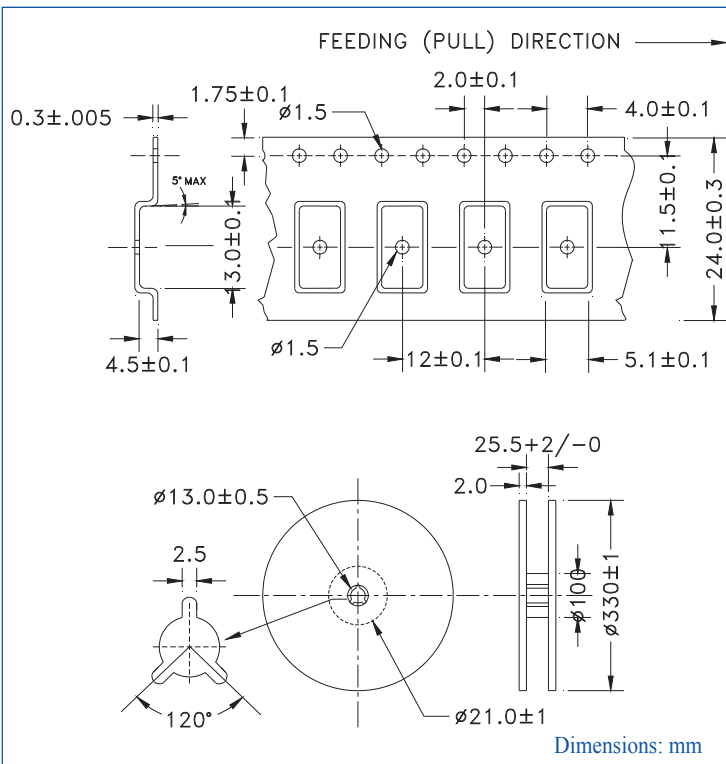


## Recommended land pattern



## TAPE & REEL: T = tape and reel (1000pcs/reel)

## Reflow Profile



Zone	Description	Temperature	Time
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 150°C ~ 180°C	60 ~ 120 sec.
2	Reflow	$T_L$ 230°C	30 ~ 40 sec.
3	Peak Heat	$T_p$ 260°C	10 sec. MAX

**ATTENTION:** Abracon products are COTS - Commercial-Off-The-Shelf products; suitable for Commercial, Industrial and, where designated, Automotive Applications. Abracon's products are not specifically designed for Military, Aviation, Aerospace, Life-dependant Medical applications or any application requiring high reliability where component failure could result in loss of life and/or property. For applications requiring high reliability and/or presenting an extreme operating environment, written consent and authorization from Abracon is required. Please contact Abracon for more information.