

# HC/49US (AT49) ULTRA LOW ESR SMD LOW PROFILE CRYSTAL



ABLS-LR



RoHS  
Compliant

11.5 x 4.8 x 4.2 mm

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

## FEATURES:

- Ultra low ESR as low as 20 ohms for 4MHz, 85% lower than typical SMD Low Profile HC49S Crystals
- Low negative resistance(-R) IC design can ensure high oscillation margin
- Tight stability and automotive grade temperature available
- Hermetically resistance weld sealed

## APPLICATIONS:

- Low negative resistance u-controller design for low frequency
- Wide range of automotive applications
- Industrial applications

## STANDARD SPECIFICATIONS:

### PARAMETERS

ABRACON P/N	ABLS-LR Series
Frequency	3.0 MHz to 36 MHz
Operation Mode	AT cut (Fundamental)
Operating Temperature	0°C to +70°C (see options)
Storage Temperature	-55°C to +125°C
Frequency Tolerance	± 50 ppm max. (see options)
Frequency Stability over the Operating Temp. (Ref to +25°C)	3.0 ~ 3.579545MHz: ± 100 ppm max. (Standard only*) *Please contact ABRACON for other stability specs. 3.579545 ~ 36MHz: ± 50 ppm max. (see options)
Equivalent Series Resistance (R1)	See Table 1
Shunt Capacitance C <sub>0</sub>	7pF max.
Load Capacitance C <sub>L</sub>	18pF (see options)
Drive Level	1 mW max., 100µW typical
Aging at 25°C Per Year	± 5ppm max.
Insulation Resistance	500 MΩ min at 100Vdc ± 15V
Spurious Responses	-3dB max.
Drive level dependency (DLD)	from 1µW to 500µW (minimum 7 points tested)

TABLE 1: ESR

FREQUENCY (MHz)	ESR ( ) Max.
3.000000	100
3.072000	100
3.276800	75
3.500000 - 4.000000	40
4.000001 - 4.500000	25
4.500001 - 6.999999	20
7.000000 - 12.999999	15
13.000000 - 30.000000	10

## OPTIONS & PART IDENTIFICATION:

(Left blank if standard)

ABLS - LR - [ ] MHz - [ ] - [ ] - [ ] - [ ]

Frequency in MHz
e.g. 3.579545MHz
14.31818MHz
24.000MHz

Load Capacitance
Please specify CL in pF or S for Series (10pF minimum)

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 to +105°C
K(*): -40°C to +125°C
L(*): -55°C to +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

Packaging
Blank: Bulk
T: Tape & Reel

\* Frequency stability R option (±150ppm) only.  
Contact ABRACON for tighter frequency stability.  
\*\* -10 to +60°C only.

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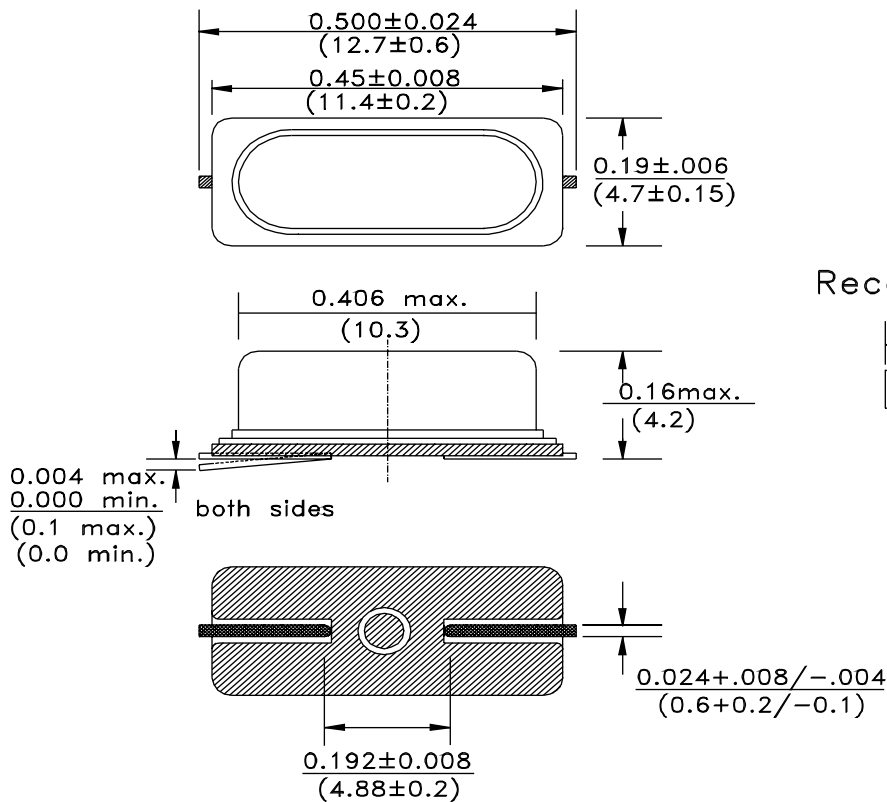


RoHS  
Compliant

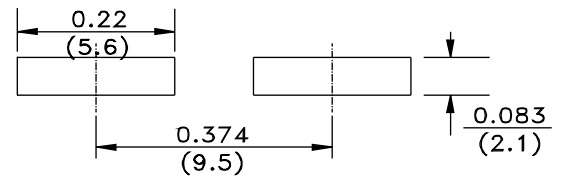


11.5 x 4.8 x 4.2 mm

## OUTLINE DRAWING:



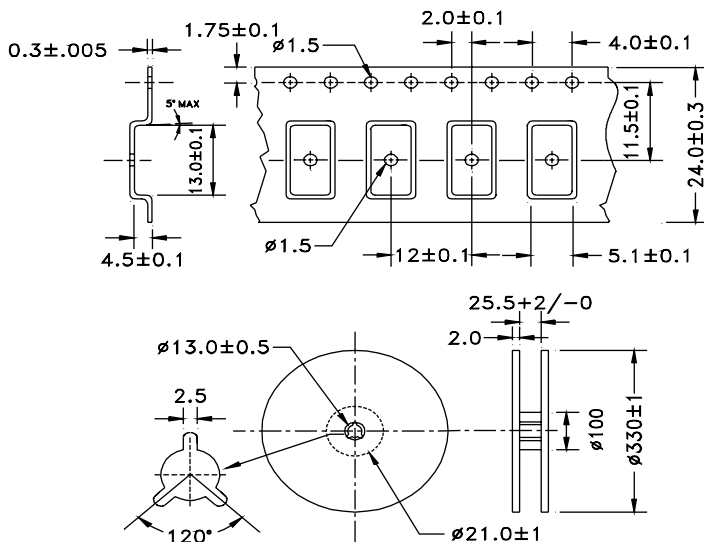
## Recommended land pattern



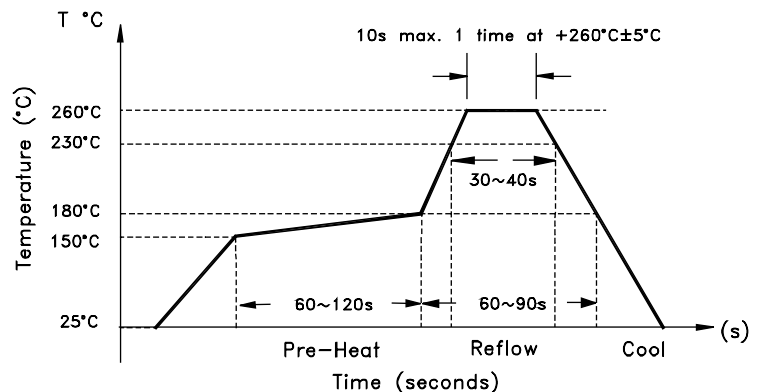
Dimensions: Inches (mm)

## TAPE & REEL: T= tape and reel (1,000pcs/reel)

## REFLOW PROFILE:



Dimensions: mm



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