

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



11.5 x 4.8 x 4.2 mm

ABLS-LR



**RoHS**  
Compliant

## 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 (Ω) 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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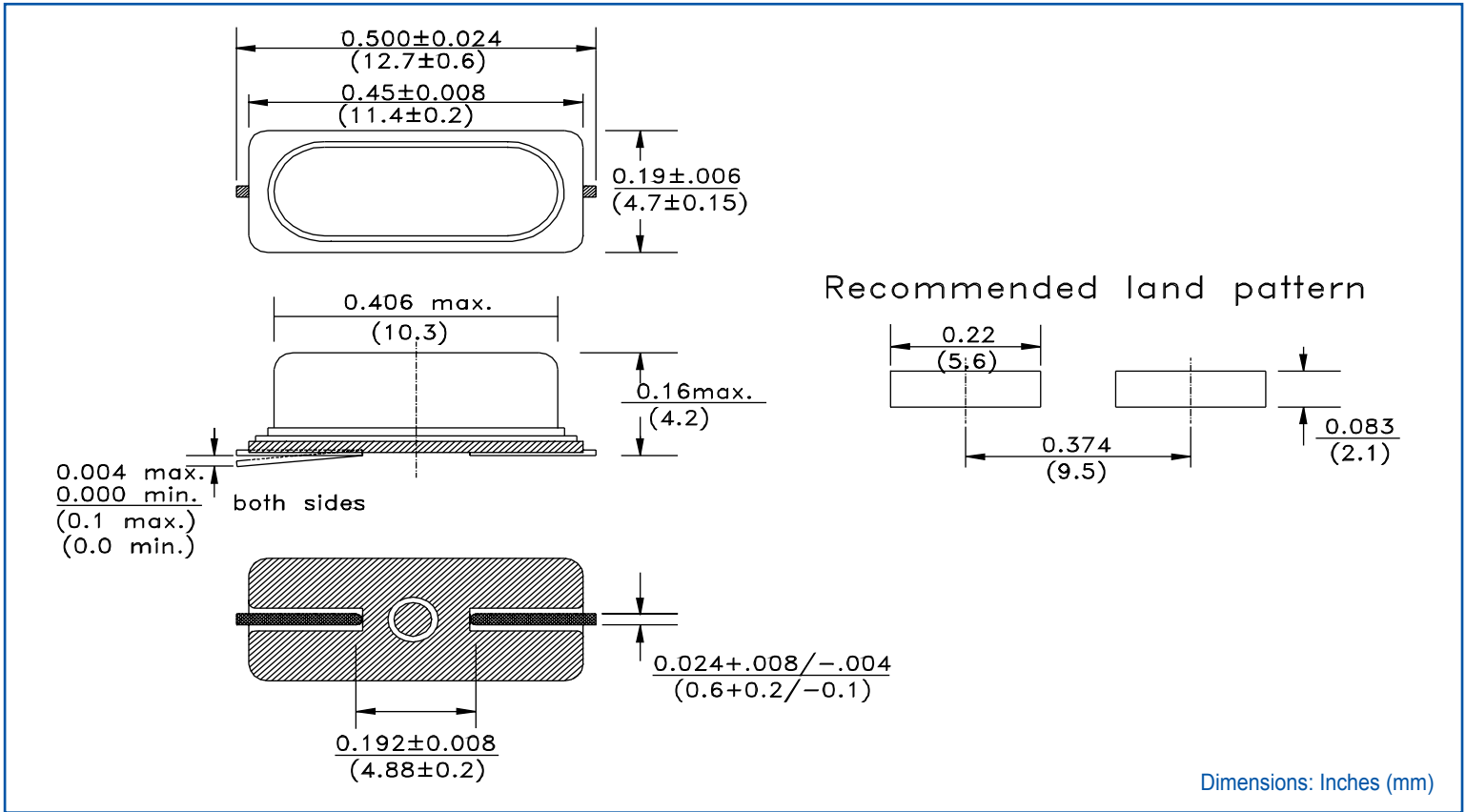
11.5 x 4.8 x 4.2 mm

ABLS-LR

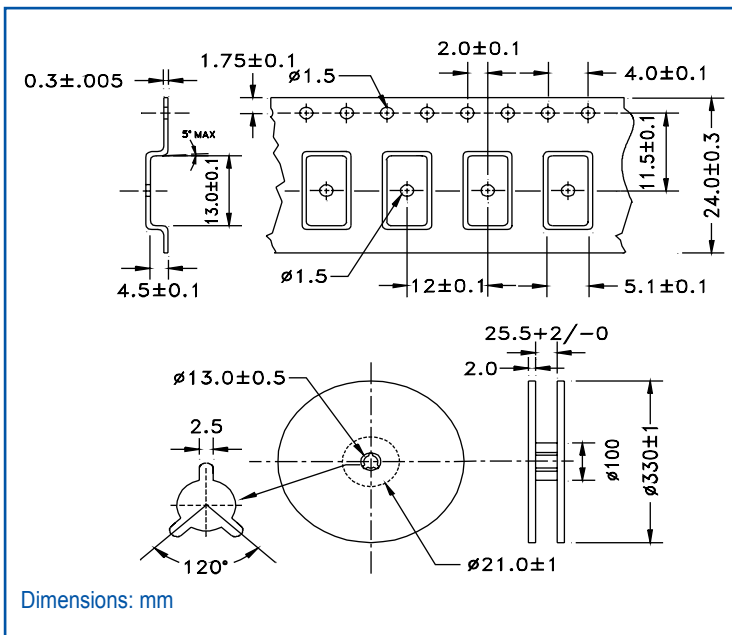


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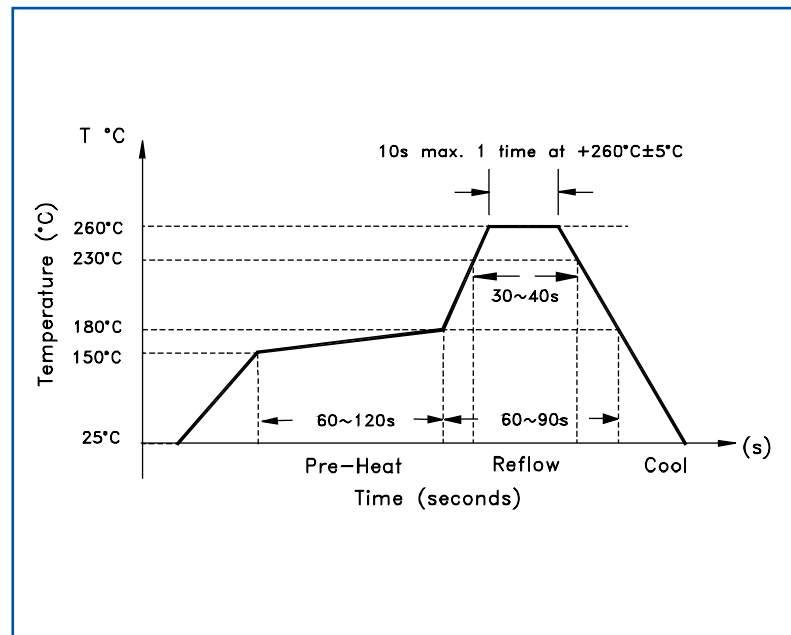
## OUTLINE DRAWING:



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



## REFLOW PROFILE:



**NOTE:** Abracon manufactured products are intended for general commercial and industrial use. For applications requiring high reliability and/or presenting extreme operating environment, written consent & authorization from Abracon is required.

ABRACON IS  
ISO9001:2008  
CERTIFIED



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