

# 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 ABL5 4MHz
- 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	3.5 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)	± 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

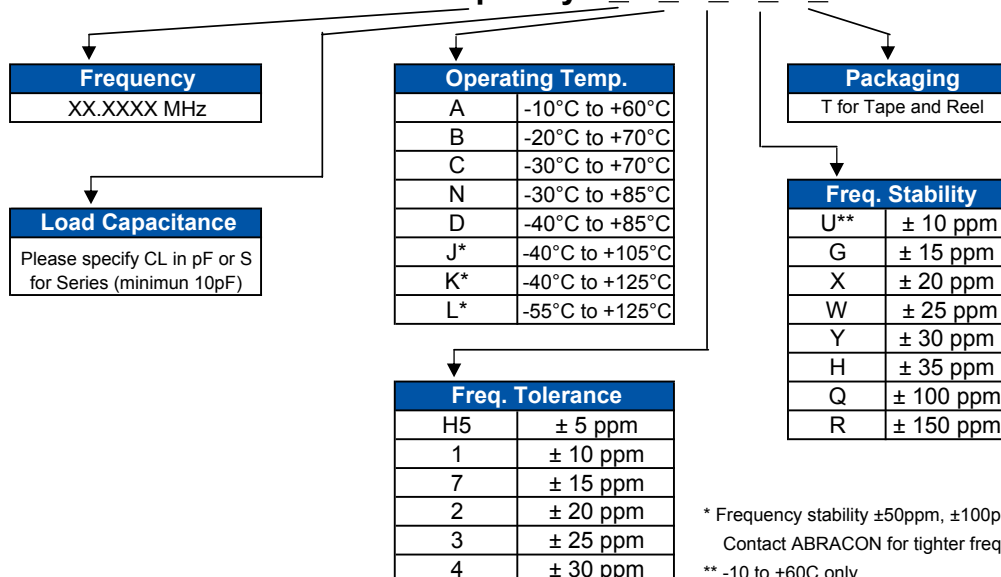
FREQUENCY (MHz)	ESR (Ω) Max.
3.500000 - 3.999999	30
4.000000 - 4.999999	20
5.000000 - 5.999999	20
6.000000 - 6.999999	20
7.000000 - 8.999999	15
9.000000 - 12.999999	15
13.000000 - 19.999999	10
20.000000 - 36.000000	10

- Change in frequency (Maximum - Minimum)
- Change in ESR (Maximum - Minimum) over DLD range < 25% of Max ESR value
- Maximum ESR over DLD range < Max ESR value

## OPTIONS & PART IDENTIFICATION:

[Left blank if standard]

ABLS - LR - Frequency - □ - □ - □ - □ - □



\* Frequency stability ±50ppm, ±100ppm, ±150ppm only.  
Contact ABRACON for tighter frequency stability.  
\*\* -10 to +60C only.



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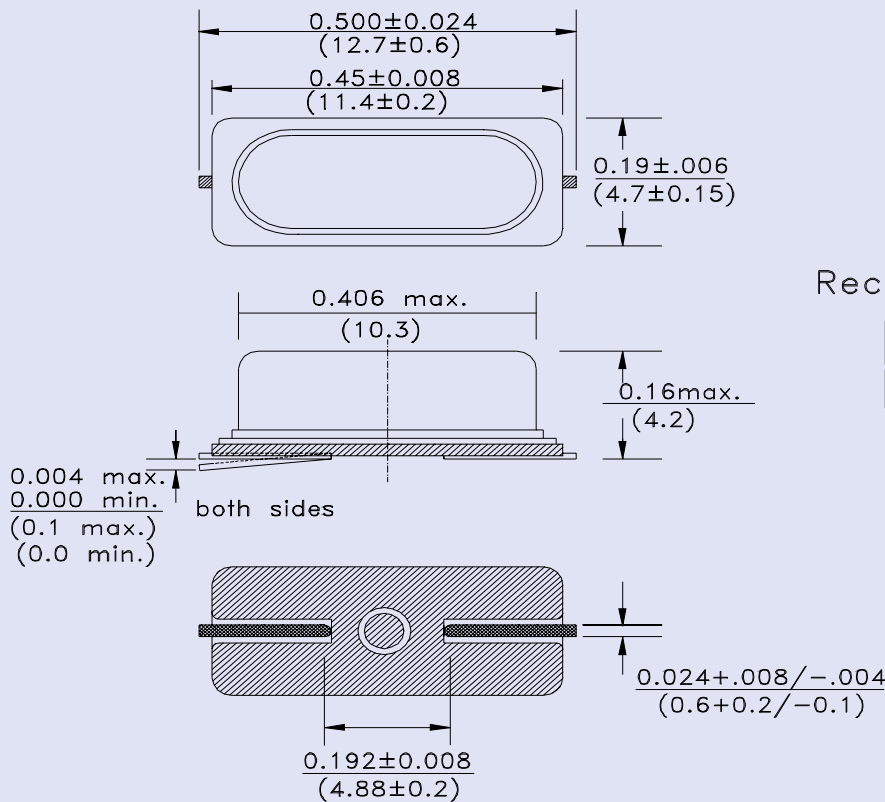
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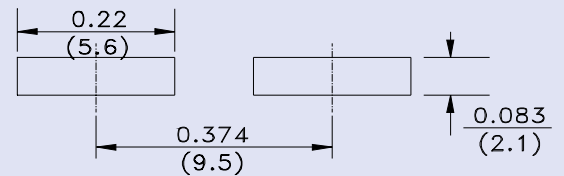


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## OUTLINE DRAWING:



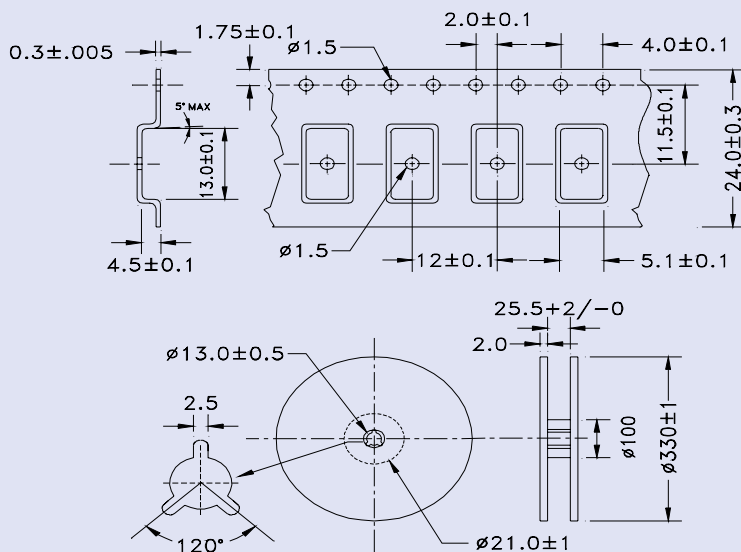
## Recommended land pattern



Dimensions: Inches (mm)

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

## REFLOW PROFILE:



Dimensions: mm

