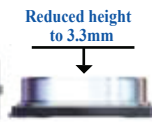
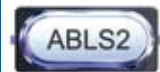


HC/49US (AT49) LOW PROFILE SURFACE MOUNT MICROPROCESSOR CRYSTAL

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 rd Overtone (Standard)
Operation Mode	Fundamental or 3 rd 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

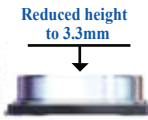
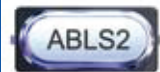
FREQUENCY (MHz)	ESR (Ω)
3.579545 - 4.999 (Fund.)	180
5.000 - 5.999 (Fund.)	120
6.000 - 7.999 (Fund.)	100
8.000 - 8.999 (Fund.)	80
9.000 - 9.999 (Fund.)	60
10.000 - 15.999 (Fund.)	50
16.000 - 50.000 (Fund.)	40
24.01 - 31.999 (3rd O/T)	100
32.000 - 70.00 (3rd O/T)	80

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

ABLS2



RoHS
Compliant



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

Load Capacitance (pF)

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

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

Oscillation Mode

F: Fund. AT>24MHz

FB: Fund. BT>24MHz

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.

Diagram illustrating the reduction of the device height to 3.3 mm. The original device is shown on the left, and the reduced height version is shown on the right, with a label indicating the height reduction to 3.3 mm. The dimensions 11.4 x 4.7 x 3.3 mm are provided below the images.

 **RoHS**
Compliant

Technical drawings of the 1000 Series 1/2" components, showing dimensions in inches and millimeters.

Top View:

- Overall width: 0.500 ± 0.024 (12.7 $\pm$ 0.6)
- Inner width: 0.45 ± 0.008 (11.4 $\pm$ 0.2)
- Height: 0.19 ± 0.006 (4.7 $\pm$ 0.15)

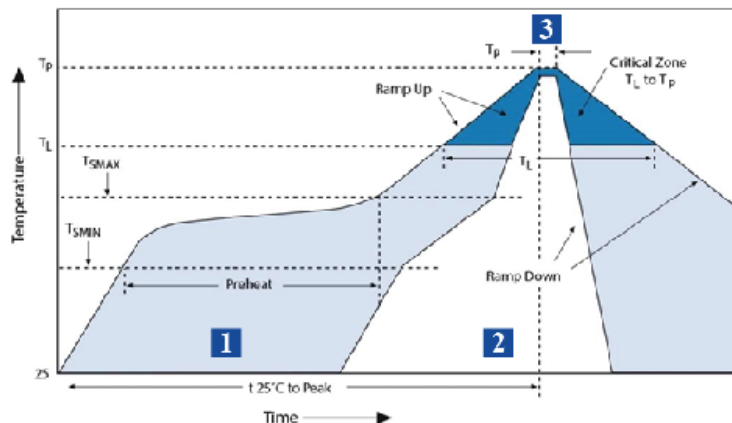
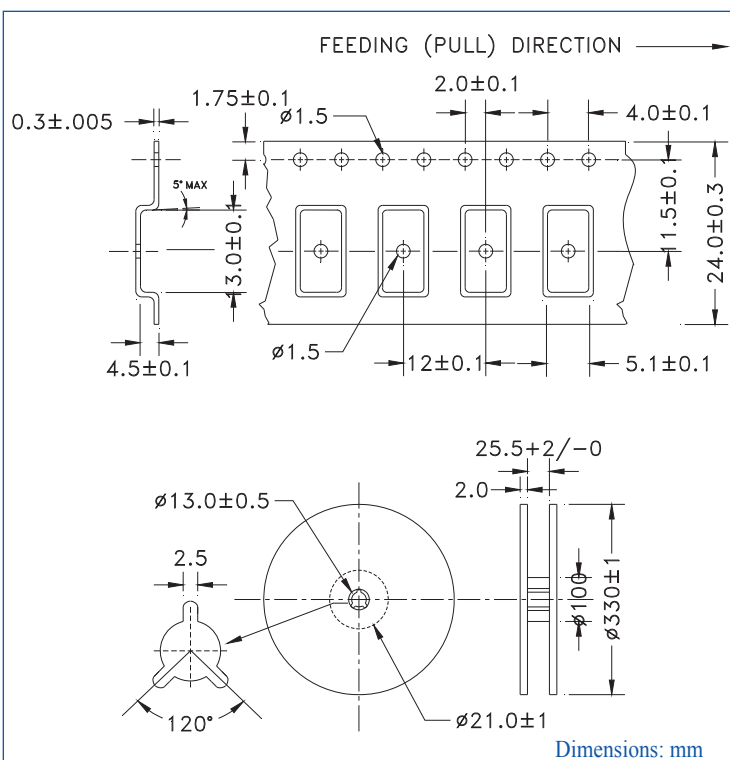
Side View:

- Top width: 0.406 max. (10.3)
- Height: 0.13 max. (3.3)
- Bottom width: 0.004 max. , 0.000 min. (0.1 max.), (0.0 min.)
- Label: both sides

Bottom View:

- Width: 0.192 ± 0.008 (4.88 $\pm$ 0.2)
- Height: $0.024 + .008 / - .004$ (0.6 + 0.2 / - 0.1)

Reflow Profile



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



The Power of Linking Together

REVISÉ: 11.15.2016

ABRACON IS
ISO9001-2008
CERTIFIED