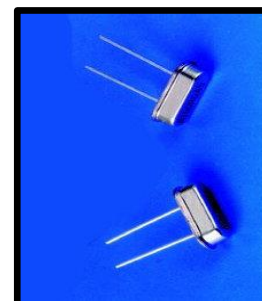# AB PRODUCT FAMILY

Microprocessor Crystal 10.3 x 5.0

Features

- **3.5 mm Maximum Height**

- **Available in Extended Temperature Range**

- **Excellent Clock Signal Generator for CPU's**

❖ Specifications

Parameter		Value
Frequency Range		3.500 to 70.000 MHz
Mode of Oscillation	Fundamental	3.500 to 40.320 MHz
	Third Overtone	24.576 to 70.000 MHz
Frequency Tolerance at 25°C		±30 ppm Standard (±10, ±20, ±50 available)
Frequency Stability over Temperature		±50 ppm Standard (±10, ±20, ±30 & ±100 ppm available)
Operating Temperature Range		-20°C to +70°C Standard -40°C to +85°C Extended
Storage Temperature Range		-55°C to +125°C
Aging		±5 ppm per Year maximum
Load Capacitance		10 pF to 32 pF or Series
Equivalent Series Resistance		See Table 1
Shunt Capacitance		7.0 pF maximum
Drive Level		100 μW Typ., 500 μW Max
Shock Resistance		±5 ppm Maximum 75 cm Drop Test in 3 axes onto a hardwood surface

Table 1

Frequency (MHz)	Mode	MAX ESR (Ohms)
3.500 to 3.580	FUND	180
3.600 to 3.999	FUND	150
4.000 to 4.999	FUND	130
5.000 to 5.999	FUND	100
6.000 to 6.999	FUND	80
7.000 to 7.999	FUND	70
8.000 to 9.999	FUND	60
10.000 to 15.999	FUND	50
16.000 to 24.000	FUND	40
24.100 to 28.999	FUND / 3OT	40 / 80
29.000 to 40.999	FUND / 3OT	40 / 70
41.000 to 80.000	3OT	70

❖ Environmental

Parameter	Value
Moisture Sensitivity Level	1
RoHS	6/6 Complaint & Lead Free
REACH SVHC	Compliant
Halogen Free	Compliant
ESD Classification Level	N/A
Termination Finish	Sn
Unit Weight (grams)	0.55

AB PRODUCT FAMILY

❖ Mechanical Specification

H = 3.5 mm Max
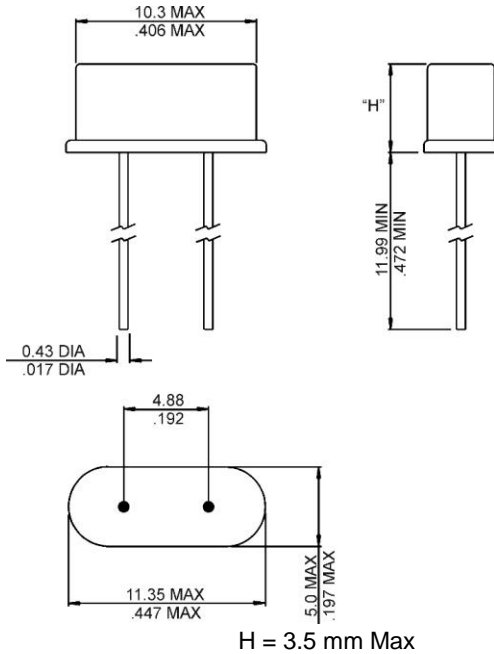
❖ Packaging

Bulk

❖ Part Numbering

AB	-	24.000	-	18	-	XXXX
Product Family		Frequency (MHz)		Load Capacitance (pF) 9 to 32 pF or S for Series		1) Tolerance, 2) Stability, 3) Mode, 4) Temperature Tolerance: E=±10 ppm, D=±20ppm, F=±30 ppm, B=±50 ppm (standard) Stability: E=±10 ppm, D=±20ppm, F=±30 ppm, B=±50 ppm (standard) Mode: blank = Fundamental, 3=3rd Overtone Temperature range: blank standard, E=Extended

EXAMPLE: AB-24.000-12-DF
Surface Mount Microprocessor Crystal, 13.5 x 4.8, 24.000 MHz, 12 pF load Capacitance, tolerance ±20 ppm and stability ±30 ppm, Fundamental mode, standard Temperature range -20°C to +70°C
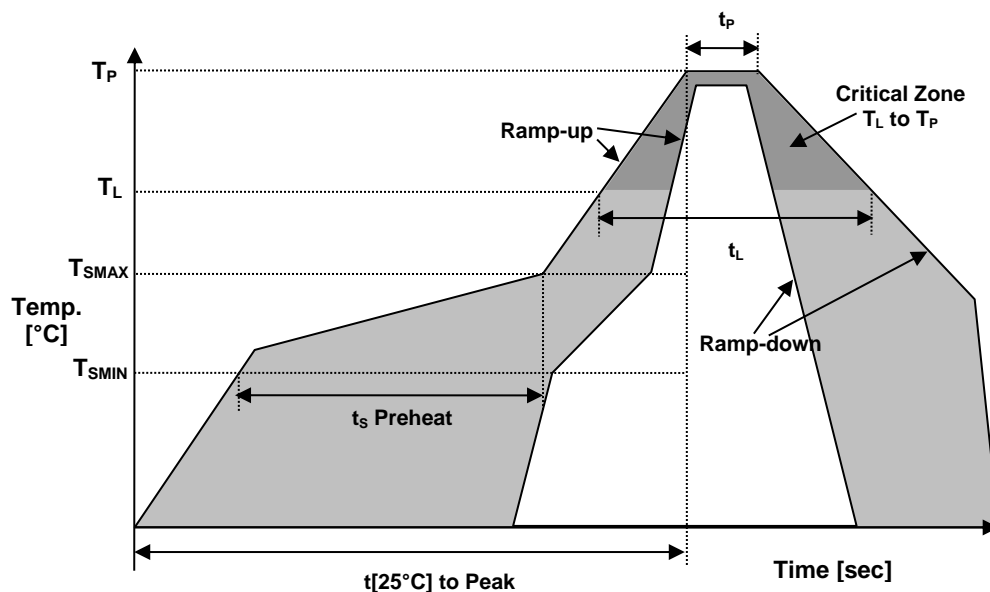
EXAMPLE: AB-8.000-10-BBE
Surface Mount Microprocessor Crystal, 13.5 x 4.8, 8.000 MHz, 10 pF load Capacitance, standard tolerance (±50 ppm), stability (±50 ppm), Fundamental mode, Extended Temperature range -40°C to +85°C

Reflow Profile

Reflow Profile (Reference IPC/JEDEC J-STD-020)		
Temperature Min Preheat	T_{SMIN}	150°C
Temperature Max Preheat	T_{SMAX}	200°C
Time (T_{SMIN} to T_{SMAX})	t_S	60 – 180 sec.
Temperature	T_L	217°C
Peak Temperature	T_P	260°C
Ramp-Up Rate	R_{UP}	3°C / sec. max
Ramp-Down Rate	R_{DOWN}	6°C / sec. max
Time within 5°C of Peak Temperature	T_P	10 sec.
Time t[25°C] to Peak Temperature	t[25°C] to Peak	480 sec.
Time	T_L	60 – 150 sec.

AB PRODUCT FAMILY

- **MARKING**

RFFFxLyw

FFF – Frequency in MHz (two digits MHz followed by first digit of kHz
x – Internal Production ID code
L – Load Capacitance Code
y – Year code
w – Week code

LOAD CAPACITANCE CODE			
CODE	C_L (pF)	CODE	C_L (pF)
A	20	J	12
B	18	K	10
C	16	M	14
D	30	N	15
F	12.5	P	13
G	32	8	8
H	22	9	9

YEAR CODE	
Year	Code
2011	1
2012	2
2013	3
2014	4
2015	5
2016	6
2017	7
2018	8
2019	9
2020	0

ALPHA WEEK CODE					
Week	Code	Week	Code	Week	Code
1	a	19	s	37	K
2	b	20	t	38	L
3	c	21	u	39	M
4	d	22	v	40	N
5	e	23	w	41	O
6	f	24	x	42	P
7	g	25	y	43	Q
8	h	26	z	44	R
9	i	27	A	45	S
10	j	28	B	46	T
11	k	29	C	47	U
12	l	30	D	48	V
13	m	31	E	49	W
14	n	32	F	50	X
15	o	33	G	51	Y
16	p	34	H	52	Z
17	q	35	I		
18	r	36	J		

- **APPROVAL**

DRAWN BY	FP, 16 May 2017
APPROVED BY	FP, 16 May 2017
REVISION	A, Initial Release