

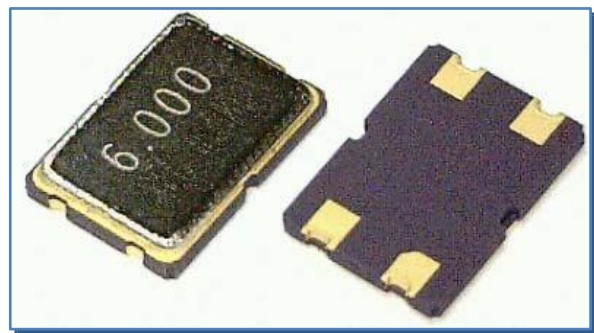


HB PRODUCT FAMILY

Surface Mount Microprocessor Crystal 7.0 x 5.0

Features

- Low Profile
- Tight Tolerance & Stability to ± 10 ppm
- Wide Frequency Range



❖ Specifications

Parameter		Value
Frequency Range		6.000 to 100.000 MHz
Mode of Oscillation	Fundamental	6.000 to 50.000 MHz
	Third Overtone	40.000 to 100.000 MHz
Frequency Tolerance at 25°C		± 50 ppm Standard (± 10 , ± 20 & ± 30 ppm available)
Frequency Stability over Temperature		± 50 ppm Standard (± 10 , ± 20 & ± 30 ppm available)
Operating Temperature Range		-10°C to +60°C Standard -40°C to +85°C Extended
Storage Temperature Range		-40°C to +85°C
Aging		± 5 ppm per Year maximum
Load Capacitance		12 pF to 32 pF or Series
Equivalent Series Resistance		See Table 1
Shunt Capacitance		75.0 pF maximum
Drive Level		1 μ W Typ., 100 μ W 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)
6.000 to 6.999	FUND	100
7.000 to 12.999	FUND	60
13.000 to 15.999	FUND	45
16.000 to 50.000	FUND	35
40.000 to 100.000	3OT	65

❖ Environmental

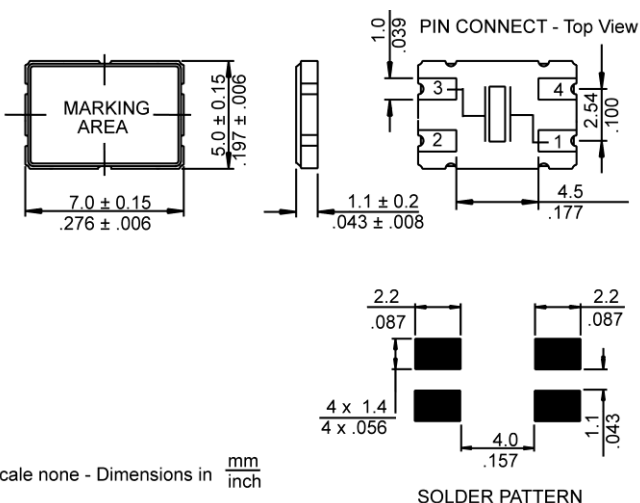
Parameter	Value
Moisture Sensitivity Level	1
RoHS	6/6 Complaint & Lead Free
REACH SVHC	Compliant
Halogen Free	Compliant
ESD Classification Level	N/A
Termination Finish	Au
Unit Weight (grams)	0.11

RS, Professionally Approved Products, gives you professional quality parts across all products categories. Our range has been testified by engineers as giving comparable quality to that of the leading brands without paying a premium price.

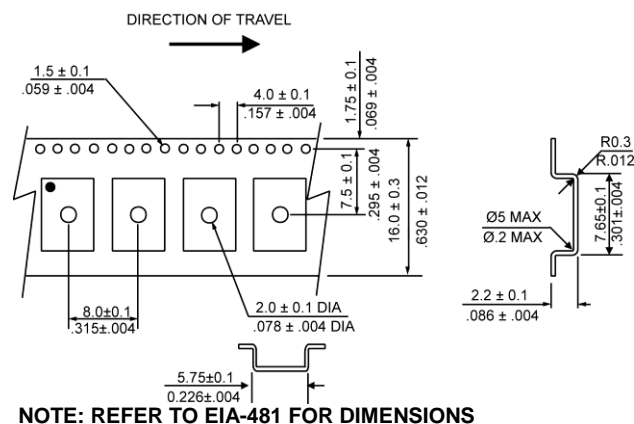


HB PRODUCT FAMILY

❖ Mechanical Specification



❖ Carrier Tape Dimension



❖ Packaging

180 mm Reel Diameter
16 mm Tape Width, 8 mm Pitch
Quantity: 1000 pcs per Reel

In accordance with EIA-481

❖ Part Numbering

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

EXAMPLE: HB-24.000-12-BB

Surface Mount Microprocessor Crystal, 7.0 x 5.0 mm, 24.000 MHz, 18 pF load Capacitance, standard tolerance (±50 ppm) and stability (±50 ppm), Fundamental mode, standard Temperature range -10°C to +60°C

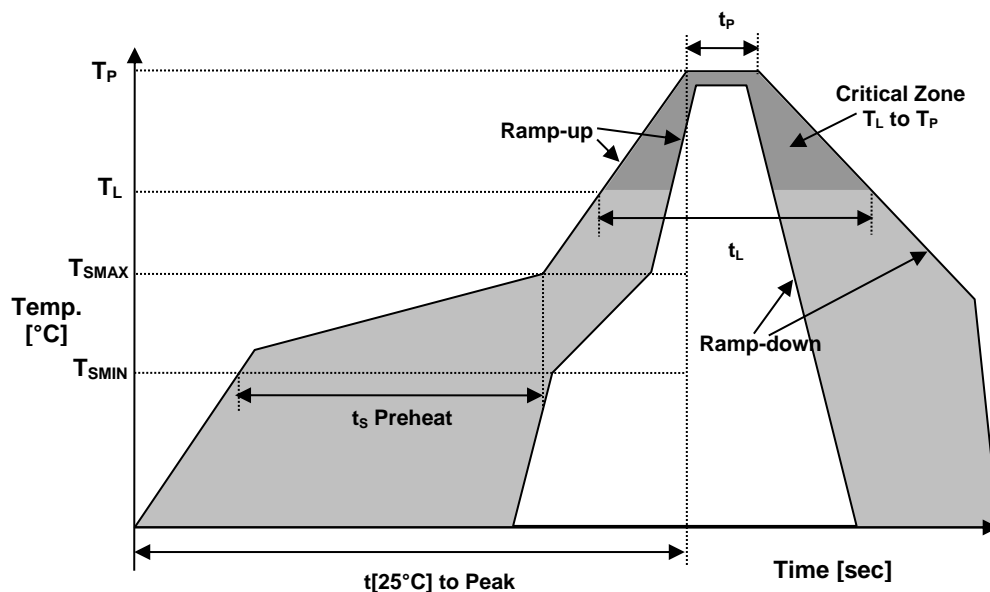
EXAMPLE: HB-8.000-10-EFE

Surface Mount Microprocessor Crystal, 7.0 x 5.0 mm, 8.000 MHz, 10 pF load Capacitance, tolerance (±10 ppm), stability (±30 ppm), Fundamental mode, Extended Temperature range -40°C to +85°C



HB PRODUCT FAMILY

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 $t[25^\circ\text{C}]$ to Peak Temperature	$t[25^\circ\text{C}]$ to Peak	480 sec.
Time	T_L	60 – 150 sec.

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HB PRODUCT FAMILY

● MARKING

RFF.FF
xxLTyw

FF.FF – Frequency in MHz
 x – Internal Production ID code
 L – Load Capacitance Code
 T – Tolerance Code
 y – Year code
 w – Week code

LOAD CAPACITANCE CODE			
CODE	C _L (pF)	CODE	C _L (pF)
A	20	J	12
B	18	M	14
C	16	N	15
F	12.5	P	13
G	32		
H	22		

TOLERANCE CODE	
CODE	TOL (ppm)
B	±50
F	±30
D	±20
E	±10

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, 28 March 2017
APPROVED BY	FP, 28 March 2017
REVISION	A, Initial Release