



AC PRODUCT FAMILY

Surface Mount Microprocessor Crystal 13.5 x 4.8

Features

- Low Profile Surface Mount
- Available in Extended Temperature Range
- Excellent Clock Signal Generator for CPU's



❖ Specifications

Parameter		Value
Frequency Range		3.200 to 80.000 MHz
Mode of Oscillation	Fundamental	3.200 to 40.320 MHz
	Third Overtone	24.576 to 80.000 MHz
Frequency Tolerance at 25°C		±30 ppm Standard (±10, ±20 available)
Frequency Stability over Temperature		±50 ppm Standard (±10, ±20 & ±30 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)
3.200 to 3.599	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 14.399	FUND	50
14.400 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

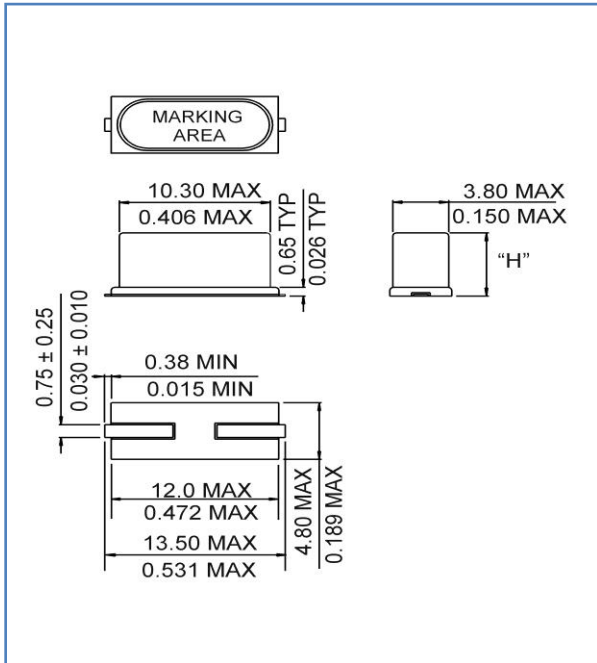
Parameter	Value
Moisture Sensitivity Level	1
RoHS	6/6 Complaint & Lead Free
REACH SVHC	Compliant
Halogen Free	Compliant
ESD Classification Level	N/A
Termination Finish	Sn
Unit Weight (grams)	0.585

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.



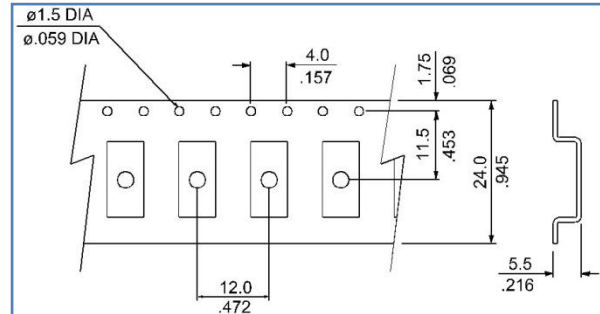
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❖ Mechanical Specification



H = 4.6 mm Max

❖ Carrier Tape Dimension



NOTE: REFER TO EIA-481 FOR DIMENSIONS

❖ Packaging

330 mm Reel Diameter
24 mm Tape Width, 12 mm Pitch
Quantity: 1000 pcs per Reel

In accordance with EIA-481

❖ Part Numbering

AC	-	24.000	-	18	-	XXXX
Product Family		Frequency (MHz)		Load Capacitance (pF)		1) Tolerance, 2) Stability, 3) Mode, 4) Temperature
				9 to 32 pF or S for Series		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=3 rd Overtone
						Temperature range: blank standard, E=Extended

EXAMPLE: AC-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

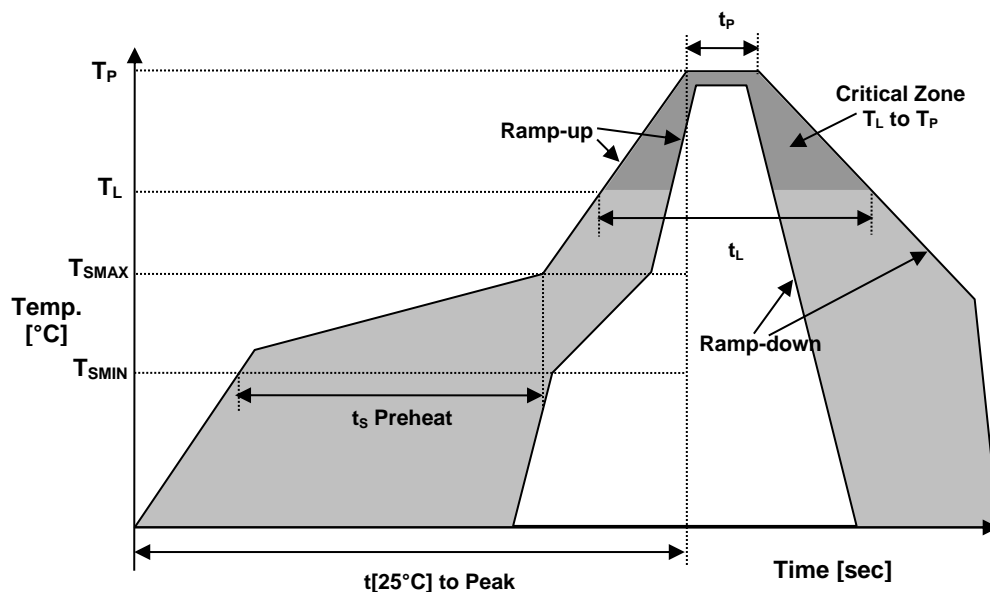
EXAMPLE: AC-8.000-10-BBE

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



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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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● MARKING

RFFxLyw

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, 29 April 2017
APPROVED BY	FP, 28 April 2017
REVISION	A, Initial Release