

# SMD Crystal Unit

## HC-49SMD 4 Pad MHZ Crystal

MXE Series

MERITEK

### FEATURE

- Surface Mount Low Profile
- Excellent Heat Resistance
- High Precision and High Frequency Stability
- Applications: Data Application, Computer Machines, Printers, CPU, Memory, Test Equipment



### ELECTRICAL CHARACTERISTICS

Item	Min	Typ	Max	Units
Nominal Frequency Range	3.072	-	100	MHz
Operation Mode	Fundamental, 3 <sup>rd</sup> Overtone, 5 <sup>th</sup> Overtone			--
Frequency Tolerance at 25°C ± 3°C	±10	±30	±50	ppm
Frequency Stability Range	±30	-	±50	
Operating Temperature Range	-40	-	+85	°C
Storage Temperature Range	-40	-	+85	
Load Capacitance, CL	6	-	30	pF
Shunt Capacitance, C0	-	-	7	
Equivalent Series Resistance	30	-	200	Ω
Drive Level	-	-	100	μW
Insulation Resistance, at 100VDC	500	-	-	MΩ
Frequency Aging First Year at 25°C ± 3°C	-5	-	5	ppm
Moisture Sensitivity Level, MSL	Level 1 (J-STD-033)			--

Note: see the parts number system for other options

### STANDARD ESR

Frequency (MHz)	Operation Mode	ESR Max (Ω)	Frequency (MHz)	Operation Mode	ESR Max (Ω)
3.0 ~ 4.0	Fundamental	200	16.1 ~ 48.0	Fundamental	30
4.1 ~ 6.0	Fundamental	80	24.1 ~ 40.0	3rd Overtone	100
6.1 ~ 8.0	Fundamental	50	40.1 ~ 80.0	3rd Overtone	50
8.1 ~ 16.0	Fundamental	40	50.0 ~ 100.0	5th Overtone	100

### DIMENSIONS

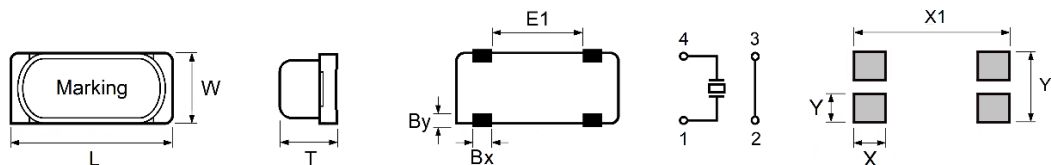


Fig.3

Unit: mm

Series	Pin	L	W	T max	Bx	By	E1	X	Y	L1	W1	Fig
MXE	4	12.5 max	4.95 max	4.0	1.30±0.10	1.20±0.10	7.70±0.10	2.0	2.0	11.0	5.5	3

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### PART NUMBERING SYSTEM

MXE F H J I 20M0  
 (1) (2) (3) (4) (5) (6)

No.	Item	Code	Description
(1)	Meritek Series	MXE	HC-49SMD Crystal, MHz 12.5x4.95x4.0mm, 4 Pads
(2)	Load Capacitance	F	F: 20pF 6~30pF, See option table
(3)	Frequency Tolerance	H	H: ±30ppm ±10~±50ppm, See option table
(4)	Frequency Stability	J	J: ±50ppm ±30~±50ppm, See option table
(5)	Operating Temperature	I	I: -40~+85°C See option table
(6)	Frequency	20M0	20M0: 20.00MHz 3M072~100M0 (M denotes decimal point)

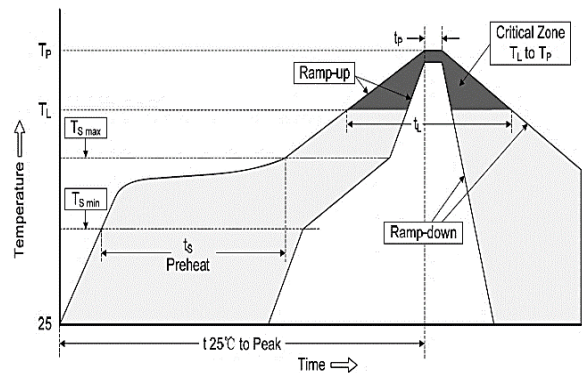
### PRODUCTS OPTION CODE

Load Capacitance	(pF) Code	3	4	5	6	7	8	9	10	12	15	16	18	20	22	25	30	32	*
		3	4	5	6	7	8	9	A	B	C	D	E	F	K	G	H	L	Z
Frequency Tolerance	(ppm) Code	±10 A		±15 C		±20 F		±25 G		±30 H		±50 J		±100 K		* Z			
Frequency Stability	(ppm) Code	±10 A		±15 C		±20 F		±25 G		±30 H		±50 J		±100 K		* Z			
Operating Temperature	(°C) Code	-40~70 4		-40~85 3/I		-40~105 2/R		-40~125 1/Y		-40~150 0		-10~60 A		0~70 B		* Z			
Operating Temperature	(°C) Code	-55~70 9		-55~85 8		-55~105 7		-55~125 6		-55~150 5		-20~70 C		-30~85 K		* Z			

Note: \* Z: None Standard, Custom options available. Contact Meritek for more information

### RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	180°C
	Time (min. to max.) ( $t_s$ )	70~100 seconds
Ramp up rate ( $T_L$ to $T_P$ )		3°C/second max.
$T_{s(max)}$ to $T_L$ (Ramp-up rate)		3°C/second max.
Reflow	Temp. ( $T_L$ )	240°C
	Time (min. to max.) ( $t_L$ )	20~50 seconds
Peak Temperature ( $T_P$ )		250°C
$t_p$ within 5°C of Peak Temperature ( $t_p$ )		10 seconds max.
Ramp-down Rate		6°C/second max.



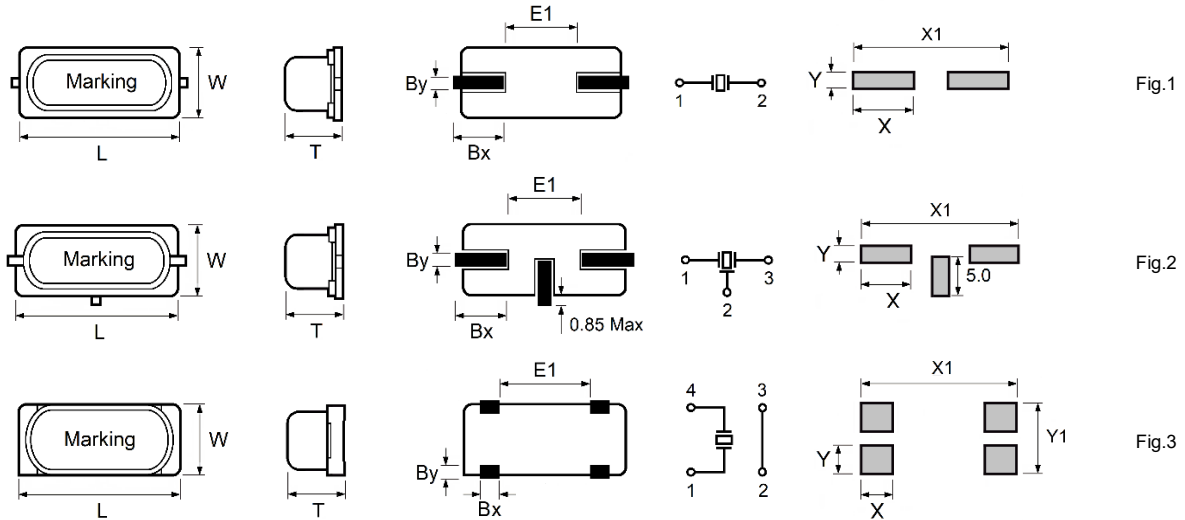
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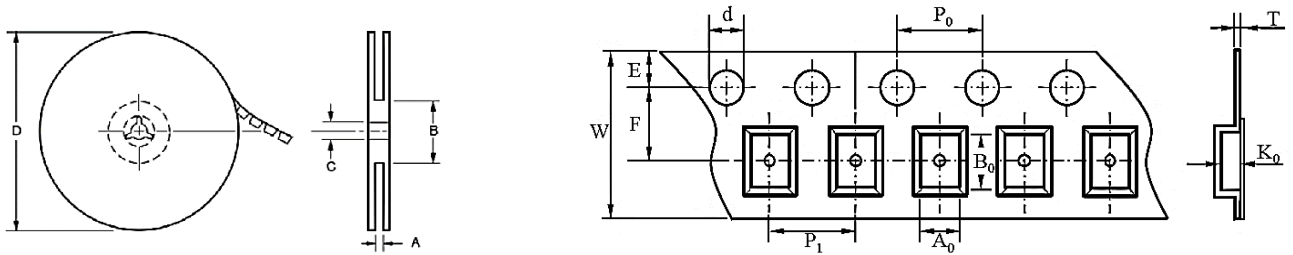
### DIMENSIONS – MXx Series - HC-49SMD



Unit: mm

Series	Pin	L	W	T max	Bx	By	E1	X	Y	L1	W1	Fig
MXL	2	11.4±0.15	4.7±0.15	2.6	3.90±0.40	0.65±0.15	4.88±0.20	5.6	2.1	15.1	-	1
MXP	2	11.4±0.15	4.7±0.15	3.2	3.90±0.40	0.65±0.15	4.88±0.20	5.6	2.1	15.1	-	1
MXJ	2	11.4±0.15	4.7±0.15	4.2	3.90±0.40	0.65±0.15	4.88±0.20	5.6	2.1	15.1	-	1
MXH	3	11.4±0.20	4.7±0.10	4.1	3.95±0.25	0.80±0.10	4.88±0.20	5.5	2.0	16.0	-	2
MXE	4	12.5 max	4.95 max	4.0	1.30±0.10	1.20±0.10	7.70±0.10	2.0	2.0	11.0	5.5	3

### PACKAGING SPECIFICATION



Unit: mm

Series	Reel Dimension						Tape Dimensions									
	A	B	C	D	Dia	Pcs/Reel	A0	B0	d	E	F	K0	P0	P1	T	W
MXL	24.5	99	13.5	330	13"	1000	5.0	15.0	1.50	1.75	11.5	2.80	4.00	12.0	0.30	24.0
MXP	24.5	99	13.5	330	13"	1000	5.0	15.0	1.50	1.75	11.5	3.40	4.00	12.0	0.30	24.0
MXJ	24.5	99	13.5	330	13"	1000	5.0	15.0	1.50	1.75	11.5	4.40	4.00	12.0	0.30	24.0
MXH	24.5	99	13.5	330	13"	1000	5.0	15.0	1.50	1.75	11.5	4.25	4.00	12.00	0.30	24.0
MXE	24.5	99	13.5	330	13"	1000	5.0	14.2	1.50	1.75	11.5	4.40	4.00	12.0	0.30	24.0

Note: Specifications subject to change without notice.