

# Ceramic SMD Crystal Unit

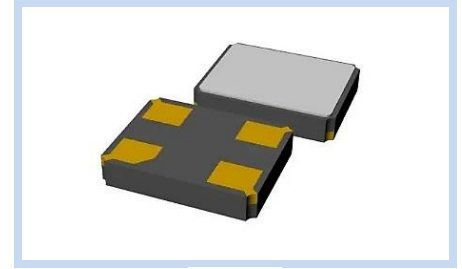
## 7.0 x 5.0mm MHZ Crystal

MX7 Series

MERITEK

### FEATURE

- Surface Mount Low Profile
- Seam Sealed Ceramic Package
- 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	6.000	-	100.000	MHz
Operation Mode	Fundamental AT, 3 <sup>rd</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	-55	-	+125	
Load Capacitance, CL	6	-	30	pF
Shunt Capacitance, C0	-	-	7	
Equivalent Series Resistance	40	-	120	Ω
Drive Level	-	100	300	μW
Insulation Resistance, at 100VDC	500	-	-	MΩ
Frequency Aging First Year at 25°C ± 3°C	-3	-	3	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)
6.0 ~ 8.0	Fundamental AT	120	16.0 ~ 40.0	Fundamental AT	40
8.0 ~ 12.0	Fundamental AT	100	40.0 ~ 100.0	3rd Overtone	70
12.0 ~ 16.0	Fundamental AT	60	-	-	-

### DIMENSIONS

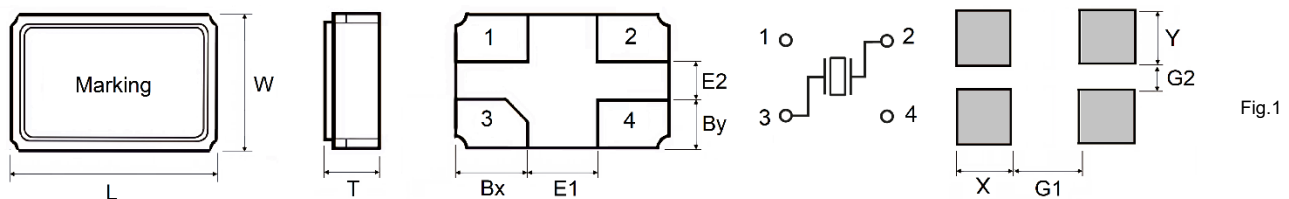


Fig.1

Unit: mm

Size	L	W	T	Bx	By	E1	E2	X	Y	G1	G2	Fig
7050	7.0 ±0.2	5.0 ±0.2	1.10 max	1.20	1.00 ±0.13	4.60	1.54 ±0.13	2.20	1.40	4.00	1.10	1

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### PART NUMBERING SYSTEM

MX7   E   H   J   I   20M0  
 (1)   (2)   (3)   (4)   (5)   (6)

No.	Item	Code	Description
(1)	Meritek Series	MX7	Ceramic SMD Crystal, MHz 7.0 x 5.0mm, 4 Pads
(2)	Load Capacitance	E	E: 18pF      6~30pF, See option table
(3)	Frequency Tolerance	H	H: ±30ppm      ±10~±100ppm, See option table
(4)	Frequency Stability	J	J: ±50ppm      ±10~±100ppm, See option table
(5)	Operating Temperature	I	I: -40~+85°C      See option table
(6)	Frequency	20M0	20M0: 20.00MHz      6M0~100M0, M: denotes decimal point

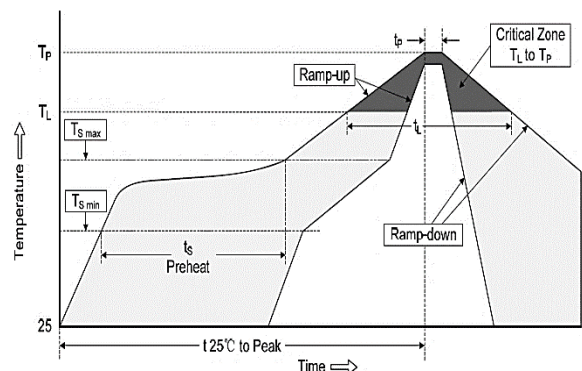
### PRODUCTS OPTION CODE

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

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

### RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	125°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) ( $t_s$ )	60~180 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. ( $T_L$ )	217°C
	Time (min. to max.) ( $t_L$ )	60~150 seconds
Peak Temperature ( $T_P$ )		260°C
$t_p$ within 5°C of Peak Temperature ( $t_p$ )		20~40 seconds
Ramp-down Rate		6°C/second max.
Reflow Times		3 times max



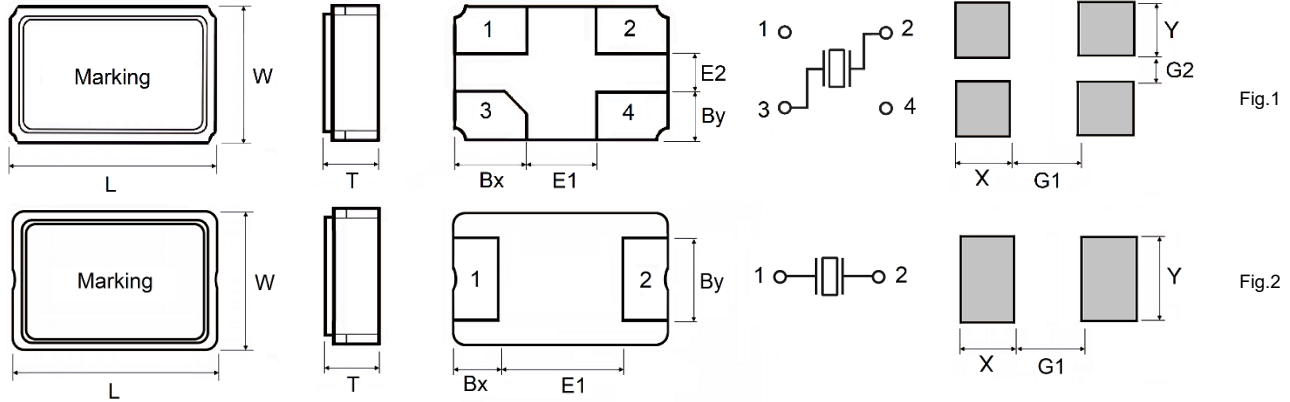
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## 7.0 x 5.0mm MHZ Crystal

MX7 Series

**MERITEK**

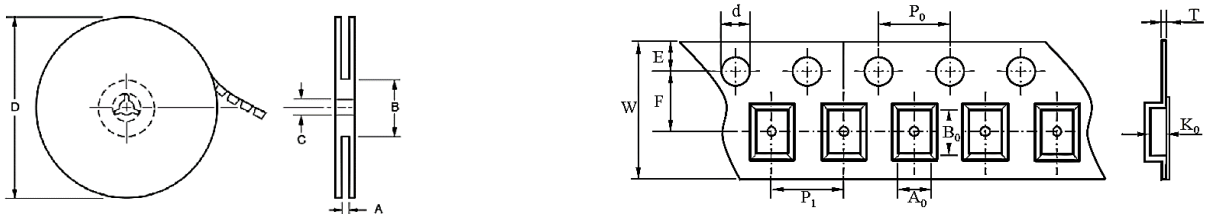
### DIMENSIONS – MXx Series



Unit: mm

Series	Size	Pad	L	W	T max	Bx	By	E1	E2	X	Y	G1	G2	Fig
MX1	1612	4	1.6 ±0.1	1.2 ±0.1	0.37	0.55	0.45	0.50	0.30	0.65	0.55	0.40	0.30	1
MXA	2016	4	2.0 ±0.1	1.6 ±0.1	0.50	0.55	0.45	0.70	0.50	0.85	0.75	0.50	0.30	1
MX2	2520	4	2.5 ±0.1	2.0 ±0.1	0.55	0.80	0.70	0.90	0.60	1.20	1.00	0.50	0.30	1
MX3	3225	4	3.2 ±0.1	2.5 ±0.1	0.75	1.00	0.90	1.20	0.70	1.40	1.20	0.80	0.40	1
MX5	5032	4	5.0 ±0.2	3.2 ±0.2	0.90	1.30	0.90	2.40	1.40	1.60	1.35	1.90	0.70	1
MX6	6035	4	6.0 ±0.2	3.5 ±0.2	1.10	1.50	1.00	3.00	1.50	1.95	1.40	2.40	1.10	1
MX7	7050	4	7.0 ±0.2	5.0 ±0.2	1.10	1.20	1.00	4.60	1.54	2.20	1.40	4.00	1.10	1
MXB	5032	2	5.0 ±0.2	3.2 ±0.2	1.20	1.30	2.00	2.40	-	1.80	2.40	2.00	-	2
MXC	6035	2	6.0 ±0.2	3.5 ±0.2	1.10	1.50	2.00	3.00	-	1.70	2.20	3.60	-	2
MX8	8045	2	8.0 ±0.2	4.5 ±0.2	1.60	1.50	2.00	5.00	-	2.50	2.8	4.00	-	2

### PACKAGING SPECIFICATION



Series	Size	Reel Dimension (mm)						Tape Dimensions (mm)									
		A	B	C	D	Dia	Pcs/Reel	A0	B0	d	E	F	K0	P0	P1	T	W
MX1	1612	9.5	60	13.5	180	178	3000	1.4	1.8	1.50	1.75	3.5	0.6	4.0	4.0	0.2	8.0
MXA	2016	9.5	60	13.5	180	178	3000	1.8	2.2	1.50	1.75	3.5	1.3	4.0	4.0	0.3	8.0
MX2	2520	9.5	60	13.5	180	178	3000	2.25	2.75	1.50	1.75	3.5	1.0	4.0	4.0	0.2	8.0
MX3	3225	9.5	60	13.5	180	178	3000	2.7	3.4	1.50	1.75	3.5	1.3	4.0	4.0	0.3	8.0
MX5	5032	13.5	80	13.5	180	178	1000	3.6	5.4	1.50	1.75	5.5	1.3	4.0	8.0	0.3	12.0
MX6	6035	13.5	80	13.5	180	178	1000	3.9	6.4	1.50	1.75	5.5	1.4	4.0	8.0	0.3	12.0
MX7	7050	17.5	80	13.5	180	178	1000	5.4	7.5	1.50	1.75	7.5	1.6	4.0	8.0	0.3	16.0
MXB	5032	17.5	80	13.5	180	178	3000	3.4	5.4	1.50	1.75	7.5	1.3	4.0	8.0	0.3	16.0
MXC	6035	17.5	80	13.5	180	178	1000	4.0	6.4	1.50	1.75	7.5	1.3	4.0	8.0	0.3	16.0
MX8	8045	17.5	80	13.5	180	178	1000	5.4	8.5	1.50	1.75	7.5	1.6	4.0	8.0	0.3	16.0

Note: Specifications subject to change without notice.