

# 32.768 Crystal Unit

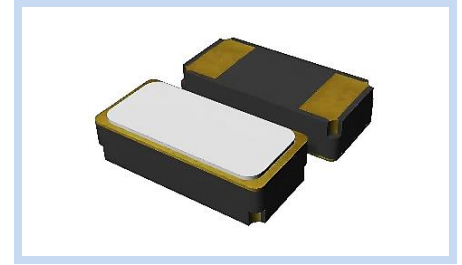
## 4.1 x 1.5mm KHz Tuning Fork

MXT4 Series

MERITEK

### FEATURE

- Surface Mount Low Profile
- Seam Sealed Ceramic Package
- Applications: Measuring Instruments, Clock Source, Communications, A/V Equipment, Bluetooth

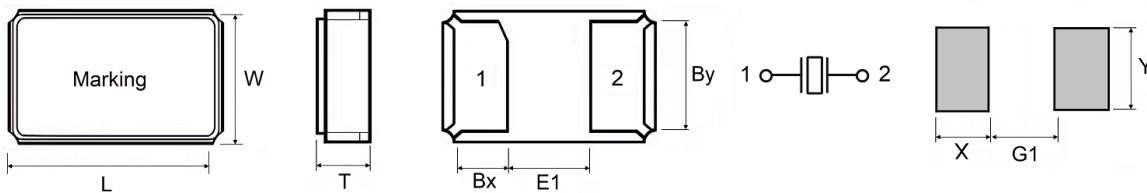


### ELECTRICAL CHARACTERISTICS

Item	Min	Typ	Max	Units
Nominal Frequency Range	-	32.768	-	KHz
Frequency Tolerance at 25°C ± 3°C	-20	-	+20	ppm
Frequency Temperature Curve	-0.034 ± 0.006			ppm/(°C) <sup>2</sup>
Turnover Temperature	20	25	30	°C
Operating Temperature Range	-40	-	+85	
Storage Temperature Range	-55	-	+125	
Load Capacitance, CL	6	-	12.5	pF
Shunt Capacitance, C0	-	1.1	7.0	pF
Motional Capacitance, C1	-	2.3	-	Ff TYP
Equivalent Series Resistance	-	-	70	KΩ
Capacitance Ratio	-	450	-	--
Q Value	-	10000	-	--
Drive Level	-	0.1	0.5	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

### DIMENSIONS



Unit: mm

Size	L	W	T	Bx	By	E1	X	Y	G1
4115	4.1 ± 0.1	1.5 ± 0.1	0.75 ± 0.1	0.6	1.3	2.7	1.1	1.9	2.3

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### PART NUMBERING SYSTEM

MXT4 B F I 32K768  
 (1) (2) (3) (4) (5)

No.	Item	Code	Description
(1)	Meritek Series	MXT4	Ceramic SMD Crystal, KHz TUNING FORK 4.1 x 1.5mm, 2 Pads
(2)	Load Capacitance	B	B: 12.5pF 6-12pF, See option table
(3)	Frequency Tolerance	F	F: ±20ppm ±5~±100ppm, See option table
(4)	Operating Temperature	I	I: -40~+85°C -40~85°C, See option table
(5)	Frequency	32K768	32K768: 32.768KHz 32K768, K: denotes decimal point

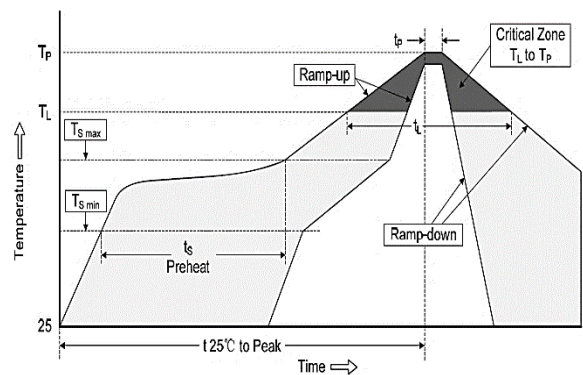
### PRODUCTS OPTION CODE

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 $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	180°C
	Time (min. to max.) ( $t_s$ )	60~120 seconds
Ramp up rate ( $T_L$ to $T_P$ )		1°C/second max.
$T_{s(max)}$ to $T_L$ (Ramp-up rate)		3°C/second max.
Reflow	Temp. ( $T_L$ )	230°C
	Time (min. to max.) ( $t_L$ )	30~40 seconds
Peak Temperature ( $T_P$ )		260°C
$t_p$ within 5°C of Peak Temperature ( $t_p$ )		10 seconds max
Ramp-down Rate		6°C/second max.



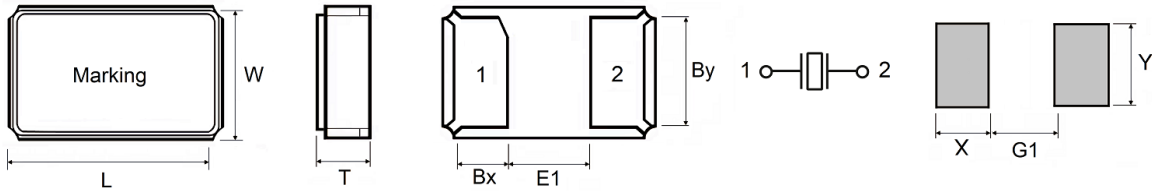
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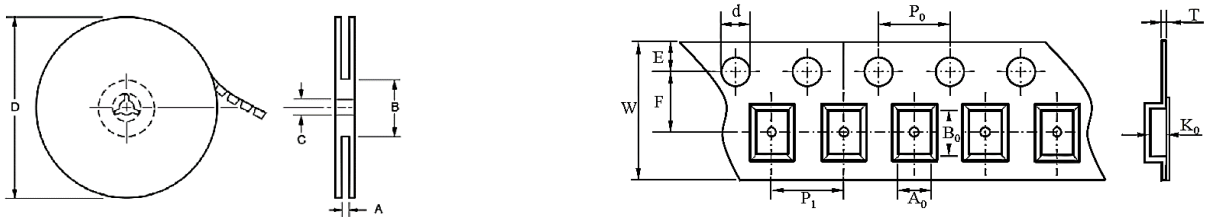
### DIMENSIONS – MXTx Series



Unit: mm

Series	Size	Pad	L	W	T max	Bx	By	E1	E2	X	Y	G1	G2
MXT1	1610	2	1.6 ±0.1	1.0 ±0.1	0.50	0.40	0.86	0.66	-	0.50	1.00	0.60	-
MXT2	2012	2	2.0 ±0.1	1.2 ±0.1	0.60	0.50	1.00	0.80	-	0.75	1.40	0.70	-
MXT3	3215	2	3.2 ±0.1	1.5 ±0.1	0.80	0.65	1.30	1.70	-	1.10	1.90	1.40	-
MXT4	4115	2	4.1 ±0.1	1.5 ±0.1	0.85	0.60	1.30	2.70	-	1.10	1.90	2.30	-
MXT5	4918	2	4.9 ±0.15	1.8 ±0.15	1.00	0.75	1.60	3.20	-	1.30	2.20	2.90	-

### 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
MXT1	1610	9.0	60	13.0	180	178	3000	1.25	1.85	1.50	1.75	3.5	0.7	4.0	4.0	0.25	8.0
MXT2	2012	9.0	60	13.0	180	178	3000	1.40	2.25	1.50	1.75	3.5	0.8	4.0	4.0	0.25	8.0
MXT3	3215	12.4	60	13.0	180	178	3000	1.90	3.60	1.50	1.75	5.5	1.0	4.0	4.0	0.30	12.0
MXT4	4115	12.4	60	13.0	180	178	3000	1.90	4.60	1.50	1.75	5.5	1.0	4.0	4.0	0.30	12.0
MXT5	4918	12.4	60	13.0	180	178	3000	2.20	5.50	1.50	1.75	5.5	1.0	4.0	4.0	0.30	12.0

Note: Specifications subject to change without notice.