

32.768 Crystal Unit

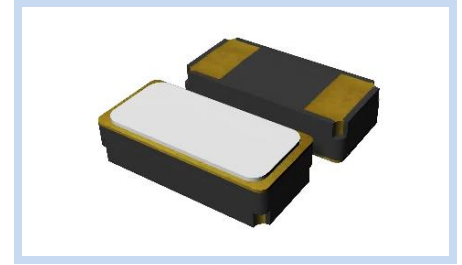
2.0 x 1.2mm KHz Tuning Fork

MXT2 Series

MERITEK

FEATURE

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

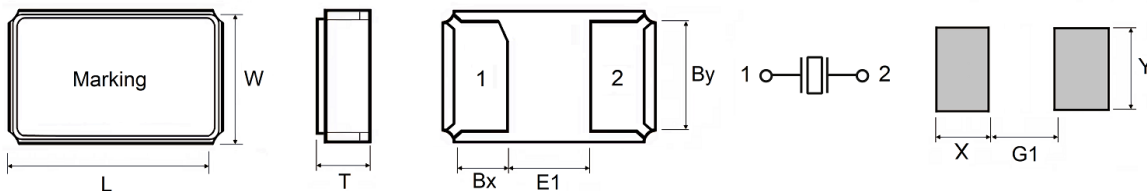


ELECTRICAL CHARACTERISTICS

| Item | Min | Typ | Max | Units |
|--|---------------------|--------|------|-----------------------|
| Nominal Frequency Range | - | 32.768 | - | KHz |
| Frequency Tolerance at 25°C ± 3°C | ±5 | ±20 | ±50 | ppm |
| Frequency Temperature Curve | -0.03 ±0.01 | | | ppm/(°C) ² |
| 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 | - | 1.3 | 7.0 | |
| 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 |
|------|----------|----------|---------|----------|----------|-----|------|-----|-----|
| 2012 | 2.0 ±0.1 | 1.2 ±0.1 | 0.6 max | 0.5 ±0.1 | 1.0 ±0.1 | 0.8 | 0.75 | 1.4 | 0.7 |

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PART NUMBERING SYSTEM

MXT2 **B** **F** **I** **32K768**
 (1) (2) (3) (4) (5)

| No. | Item | Code | Description |
|-----|-----------------------|--------|--|
| (1) | Meritek Series | MXT2 | Ceramic SMD Crystal, KHz TUNING FORK 2.0 x 1.2mm, 2 Pads |
| (2) | Load Capacitance | B | B: 12.5pF 6-12pF, See option table |
| (3) | Frequency Tolerance | F | F: ±20ppm ±10~±50ppm, See option table |
| (4) | Operating Temperature | I | I: -40~+85°C -40~125°C, See option table |
| (5) | Frequency | 32K768 | 32K768: 32.768KHz 32K768, K: denotes decimal point |

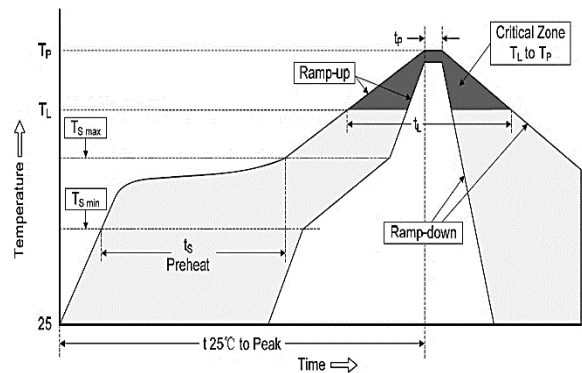
PRODUCTS OPTION CODE

| 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. |



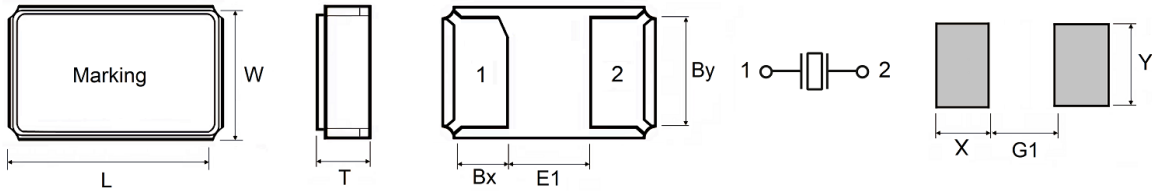
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MXT2 Series

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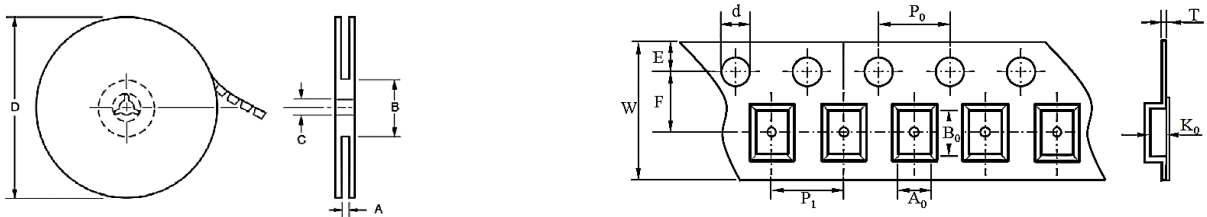
DIMENSIONS – MXTx Series



Unit: mm

| Series | Size | Pad | L | W | T max | Bx | By | E1 | X | Y | G1 |
|--------|------|-----|-----------|-----------|-------|------|------|------|------|------|------|
| 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.