

SPECIFICATION FOR APPROVAL

CUSTOMER : _____

PRODUCT TYPE : SMD Crystal 1.6×1.2

NOMINAL FREQ. : 48.000000MHz

TXC P/N : 8Q48090003

REVISION : A1

CUSTOMER P/N : _____

PM / SALES : _____

DATE : _____

CUSTOMER CONFIRMATION : _____
(Singnature)

(Date)

- (1) TXC requires one copy returned with signature and title of authorized individual that signifies acceptance of the attached specifications.
- (2) Orders received and accepted by TXC after return of signed copy of specification will be produced per these specifications.
- (3) Any changes to these specifications must be agreed upon by both parties and new revision of the Product Specification Sheet will be issued.
- (4) Any issuance of purchase order prior to consigning back the Approval page of "Specification Sheets" from customers will be regarded as the agreement on the contents of these specifications.

MSL:Level 1
RoHS Compliant

(for glass crystal only : Pb used in sealing glass material is exempt from EU directive)




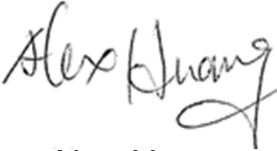

PRODUCT SPECIFICATION SHEET

PRODUCT TYPE : SMD Crystal 1.6×1.2

NOMINAL FREQ. : 48.000000MHz

TXC P/N : 8Q48090003

REVISION : A1

| PE/RD | QA | MFG |
|--|---|---|
|  Mike Chiu |  Alex Huang |  Rick Lo |
| 7-Mar-17 | 7-Mar-17 | 7-Mar-17 |

NOTE:

- (1) The green product standard set by TXC is based upon the international standards. Related information is publicly described on the TXC's Website, and updated regularly. The document is compliant with the latest green product quality system directives at the time.
- (2) Revision "Sx" is for engineering samples only. PE/RD's approval required.
- (3) Revision "Ax" is production ready. PE, QA and MFG's approval required.

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RoHS Compliant**

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■ ELECTRICAL SPECIFICATIONS

Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement and tests are as follow:

Ambient temperature : $25 \pm 10^{\circ}\text{C}$
 Relative humidity : 40%~70%

If there is any doubt about the results, measurement shall be made within the following limits:

Ambient temperature : $25 \pm 3^{\circ}\text{C}$
 Relative humidity : 40%~70%

Measure equipment

Electrical characteristics measured by S&A 250B or equivalent.

Crystal cutting type

The crystal is using AT CUT (thickness shear mode).

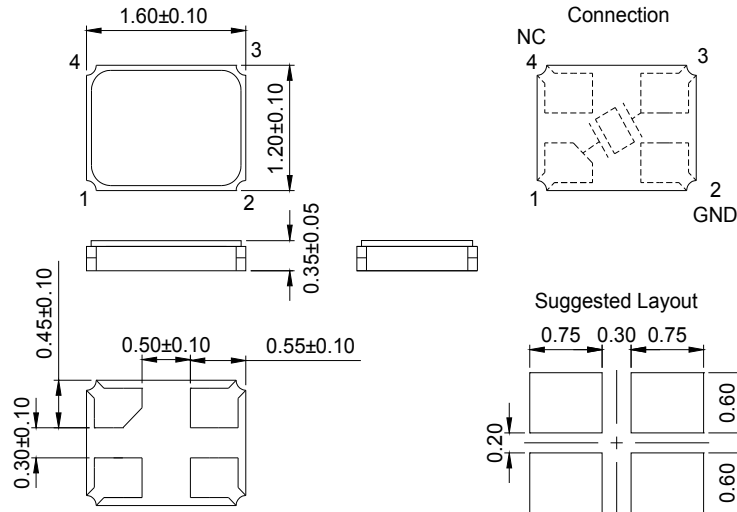
Unit Weight:

0.0029±0.0020 g/pcs

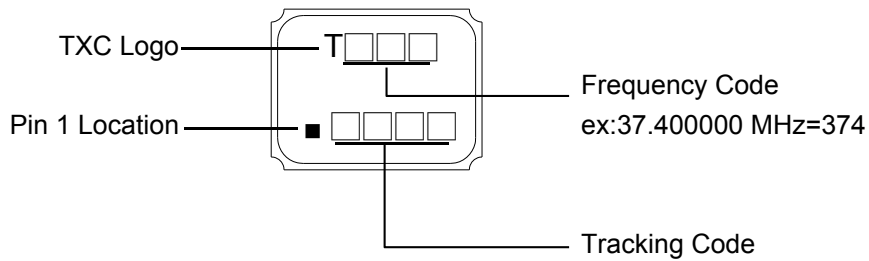
| | Parameters | Symbol | Electrical Spec. | | | | Notes |
|----|---------------------------------|--------|------------------|------|------|--------------------|--|
| | | | Min. | Typ. | Max. | Units | |
| 1 | Nominal Frequency | FL | 48.000000 | | | MHz | - |
| 2 | Oscillation Mode | - | Fundamental | | | - | - |
| 3 | Load Capacitance | CL | 7 | | | pF | Test Condition:Network Analyzer E5100A |
| | | | 8.8 | | | | Test Condition:Saunders (S&A) Network Analyzer 250B |
| 4 | Frequency Tolerance | - | -6 | ~ | 8 | ppm | at $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ |
| 5 | Frequency Stability | - | ± 12 | | | ppm | Over Operating Temp. Range (Reference 25°C) |
| 6 | Operating Temperature | - | -40 | ~ | 85 | $^{\circ}\text{C}$ | - |
| 7 | Aging | - | -2 | - | 0 | ppm | 5 Years |
| 8 | Drive Level | DL | 0.01 | - | 100 | μW | - |
| 9 | Equivalent Series Resistance | ESR | - | 18 | 30 | Ω | - |
| 10 | Shunt Capacitance C0 | C0 | 0.3 | 0.5 | 1.0 | pF | - |
| 11 | Motional Capacitance C1 | C1 | 1 | 2 | 4 | fF | - |
| 12 | Insulation Resistance | - | 500 | - | - | M Ω | at DC 100V |
| 13 | Storage Temperature Range | - | -40 | ~ | 105 | $^{\circ}\text{C}$ | - |
| 14 | Motional Inductance L1 | L1 | 4 | 6 | 8 | mH | - |
| 15 | Spurious mode series resistance | - | 1100 | - | - | Ω | $\pm 0.7\text{MHz}$ |
| 16 | Frequency Perturbation | - | ± 1 | | | ppm | - |
| 17 | Frequency drift after reflow | - | ± 2 | | | ppm | After two reflows |

■ DIMENSIONS

(Unit:mm)



■ MARKING

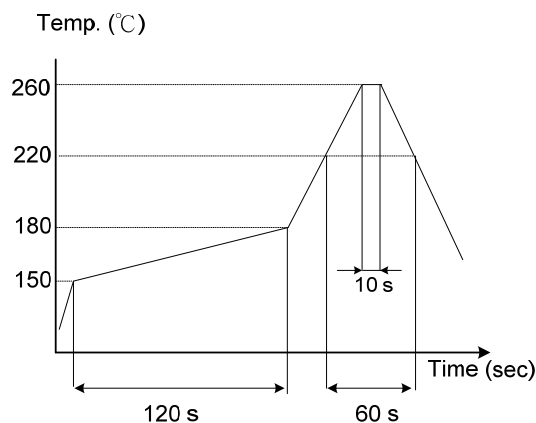


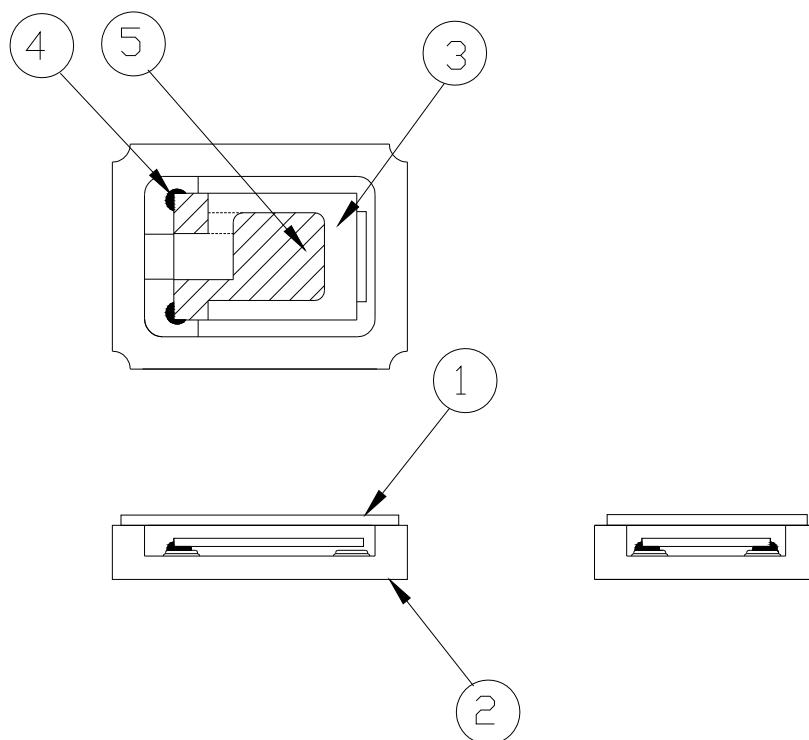
Production location:Taiwan/China

■ SUGGESTED REFLOW PROFILE

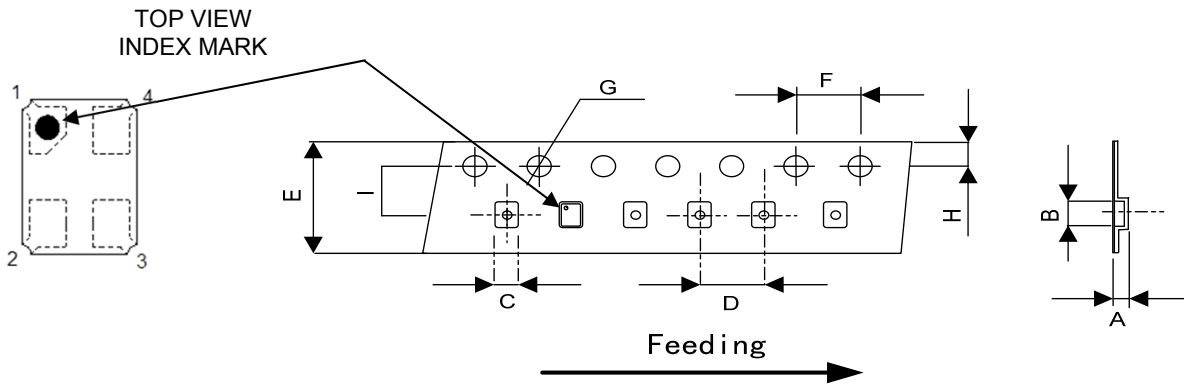
Total time : 200 sec. Max.

Solder melting point :220 °C



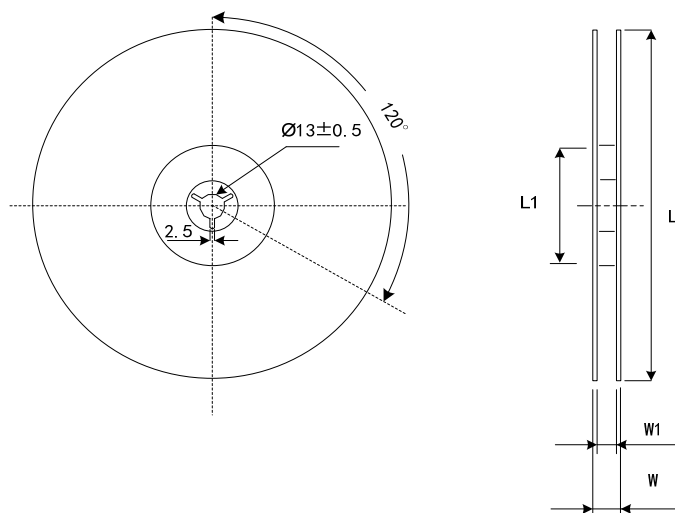
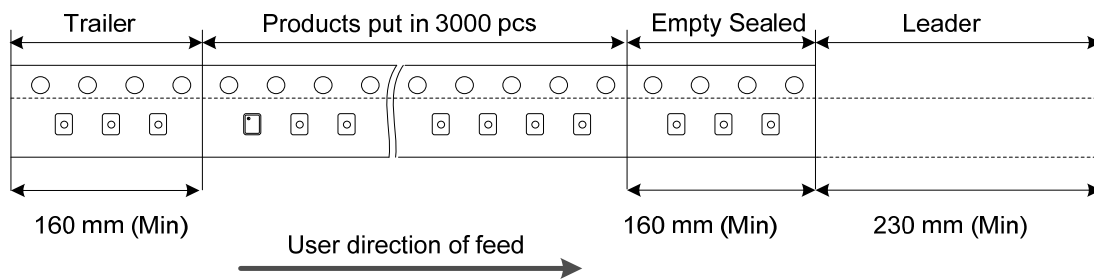
■ STRUCTURE ILLUSTRATION


| NO | COMPONENTS | MATERIALS | FINISH/SPECIFICATIONS |
|----|---------------------|--|-----------------------|
| 1 | Lid | Kovar | - |
| 2 | Base(Package) | Ceramic (Al ₂ O ₃)+Pad (Au) | Alumina ceramics |
| 3 | Crystal blank | SiO ₂ | - |
| 4 | Conductive adhesive | Ag | Silicone resin |
| 5 | Electrode | Noble Metal | - |

PACKING


| DIMENSIONS | A | B | C | D | E | F | G | H | I | (UNIT : mm) |
|------------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|---------------|----------------|-------------|
| | 0.75 ± 0.15 | 1.85 ± 0.1 | 1.45 ± 0.1 | 4.00 ± 0.1 | 8.00 ± 0.2 | 4.00 ± 0.1 | 1.55 ± 0.05 | 1.75 ± 0.1 | 3.50 ± 0.05 | |

REMARK :



| DIMENSIONS | L | L1 | W | W1 | Standard Reel Quantity is 3,000 pcs per reel (UNIT:mm) |
|------------|--------------|---------------|--------------|------------|---|
| | 178 ±1.00 | 60.2 ±0.50 | 11.5 ±0.2 | 8 +1/-0 | |

■ RELIABILITY SPECIFICATIONS

1. Mechanical Endurance

| No. | Test Item | Test Methods | REF.DOC |
|-----|------------------|--|-------------|
| 1.1 | Drop Test | 150 cm height, 3 times on concrete floor. | MIL-STD-202 |
| 1.2 | Mechanical Shock | Device are shocked to half sine wave (1000 G) three mutually perpendicular axes each 3 times. 0.5m sec. duration time | MIL-STD-202 |
| 1.3 | Vibration | Frequency range 10 ~ 2000 Hz Amplitude 1.52 mm/20G Sweep time 20 minute perpendicular axes each test time 4 hours (Total test time 12 hours) | MIL-STD-883 |
| 1.4 | Gross Leak | Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm ² | MIL-STD-883 |
| 1.5 | Fine Leak | Helium Bombing 4.5 Kg/ cm ² for 2 hr | |
| 1.6 | Solder ability | Temperature 245 °C ± 5°C Immersing depth 0.5 mm minimum Immersion time 5 ± 1 seconds Flux Rosin resin methyl alcohol solvent (1 : 4) | MIL-STD-883 |

2. Environmental Endurance

| No. | Test Item | Test Methods | REF. DOC |
|-----|------------------------------|--|-------------|
| 2.1 | Resistance To Soldering Heat | Pre-heat temperature 125 °C Pre-heat time 60 ~ 120 sec. Test temperature 260 ± 5 °C Test time 10 ± 1 sec. | MIL-STD-202 |
| 2.2 | High Temp. Storage | + 125 °C ± 3 °C for 500 ± 12 hours | MIL-STD-883 |
| 2.3 | Low Temp. Storage | - 40 °C ± 3 °C for 500 ± 12 hours | |
| 2.4 | Thermal Shock | Total 100 cycles of the following temperature cycle | MIL-STD-883 |
| 2.5 | High Temp & Humidity | 85°C ± 3°C, RH 85% , 500Hrs | EIA-JESD22 |
| 2.6 | Pressure Cooker Storage | 121 ± 3°C , RH100% , 2 bar , 240Hrs | EIA-JESD22 |

单击下面可查看定价，库存，交付和生命周期等信息

[>>TXC\(台湾晶技\)](#)