

# QUARTZ CRYSTAL UNIT

**SERIES 7U, SEAM SEALED CERAMIC 3.2\*2.5MM SURFACE MOUNT PACKAGE**



深圳市晶科鑫实业有限公司

Shenzhen Crystal Technology Industrial Co., Ltd

## APPROVAL SHEET

|                |                                                                                                                                                                                        |  |  |      |              |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|------|--------------|
| CUSTOMER P/N:  |                                                                                                                                                                                        |  |  |      |              |
| TYPE:          | SMD CRYSTAL                                                                                                                                                                            |  |  |      |              |
| DESCRIPTION:   | SMD3225 12.000MHZ 9PF ±10PPM -40~85℃                                                                                                                                                   |  |  |      |              |
| P N/ SJK:      | 7U12000E09UCG                                                                                                                                                                          |  |  |      |              |
| ENVIRONMENTAL: | <input checked="" type="checkbox"/> RoHS <input checked="" type="checkbox"/> REACH <input checked="" type="checkbox"/> HF <input type="checkbox"/> PAHS <input type="checkbox"/> other |  |  |      |              |
| REVISION:      | A1 2017-5-10                                                                                                                                                                           |  |  | MOQ: | 3000pcs/real |
| MSL:           | Levels 1                                                                                                                                                                               |  |  |      |              |

| SIGNATURE |                         |         |                                                                              |       |         |
|-----------|-------------------------|---------|------------------------------------------------------------------------------|-------|---------|
| SUPPLIER  |                         |         | CUSTOMER                                                                     |       |         |
| Issue     | Check                   | Approve | QA                                                                           | Check | Approve |
|           |                         |         |                                                                              |       |         |
| SJK       | 18682088994 (Mr. Huang) |         | Signature                                                                    |       |         |
| FAE_EMAIL | sjk-fae@q-crystal.com   |         | Date                                                                         |       |         |
| Date      |                         |         | Approve: <input type="checkbox"/> accept <input type="checkbox"/> unaccepted |       |         |
| Note:     |                         |         |                                                                              |       |         |

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## 1. TESTING CONDITION

### Standard atmospheric conditions

Unless otherwise specified, the standard range of atmospheric conditions for making measurement

and tests are as follow:

Ambient temperature :  $25\pm 5^{\circ}\text{C}$

Relative humidity : 40%~70%

### Measure equipment

Electrical characteristics measured by S&A250B or equivalent.

## 2. ELECTRICAL SPECIFICATIONS

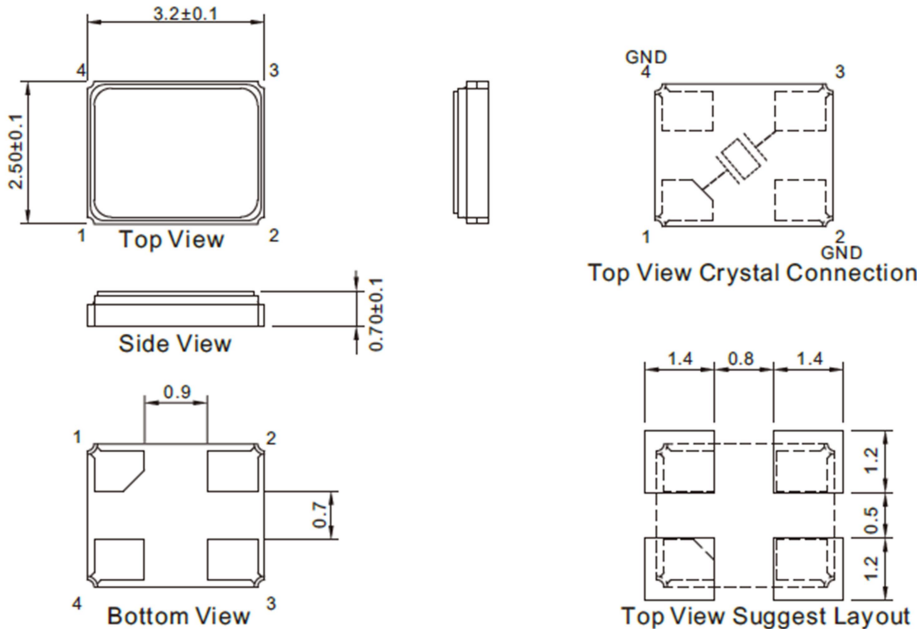
|                                                                |                                                                      |
|----------------------------------------------------------------|----------------------------------------------------------------------|
| Output Frequency Range                                         | 12.000000MHz                                                         |
| Mode                                                           | AT/Fundamental                                                       |
| Frequency Tolerance                                            | $\pm 10$ ppm max (at $25^{\circ}\text{C}$ )                          |
| Load Capacitance( $C_L$ )                                      | 9.0 PF                                                               |
| Frequency Stability Over Operating Temperature Characteristics | $\pm 10$ ppm max /<br>$-20^{\circ}\text{C}$ to $+70^{\circ}\text{C}$ |
|                                                                | $\pm 30$ ppm max/<br>$-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$  |
| Operating Temperature Range                                    | $-40^{\circ}\text{C}$ to $+85^{\circ}\text{C}$                       |
| Storage Temperature Range                                      | $-40^{\circ}\text{C}$ to $+125^{\circ}\text{C}$                      |
| Shunt Capacitance ( $C_0$ )                                    | 3.0 PF Max                                                           |
| Driver Level (Typical)                                         | 10 $\mu$ W                                                           |
| Equivalent Series Resistance(ESR)                              | 100 $\Omega$ Max                                                     |
| Aging @ $25^{\circ}\text{C}$ 1 <sup>st</sup> year (Max)        | $\pm 3$ ppm/year                                                     |

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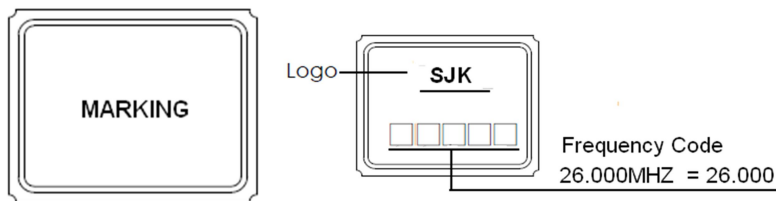


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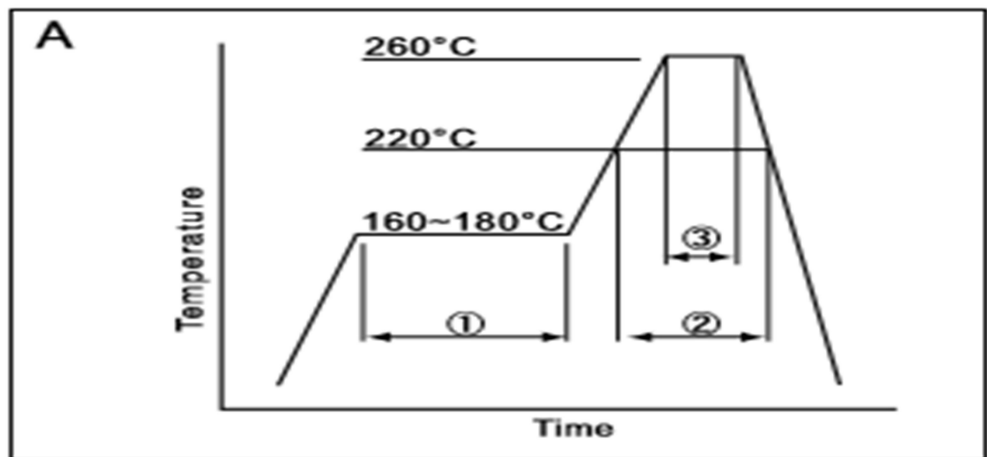
### 3. DIMENSION (Units: mm)



### 4. MARKING



### 5. REFLOW CONDITION



|   |              |           |            |
|---|--------------|-----------|------------|
| ① | Preheat      | 160~180°C | 120sec.    |
| ② | Primary heat | 220°C     | 60sec.     |
| ③ | Peak         | 260°C     | 10sec. max |

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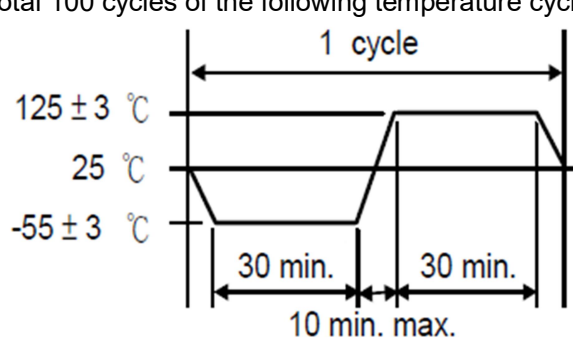
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## 6. RELIABILITY TEST SPECIFICATION

### 1. Mechanical Endurance

| No. | Test Item        | Test Methods                                                                                                                                             | REF.DOC      |
|-----|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 1.1 | Drop Test        | 150 cm height, 3 times on concrete floor.                                                                                                                | JIS C6701    |
| 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-202F |
| 1.3 | Vibration        | Frequency range 10 ~ 2000 Hz<br>Amplitude 1.52 mm/20G<br>Sweep time 20 minute<br>Perpendicular axes each test time 4 hours<br>(Total test time 12 hours) | MIL-STD-883E |
| 1.4 | Gross Leak       | Standard Sample For Automatic Gross Leak Detector, Test Pressure: 2Kg / cm <sup>2</sup>                                                                  | MIL-STD-883E |
| 1.5 | Fine Leak        | Helium Bombing 4.5 Kg/ cm <sup>2</sup> for 2 hr                                                                                                          | MIL-STD-883E |
| 1.6 | Solder ability   | Temperature 245 °C ± 5°C<br>Immersing depth 0.5 mm minimum<br>Immersion time 5 ± 1 seconds<br>Flux Rosin resin methyl alcohol solvent ( 1 : 4 )          | MIL-STD-883E |

### 2. Environmental Endurance

| No. | Test Item                    | Test Methods                                                                                                                                | REF.DOC      |
|-----|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| 2.1 | Resistance To Soldering Heat | Pre-heat temperature 125 °C<br>Pre-heat time 60 ~ 120 sec.<br>Test temperature 260 ± 5 °C<br>Test time 10 ± 1 sec.                          | MIL-STD-202F |
| 2.2 | High Temp. Storage           | + 125 °C ± 3 °C for 500 ± 12 hours                                                                                                          | MIL-STD-883E |
| 2.3 | Low Temp. Storage            | - 40 °C ± 3 °C for 500 ± 12 hours                                                                                                           | MIL-STD-883E |
| 2.4 | Thermal Shock                | Total 100 cycles of the following temperature cycle<br> | MIL-STD-883E |
| 2.5 | High Temp & Humidity         | 85°C ± 3°C, RH 85% , 500Hrs                                                                                                                 | JIS C5023    |
| 2.6 | Pressure Cooker Storage      | 121 ± 3°C , RH100% , 2 bar , 240Hrs                                                                                                         | JIS C6701    |

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