




**SPECIFICATION SHEET**

|                                |   |
|--------------------------------|---|
| <b>SPECIFICATION SHEET NO.</b> | Q0501-CJ24M00000S001  |
| <b>DATE</b>                    | May 01, 2023  |
| <b>REVISION</b>                | A0  |
| <b>DESCRIPTION</b>             | SMD Ceramic Resonator, 2520 Type, L2.5*W2.0*H1.0mm,<br>Without Built-in Capacitance, 2 pads, CRAW Series<br>24.000MHz, Frequency Accuracy +/-0.5%,<br>Operating Temp. Range -25°C ~+85°C,<br>Reflow Profile Condition 260 °C Max.<br>RoHS/RoHS III compliant, Tape/Reel |
| <b>CUSTOMER</b>                |   |
| <b>CUSTOMER PART NUMBER</b>    |   |
| <b>CROSS REF. PART NUMBER</b>  |   |
| <b>ORIGINAL PART NUMBER</b>    | TGS CRAW 24.0MX TLF   |
| <b>PART CODE</b>               | CJ24M00000S001  |

|                         |   |  |   |
|-------------------------|---|--|---|
| <b>VENDOR APPROVE</b>   |   |  |   |
| Issued/Checked/Approved |  |  |  |
| DATE: May 01, 2023      |   |  |   |

|                         |  |
|-------------------------|--|
| <b>CUSTOMER APPROVE</b> |  |
|                         |  |
| DATE:                   |  |

5/1/2023

**SMD CERAMIC RESONATOR CRAW SERIES**

**MAIN FEATURE**

- SMD Ceramic Resonator, L2.5\*W2.0\*H1.0mm, 2 pads
- Low cost & Without Built-in Capacitance
- Reflow Profile Condition 260 °C Max.
- Wide Frequency Range
- Cross more competitors part
- RoHS III compliant



**APPLICATION**

- Bluetooth, wireless communication set
- Communication Electronics

**PART CODE GUIDE**

**RFQ**  
Request For Quotation

|           |                 |          |            |
|-----------|-----------------|----------|------------|
| <b>CJ</b> | <b>24M00000</b> | <b>S</b> | <b>001</b> |
| 1         | 2               | 3        | 4          |

- 1) CJ: Part family Code for SMD Ceramic Resonator, L2.5\*W2.0\*H1.0mm, 2 pads, CRAW series
- 2) 24M00000: Frequency range code for 24.00000MHz
- 3) S: SMD type, Package Tape/Reel, 3000pcs/Reel
- 4) 001: Specification code for original part No.: **TGS CRAW 24.0MX TLF**

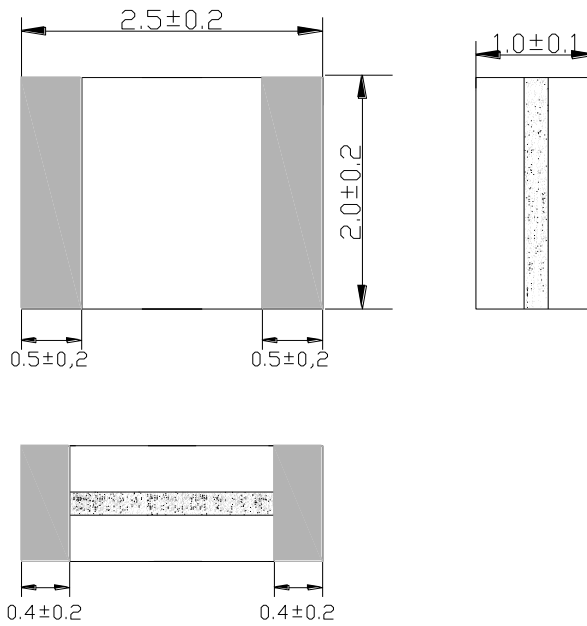
**SMD CERAMIC RESONATOR CRAW SERIES**

**DIMENSION (Unit: mm)**

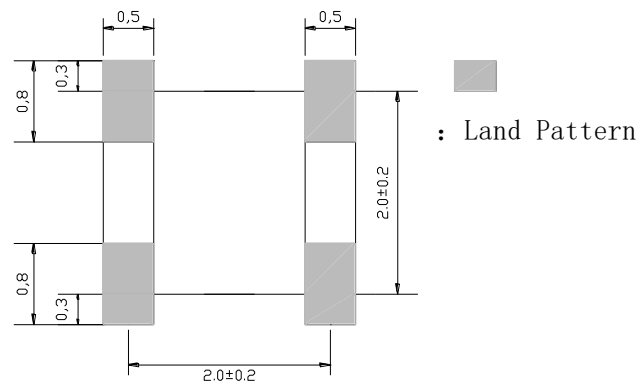
Image for reference



**CRAW**



**Recommend Pad Layout**



**SMD CERAMIC RESONATOR CRAW SERIES**
**ELECTRICAL PARAMETERS**

| Parameter  | Part No. Symbol         | Units   | Value              |         |        | Condition                                   |
|--|-------------------------|---|--------------------|---------|--------|---|
|  |                         |   | Min.               | Typical | Max.   |   |
| Original Manufacturer                            | TGS                     | TGS Crystals                                    |                    |         |        |   |
| Holder Type                                      | CRAW                    | SMD Ceramic Resonator, L2.5*W2.0*H1.0mm, 2 pads |                    |         |        |   |
| Frequency Range                                  | 24.0                    | MHz   | 24.00              |         |        |   |
| Withstanding Voltage                             |                         | V   | 50                 |         |        | @DC, 1 min                                  |
| Insulation Resistance                            |                         | MΩ  | 500                |         |        | @AV, 1 min.                                 |
| Operation Temperature                            |                         | °C  | -25                |         | +85    |   |
| Storage Temperature                              |                         | °C  | -55                |         | +85    |   |
| Rating Voltage                                   |                         | V   | 6.0                |         |        | DC  |
|  |                         |   | 15                 |         |        | p-p   |
| Frequency Accuracy                               |                         | %   | ±0.5               |         |        |   |
| Resonant Impedance                               |                         | Ω   |                    |         | 60     |   |
| Temperature Coefficient of Oscillation Frequency |                         | %   |                    |         | +/-0.3 | Oscillation Frequency drift, -25°C ~ +85°C) |
| Oscillation Frequency Aging Rate (10 years)      |                         | %   |                    |         | +/-0.3 | From initial value                          |
| IC application                                   |                         |   | 1/6 TC74HCU04      |         |        |   |
| Design Mode                                      | MX                      |   |                    |         |        |   |
| Built-in Capacitance                             |                         | pF  | N/A                |         |        |   |
| Other  | Package                 | T   | Tape/Reel          |         |        |   |
|  | RoHS Status             | LF  | RoHS III compliant |         |        |   |
|  | Add Value               |   | N/A                |         |        |   |
|  | Internal Control Code * |   | N/A                |         |        |   |

Note: 1) Original Part Number: **TGS CRAW 24.0MX TLF**

2) \* Internal Control Code- 2 letter or digits; Blank: N/A

**SMD CERAMIC RESONATOR CRAW SERIES**
**RELIABILITY**

| Test Items                       | Test Method And Conditions   | Performance Requirements                               |
|----------------------------------|--|--|
| <b>Humidity</b>                  | Keep the resonator at 40°C±2°C and 90%-95% RH for 96h. Then Release the resonator into the room Condition for 1h prior to the Measurement.   | It shall fulfill the specifications in Table 1.        |
| <b>High Temperature Exposure</b> | Subject the resonator to -85°C±2°C for 96h, then release the resonator into the room conditions for 1h prior to the measurement.   | It shall fulfill the specifications in Table 1.        |
| <b>Low Temperature Exposure</b>  | Subject the resonator to -55°C±2°C for 96h, then release the resonator into the room conditions for 1h prior to the measurement.   | It shall fulfill the specifications in Table 1.        |
| <b>Temperature Cycling</b>       | After temperature cycling of blow table was performed 5 times, resonator shall be measured after being placed in natural conditions for 1h. Time: 30 min.@ -25 +/-3°C ; Time: 30 min. @85 +/-3°C | It shall fulfill the specifications in Table 1.        |
| <b>Vibration</b>                 | Subject the resonator to vibration for 2h each in x, y and z axis With the amplitude of 1.5mm, the frequency shall be varied uniformly between the limits of 10 Hz—55Hz.                         | It shall fulfill the specifications in Table 1.        |
| <b>Mechanical Shock</b>          | Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times.  | It shall fulfill the specifications in Table 1.        |
| <b>Soldering Test</b>            | Passed through the re-flow oven under the following condition and left at room temperature for 1h before measurement   | It shall fulfill the specifications in Table 1.        |
| <b>Solder Ability</b>            | Dipped in 245°C±5°C solder bath for 3s±0.5 s with rosin flux (25wt% ethanol solution.)   | The terminals shall be at least 95% covered by solder. |
| <b>Board Bending</b>             | Mount a glass-epoxy board (Width=40mm,thickness=1.6mm),then bend it to 1mm displacement and keep it for 5s. (See the following figure 1)   | Mechanical damage such as breaks shall not occur.      |

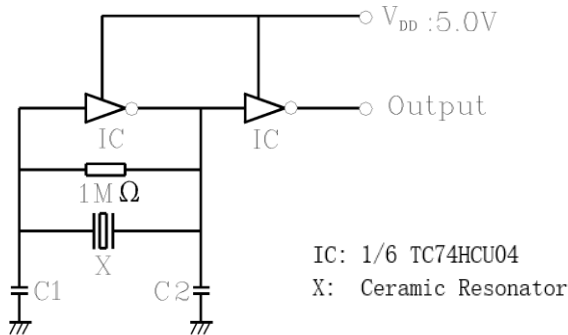
**Table 1**

| Item  | Specification after test |
|---|--------------------------|
| Oscillation Frequency Change $\Delta F_{osc}/F_{osc}$ (%) max | ±0.3                     |
| Resonant Impedance ( $\Omega$ ) max                           | 60                       |

The limits in the above table are referenced to the initial measurements.

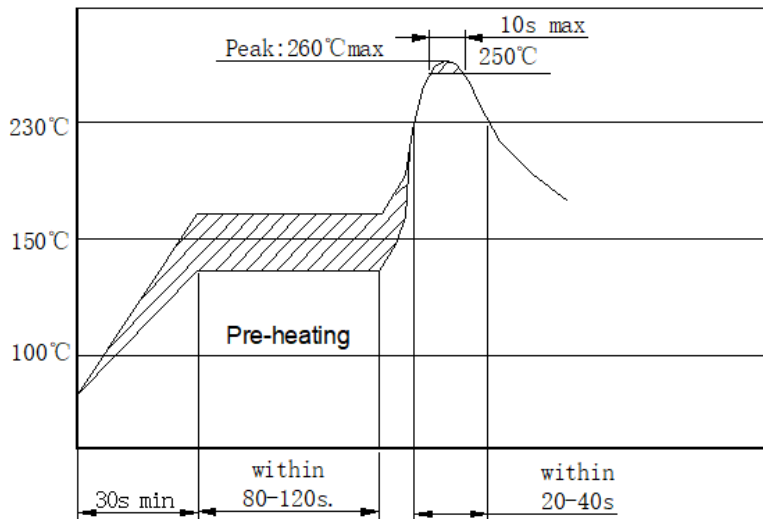
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**TEST CIRCUIT (For Reference Only)**

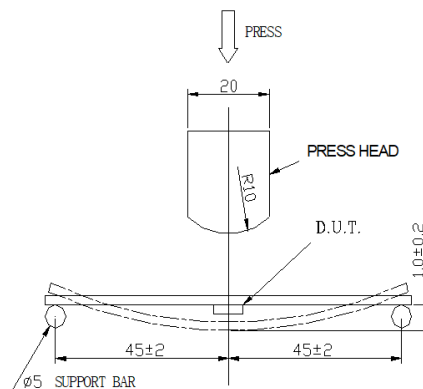


**Note:**  
Parts shall be tested under the condition  
(Temp.: 20±15°C, Humidity 65±20% R.H.) unless the  
standard condition (Temp.: 25±3 °C, Humidity :65±10%  
R.H.) is regulated to measure.

**SUGGESTED REFLOW PROFILE (For Reference Only)**



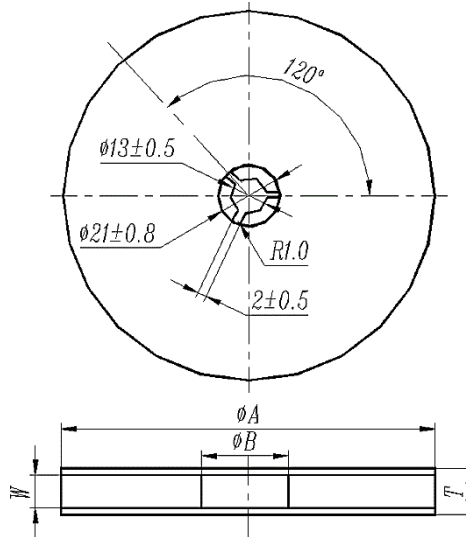
**BOARD BENDING TEST- FIGURE 1**



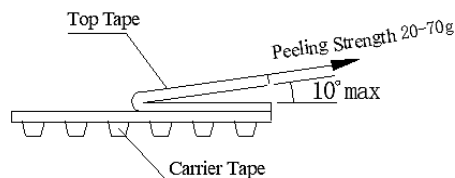
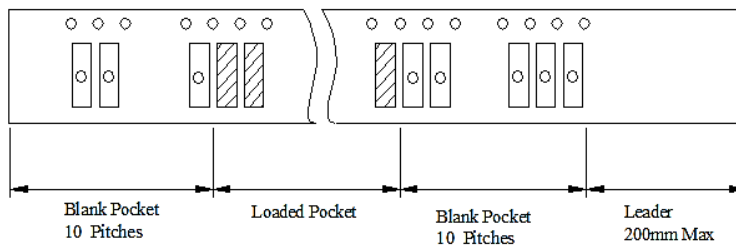
**SMD CERAMIC RESONATOR CRAW SERIES**

**TAPE/REEL (Unit: mm)**

All Devices are packed in accordance with EIA standard RS-481-2 and specifications, 3000pcs/Reel



| Symbol   | Dimension |
|----------|-----------|
| $\phi A$ | 180±3.0   |
| $\phi B$ | 60.0 Min. |
| W        | 8.4 Min.  |
| T        | 12.4 Max. |



## SMD CERAMIC RESONATOR CRAW SERIES

### OTHERS

#### Caution

- Don't apply excess mechanical stress to the component and terminals at soldering. Do not use this product with bend.
- Do not clean or wash the component for it is not hermetically sealed.
- Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
- Don't be close to fire.
- This specification mentions the quality of the component as a single unit. Please insure the component is thoroughly evaluated in your application circuit
- Expire date (Shelf life) of the products is 12 months after delivery under the conditions of a sealed and an unopened package. Please use the products within 12 months after delivery. If you store the products for a long time (more than 12 months), use carefully because the products may be degraded in the solderability or rusty. Please confirm solderability and characteristics for the products regularly.
- Please contact us before using the product as automobile electronic component.

#### Notice

- Please return one of these specifications after your signature of acceptance.
- When something gets doubtful with this specification, we shall jointly work to get an agreement

### DISCLAIMER

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5/1/2023

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