




SPECIFICATION SHEET

| | |
|--------------------------------|---|
| SPECIFICATION SHEET NO. | Q0620-CR4M096000S039 |
| DATE | June 20, 2023 |
| REVISION | A0 |
| DESCRIPTION | MHz SMD Ceramic Resonator, 4520 Type, L4.5*W2.0*H1.2mm, Built-in Capacitance, 3 pads, CRTR Series 4.0960000MHz, Frequency Accuracy $\pm 0.5\%$, Operating Temp. Range $-25^{\circ}\text{C} \sim +85^{\circ}\text{C}$, Reflow Profile Condition 260°C Max. RoHS/RoHS III compliant, Tape/Reel, 3000pcs/Reel |
| CUSTOMER | |
| CUSTOMER PART NUMBER | |
| CROSS REF. PART NUMBER | |
| ORIGINAL PART NUMBER | TGS CRTR 4.096MG-39 TLF |
| PART CODE | CR4M096000S039 |

| | | | |
|-------------------------|---|--|---|
| VENDOR APPROVE | | | |
| Issued/Checked/Approved |  |  |  |
| DATE: June 20, 2023 | | | |

| | |
|-------------------------|--|
| CUSTOMER APPROVE | |
| | |
| DATE: | |

6/20/2023

SMD CERAMIC RESONATOR CRTR SERIES

MAIN FEATURE

- SMD Ceramic Resonator, L4.5*W2.0*H1.2mm, 3 pads
- Low cost & 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](#)

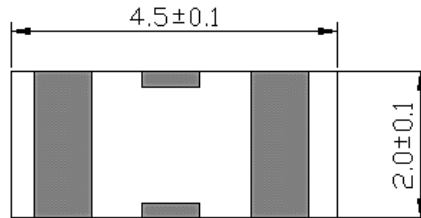
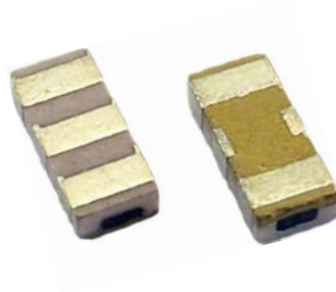
| | | | |
|-----------|-----------------|----------|------------|
| CR | 4M096000 | S | 039 |
| 1 | 2 | 3 | 4 |

- 1) CR: Part Code for SMD Ceramic Resonator, Built-in Capacitance, 3 pads, L4.5*W2.0*H1.2mm, CRTR SERIES
- 2) 4M096000: Frequency range code for 4.0960000MHz
- 3) S: SMD type, Package Tape/Reel
- 4) 039: Specification code for original part No.: TGS CRTR 4.096MG-39 TLF

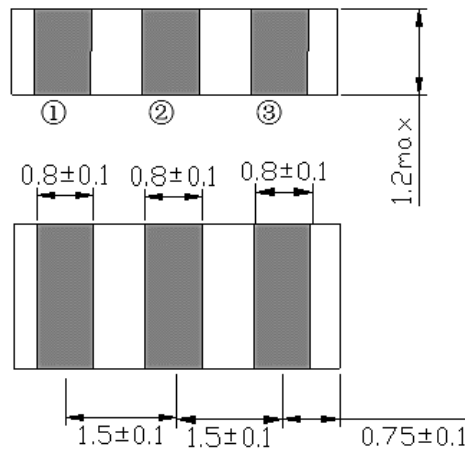
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DIMENSION (Unit: mm)

Image for reference

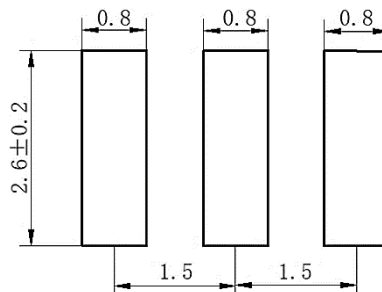


CRTR



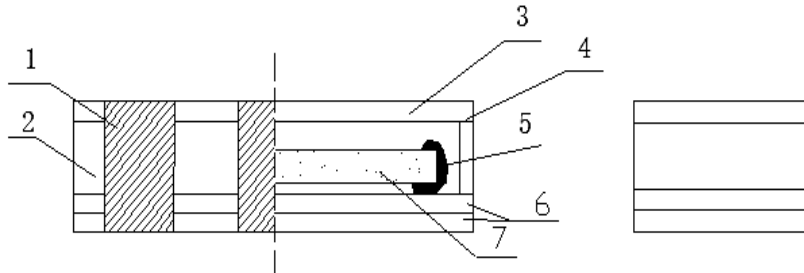
- ① Input
- ② Ground
- ③ Output

Recommend Pad Layout



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STRUCTURE



| NO. | Components | Materials |
|-----|---------------------|--|
| 1 | Outer Electrodes | <p>Top and Bottom Electrodes Ag + Ni (under plating) + Sn (over plating)</p> <p>Side Electrodes Ni + Cu + Ag (under plating) + Sn (over plating)</p> |
| 2 | Ceramic Box | Insulation Box |
| 3 | Cover | Dielectric Material |
| 4 | Glue | Epoxy Resin |
| 5 | Conductive Adhesive | Ag+Epoxy Resin |
| 6 | Base | Dielectric Material |
| 7 | Ceramic Element | Piezoelectric Ceramics (PZT) |

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ELECTRICAL PARAMETERS

| Parameter | Part No. Symbol | Units | Value | | | Condition |
|--|-----------------------|---|--------------------------------|---------|------|---|
| | | | Min. | Typical | Max. | |
| Original Manufacturer | TGS | TGS Crystals | | | | |
| Holder Type | CRTR | SMD Ceramic Resonator, L4.5*W2.0*H1.2mm, 3 pads | | | | |
| Frequency Range | 4.096 | MHz | 4.0960000 | | | |
| Withstanding Voltage | MG | 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 | | | 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 | | 1/6TC4069UBP×2 | | | | |
| Design Mode | | | | | | |
| Built-in Capacitance | -39 | pF | 39pF (±20%) | | | |
| Other | Package | T | Tape/Reel | | | |
| | RoHS Status | LF | RoHS III compliant | | | |
| | Add Value | | N/A | | | |
| | Internal Control Code | | 2 letter or digits; Blank: N/A | | | |

Note: 1) Original Part Number: TGS CRTR 4.096MG-39 TLF 2) Components shall be left in a chamber of +85±2°C for 1000 hours, then measured after leaving in natural condition for 1 hour.

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RELIABILITY

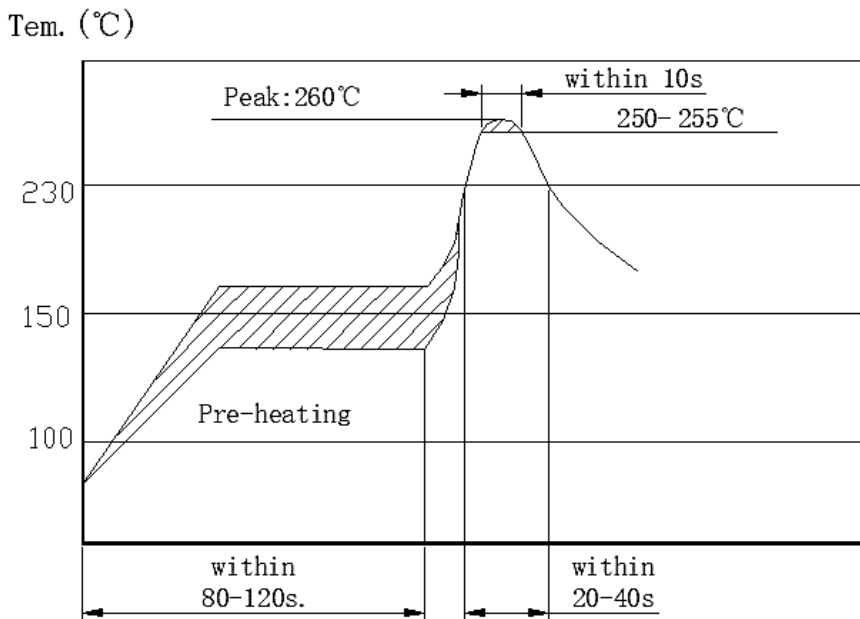
| Test Items | Test Method And Conditions | Performance Requirements |
|----------------------------------|--|--|
| Humidity | Keep the resonator at 40°C±2°C and 90%-95% RH for 96h. Then Release the resonator into the room Condition for 1h prior to the Measurement. | It shall fulfill the specifications in Table 1. |
| High Temperature Exposure | 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. |
| Low Temperature Exposure | 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. |
| Temperature Cycling | Subject the resonator to -25°C±3°C for 30±3 min. followed by a high temperature of 85°C ±3°C for 30±3 min. Cycling shall be repeated 5 times with a transfer time of 15s. At the room temperature for 1h prior to the measurement. | It shall fulfill the specifications in Table 1. |
| Vibration | 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. |
| Mechanical Shock | Drop the resonator randomly onto a wooden floor from the height of 100cm 3 times. | It shall fulfill the specifications in Table 1. |
| Soldering Test | 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. |
| Solder Ability | 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. |
| Board Bending | 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. |

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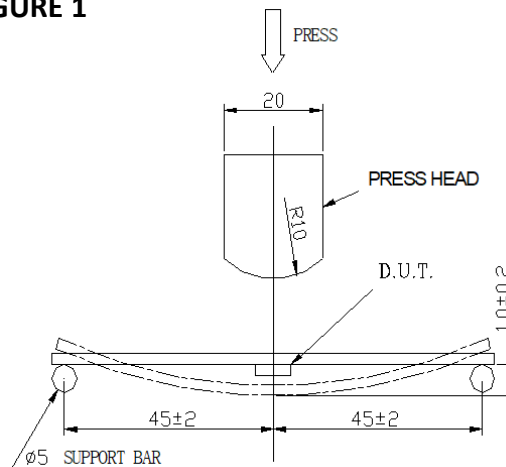
Table 1

| Item | Specification after test |
|---|--------------------------|
| Oscillation Frequency Change $\Delta F_{osc}/F_{osc}$ (%) max | ± 0.3 |
| Resonant Impedance (Ω) max | 60 |
| The limits in the above table are referenced to the initial measurements. | |

SUGGESTED REFLOW PROFILE (For Reference Only)

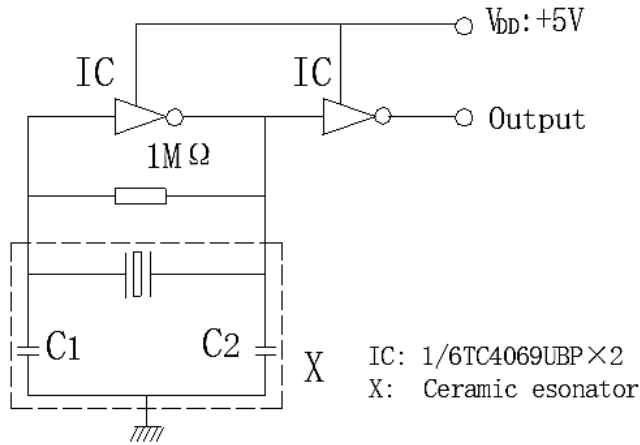


BOARD BENDING TEST- FIGURE 1



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TEST CIRCUIT (For Reference Only)



Note:

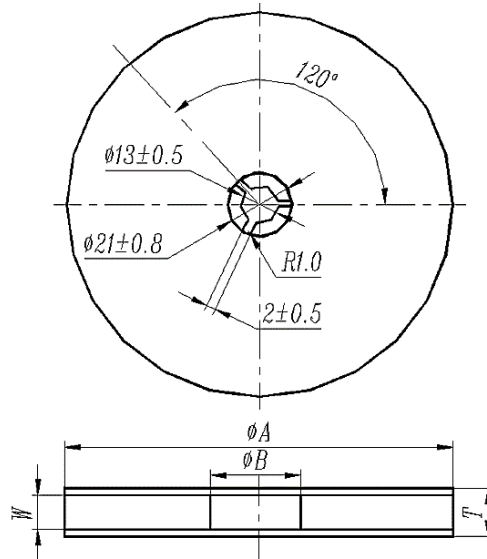
Parts shall be tested under the condition (Temp.: 20±15°C, Humidity 65±20% R.H.) unless the standard condition (Temp.: 25±3 °C, Humidity :65±10% R.H.) is regulated to measure.

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TAPE/REEL (Unit: mm)

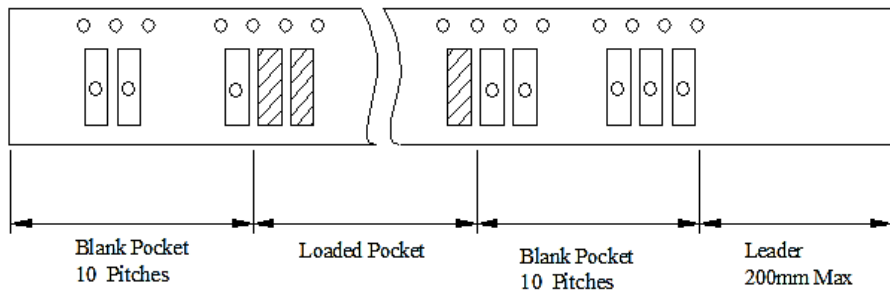
All Devices are packed in accordance with EIA standard RS-481-2 and specifications, 3000pcs/Reel, Carrier tape size-12,

Reel

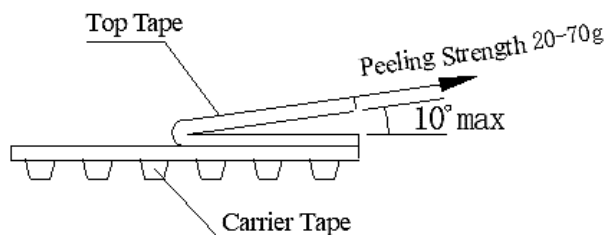


| Symbol | Dimension |
|----------|---------------|
| ϕA | 180 ± 3.0 |
| ϕB | 60.0 Min. |
| W | 12.4 Min. |
| T | 19.4 Max. |

Packing Method Sketch Map



Test Condition Of Peeling Strength



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NOTES

- 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 solder-ability or rusty. Please confirm solder-ability and characteristics for the products regularly.
- Exposure components under soldering condition that is exceeding our recommendation will increase the failure dangerous.
- Please contact us before using the product as automobile electronic component.
- Please return one of these specifications after your signature of acceptance.
- When something gets doubtful with this specifications, we shall jointly work to get an agreement.
- For questions on technology, prices and delivery, please contact our sales offices or e-mail:
sales@NextGenComponent.com .

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