

**SPECIFICATION SHEET**

<b>SPECIFICATION SHEET NO.</b>	Q0618-CL16M00000S022
<b>DATE</b>	June 18, 2023
<b>REVISION</b>	A0
<b>DESCRIPTION</b>	SMD Ceramic Resonator, 4741 Type, L4.7*W4.1*H1.8mm, Built-in Capacitance, 3 pads, CRTS Series 16.000MHz, Frequency Accuracy $\pm 0.5\%$ , Operating Temp. Range -25°C ~+85°C, Reflow Profile Condition 260 °C Max. RoHS/RoHS III compliant, Tape/Reel, 1000pcs/Reel
<b>CUSTOMER</b>	
<b>CUSTOMER PART NUMBER</b>	
<b>CROSS REF. PART NUMBER</b>	
<b>ORIGINAL PART NUMBER</b>	TGS CRTS 16.0MX-22 TLF
<b>PART CODE</b>	CL16M00000S022

**VENDOR APPROVE**

Issued/Checked/Approved



DATE: June 18, 2023

**CUSTOMER APPROVE**

DATE:

6/18/2023

**SMD CERAMIC RESONATOR CRTS SERIES**

**MAIN FEATURE**

- SMD Ceramic Resonator, L4.7\*W4.1\*H1.8mm, 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

CL	16M00000	S	022
1	2	3	4

- 1) CL: Part Code for SMD Ceramic Resonator, Built-in Capacitance, 3 pads, L4.7\*W4.1\*H1.8mm, CRTS series
- 2) 16M00000: Frequency range code for 16.00000MHz
- 3) S: SMD type, Package Tape/Reel, 1000pcs/Reel
- 4) 022: Specification code for original part No.: TGS CRTS 16.0MX-22 TLF

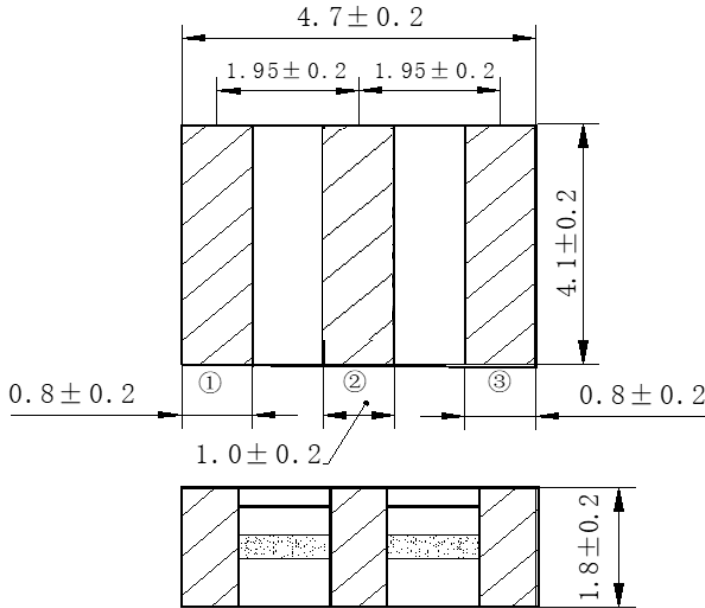
**SMD CERAMIC RESONATOR CRTS SERIES**

**DIMENSION (Unit: mm)**

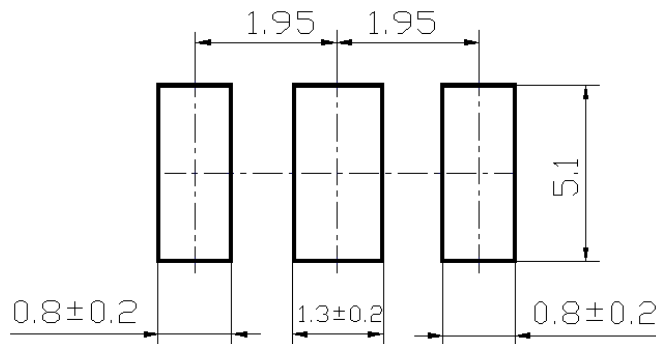
Image for reference



**CRTS**



**Recommend Pad Layout**



**SMD CERAMIC RESONATOR CRTS SERIES**
**ELECTRICAL PARAMETERS**

Parameter	Part No. Symbol	Units	Value			Condition
			Min.	Typical	Max.	
<b>Original Manufacturer</b>	TGS	TGS Crystals				
<b>Holder Type</b>	CRTS	SMD Ceramic Resonator, L4.7*W4.1*H1.8mm, 3 pads				
<b>Frequency Range</b>	16.0	MHz	16.0			
<b>Withstanding Voltage</b>	MX	V	50			@DC, 1 min
<b>Insulation Resistance</b>		MΩ	500			@AV, 1 min.
<b>Operation Temperature</b>		°C	-25		+85	
<b>Storage Temperature</b>		°C	-55		+85	
<b>Rating Voltage</b>		V	6			DC
			15			p-p
<b>Frequency Accuracy</b>		%	±0.5			
<b>Resonant Impedance</b>		Ω		40	60	
<b>Temperature Coefficient of Oscillation Frequency</b>		%			±0.3	Oscillation Frequency drift, -25°C ~ +85°C)
<b>Oscillation Frequency Aging Rate (10 years)</b>		%			±0.3	From initial value
<b>IC application</b>		1/6TC74HCU04P×2				
<b>Design Mode</b>						
<b>Built-in Capacitance</b>	-22	pF	22pF (±20%)			
<b>Other</b>	<b>Package</b>	T	Tape/Reel			
	<b>RoHS Status</b>	LF	RoHS III compliant			
	<b>Add Value</b>		N/A			
	<b>Internal Control Code</b>		2 letter or digits; Blank: N/A			

Note: Original Part Number: TGS CRTS 16.0MX-22 TLF

**SMD CERAMIC RESONATOR CRTS SERIES**

**RELIABILITY**

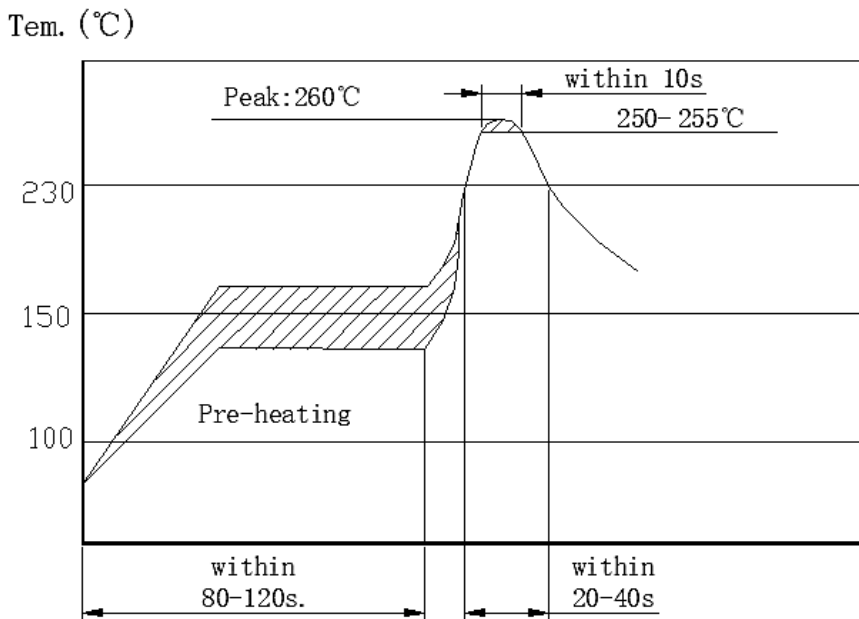
Test Items	Test Method And Conditions	Performance Requirements
<b>Humidity</b>	Keep the resonator at 40°C±2°C and 90%-95% RH for 96h. Then Release the resonator into the room Condition for 1h prior to the Measurement.	It shall fulfill the specifications in Table 1.
<b>High Temperature Exposure</b>	Subject 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>	Subject the resonator to -25°C for 30 min. followed by a high temperature of 85°C for 30 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.
<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.

**SMD CERAMIC RESONATOR CRTS SERIES**

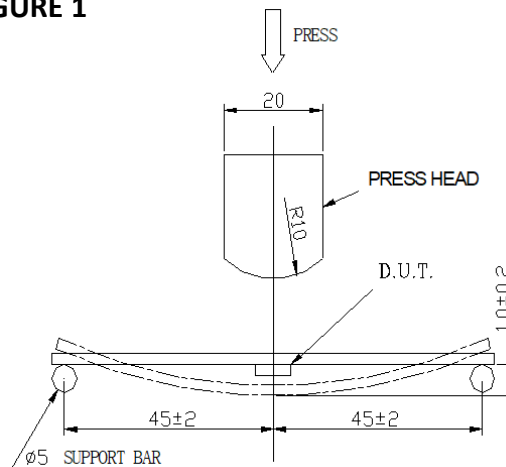
**Table 1**

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

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

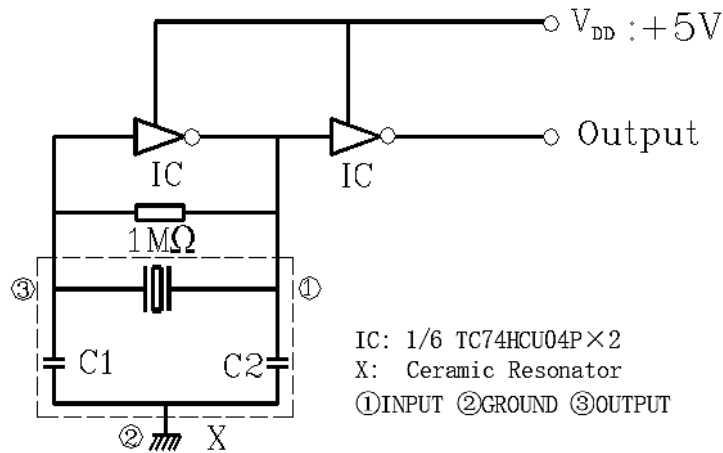


**BOARD BENDING TEST- FIGURE 1**



**SMD CERAMIC RESONATOR CRTS SERIES**

**TEST CIRCUIT (For Reference Only)**



**Note:**

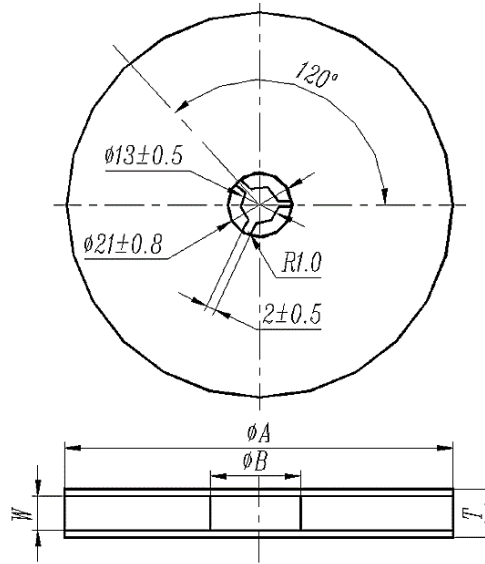
Parts shall be tested under the condition ( Temp.:  $20 \pm 15^{\circ}C$ , Humidity  $65 \pm 20\%$  R.H.) unless the standard condition (Temp.:  $25 \pm 3^{\circ}C$ , Humidity :  $65 \pm 10\%$  R.H.) is regulated to measure.

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

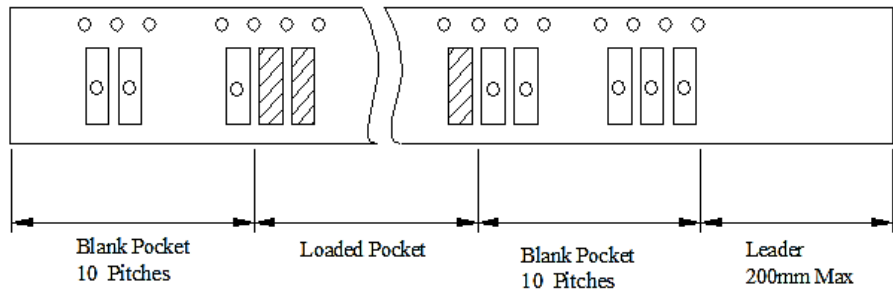
All Devices are packed in accordance with EIA standard RS-481-2 and specifications., 1000pcs/Reel, Carrier tape size-12

Reel

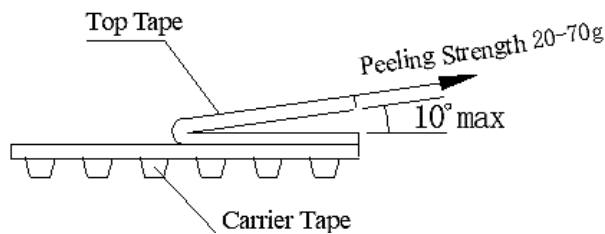


Symbol	Dimension
φA	180±3.0
φB	60.0 Min.
W	12.4 Min.
T	19.4 Max.

Packing Method Sketch Map



Test Condition Of Peeling Strength





## SMD CERAMIC RESONATOR CRTS SERIES

### 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](mailto:sales@NextGenComponent.com) .

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