




**SPECIFICATION SHEET**

<b>SPECIFICATION SHEET NO.</b>	Q0501-CN33M00000S005
<b>DATE</b>	May 01, 2023
<b>REVISION</b>	A0
<b>DESCRIPTION</b>	SMD Ceramic Resonator, 2520 Type, L2.5*W2.0*H1.1mm, Built-in Capacitance, 3 pads, CRTW Series 33.00000MHz, Frequency Accuracy +/-0.5%, Operating Temp. Range -25°C ~+85°C, Reflow Profile Condition 260 °C Max. 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 CRTW 33.0MX-5 TLF
<b>PART CODE</b>	CN33M00000S005

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

<b>CUSTOMER APPROVE</b>	
DATE:	

5/1/2023

**SMD CERAMIC RESONATOR CRTW SERIES**

**MAIN FEATURE**

- SMD Ceramic Resonator, L2.5\*W2.0\*H1.1mm, 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](#)

<b>CN</b>	<b>33M00000</b>	<b>S</b>	<b>005</b>
1	2	3	4

- 1) CN: Part Code for SMD Ceramic Resonator, Built-in Capacitance, L2.5\*W2.0\*H1.1mm, 3 pads, CRTW series
- 2) 33M00000: Frequency range code for 33.0000MHz
- 3) S: SMD type, Package Tape/Reel, 3000pcs/Reel
- 4) 005: Specification code for original part No.: **TGS CRTW 33.0MX-5 TLF**

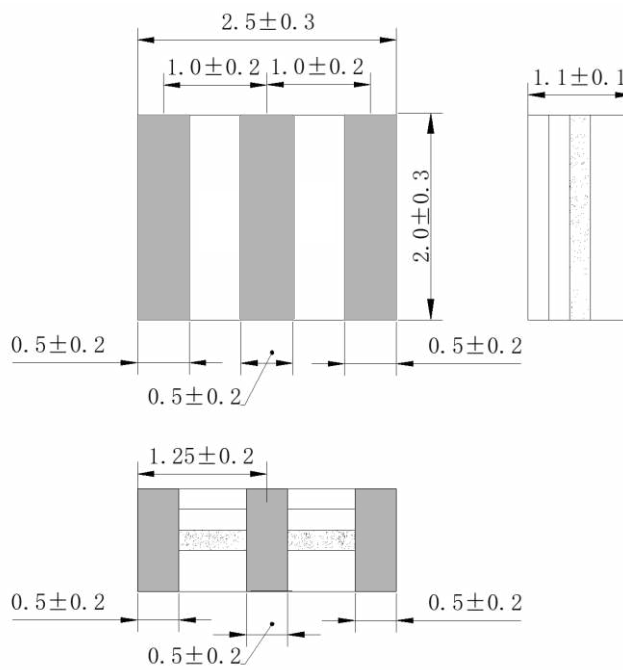
**SMD CERAMIC RESONATOR CRTW SERIES**

**DIMENSION (Unit: mm)**

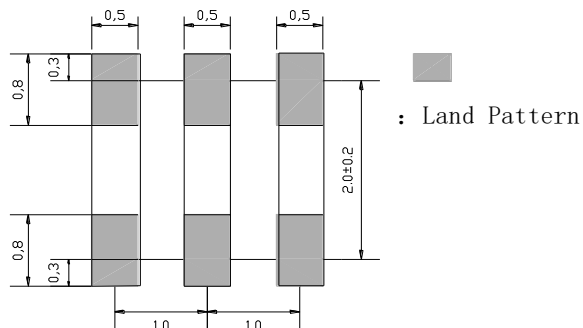
Image for reference



**CRTW**



**Recommend Pad Layout**



**SMD CERAMIC RESONATOR CRTW SERIES**
**ELECTRICAL PARAMETERS**

Parameter	Part No. Symbol	Units	Value			Condition
			Min.	Typical	Max.	
<b>Original Manufacturer</b>	TGS	TGS Crystals				
<b>Holder Type</b>	CRTW	SMD Ceramic Resonator, L2.5*W2.0*H1.1mm, 3 pads				
<b>Frequency Range</b>	33.0	MHz	33.000			
<b>Withstanding Voltage</b>	MX	V	50			@DC, 1 min
<b>Insulation Resistance</b>		MΩ	500			@10V, 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			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>		1/6 TC74HCU04x2				
<b>Design Mode</b>						
<b>Built-in Capacitance</b>	-5	pF	5pF (+/-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> *		N/A			

Note: 1) Original Part Number: **TGS CRTW 33.0MX-5 TLF**

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

**SMD CERAMIC RESONATOR CRTW SERIES**
**RELIABILITY**

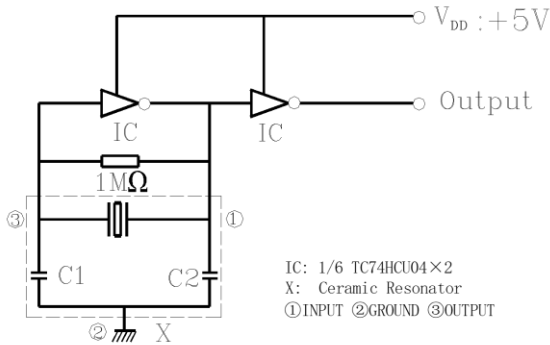
Test Items	Test Method And Conditions	Performance Requirements
<b>Humidity</b>	Keep the resonator at 40°C±2°C and 90%-95% RH for 96h. Then Release the resonator into the room Condition for 1h prior to the Measurement.	It shall fulfill the specifications in Table 1.
<b>High Temperature Exposure</b>	Subject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

**SMD CERAMIC RESONATOR CRTW SERIES**

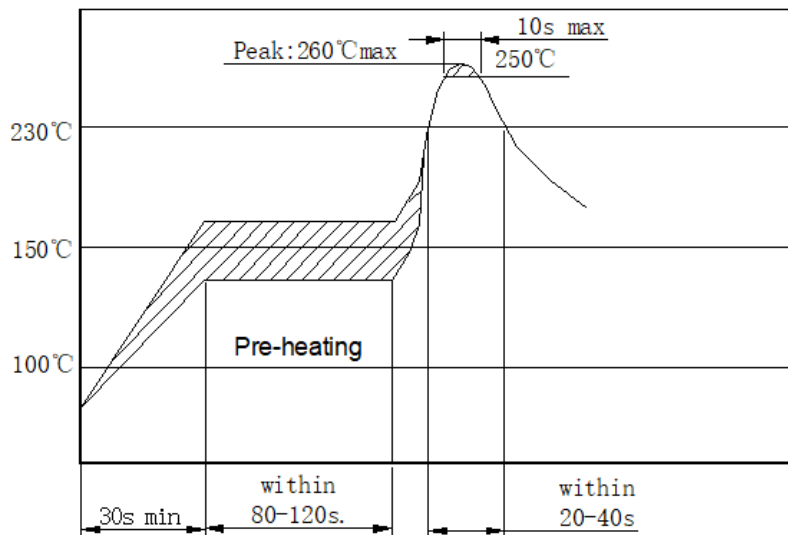
**TEST CIRCUIT (For Reference Only)**



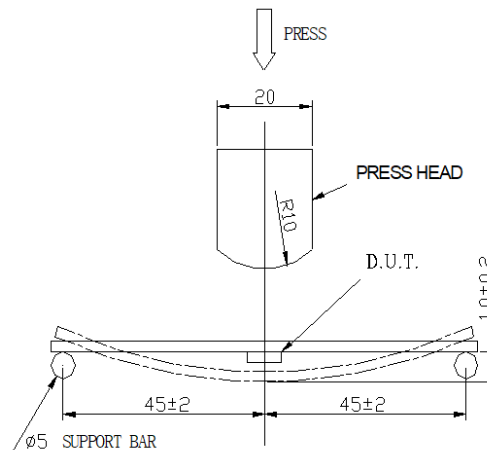
**Note:**

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.

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



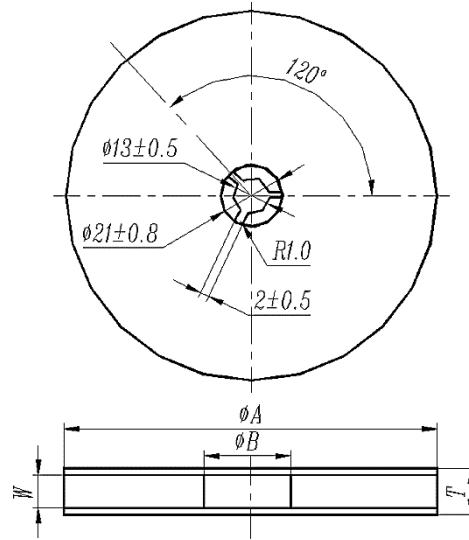
**BOARD BENDING TEST- FIGURE 1**



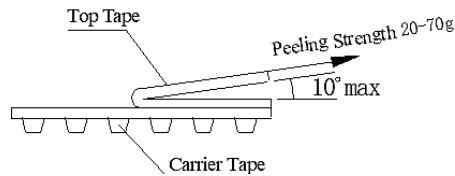
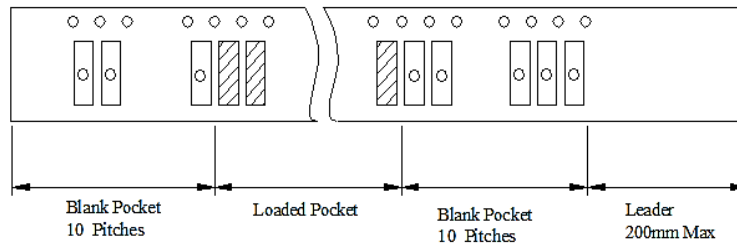
**SMD CERAMIC RESONATOR CRTW SERIES**

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

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



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



## SMD CERAMIC RESONATOR CRTW 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

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5/1/2023