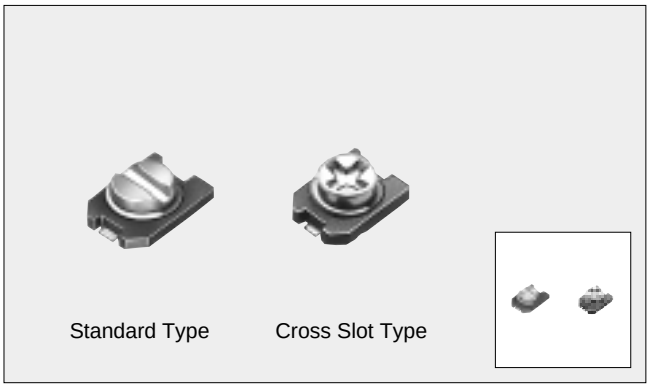
CHIP TRIMMER CAPACITOR

Chip Ceramic Trimmer Capacitor **TZC03** Series

Chip Trimmer Capacitor with Minus & Cross Slot.

■FEATURES

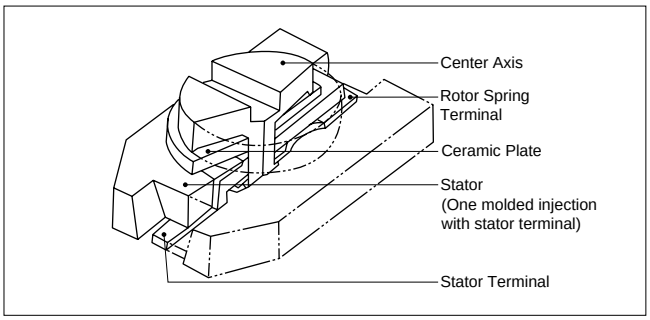
1. Small size:3.2(W)×4.5(L)×1.6(H)mm.
   (Cross slot type:1.7(H)mm)
2. Color coded stator permits easy identification of capacitance and reduces mounting errors.
3. Can be adjusted with conventional adjustment tools (Standard type) having a thickness of 0.5mm.
4. Available for cross slot type to provide better adjustability.
5. Providing mechanism to prevent air leak offers better mountability with automatic mounter.(Cross slot type)
6. Designed for automatic placement in surface mount applications.
7. Heat resistant resin withstands reflow soldering temperatures.



■APPLICATIONS

- Compact radios, Headphones stereos
- Pagers
- Camcorders
- Mobile telephones
- Hybrid ICs
- Cordless telephones
- Portable radio equipment

■CONSTRUCTION



■PART NUMBERING

(Please specify the part number when ordering.)

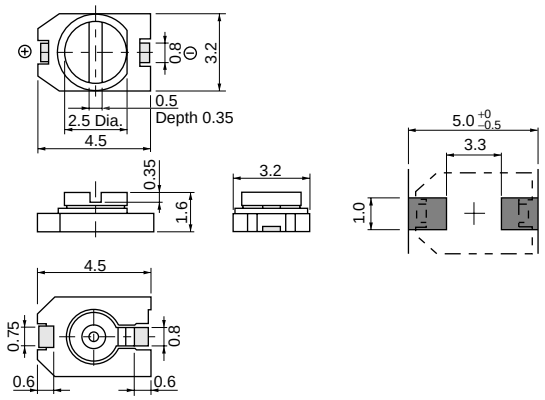
(Ex.) TZC03 | Z | 060 | A | 110 | T00

❶ ❷ ❸ ❹ ❺ ❻

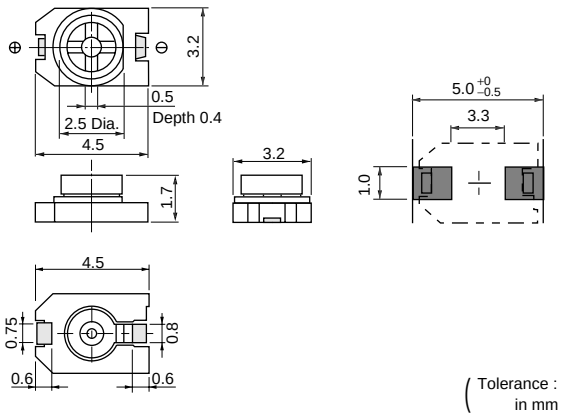
❶Model Number
❷Temperature Coefficient Characteristics
❸Capacitance Value
❹Terminal Style
❺Other Specifications 110:Standard Type (Minus Slot)
310:Cross Slot Type
❻Packaging Code T00:Taping 1,000pcs./reel (180mm dia.)
T01:Taping 4,000pcs./reel (330mm dia.)
No Code:Bulk Package 500pcs./bag

■DIMENSIONS/STANDARD LAND PATTERNS

Standard Type (Minus Slot)



Cross Slot Type



(Tolerance : ±0.1 in mm)

■RATINGS

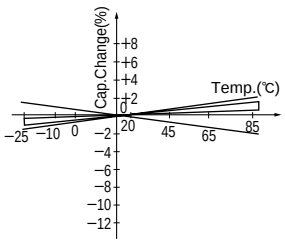
Part Number	Capacitance (pF)		Temperature Coefficient (ppm/℃)	Q <1MHz, Cmax.>	Stator Color
	Min. (max.)	Max. (±5%, ±0%)			
TZC03Z030A□□□	1.4	3.0	NP0 ±300 (0±300)	300 min.	Brown
TZC03Z060A□□□	2.0	6.0	NP0 ±300 (0±300)	500 min.	Blue
TZC03R100A□□□	3.0	10.0	N750 ±300 (−750±500)	500 min.	White
TZC03P200A□□□	5.0	20.0	N1200±500 (−1200±500)	300 min.	Red
TZC03P300A□□□	6.5	30.0	N1200±500 (−1200±500)	300 min.	Green

•Rated Voltage:100Vdc •Withstanding Voltage:220Vdc •Insulation Resistance:10^4MΩmin.
•Driving Torque:1.5 to 10.0 mN·m (Ref.15 to 100g·cm) •Working Temperature Range:−25 to +85℃

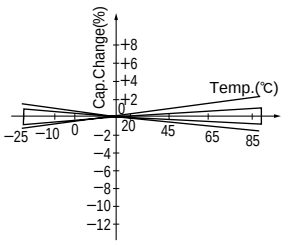
■CHARACTERISTICS

● Temperature Coefficient Characteristics

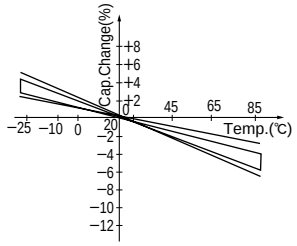
TZC03Z030(NP0±300ppm/℃)



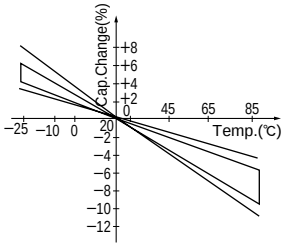
TZC03Z060(NP0±300ppm/℃)



TZC03R100(N750±300ppm/℃)

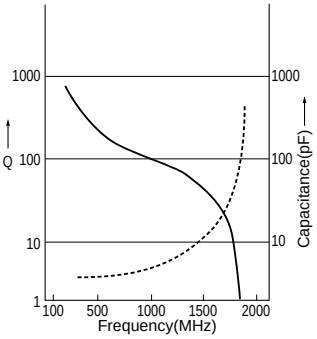


TZC03P200(N1200±500ppm/℃)

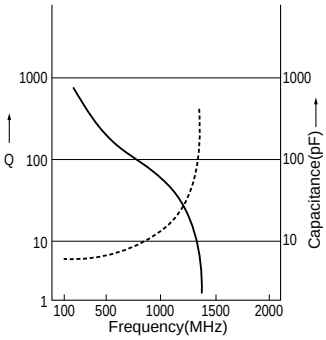


● Q and Capacitance vs. Frequency Characteristics
Characteristics are measured at the maximum rated capacitance value position.

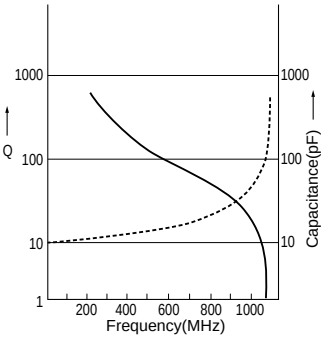
TZC03Z030



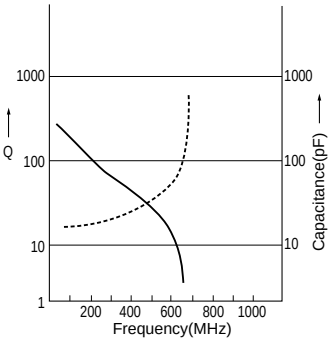
TZC03Z060



TZC03R100



TZC03P200



Q : Solid line Capacitance : Dotted line

■TAPING SPECIFICATIONS / HANDLING PRECAUTIONS / SOLDERING CONDITIONS

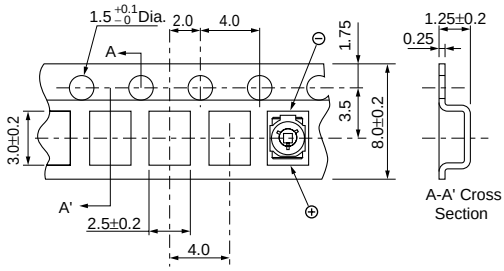
● See pages 19 to 21.

Taping Dimensions and Minimum Order Quantity of Ceramic Trimmer Capacitor

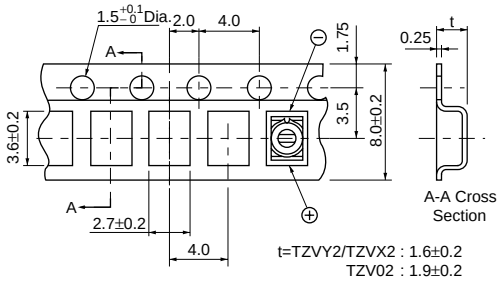
1. Plastic Tape and Reel Dimensions (TZS02 / TZVY2 / TZVX2 / TZV02 / TZC03 / TZBX4 Series)

(1) Plastic Tape

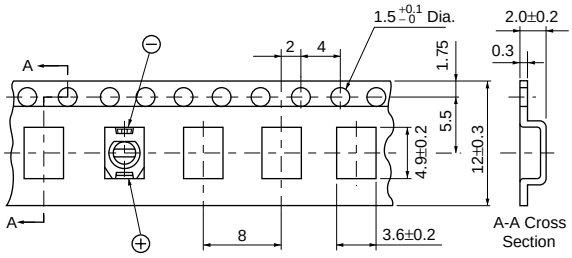
•TZS02 Series



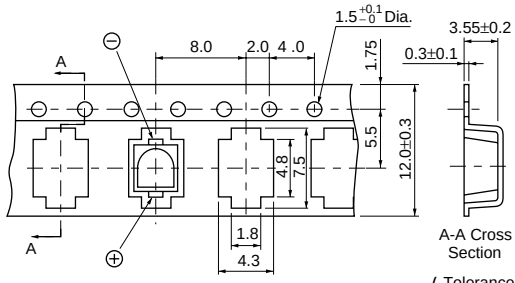
•TZVY2/TZVX2/TZV02 Series



•TZC03 Series



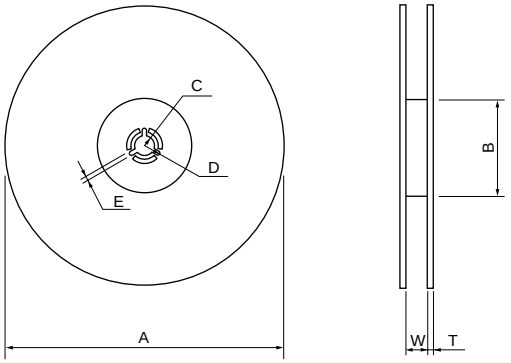
•TZBX4 Series



Direction of Feed

(Tolerance : ±0.1 in mm)

(2) Reel



	TZS02/TZVY2/TZVX2/TZV02 Series		TZC03/TZBX4 Series	
A	178±2dia.	330±2dia.	178±2dia.	330±2dia.
B	50dia.min.	50dia.min.	50dia.min.	50dia.min.
C	13±0.5dia.	13±0.5dia.	13±0.5dia.	13±0.5dia.
D	21±0.8dia.	21±0.8dia.	21±0.8dia.	21±0.8dia.
E	2±0.5	2±0.5	2±0.5	2±0.5
T	2±0.5	2±0.5	2±0.5	2±0.5
W	10±1.5	10±1.5	14±1.5	14±1.5

(in mm)

(3) Minimum Order Quantity (order in sets only)

•TZS02 Series
- 3,000pcs. / reel (180mm dia.)
- 10,000pcs. / reel (330mm dia.)
- 500pcs. / bag

•TZVY2/TZVX2 Series
- 2,000pcs. / reel (180mm dia.)
- 10,000pcs. / reel (330mm dia.)
- 500pcs. / bag

•TZV02 Series
- 2,000pcs. / reel (180mm dia.)
- 8,000pcs. / reel (330mm dia.)
- 500pcs. / bag

•TZC03 Series
- 1,000pcs. / reel (180mm dia.)
- 4,000pcs. / reel (330mm dia.)
- 500pcs. / bag

•TZBX4 Series
- 500pcs. / reel (180mm dia.)
- 2,500pcs. / reel (330mm dia.)
- 500pcs. / bag

•TZ03 Series
- 1,000pcs. / bag
- 500pcs. / bag (YR style only)

Notice of Ceramic Trimmer Capacitor

Introduction :

Trimmer capacitors made by MURATA MFG. CO., LTD. are designed to achieve high reliability and cost efficiency. We offer the following usage guidelines to ensure our trimmer capacitors perform effectively and meet your requirements. Rapid innovations will certainly create new applications for our trimmer capacitors. We welcome you to contact us concerning application questions.

1. Mounting Trimmer Capacitors on PCBs

(1) Ensure that PCB hole spacing complies with the terminal spacing requirement of the intended trimmer capacitor model. Incorrect hole spacing may lower trimmer capacitor performance due to excessive stress applied to the terminal.
(2) Mount trimmer capacitor in contact with PCB.
(3) Do not apply bending stress after the trimmer capacitor has been mounted to the PCB. See the stress specification listed below.

Model	Allowable Stress
TZ03/TZBX4 (Terminal Style CZD)	10.0N(Ref.1kgf)

(4) Note trimmer capacitor polarity to minimize the influence of stray capacitance. Refer to the outlines of each model. (⊕Terminal:Stator side ; ⊖Terminal:Rotor side)
(5) Do not warp and/or bend PC board to prevent trimmer capacitor from breakage.

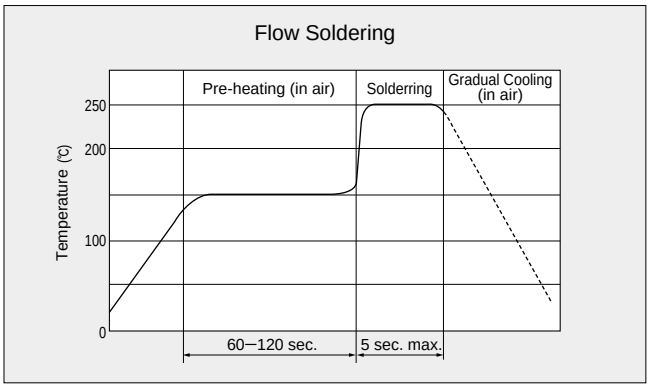
2. Soldering

Standard soldering conditions are shown below. Before using soldering conditions other than those listed below , please consult MURATA factory representative. If the soldering conditions are not suitable for the product , the trimmer capacitor may deviate from the specified performances characteristic.

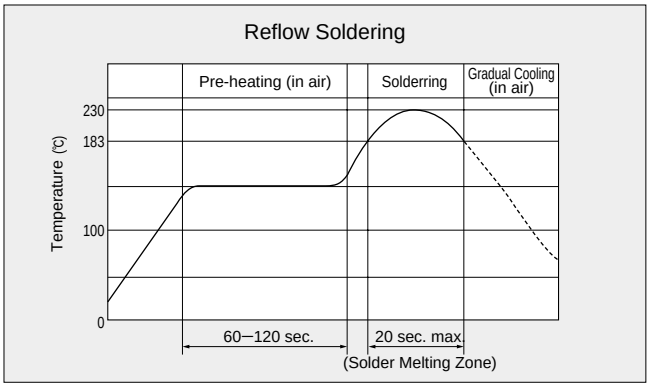
(1) Soldering Iron

	TZS02/TZVY2/ TZVX2/TZV02/TZC03	TZBX4/TZ03
Tip temperature	260℃±10℃	260℃±10℃
Soldering time	3 sec. max.	3 sec. max.
Tip diameter	1mm dia. max.	2mm dia. max.
Iron wattage	20W max.	30W max.

(2) Flow Soldering
- TZBX4 Cover film type
  Immerse the body in solder bath
- TZBX4 Terminal style C and D / TZ03 series
  Only immerse terminal in solder bath
  Refer to the standard temperature profile listed below.



(3) Reflow Soldering
TZS02 / TZVY2 / TZVX2 / TZV02 / TZC03 / TZBX4 series
Refer to the standard temperature profile listed below.



(4) Notice When Soldering
- The solder iron should contact neither the trimmer capacitor's resin case nor its ceramic substrate.
- To prevent the deterioration of trimmer capacitor characteristics, apply flux only to terminals.
- The amount of solder is critical. Insufficient amounts of solder can lead to insufficient soldering strength on the PCB. Excessive amounts of solder may cause bridging between the terminals resulting in terminal shorts.
- Do not use water - soluble flux if using water for washing.
- TZS02 / TZVY2 / TZVX2 / TZV02 / TZC03 / TZBX4 series without cover films can not be soldered using the flow soldering method (dipping).
- TZ03 series can not be soldered using the reflow soldering method.
- When soldering the TZC03 series, the solder should not flow into the staking part of the substrate. If such flow does occur, driver slot rotation will be impeded.
- Use our standard land dimension. Excessive land area causes displacement due to effect of the surface tension of the solder or the contact failure due to flux wicking up. Insufficient land area causes insufficient soldering strength of the chip.

Series	Standard applying thickness
TZS02/TZVY2/TZVX2/TZV02	120—170μm
TZC03	150—200μm
TZBX4	200—250μm

Notice of Ceramic Trimmer Capacitor

3. Cleaning

- TZS02 / TZVY2 / TZVX2 / TZV02 / TZC03 / TZBX4 Series (without cover film) can not be cleaned because of open construction.

(1) Cleaning Solvents
Isopropyl - alcohol and ethyl - alcohol are satisfactory cleaning agents. Water-based agents like Pinealpha and Cleanthre cannot be used. Before using other agents, please consult a MURATA factory representative.

(2) Cleaning Precautions
① TZBX4 Series (with cover film)
The total cleaning time for either the dipping or vapor method shall not exceed 2 minutes. The total cleaning time for the ultrasonic method shall be less than 1 minute and for the cold dipping method shall be less than 5 minutes.
② TZ03 Series
Cleaning time shall be less than 2 minutes for the dipping method and less than 30 seconds for the ultrasonic method.
③ Ultrasonic Cleaning
Specifications are as follows.
1. Power : 20W / liter max.
2. Frequenc : 28kHz
3. Temperature : Ambient temperature
Many variables are associated with using ultrasonic cleaning equipment such as the equipment's self-resonance point, its jig construction, and cleaning conditions such as the depth of immersion. Therefore, please test cleaning equipment to determine suitable conditions.

4. Adjusting

(1) To maintain specified performance characteristics, do not apply excessive force (preferably, not exceeding 1.0N (Ref.100g.f).
(2) For high-frequency capacitors, use suitable screwdrivers whose thickness is appropriate for the adjustment slot.
(3) Note the following for the TZBX4 series with cover film.
- Do not break the cover film before the completion of PCB mounting, soldering, and cleaning.
- Do not clean the trimmer capacitor after the cover film has been broken.
- To break the cover film, first turn the screwdriver more than 45°, then set the capacitance value. (The cover film cannot be broken by only inserting the screwdriver.)
- Before finding the screwdriver slot, applying pressure on the driver plate should be kept less than 1.96N. Higher pressure leads to extensive setting drift or damage to internal elements.
After finding the screwdriver slot, the applied force should be less than 3.0N (Ref.300gf).

5. External Substances

Do not externally apply silicone or any other substances to the trimmer capacitors to secure adjustment position. This may cause electrical contact problems or trimmer capacitor corrosion.

6. Storage

(1) Before using trimmer capacitor, please store under the condition of −10 to +40℃ and 30 to 85%RH.
(2) Do not store in or near corrosive gasses.
(3) Use within 6 months of delivery.
(4) Do not open the package until just prior to using.
(5) Prior to storing opened packages, the packaging should be heat sealed. Avoid using rubber bands when repackaging.

7. Note

(1) Before using trimmer capacitors, please test after assembly in your particular mass production system.
(2) MURATA cannot guarantee trimmer capacitor integrity when used under conditions other than those specified in this document.

⚠Note:

1. Export Control
   〈For customers outside Japan〉
   Murata products should not be used or sold for use in the development, production, stockpiling or utilization of any conventional weapons or mass-destructive weapons (nuclear weapons, chemical or biological weapons, or missiles), or any other weapons.
   〈For customers in Japan〉
   For products which are controlled items subject to the "Foreign Exchange and Foreign Trade Law" of Japan, the export license specified by the law is required for export.
2. Please contact our sales representatives or product engineers before using our products listed in this catalog for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property, or when intending to use one of our products for other applications than specified in this catalog.
   ① Aircraft equipment
   ② Aerospace equipment
   ③ Undersea equipment
   ④ Medical equipment
   ⑤ Transportation equipment (vehicles, trains, ships,etc.)
   ⑥ Traffic signal equipment
   ⑦ Disaster prevention / crime prevention equipment
   ⑧ Data-processing equipment
   ⑨ Application of similar complexity and/or reliability requirements to the applications listed in the above
3. Product specifications in this catalog are as of September 1999. They are subject to change or our products in it may be discontinued without advance notice. Please check with our sales representatives or product engineers before your ordering. If there are any questions, please contact our sales representatives or product engineers.
4. The parts numbers and specifications listed in this catalog are for information only. You are requested to approve our product specification or to transact the approval sheet for product specification, before your ordering.
5. Please note that unless otherwise specified, we shall assume no responsibility whatsoever for any conflict or dispute that may occur in connection with the effect of our and/or third party's intellectual property rights and other related rights in consideration of your using our products and/or information described or contained in our catalogs. In this connection, no representation shall be made to the effect that any third parties are authorized to use the rights mentioned above under licenses without our consent.
6. None of ozone depleting substances (ODS) under the Montreal Protocol is used in manufacturing process of us.

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