Ceramic Trimmer Capacitors

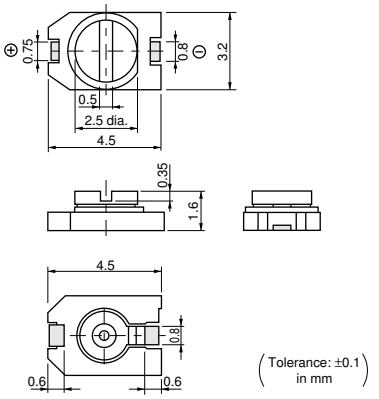
muRata

TZC3 Series

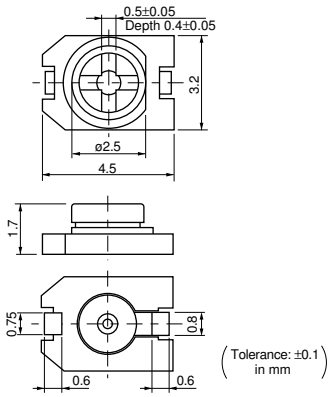
■ Features

1. Small size with external dimension of 3.2(W)x4.5(L)x1.6(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 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.

Standard Type



Cross Slot Type



■ Applications

1. Compact radios
2. Headphone stereos
3. Pagers
4. Portable radio equipments
5. Hybrid ICs
6. Cellular telephones
7. Cordless telephones
8. Remote keyless entry systems

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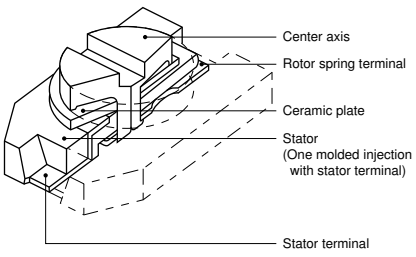
Part Number	C min. (max.) (pF)	C max. (pF)	TC	Q	Rated Voltage	Withstanding Voltage	Stator/Case Color
TZC3Z030A□□□	1.4	3.0 +50/-0%	NP0±300ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Brown
TZC3Z060A□□□	2.0	6.0 +50/-0%	NP0±300ppm/°C	500min. at 1MHz, Cmax.	100Vdc	220Vdc	Blue
TZC3R100A□□□	3.0	10.0 +50/-0%	N750±300ppm/°C	500min. at 1MHz, Cmax.	100Vdc	220Vdc	White
TZC3P200A□□□	5.0	20.0 +50/-0%	N1200±500ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Red
TZC3P300A□□□	6.5	30.0 +50/-0%	N1200±500ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Green

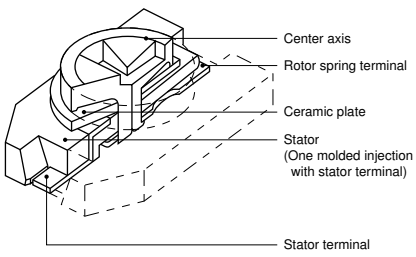
Insulation Resistance: 10000M ohm Torque: 1.5 to 9.8mNm Operating Temperature Range: -25 to +85°C
The last three digits show the slot type. 110: standard (minus) type, 310 : cross slot type.

■ Construction

Standard Type



Cross Slot Type



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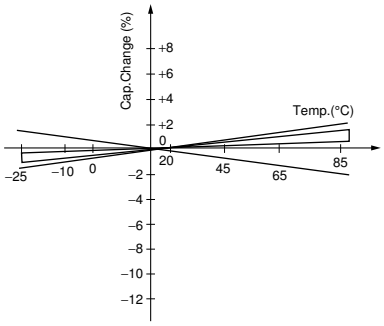
■ Temperature Characteristics

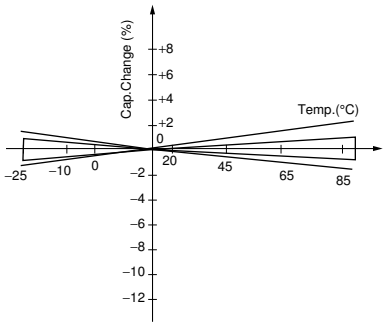
TZC3Z030

Z030 (NP0±300 ppm/°C)



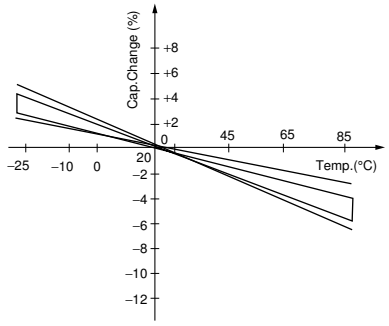
TZC3Z060

Z060 (NP0±300 ppm/°C)



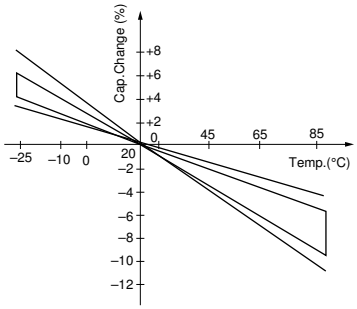
TZC3R100

R100 (N750±300 ppm/°C)



TZC3P200

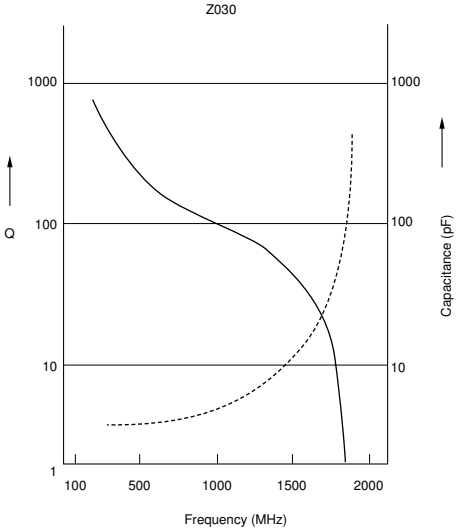
P200 (N1200±500ppm/°C)



■ Frequency Characteristics

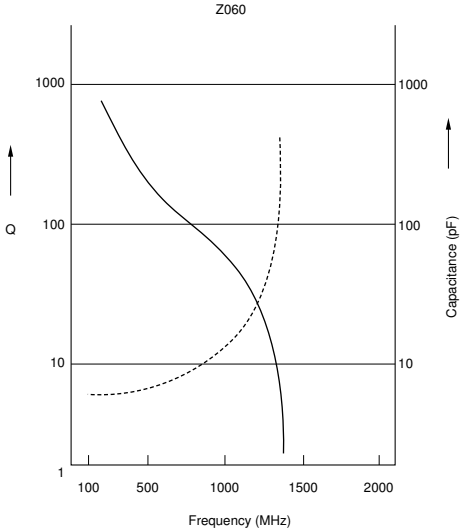
TZC3Z030

Z030



TZC3Z060

Z060



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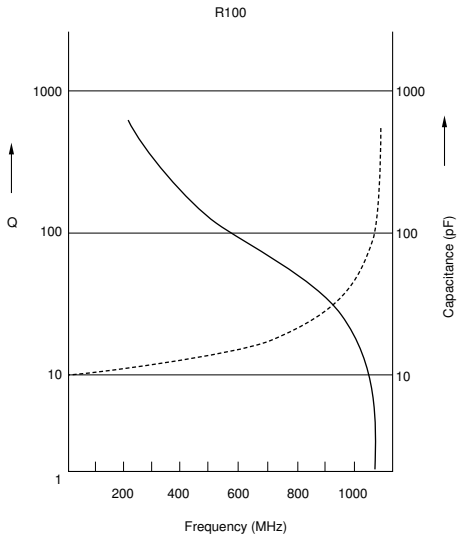
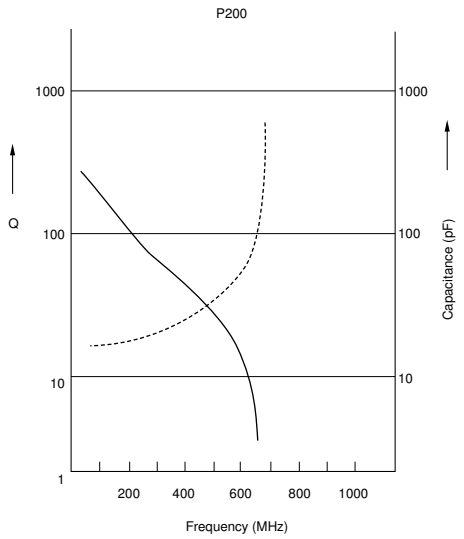
■ Frequency Characteristics

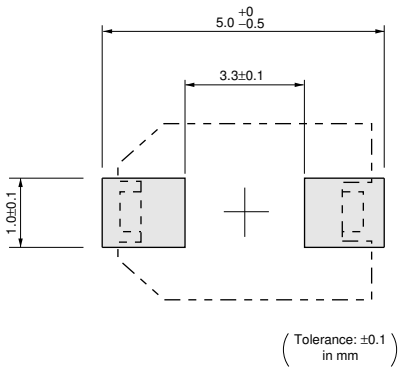
TZC3R100



TZC3P200



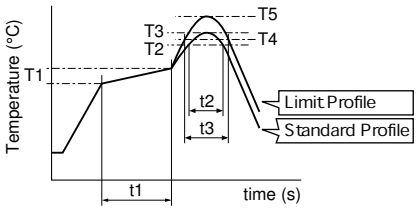
■ Land Pattern



■ Temperature Profile

● Reflow Soldering Profile

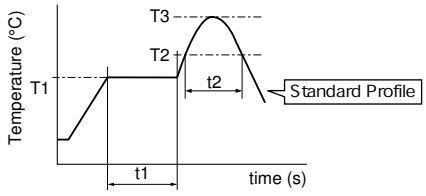
①Soldering profile for Lead-free solder (96.5Sn/3Ag/0.5Cu)



Standard Profile					
Pre-heating		Heating		Peak temperature (T3)	Cycle of reflow
Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)		
150 to 180°C	60 to 120sec.	220°C	30 to 60sec.	245±3°C	2time

Limit Profile					
Pre-heating		Heating		Peak temperature (T5)	Cycle of reflow
Temp. (T1)	Time (t1)	Temp. (T4)	Time (t3)		
150 to 180°C	60 to 120sec.	230°C	30 to 50sec.	260 +5/-0°C	2time

②Soldering profile for Eutectic solder (63Sn/37Pb)
(Limit profile: refer to ①)



Standard Profile					
Pre-heating		Heating		Peak temperature (T3)	Cycle of reflow
Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)		
150°C	60 to 120sec.	183°C	30sec.	230 +5/-0°C	1time

● Solder Iron

Standard Profile			
Temperature of soldering iron tip	Soldering time	Soldering iron power output	Cycle of solder iron
350±10°C	3sec. max.	30W max.	1time

■ Notice (Storage and Operating Condition)

1. Do not use the trimmer capacitor under atmosphere of RTV silicone rubber (Room Temperature Vulcanizing Silicone Rubber) except Acetone liberating silicone sealant.
2. Before using trimmer capacitor, please store under the condition of -10 to +40 degree C and 30 to 85%RH.
3. Do not store in or near corrosive gasses.
4. Use within 6 months of delivery.
5. Do not store under direct sunlight.
6. Do not use the trimmer capacitor under the conditions listed below.
   (1) Corrosive gasses atmosphere
   (ex. Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
   (2) In liquid (ex. water, oil, medical liquid, organic solvent, etc.)
   (3) Dusty / dirty atmosphere
   (4) Direct sunlight
   (5) Static voltage nor electric/magnetic fields
   (6) Direct sea breeze
   (7) Other variations of the above

■ Notice (Soldering and Mounting)

1. Soldering
   (1) TZC3 series can be soldered by reflow soldering method and soldering iron. Do not use flow soldering method (dipping).
   (2) Soldering condition
   Refer to the temperature profile.
   If the soldering conditions are not suitable, e.g., excessive time and/or excessive temperature, the trimmer capacitor may deviate from the specified characteristics.
   (3) The amount of solder is critical.
   (4) The thickness of solder paste should be printed from 150 micro m to 200 micro m and the dimension of land pattern should be Murata's standard land pattern used at reflow soldering.
   Insufficient amounts of solder can lead to insufficient soldering strength on PCB.
   Excessive amounts of solder may cause bridging between the terminals or contact failure due to flux wicking up.
   (5) When using soldering iron, the diameter of the string solder shall be less than 0.5mm. The string solder shall be applied to the lower part of the terminal only. Do not apply flux except to the terminals. Excessive amounts of solder and/or applying solder to the upper part of the terminal may cause fixed metal rotor or contact failure due to flux invasion into the movable part and/or the contact point. The soldering iron should not come in contact with the stator of the trimmer capacitor. If such contact does occur, the trimmer capacitor may be damaged.
   (6) Our recommended chlorine content of solder is as follows.
   (a) Solder paste: 0.2wt% max.
   (b) String solder: 0.5wt% max.
   (7) Do not use water-soluble flux (for water cleaning).
   To prevent the deterioration of trimmer capacitor characteristics, apply flux only to terminals.
   (8) When soldering the TZC3 series, the solder should not flow into the staking part of the substrate. If such flow does occur, driver slot rotation will be damaged.
2. Mounting
   (1) Do not apply excessive force (preferably 5.0 N [Ref: 500gf] max.), when the trimmer capacitor is mounted on the PCB.
   (2) Do not warp and/or bend PCB to prevent trimmer capacitor from breakage.
   (3) Use the suitable dimension of the pick-up nozzle (2.5mm external diameter and 1.5mm bore diameter).
3. Cleaning
   Cannot be cleaned because of open construction.
4. Other
   Note the polarity of the trimmer capacitor to minimize influence by stray capacitance.
   (Refer to the dimensions concerning the polarity.)

■ Notice (Handling)

1. Use suitable screwdrivers that fit comfortably in driver slot.
   (1) Recommended screwdriver for manual adjustment
   Standard type --> MURATA: KMDR010
   Cross slot type --> TORAY: SA-1825
   (Murata P/N is KMDR040)
   (2) Recommended screwdriver bit for automatic adjustment
   Standard type --> MURATA: KMBT010
   Cross slot type --> TORAY: JB-1825
   (Murata P/N is KMBT040)
2. When adjusting with a screwdriver, do not apply excessive force (preferably 1.0 N [Ref: 100gf] max.) to minimize capacitance drift. If excessive force is applied to the screwdriver slot, it may cause deformation of the products.
3. Do not apply adhesive, lock paints, or any other substances to the trimmer capacitor to secure the rotor position. They may cause corrosion or electrical contact problems.

■ Notice (Other)

Before using trimmer capacitor, please test after assembly in your particular mass production system.