

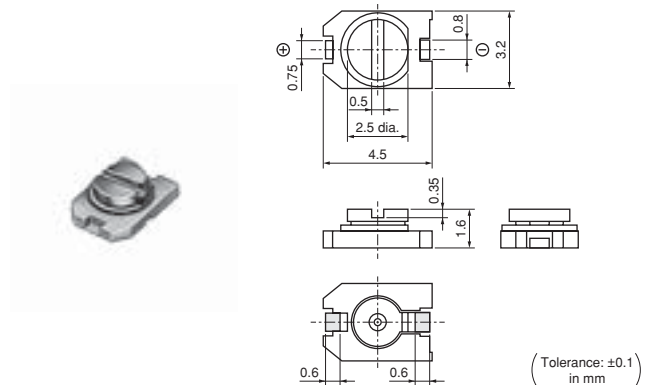
Ceramic Trimmer Capacitors



TZC3 Series

■ Features

1. Small size with external dimension of 3.2(W)x4.5(L)x1.6(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. Designed for automatic placement in surface mount applications.
5. Heat resistant resin withstands reflow soldering temperatures.



■ Applications

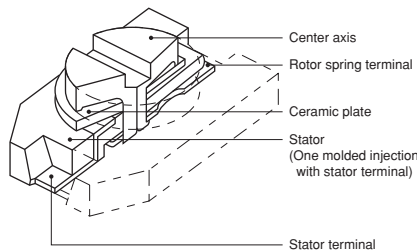
1. Compact radios
2. Headphones
3. Pagers
4. Portable radio equipment
5. Hybrid ICs
6. Cellular telephones
7. Cordless telephones
8. Remote keyless entry systems

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Part Number	C min. (max.) (pF)	C max. (pF)	TC	Q	Rated Voltage	Withstanding Voltage	Stator/Case Color
TZC3Z030A110	1.4	3.0 +50/-0%	NP0±300ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Brown
TZC3Z060A110	2.0	6.0 +50/-0%	NP0±300ppm/°C	500min. at 1MHz, Cmax.	100Vdc	220Vdc	Blue
TZC3R100A110	3.0	10.0 +50/-0%	N750±300ppm/°C	500min. at 1MHz, Cmax.	100Vdc	220Vdc	White
TZC3P200A110	5.0	20.0 +50/-0%	N1200±500ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Red
TZC3P300A110	6.5	30.0 +50/-0%	N1200±500ppm/°C	300min. at 1MHz, Cmax.	100Vdc	220Vdc	Green

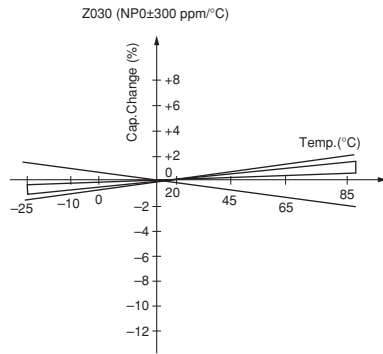
Insulation Resistance: 10000M ohm Torque: 1.5 to 9.8mNm Operating Temperature Range: -25 to +85°C

■ Construction

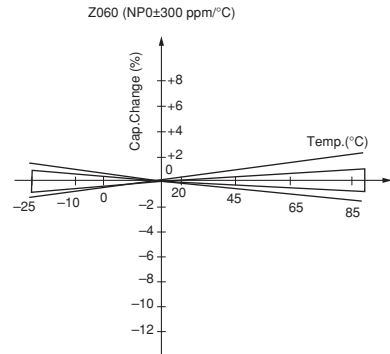


Temperature Characteristics

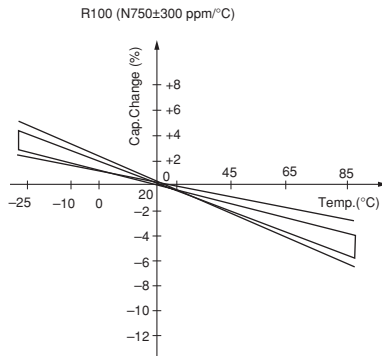
TZC3Z030



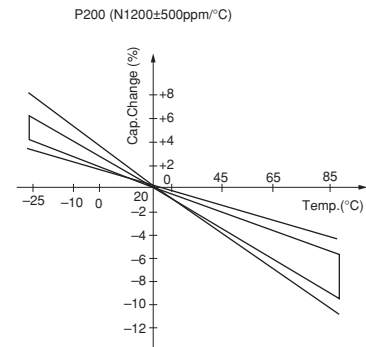
TZC3Z060



TZC3R100



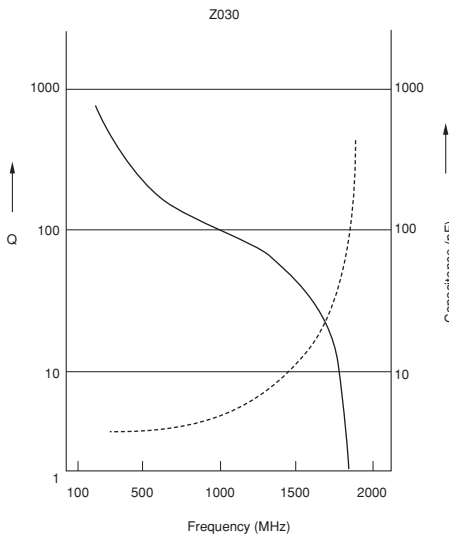
TZC3P200



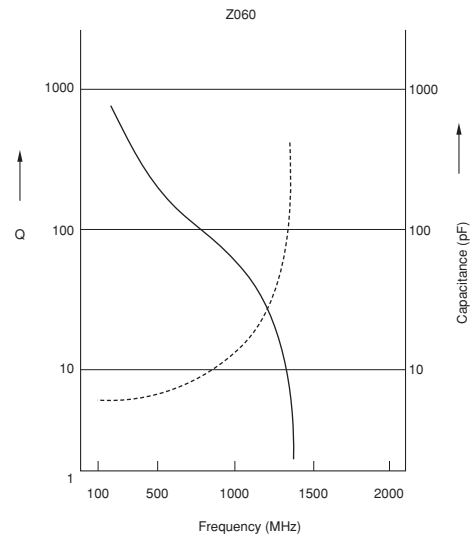
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Frequency Characteristics

TZC3Z030



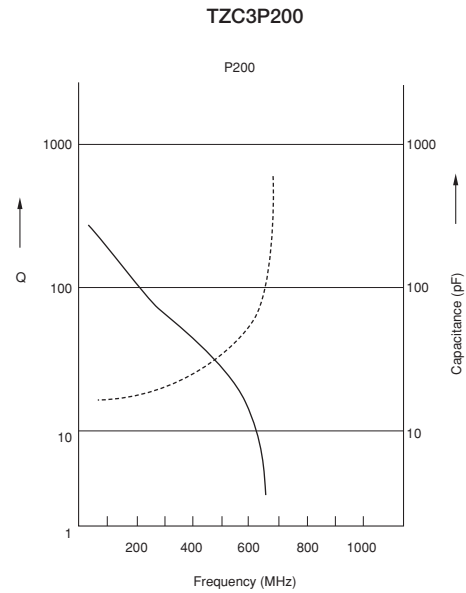
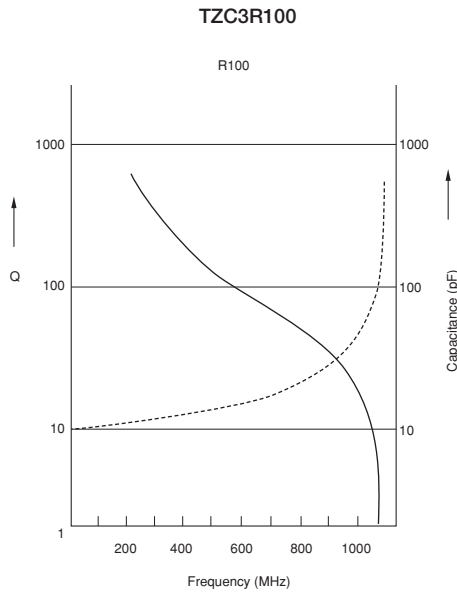
TZC3Z060



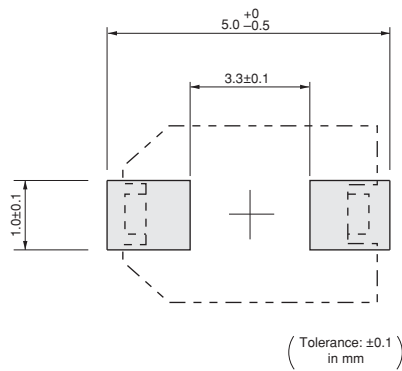
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Frequency Characteristics



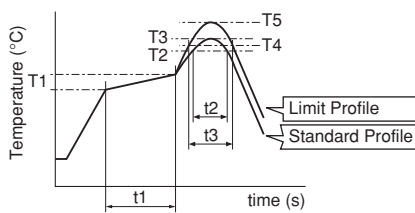
Land Pattern



Temperature Profile

Reflow Soldering Profile

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

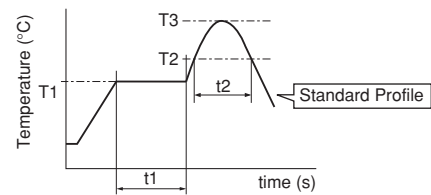


Standard Profile					
Pre-heating		Heating		Peak temperature (T3)	Cycle of reflow
Temp. (T1)	Time (t1)	Temp. (T2)	Time (t2)		
150 to 180°C	60 to 120sec.	220°C	30 to 60sec.	245±3°C	2 times

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	2 times

② Soldering 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	1 time

Soldering Iron

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

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■ Notice (Storage and Operating Conditions)

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 capacitors, please store under the conditions of -10 to +40°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.

■ 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 conditions
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

■ 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 --> VESSEL: NO.9000+1.7×30
(Murata P/N is KMDR080)
 - (2) Recommended screwdriver bit for automatic adjustment
Standard type --> MURATA: KMBT010
Cross slot type --> VESSEL: No.CA-11
(Murata P/N is KMBT080)

■ Notice (Other)

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

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 or electric/magnetic fields
 - (6) Direct sea breeze
 - (7) Other variations of the above

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 protect trimmer capacitor from breakage.
 - (3) Use a pick-up nozzle of a suitable dimension.
(2.5mm external diameter and 1.5mm bore diameter.)
- ### 3. Cleaning
- This product 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.)

2. When adjusting with a screwdriver, do not apply excessive force (preferably 1.0 N [Ref: 100gf] max.) to minimize capacitance drift. Excessive force applied to the screwdriver slot 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.

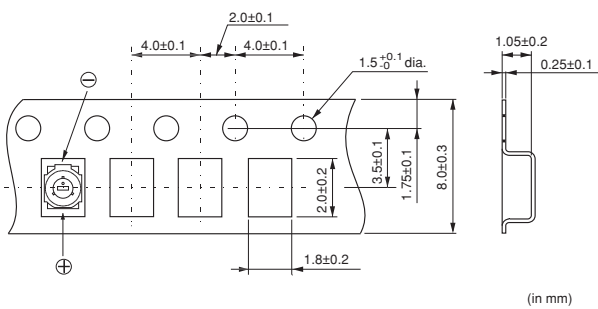
Packaging

Minimum Quantity

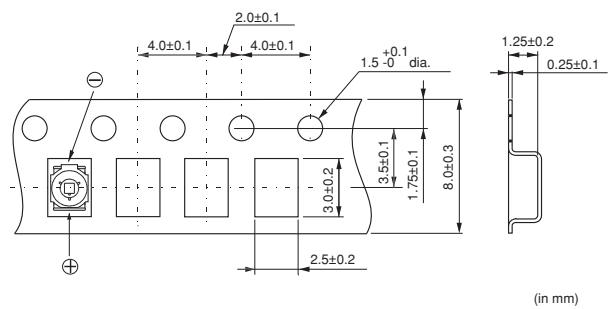
Part Number	Minimum Quantity (pcs.)		
	ø180mm Reel	ø330mm Reel	Bulk
TZR1	3000	-	500
TZS2	3000	-	500
TZY2	2000	-	500
TZV2	2000	-	500
TZC3	1000	-	500
TZW4	500	-	100
TZB4	500	2500	500

Tape Dimensions

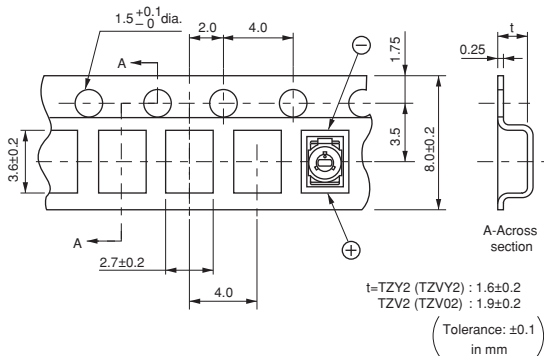
TZR1 Series



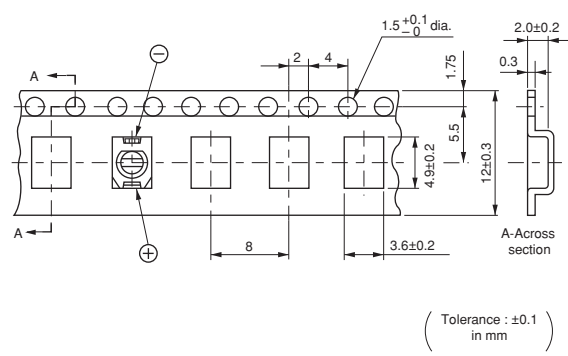
TZS2 Series



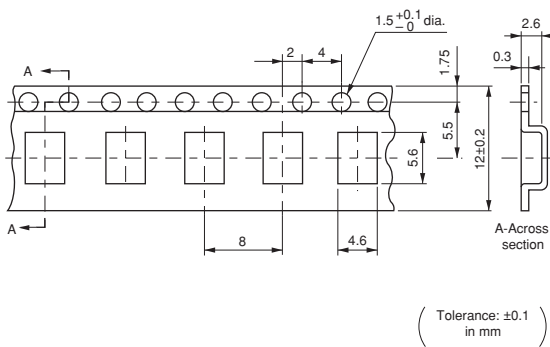
TZY2/TZV2 Series



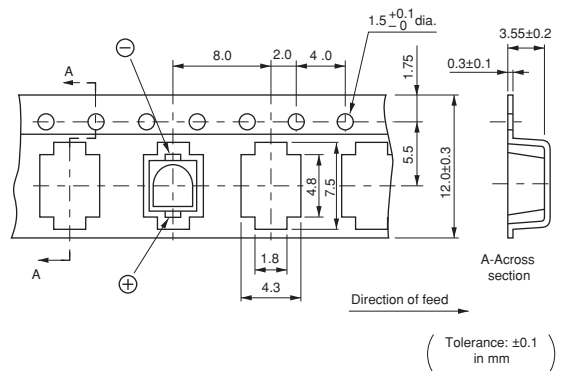
TZC3 Series



TZW4 Series



TZB4 Series



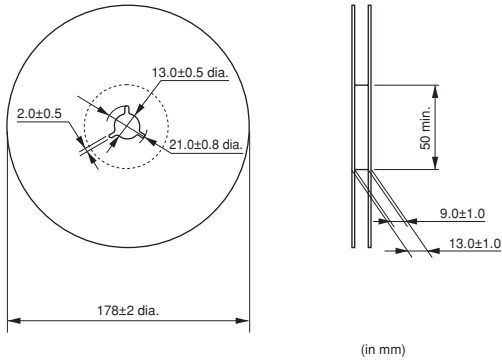
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Packaging

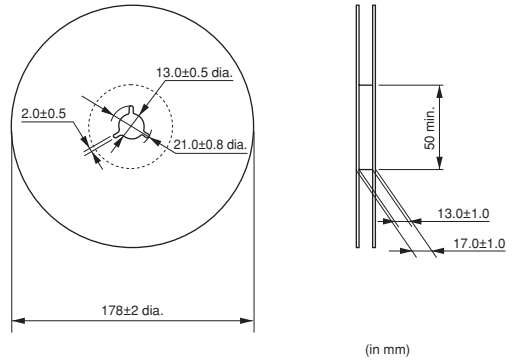
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■ Reel Dimensions (180mm diameter)

TZR1/TZS2/TZY2/TZV2 Series

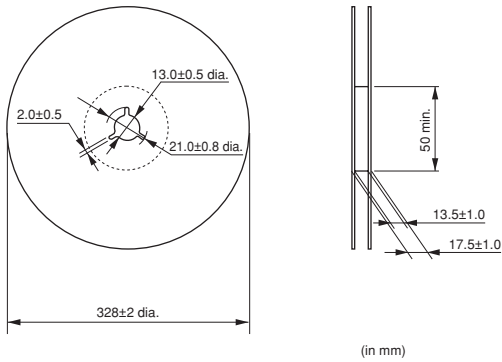


TZC3/TZW4/TZB4 Series



■ Reel Dimensions (330mm diameter)

TZB4 Series



Recommended Adjustment Tools

Please use the following recommended screwdrivers.

You can order these drivers using the part numbers below.

Although you can also adjust the capacitance value using commercial products, please use one with the same head size as the driver listed below.

■ For Manual Adjustment

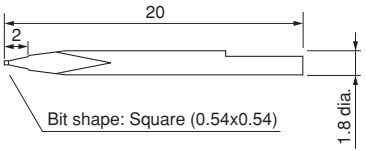
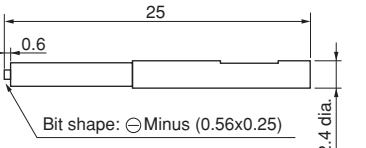
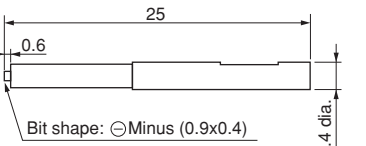
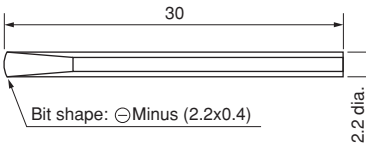
Series	MURATA Model Number	Manufacturer's Model Number	Shape
TZR1	KMDR160	MURATA MFG. KMDR160	<p style="text-align: right;">(in mm)</p>
TZS2	KMDR050	MURATA MFG. KMDR050	<p style="text-align: right;">(in mm)</p>
TZY2	KMDR060	ENGINEER INC. DA-89	<p style="text-align: right;">(in mm)</p>
TZV2	KMDR020	VESSEL MFG. NO.9000 -0.9×30	<p style="text-align: right;">(in mm)</p>
TZC3 TZB4	KMDR010	MURATA MFG. KMDR010	<p style="text-align: right;">(in mm)</p>
TZW4	KMDR130	VESSEL MFG. NO.9000 -1.3×30	<p style="text-align: right;">(in mm)</p>

Continued on the following page.

Recommended Adjustment Tools

☐ Continued from the preceding page.

■ For Automatic Adjustment

Series	MURATA Model Number	Manufacturer's Model Number	Shape
TZS2	KMBT050	MURATA MFG. KMBT050	 <p style="text-align: right;">(in mm)</p>
TZY2	KMBT060	MURATA MFG. KMBT060	 <p style="text-align: right;">(in mm)</p>
TZV2	KMBT020	MURATA MFG. KMBT020	 <p style="text-align: right;">(in mm)</p>
TZC3 TZB4	KMBT010	MURATA MFG. KMBT010	 <p style="text-align: right;">(in mm)</p>

Qualified Standards

The products listed herein have been produced
by a ISO9001 certified factory

MURATA FACTORY

Sabae Murata Mfg. Co., Ltd.

* No ODCs (Ozone Depleting Chemicals) are used on
any Murata trimmer potentiometers.

⚠Note:

1. Export Control

<For customers outside Japan>

No Murata products should be used or sold, through any channels, for use in the design, development, production, utilization, maintenance or operation of, or otherwise contribution to (1) any weapons (Weapons of Mass Destruction [nuclear, chemical or biological weapons or missiles] or conventional weapons) or (2) goods or systems specially designed or intended for military end-use or utilization by military end-users.

<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 the products in this catalog for the applications listed below, which require especially high reliability for the prevention of defects which might directly damage a third party's life, body or property, or when one of our products is intended for use in applications other than those specified in this catalog.

- | | |
|-----------------------------|--|
| ① Aircraft equipment | ② Aerospace equipment |
| ③ Undersea equipment | ④ Power plant equipment |
| ⑤ Medical equipment | ⑥ Transportation equipment (vehicles, trains, ships, etc.) |
| ⑦ Traffic signal equipment | ⑧ Disaster prevention / crime prevention equipment |
| ⑨ Data-processing equipment | ⑩ Application of similar complexity and/or reliability requirements to the applications listed above |

3. Product specifications in this catalog are as of September 2013. 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 ordering. If there are any questions, please contact our sales representatives or product engineers.

4. Please read rating and ⚠CAUTION (for storage, operating, rating, soldering, mounting and handling) in this catalog to prevent smoking and/or burning, etc.

5. This catalog has only typical specifications. Therefore, please approve our product specifications or transact the approval sheet for product specifications before ordering.

6. 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 a third party's intellectual property rights and other related rights in consideration of your use of 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.

7. No ozone depleting substances (ODS) under the Montreal Protocol are used in our manufacturing process.