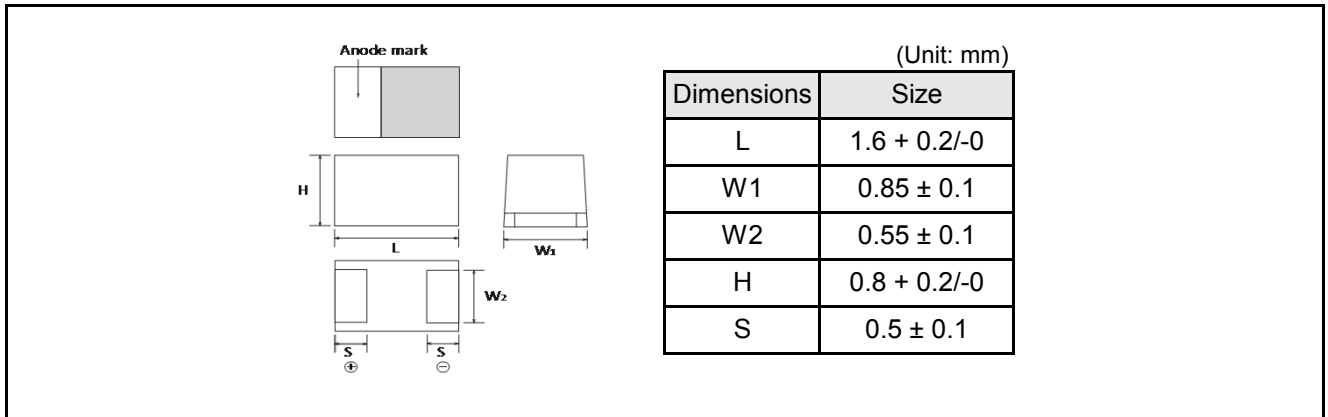


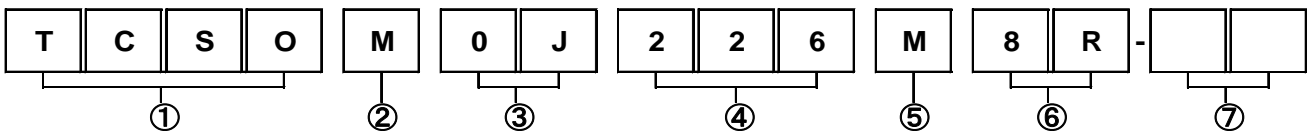
●Features

- 1) Conductive polymer used at the cathode for ultra-low ESR.
- 2) New package structure results in the largest capacitance.
- 3) Compact, low profile, ultra-high capacitance contributes to smaller, thinner sets with greater functionality.
- 4) Conductive polymer has a self-healing function that prevents failure, resulting in safe, high reliability operation.

●Dimensions



●Part No. Explanation



① Series name
TCSO

② Case style
M : 1608-10 (0603) Low profile size

③ Rated voltage

| CODE | Rated voltage (V) |
|------|-------------------|
| 0J | 6.3 |
| 1A | 10 |

④ Nominal capacitance
Nominal capacitance in pF in 3 digits:
2 significant figures followed by the figure representing the number of 0's.

⑤ Capacitance tolerance
M : ±20%

⑥ Taping
8: Tape width
R: Positive electrode on the side opposite to sprocket hole

⑦ Discrimination code

*This specification has possibility of change, due to underdevelopment product.
Please ask for latest specification to our sales.

●Rated table

(ESR : mΩ)

| Capacitance (μF) | Rated voltage (V.DC) | |
|------------------|----------------------|-----|
| | 6.3 | 10 |
| 10 (106) | | 300 |
| 22 (226) | 300 | |
| 47 (476) | 300 | |

☆Under development

●Marking

The indications listed below should be given on the surface of a capacitor.

- (1) Polarity : The polarity should be shown by □ bar. (on the anode side)
- (2) Rated DC voltage : A voltage code is shown as below table.
- (3) Capacitance : A capacitance code is shown as below table.

| Voltage Code | Rated DC Voltage (V) |
|--------------|----------------------|
| j | 6.3 |
| A | 10 |

| Capacitance Code | Nominal Capacitance (μF) |
|------------------|--------------------------|
| a | 10 |
| j | 22 |
| s | 47 |

Visual typical example

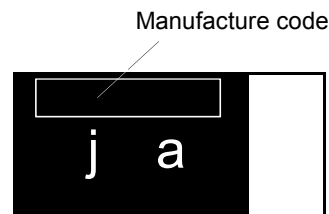
voltage code and capacitance code are variable with parts number.

[M case]

EX.)

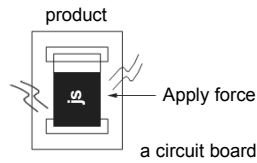
$\frac{j}{(1)}$ $\frac{a}{(2)}$

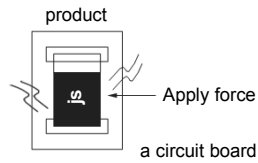
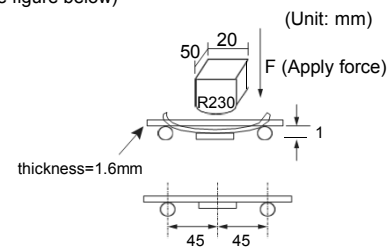
(1) voltage code (2) capacitance code



●Characteristics

| Item | | Performance | Test conditions (based on JIS C 5101-1 and JIS C 5101-3) | | | | | | | | | | | | | | | |
|--------------------------------------------------------|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------|------|---|---------|----------|---|------------|---------------|---|---------|----------|---|------------|---------------|
| Operating Temperature | | -55°C to +105°C | Voltage reduction when temperature exceeds +85°C | | | | | | | | | | | | | | | |
| Maximum operating temperature with no voltage derating | | +85°C | | | | | | | | | | | | | | | | |
| Rated voltage (V.DC) | | 6.3 10 | at 85°C | | | | | | | | | | | | | | | |
| Category voltage (V.DC) | | 5 8 | at 105°C | | | | | | | | | | | | | | | |
| Surge voltage (V.DC) | | 8 13 | at 85°C | | | | | | | | | | | | | | | |
| DC Leakage current | | Shall be satisfied the value on "Standard list " | As per 4.9 JIS C 5101-1 As per 4.5.1 JIS C 5101-3 Voltage : Rated voltage for 5min | | | | | | | | | | | | | | | |
| Capacitance tolerance | | Shall be satisfied allowance range. ±20% | As per 4.7 JIS C 5101-1 As per 4.5.2 JIS C 5101-3 Measuring frequency : 120±12Hz Measuring voltage : 0.5Vrms + 1.5V.DC Measuring circuit : DC equivalent series circuit | | | | | | | | | | | | | | | |
| Tangent of loss angle (Df, tan δ) | | Shall be satisfied the voltage on "Standard list " | As per 4.8 JIS C 5101-1 As per 4.5.3 JIS C 5101-3 Measuring frequency : 120±12Hz Measuring voltage : 0.5Vrms + 1.5V.DC Measuring circuit : DC equivalent series circuit | | | | | | | | | | | | | | | |
| ESR | | Shall be satisfied the value on "Standard list " | As per 4.10 JIS C 5101-1 As per 4.5.4 JIS C 5101-3 Measuring frequency : 100±10kHz Measuring voltage : 0.5Vrms or less Measuring circuit : DC equivalent series circuit | | | | | | | | | | | | | | | |
| Resistance to Soldering heat | Appearance | There should be no significant abnormality. The indications should be clear. | As per 4.14 JIS C 5101-1 As per 4.6 JIS C 5101-3 Dip in the solder bath Solder temp. : 240±5 Duration : 10±0.5s Repetition 1 After the specimens, leave it at room temperature for over 24h and then measure the sample. | | | | | | | | | | | | | | | |
| | L.C. | Less than 300% of initial limit | | | | | | | | | | | | | | | | |
| | $\Delta C / C$ | Within ±20% of initial value | | | | | | | | | | | | | | | | |
| | Df (tan δ) | Less than 300% of initial limit | | | | | | | | | | | | | | | | |
| Temperature cycle | Appearance | There should be no significant abnormality. The indications should be clear. | As per 4.16 JIS C 5101-1 As per 4.10 JIS C 5101-3 Repetition : 5 cycles (1 cycle : steps 1 to 4) without discontinuation. | | | | | | | | | | | | | | | |
| | L.C. | Less than 1000% of initial limit | | | | | | | | | | | | | | | | |
| | $\Delta C / C$ | Within ±20% of initial value | | | | | | | | | | | | | | | | |
| | Df (tan δ) | Less than 300% of initial limit | | | | | | | | | | | | | | | | |
| | | <table border="1"> <thead> <tr> <th></th> <th>Temp.</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55±3°C</td> <td>30±3min.</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>3min. or less</td> </tr> <tr> <td>3</td> <td>105±2°C</td> <td>30±3min.</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>3min. or less</td> </tr> </tbody> </table> | | | Temp. | Time | 1 | -55±3°C | 30±3min. | 2 | Room temp. | 3min. or less | 3 | 105±2°C | 30±3min. | 4 | Room temp. | 3min. or less |
| | Temp. | Time | | | | | | | | | | | | | | | | |
| 1 | -55±3°C | 30±3min. | | | | | | | | | | | | | | | | |
| 2 | Room temp. | 3min. or less | | | | | | | | | | | | | | | | |
| 3 | 105±2°C | 30±3min. | | | | | | | | | | | | | | | | |
| 4 | Room temp. | 3min. or less | | | | | | | | | | | | | | | | |
| Moisture resistance | Appearance | There should be no significant abnormality. The indications should be clear. | As per 4.22 JIS C 5101-1 As per 4.12 JIS C 5101-3 After leaving the sample under such atmospheric condition that the temperature and humidity are 40±2°C and 90 to 95% RH, respectively, for 500±12h leave it at room temperature for over 24h and then measure the sample. | | | | | | | | | | | | | | | |
| | L.C. | Less than 300% of initial limit | | | | | | | | | | | | | | | | |
| | $\Delta C / C$ | Within +30/-20% of initial value Within +40/-20% of initial value (MOJ476) | | | | | | | | | | | | | | | | |
| | Df (tan δ) | Less than 300% of initial limit | | | | | | | | | | | | | | | | |

| Item | Performance | Test conditions (based on JIS C 5101-1 and JIS C 5101-3) |
|-----------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature Stability | Temp. | -55°C |
| | $\Delta C / C$ | Within 0/-20% of initial value |
| | Df (tan δ) | Shall be satisfied the value on " Standard list " |
| | L.C. | - |
| | Temp. | +105°C |
| | $\Delta C / C$ | Within +50/0% of initial value |
| | Df (tan δ) | Shall be satisfied the value on " Standard list " |
| Surge voltage | Appearance | There should be no significant abnormality. The indications should be clear. |
| | L.C. | Less than 200% of initial limit |
| | $\Delta C / C$ | Within $\pm 20\%$ of initial value Within +20/-30% of initial value (MOJ476) |
| | Df (tan δ) | Less than 200% of initial limit |
| Loading at High temperature | Appearance | There should be no significant abnormality. The indications should be clear. |
| | L.C. | Less than 400% of initial limit |
| | $\Delta C / C$ | Within $\pm 20\%$ of initial value Within +20/-30% of initial value (MOJ476) |
| | Df (tan δ) | Less than 300% of initial limit |
| Terminal strength | Capacitance | The measured value should be stable. |
| | Appearance | There should be no significant abnormality. |
| Adhesiveness | The terminal should not come off. | <p>As per 4.34 JIS C 5101-1 As per 4.8 JIS C 5101-3 Apply force of 5N in the two directions shown in the figure below for 10 \pm1s after mounting the terminal on a circuit board.</p>  |
| Dimensions | Refer to "External dimensions" | Measure using a caliper of JIS B 7507 Class 2 or higher grade |



| Item | | Performance | Test conditions (based on JIS C 5101-1 and JIS C 5101-3) |
|------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to solvents | | The indication should be clear. | As per 4.32 JIS C 5101-1 As per 4.18 JIS C 5101-3 Dip in the isopropyl alcohol for 30±5s, at room temperature. |
| Solderability | | 3/4 or more surface area of the solder coated terminal dipped in the soldering bath should be covered with the new solder. | As per 4.15.2 JIS C 5101-1 As per 4.7 JIS C 5101-3 Dip speed : 25±2.5mm / s Pre-treatment (accelerated aging): Leave the sample on the boiling distilled water for 1 h. Solder temp. : 245±5°C Duration : 3±0.5s Solder : M705 Flux : Rosin 25% IPA 75% |
| Vibration | Capacitance | Measure value should not fluctuate during the measurement. | As per 4.17 JIS C 5101-1 Frequency : 10 to 55 to 10Hz/min. Amplitude : 1.5mm |
| | Appearance | There should be no significant abnormality. | Time : 2h each in X and Y directions. Mounting : The terminal is soldered on a print circuit board. |

●Standard products list

| Part No. | Rated voltage 85°C | Category voltage 105°C | Surge voltage 85°C | Cap. 120Hz | Toleranc e | Leakage current 25°C | Df 120Hz (%) | | | ESR 100kHz |
|-----------------------|-----------------------|------------------------------|--------------------------|---------------|---------------|----------------------------|--------------|------|-------|---------------|
| | (V) | (V) | (V) | (μ F) | (%) | 1WV.5min (μ A) | -55°C | 25°C | 105°C | (m Ω) |
| TCSO M 0J 226 M8R | 6.3 | 5 | 8 | 22 | \pm 20 | 13.9 | 15 | 15 | 20 | 300 |
| TCSO M 0J 476 M8R-ZM1 | 6.3 | 5 | 8 | 47 | \pm 20 | 29.7 | 15 | 15 | 20 | 300 |
| TCSO M 1A 106 M8R-ZM1 | 10 | 8 | 13 | 10 | \pm 20 | 10.0 | 15 | 15 | 20 | 300 |

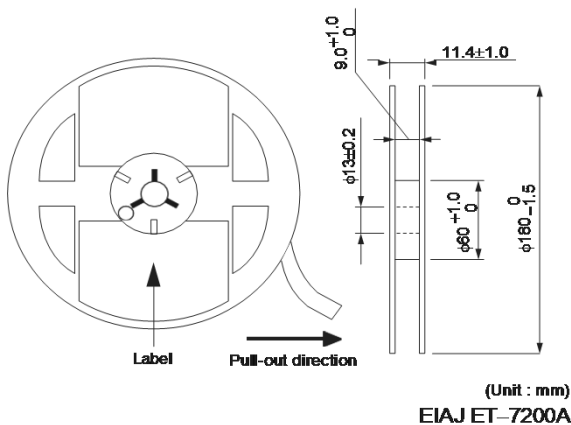
* Under development

●Packaging specifications

The diagram shows a side view of a component on a reel. Dimensions are labeled as follows: A (width of component), B (height of component), W (width of reel), E (height of reel), F (height of reel), P1, P2, P0 (pitch between components), D0 (sprocket hole diameter), t1 (thickness of component), and t2 (thickness of reel). A note indicates 'Component is loaded' and an arrow shows 'Pull-out direction'.

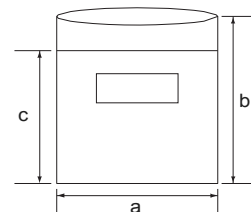
| A | B | W | E | F | P1 | P2 | P0 | D0 | t1 | t2 | standard packaging quantity |
|-----------------|-----------------|---------------|----------------|----------------|---------------|----------------|---------------|------------------------|--------------------|--------------------|-----------------------------------|
| 1.15 \pm 0.10 | 2.00 \pm 0.10 | 8.0 \pm 0.2 | 1.75 \pm 0.1 | 3.5 \pm 0.05 | 4.0 \pm 0.1 | 2.0 \pm 0.05 | 4.0 \pm 0.1 | ϕ 1.50+ 0.10/0 | 0.20 \pm 0.05 | 1.10 \pm 0.10 | 3000pcs |

●Reel dimensions



●Damp proof package

- ① One reel is packed in aluminum bag.
The size of aluminum bag is 240(a) x 250(b)mm.
The size up to 230(c)mm is to zipper.
- ② A desiccant is packed with a reel.
- ③ The aluminum bag is heat-sealed.
- ④ The label of the same as the label on the reel is placed on the aluminum bag.



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- Our Products are designed and manufactured for application in ordinary electronic equipment (such as AV equipment, OA equipment, telecommunication equipment, home electronic appliances, amusement equipment, etc.). If you intend to use our Products in devices requiring extremely high reliability (such as medical equipment ^(Note 1), transport equipment, traffic equipment, aircraft/spacecraft, nuclear power controllers, fuel controllers, car equipment including car accessories, safety devices, etc.) and whose malfunction or failure may cause loss of human life, bodily injury or serious damage to property ("Specific Applications"), please consult with the ROHM sales representative in advance. Unless otherwise agreed in writing by ROHM in advance, ROHM shall not be in any way responsible or liable for any damages, expenses or losses incurred by you or third parties arising from the use of any ROHM's Products for Specific Applications.

(Note1) Medical Equipment Classification of the Specific Applications

| JAPAN | USA | EU | CHINA |
|-----------|-----------|------------|-----------|
| CLASS III | CLASS III | CLASS II b | CLASS III |
| CLASS IV | | CLASS III | |

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 - Use of our Products in places where the Products are exposed to sea wind or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - Use of our Products in places where the Products are exposed to static electricity or electromagnetic waves
 - Use of our Products in proximity to heat-producing components, plastic cords, or other flammable items
 - Sealing or coating our Products with resin or other coating materials
 - Use of our Products without cleaning residue of flux (Exclude cases where no-clean type fluxes is used. However, recommend sufficiently about the residue.) ; or Washing our Products by using water or water-soluble cleaning agents for cleaning residue after soldering
 - Use of the Products in places subject to dew condensation
- The Products are not subject to radiation-proof design.
- Please verify and confirm characteristics of the final or mounted products in using the Products.
- In particular, if a transient load (a large amount of load applied in a short period of time, such as pulse, is applied, confirmation of performance characteristics after on-board mounting is strongly recommended. Avoid applying power exceeding normal rated power; exceeding the power rating under steady-state loading condition may negatively affect product performance and reliability.
- De-rate Power Dissipation depending on ambient temperature. When used in sealed area, confirm that it is the use in the range that does not exceed the maximum junction temperature.
- Confirm that operation temperature is within the specified range described in the product specification.
- ROHM shall not be in any way responsible or liable for failure induced under deviant condition from what is defined in this document.

Precaution for Mounting / Circuit board design

- When a highly active halogenous (chlorine, bromine, etc.) flux is used, the residue of flux may negatively affect product performance and reliability.
- In principle, the reflow soldering method must be used on a surface-mount products, the flow soldering method must be used on a through hole mount products. If the flow soldering method is preferred on a surface-mount products, please consult with the ROHM representative in advance.

For details, please refer to ROHM Mounting specification

Precautions Regarding Application Examples and External Circuits

1. If change is made to the constant of an external circuit, please allow a sufficient margin considering variations of the characteristics of the Products and external components, including transient characteristics, as well as static characteristics.
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This Product is electrostatic sensitive product, which may be damaged due to electrostatic discharge. Please take proper caution in your manufacturing process and storage so that voltage exceeding the Products maximum rating will not be applied to Products. Please take special care under dry condition (e.g. Grounding of human body / equipment / solder iron, isolation from charged objects, setting of Ionizer, friction prevention and temperature / humidity control).

Precaution for Storage / Transportation

1. Product performance and soldered connections may deteriorate if the Products are stored in the places where:
 - [a] the Products are exposed to sea winds or corrosive gases, including Cl₂, H₂S, NH₃, SO₂, and NO₂
 - [b] the temperature or humidity exceeds those recommended by ROHM
 - [c] the Products are exposed to direct sunshine or condensation
 - [d] the Products are exposed to high Electrostatic
2. Even under ROHM recommended storage condition, solderability of products out of recommended storage time period may be degraded. It is strongly recommended to confirm solderability before using Products of which storage time is exceeding the recommended storage time period.
3. Store / transport cartons in the correct direction, which is indicated on a carton with a symbol. Otherwise bent leads may occur due to excessive stress applied when dropping of a carton.
4. Use Products within the specified time after opening a humidity barrier bag. Baking is required before using Products of which storage time is exceeding the recommended storage time period.

Precaution for Product Label

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Precaution for Disposition

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[T55D337M6R3C0045](#) [T55D337M010C0040](#) [T55D227M6R3C0055](#) [T55D227M6R3C0050](#) [T55D227M6R3C0025](#)