



# THE DATASHEET OF CT94EW104



# 18 TURNS CERMET TRIMMERS

# CT-94

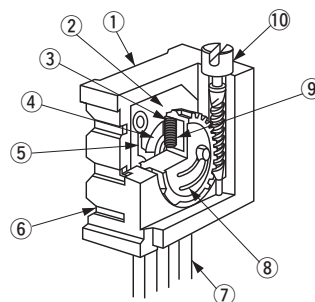
RoHS compliant



## FEATURES

- RoHS compliant
- Thin body design (4.8 mm thick)
- 18 turns, sealed, precision type

## INTERNAL STRUCTURE



|   | Part name         | Material                  | Flammability |
|---|-------------------|---------------------------|--------------|
| ① | Housing           | Polybutyleneterephthalate | UL94V-0      |
| ② | Base element      | Ceramic                   | —            |
| ③ | Wiper             | Multi metal alloy         |              |
| ④ | Resistive element | RuO <sub>2</sub> cermet   |              |
| ⑤ | Electrode         | Ag-Pd cermet              | UL94V-0      |
| ⑥ | Adhesive          | Epoxy                     |              |
| ⑦ | Terminal pin      | Copper, Tin-plated        | —            |
| ⑧ | Rotor gear        | Polyamide                 | UL94HB       |
| ⑨ | Rubber cushion    | Silicone rubber           | —            |
| ⑩ | Shaft             | Brass, Nickel-plated      |              |

## PART NUMBER DESIGNATION

CT - 94 E W 1 k Ω ( 1 0 2 )

Series name

Terminal pin

E : Sn (Lead-free)

Product shape

W, Y : Top adjustment



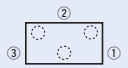


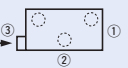
X, P, Z : Side adjustment

Resistance code

Resistance value

※ Please refer to the LIST OF PART NUMBERS when placing orders.

## LIST OF PART NUMBERS

| Adjustment position   | Shape of terminal (Top view)   | Form of packaging | Pieces in package |
|---|--|-------------------|-------------------|
|   |  | Plastic bag       |                   |
| Top adjustment<br> |   | CT-94EW           | 50 pcs./pack      |
|   |   | CT-94EY           |                   |
| Side adjustment<br>(↑ Adjustment direction)   |   | CT-94EX           |                   |
|   |   | CP-94EP           |                   |
|   |  | CT-94EZ           |                   |
|   |  |                   |                   |

## ELECTRICAL CHARACTERISTICS

|                           |   |
|---------------------------|---|
| Nominal resistance range  | 10 Ω ~ 2 M Ω  |
| Resistance tolerance      | ± 10 %  |
| Power ratings             | 0.5 W (70 °C) 0 W (125 °C)  |
| Resistance law            | (B)<br>Linear law   |
| Maximum input voltage     | DC300 V or power rating, whichever is smaller   |
| Maximum wiper current     | 100 mA or power rating, whichever is smaller  |
| Effective electrical turn | 15 turns  |
| End resistance            | 1 % or 2 Ω , whichever is greater   |
| C.R.V.                    | 1 % or 3 Ω , whichever is greater   |
| Operating temp. range     | − 55 ~ 125 °C   |
| Temp. coefficient         | 10 Ω , 20 Ω : ± 250 10 <sup>-6</sup> /°C maximum<br>50 Ω ~ 2 M Ω : ± 100 10 <sup>-6</sup> /°C maximum |
| Insulation resistance     | 1000 M Ω minimum (DC500 V)  |
| Dielectric strength       | AC900 V, 60 s   |
| Net weight                | Approx. 0.88 g (CT-94EP)<br>Approx. 0.92 g (CT-94EW, EX, EY, EZ)                                      |

## <Nominal resistance values>

|        |        |          |        |         |         |           |         |       |       |
|--------|--------|----------|--------|---------|---------|-----------|---------|-------|-------|
| ⊕ 10 Ω | ⊕ 20 Ω | 50 Ω     | 100 Ω  | 200 Ω   | 500 Ω   | 1 k Ω     | 2 k Ω   | 5 k Ω |       |
| 10 k Ω | 20 k Ω | ⊕ 25 k Ω | 50 k Ω | 100 k Ω | 200 k Ω | ⊕ 250 k Ω | 500 k Ω | 1 M Ω | 2 M Ω |

Fig.1

※ The above part numbers are all available with the respective combination of <Nominal resistance values> (Fig. 1).

※ Verify the above part numbers when placing orders.

**The products indicated by ⊕ mark are manufactured upon receipt of order basis.**

## MECHANICAL CHARACTERISTICS

|                   |   |
|-------------------|---|
| Mechanical turn   | 18 turns                                      |
| Operating torque  | 35 mN·m {357 gf·cm} maximum                   |
| Mechanical stop   | Clutch action                                 |
| Rotational life   | 200 cycles [ Δ R/R ≤ ± (2 Ω + 3 %)]           |
| Terminal strength | 10 N {1.02 kgf} minimum<br>(Tensile strength) |
| Thrust to shaft   | 10 N {1.02 kgf} minimum                       |
| Solderability     | 245 ± 3 °C, 2 ~ 3 s                           |

{ } : Reference only

## ENVIRONMENTAL CHARACTERISTICS

| Test item           | Test conditions  | Specifications                   |
|---------------------|--|----------------------------------|
| Thermal shock       | − 65 ~ 125 °C (0.5 h),<br>5 cycles   | [ Δ R/R ≤ 1 %]<br>[S.S. ≤ 1 %]   |
| Humidity            | − 10 ~ 65 °C (80 ~ 98 %),<br>10 cycles, 240 h  | [ Δ R/R ≤ 2 %]                   |
| Shock               | 981 m/s <sup>2</sup> , 6 ms<br>6 directions for 3 times each   | [ Δ R/R ≤ 1 %]<br>[S.S. ≤ 1 %]   |
| Vibration           | (Amplitude) 1.52 mm or<br>(Acceleration) 196 m/s <sup>2</sup> ,<br>10 ~ 2000 Hz, 3 directions, 12 times each |                                  |
| Load life           | 70 °C, 0.5 W, 1000 h   | [ Δ R/R ≤ 3 %]<br>[S.S. ≤ 1 %]   |
| Low temp. operation | − 55 °C, 2 h   | [ Δ R/R ≤ 2 %]<br>[S.S. ≤ 2 %]   |
| High temp. exposure | 125 °C, 250 h  | [ Δ R/R ≤ 3 %]<br>[S.S. ≤ 2 %]   |
| Immersion seal      | 85 °C, 60 s  | No leaks (No continuous bubbles) |
| Soldering heat      | Flow<br>260 ± 3 °C, 5 ~ 6 s, two times maximum<br>Manual soldering<br>380 ± 10 °C, 3 ~ 4 s                   | [ Δ R/R ≤ 1 %]                   |

Δ R/R : Change in total resistance  
S.S. : Setting stability

# CT-94

## CERMET TRIMMERS

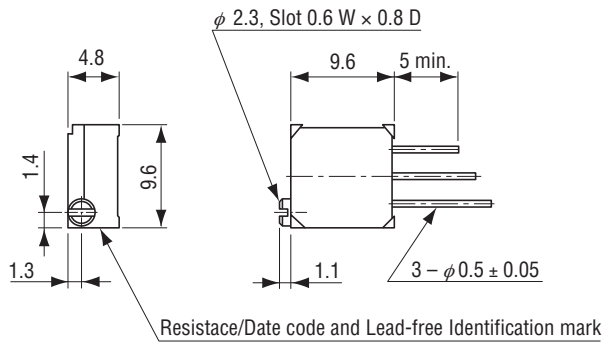
### MAXIMUM INPUT RATINGS

| Nominal resistance values (Ω)   | Resistance code   | Maximum input voltage (V)   | Maximum wiper current (mA)   |
|---|---|---|--|
| <ul style="list-style-type: none"> <li>➡ 10</li> <li>➡ 20</li> <li>50</li> <li>100</li> <li>200</li> <li>500</li> </ul>                   | <ul style="list-style-type: none"> <li>100</li> <li>200</li> <li>500</li> <li>101</li> <li>201</li> <li>501</li> </ul>              | <ul style="list-style-type: none"> <li>1.00</li> <li>2.00</li> <li>5.00</li> <li>7.07</li> <li>10.0</li> <li>15.8</li> </ul>            | <ul style="list-style-type: none"> <li>100</li> <li>100</li> <li>100</li> <li>70.7</li> <li>50.0</li> <li>31.6</li> </ul>                  |
| <ul style="list-style-type: none"> <li>1 k</li> <li>2 k</li> <li>5 k</li> <li>10 k</li> <li>20 k</li> <li>➡ 25 k</li> <li>50 k</li> </ul> | <ul style="list-style-type: none"> <li>102</li> <li>202</li> <li>502</li> <li>103</li> <li>203</li> <li>253</li> <li>503</li> </ul> | <ul style="list-style-type: none"> <li>22.4</li> <li>31.6</li> <li>50.0</li> <li>70.7</li> <li>100</li> <li>112</li> <li>158</li> </ul> | <ul style="list-style-type: none"> <li>22.4</li> <li>15.8</li> <li>10.0</li> <li>7.07</li> <li>5.00</li> <li>4.48</li> <li>3.16</li> </ul> |
| <ul style="list-style-type: none"> <li>➡ 100 k</li> <li>200 k</li> <li>250 k</li> <li>500 k</li> <li>1 M</li> <li>2 M</li> </ul>          | <ul style="list-style-type: none"> <li>104</li> <li>204</li> <li>254</li> <li>504</li> <li>105</li> <li>205</li> </ul>              | <ul style="list-style-type: none"> <li>224</li> <li>300</li> <li>300</li> <li>300</li> <li>300</li> <li>300</li> </ul>                  | <ul style="list-style-type: none"> <li>2.24</li> <li>1.50</li> <li>1.20</li> <li>0.60</li> <li>0.30</li> <li>0.15</li> </ul>               |

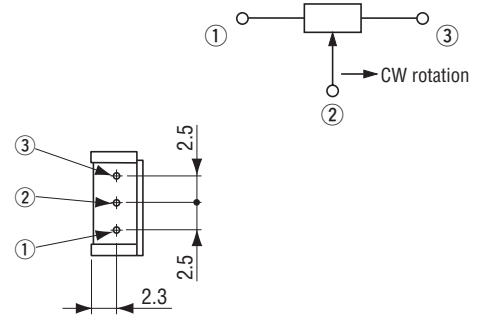
The products indicated by ➡ mark are manufactured upon receipt of order basis.

### OUTLINE DIMENSIONS

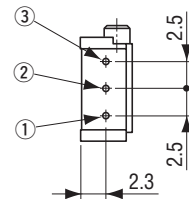
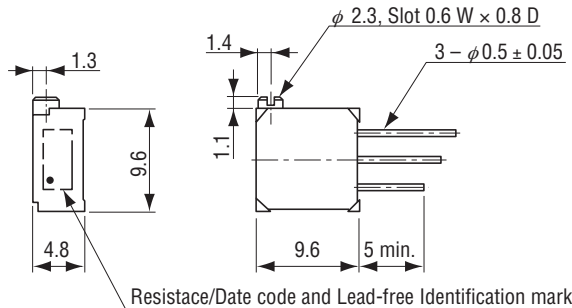
#### CT-94EW Top adjustment



Unless otherwise specified, tolerance: ± 0.3 (Unit: mm)

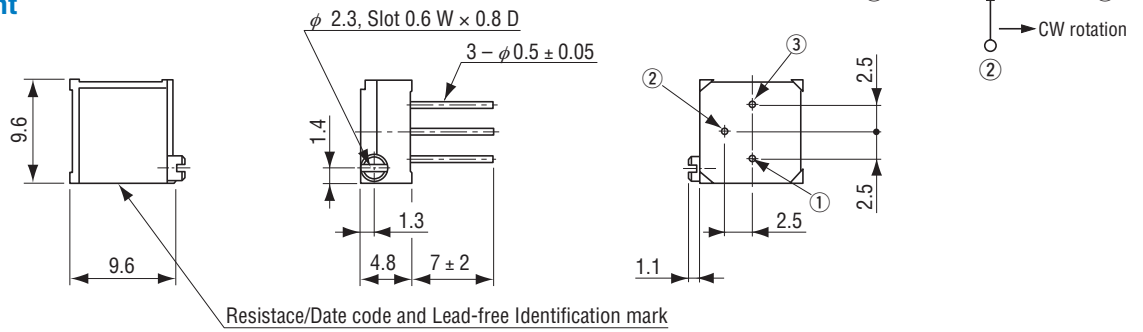


#### CT-94EX Side adjustment

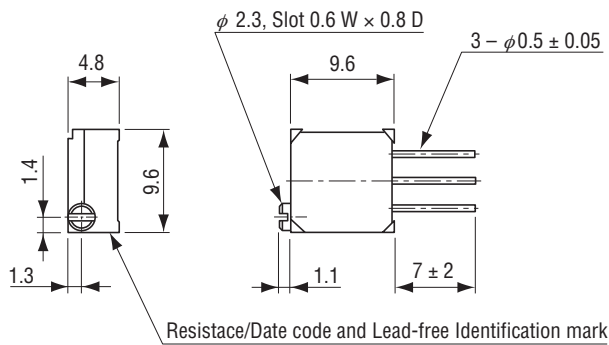


## OUTLINE DIMENSIONS

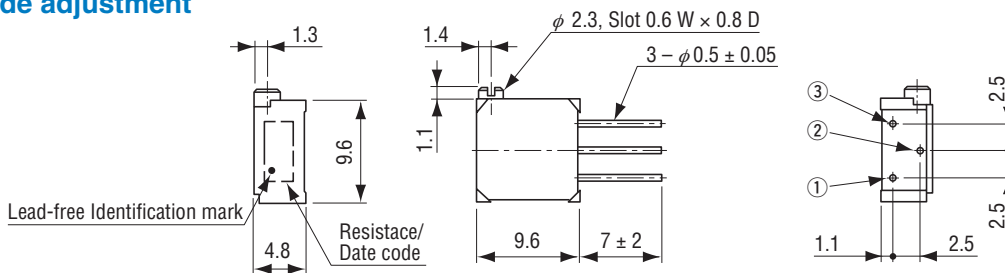
### CT-94EP Side adjustment



### CT-94EY Top adjustment



### CT-94EZ Side adjustment



## PACKAGING SPECIFICATIONS

### <Bulk pack specifications>

- Unit of bulk in a plastic bag is 50 pcs. per pack.
- Boxing of bulk in a plastic bag is performed with 100 pcs. per box.

## Looking for pricing, stock, or lifecycle information?

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