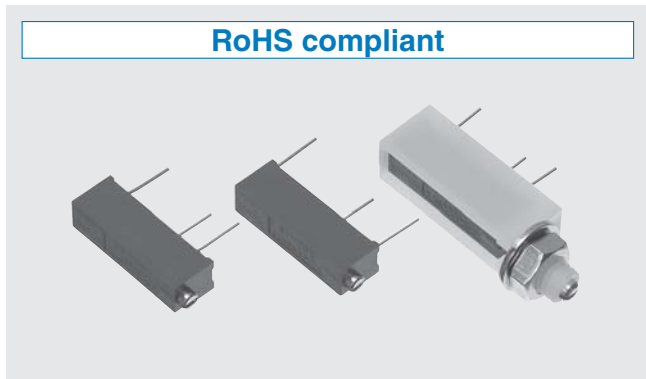


# 15 TURNS CERMET TRIMMERS

# CT-20

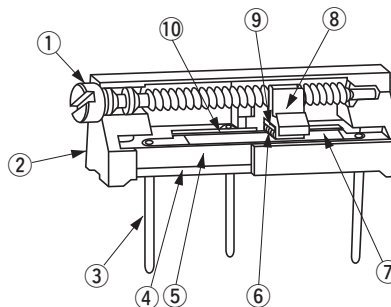
RoHS compliant



## FEATURES

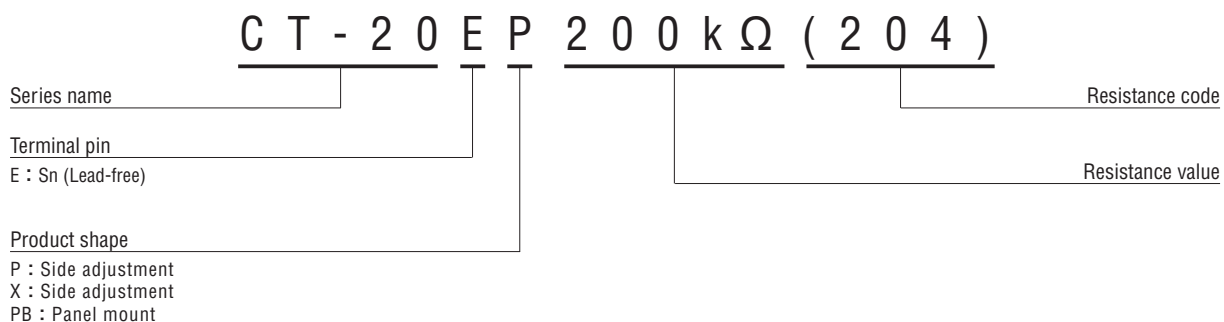
- RoHS compliant
- General use type
- Wide resistance range from 10 Ω to 5 M Ω

## INTERNAL STRUCTURE



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

## PART NUMBER DESIGNATION



※ 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       |                   |
| Side adjustment<br>(↑ Adjustment direction) |                              | CT-20EP           | 50 pcs./pack      |
|   |                              | CT-20EX           |                   |
|   |                              | CT-20EPB          | 25 pcs./pack      |

## ELECTRICAL CHARACTERISTICS

|                           |   |
|---------------------------|---|
| Nominal resistance range  | 10 Ω ~ 5 M Ω  |
| Resistance tolerance      | ± 10 %  |
| Power ratings             | 0.5 W (70 °C) 0 W (120 °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 | 12 turns  |
| End resistance            | 1 % or 2 Ω , whichever is greater   |
| C.R.V.                    | 1 % or 3 Ω , whichever is greater   |
| Operating temp. range     | — 55 ~ 120 °C   |
| Temp. coefficient         | 10 Ω , 20 Ω , 5 M 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       | AC600 V, 60 s   |
| Net weight                | Approx. 1.08 g (CT-20EP, EX)<br>Approx. 3.7 g (CT-20EPB)  |

## <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 | 50 k Ω | 100 k Ω | 200 k Ω | 500 k Ω | 1 M Ω | 2 M Ω | ⤴ 5 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   | 15 turns  |
| Operating torque  | 35 mN·m {357 gf·cm} maximum   |
| Mechanical stop   | Clutch action   |
| Rotational life   | 200 cycles<br>10 Ω ~ 200 Ω [ Δ R/R ≤ ± (0.5 Ω + 3 %) ]<br>500 Ω ~ 5 M Ω [ Δ R/R ≤ ± (0.5 Ω + 2 %) ] |
| Terminal strength | 9 N {917 gf} minimum<br>(Tensile strength)  |
| Thrust to rotor   | 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), 5 cycles  | [ Δ R/R ≤ 1 % ]<br>[ S.S. ≤ 1 % ] |
| Humidity            | — 10 ~ 65 °C (80 ~ 98 %),<br>10 cycles, 240 h  | [ Δ R/R ≤ 1 % ]                   |
| 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 ≤ 2 % ]<br>[ S.S. ≤ 1 % ] |
| Low temp. operation | — 55 °C, 2 h   | [ Δ R/R ≤ 1 % ]<br>[ S.S. ≤ 2 % ] |
| High temp. exposure | 120 °C, 250 h  | [ Δ R/R ≤ 2 % ]<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-20

## CERMET TRIMMERS

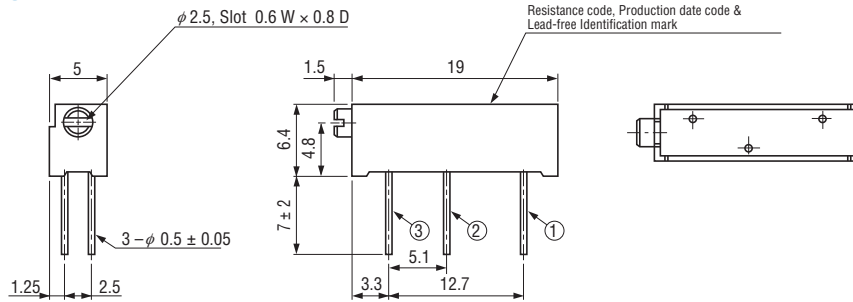
### MAXIMUM INPUT RATINGS

| Nominal resistance values ( $\Omega$ )   | 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>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>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>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>3.16</li> </ul> |
| <ul style="list-style-type: none"> <li>100 k</li> <li>200 k</li> <li>500 k</li> <li>1 M</li> <li>2 M</li> <li>➔ 5 M</li> </ul> | <ul style="list-style-type: none"> <li>104</li> <li>204</li> <li>504</li> <li>105</li> <li>205</li> <li>505</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>0.60</li> <li>0.30</li> <li>0.15</li> <li>0.06</li> </ul> |

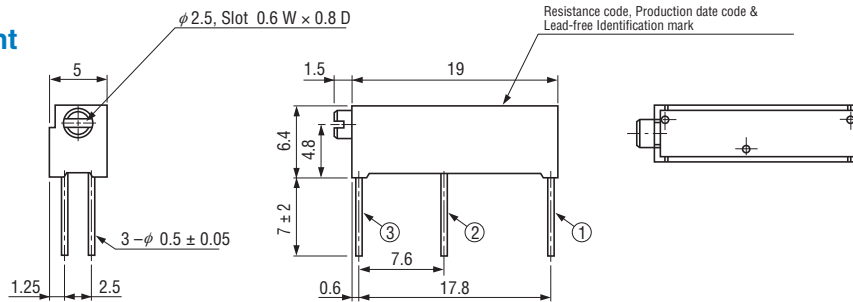
The products indicated by ➔ mark are manufactured upon receipt of order basis.

### OUTLINE DIMENSIONS

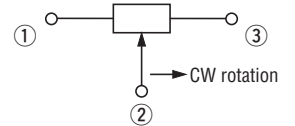
#### CT-20EP Side adjustment



#### CT-20EX Side adjustment

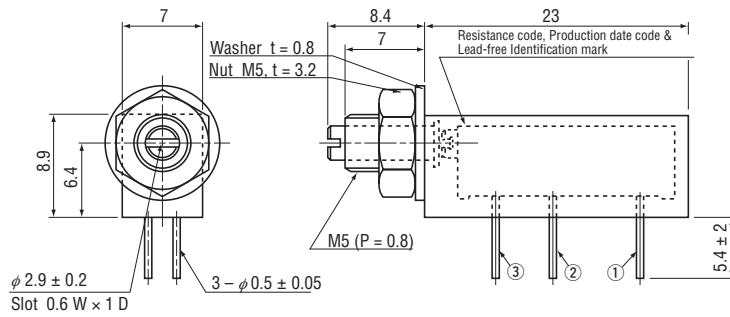


Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)

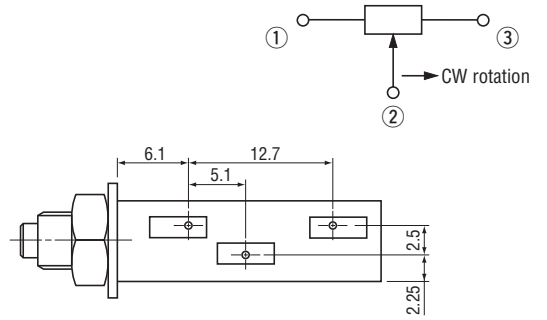


## OUTLINE DIMENSIONS

### CT-20EPB



Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)



## PACKAGING SPECIFICATIONS

### <Bulk pack specifications>

- Unit of bulk in a plastic bag is 50 pcs. (CT-20EPB is 25 pcs.) per pack.
- Boxing of bulk in a plastic bag is performed with 100 pcs. (CT-20EPB is 50 pcs.) per box.