

COPAL ELECTRONICS

15 TURNS

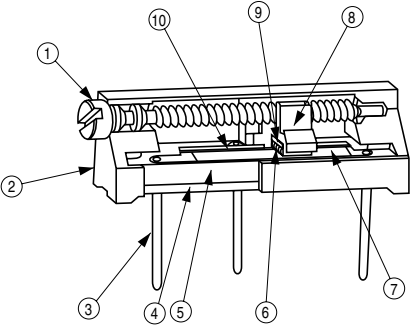
CERMET TRIMMERS

CT-20



FEATURES

- General use type
- Wide resistance range from 10 Ω to 5 MΩ

INTERNAL STRUCTURE			
			
Part name		Material	Flammability
①	Shaft	Brass, Nickel-plated	—
②	Housing	PBT (Polybutyleneterephthalate)	UL-94V-0
③	Terminal pin	Copper, Solder-plated	—
④	Adhesive	Epoxy	UL-94V-0
⑤	Base element	Ceramic	—
⑥	Wiper	Multi metal alloy	
⑦	Resistive element	RuO ₂ cermet	
⑧	Slider block	PBT (Polybutyleneterephthalate)	UL-94HB
⑨	Rubber cushion	Silicone rubber	—
⑩	Electrode	Ag-Pd cermet	

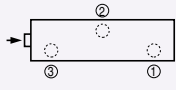
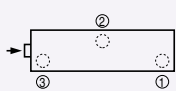
CFCs, Halon, Carbon tetrachloride and designated bromic flame retardant PBBOs and PBBs are not used in our products.

PART NUMBER DESIGNATION

C T - 2 0 P 2 0 0 k Ω (2 0 4)			
Series name		Resistance code	
Product shape		Resistance value	
P : Side adjustment			
X : Side adjustment			

✳ 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
		Bulk packaging	
Side adjustment (↑ Adjustment direction)		CT-20P	50 pcs./pack
		CT-20X	

<Nominal resistance values>

10 Ω	20 Ω	50 Ω	100 Ω	200 Ω	500 Ω	1 kΩ	2 kΩ	5 kΩ
10 kΩ	20 kΩ	25 kΩ	50 kΩ	100 kΩ	200 kΩ	250 kΩ	500 kΩ	1 MΩ
								2 MΩ
								5 MΩ

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.

➡ : Semi-standard

■ ELECTRICAL CHARACTERISTICS

Nominal resistance range	10 Ω ~ 5 MΩ
Total resistance tolerance	± 10 %
Power ratings	0.5 W (70 °C) 0 W (125 °C)
Resistance law	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 ~ +125 °C
Temp. coefficient	10 Ω, 20 Ω, 5 MΩ ± 250 ppm/°C maximum 50 Ω ~ 2 MΩ ± 100 ppm/°C maximum
Insulation resistance	1000 MΩ minimum (DC500 V)
Dielectric strength	AC600 V, 60 s
Net weight	Approx. 1.08 g

■ MECHANICAL CHARACTERISTICS

Mechanical turn	15 turns
Operating torque	35 mN·m {357 gf·cm} maximum
Mechanical stop	Clutch action
Rotational life	200 cycles 10 Ω ~ 200 Ω [$\Delta R/R \leq \pm (0.5 \Omega + 3 \%)$] 500 Ω ~ 5 MΩ [$\Delta R/R \leq \pm (0.5 \Omega + 2 \%)$]
Terminal strength	9 N {917 gf} minimum (Tensile strength)
Thrust to rotor	10 N {1.02 kgf} minimum
Solderability	235 °C, 2 s

{ } : Reference only

■ ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions	Specifications
Thermal shock	-65 ~ +125 °C (0.5 h), 5 cycles	[$\Delta R/R \leq 1 \%$] [S.S. $\leq 1 \%$]
Humidity	-10 ~ +65 °C (80 ~ 98 %RH), 10 cycles, 240 h	[$\Delta R/R \leq 1 \%$]
Shock	981 m/s ² , 6 ms 6 directions for 3 times each	[$\Delta R/R \leq 1 \%$] [S.S. $\leq 1 \%$]
Vibration	Amplitude of 1.52 mm or Acceleration of 196 m/s ² , 10~2000 Hz, 3 directions, 12 times each	
Load life	70 °C, 0.5 W, 1000 h	[$\Delta R/R \leq 2 \%$] [S.S. $\leq 1 \%$]
Low temp. operation	-55 °C, 2 h	[$\Delta R/R \leq 1 \%$] [S.S. $\leq 2 \%$]
High temp. exposure	125 °C, 250 h	[$\Delta R/R \leq 2 \%$] [S.S. $\leq 2 \%$]
Immersion seal	85 °C, 60 s	No leaks (No continuous bubbles)
Soldering heat	350 °C, 3 s	[$\Delta R/R \leq 1 \%$]

$\Delta R/R$: Change in total resistance
 S.S. : Setting stability

CT-20

CERMET TRIMMERS

MAXIMUM INPUT RATINGS

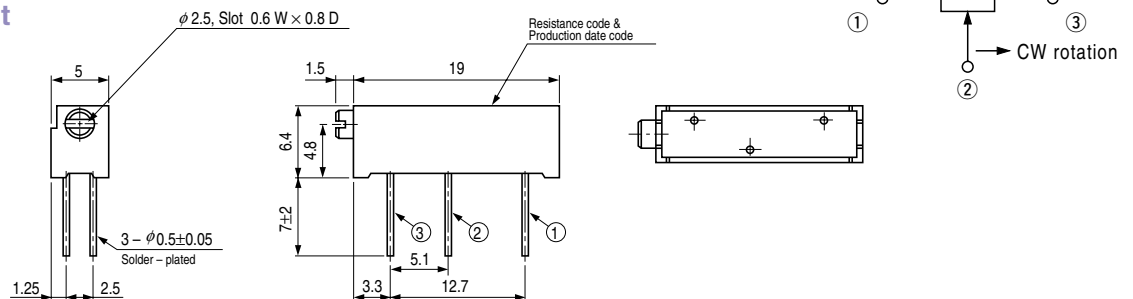
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
$\rightarrow$ 10 $\rightarrow$ 20 50 100 200 500	100 200 500 101 201 501	1.00 2.00 5.00 7.07 10.0 15.8	100 100 100 70.7 50.0 31.6
1 k 2 k 5 k 10 k 20 k 25 k 50 k	102 202 502 103 203 253 503	22.4 31.6 50.0 70.7 100 112 158	22.4 15.8 10.0 7.07 5.00 4.48 3.16
$\rightarrow$ 100 k $\rightarrow$ 200 k $\rightarrow$ 250 k 500 k 1 M 2 M $\rightarrow$ 5 M	104 204 254 504 105 205 505	224 300 300 300 300 300 300	2.24 1.50 1.20 0.60 0.30 0.15 0.06

$\rightarrow$: Semi-standard

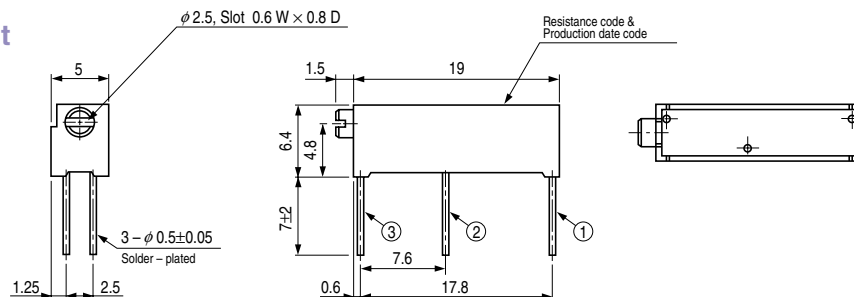
OUTLINE DIMENSIONS

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

CT-20P Side adjustment



CT-20X Side adjustment



PACKAGING SPECIFICATIONS

<Bulk packaging specifications>

- Unit of bulk in vinyl bag packaging is 50 pcs. per pack.
- Boxing of bulk in vinyl bags is performed with 100 pcs. per box.