

SURFACE MOUNT CERMET TRIMMERS (14 TURNS)

ST-5

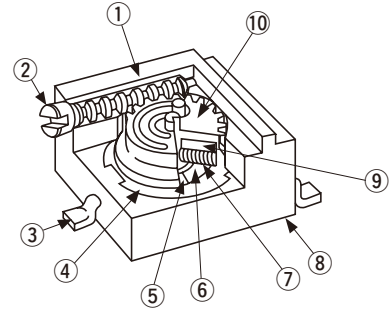
RoHS compliant



FEATURES

- RoHS compliant
- Precise adjustment is possible
- Automatic mounting is possible (Taping)
- Flow/reflow soldering is possible
- Sealed construction (Washable)

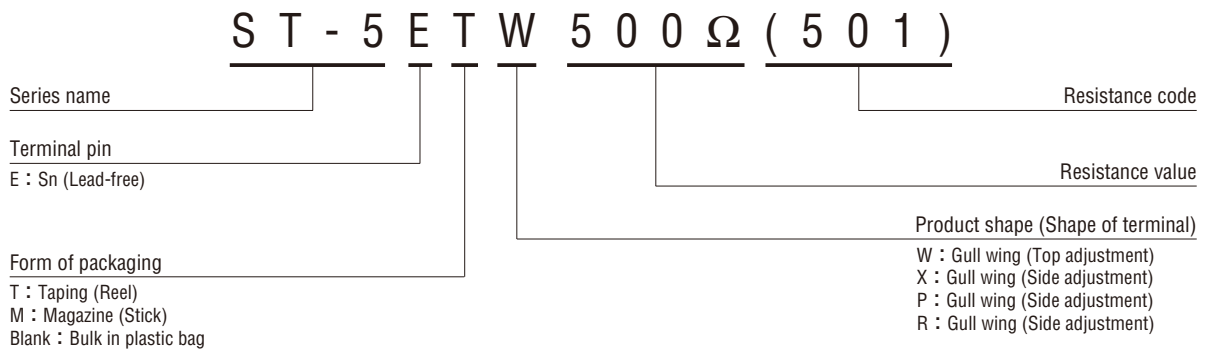
INTERNAL STRUCTURE



	Part name	Material	Flammability
①	Housing	Polyphenylenesulphide	UL-94V-0
②	Shaft	Brass, Nickel-plated	—
③	Terminal pin	Copper, Tin-plated	
④	Base element	Ceramic	
⑤	Electrode	Ag-Pd cermet	
⑥	Resistive element	RuO ₂ cermet	
⑦	Wiper	Multi metal alloy	
⑧	Adhesive	Epoxy	
⑨	Rubber cushion	Silicone rubber	
⑩	Rotor gear	Polyamide	

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

PART NUMBER DESIGNATION



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

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LIST OF PART NUMBERS

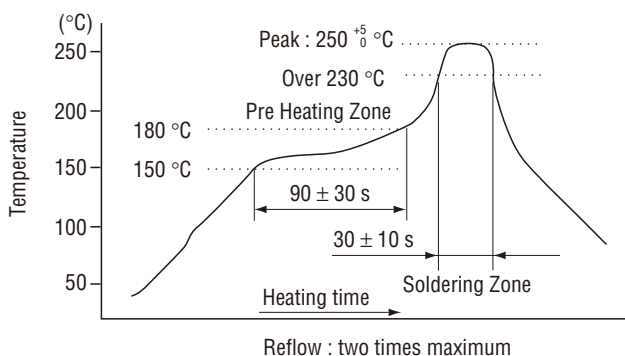
Adjustment position	Shape of terminal	Form of packaging		
		Taping (reel)	Magazine (stick)	Plastic bag
Top adjustment	W (Gull wing)	ST-5ETW	ST-5EMW	ST-5EW
Side adjustment	X (Gull wing)	ST-5ETX	ST-5EMX	ST-5EX
	P (Gull wing)	ST-5ETP	ST-5EMP	ST-5EP
	R (Gull wing)	ST-5ETR	ST-5EMR	ST-5ER
Pieces in package		500 pcs./reel	50 pcs./stick	50 pcs./pack

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

ELECTRICAL CHARACTERISTICS

Nominal resistance range	10 Ω ~ 2 MΩ
Resistance tolerance	±10 %
Power ratings	0.25 W (85 °C) 0 W (120 °C)
Resistance law	Linear law
Maximum input voltage	DC200 V or power rating, whichever is smaller
Maximum wiper current	100 mA or power rating, whichever is smaller
Effective electrical turn	11 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 ~ 50 Ω : ± 250 10 ⁻⁶ /°C maximum 100 Ω ~ 2 MΩ : ± 100 10 ⁻⁶ /°C maximum
Insulation resistance	1000 MΩ minimum (DC500 V)
Dielectric strength	AC600 V, 60 s
Net weight	Approx. 0.35 g

<Reflow profile for soldering heat evaluation>



<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	50 kΩ	100 kΩ	200 kΩ	500 kΩ	1 MΩ	2 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.

※ Taping and magazine specifications are not sold separately and must be purchased in reel or stick units.

MECHANICAL CHARACTERISTICS

Mechanical turn	14 turns
Operating torque	20 mN·m {204 gf·cm} maximum
Mechanical stop	Clutch action
Rotational life	200 cycles 10 Ω ~ 200 Ω [ΔR/R ≤ ± (0.5 Ω + 3 %)] 500 Ω ~ 2 MΩ [ΔR/R ≤ ± (0.5 Ω + 2 %)]
Thrust to shaft	5 N {0.51 kgf} minimum
Solderability	245 ± 3 °C, 2 ~ 3 s
Shear (Adhesion)	5 N {0.51 kgf} 10 s
Substrate bending	Width 90 mm, bend 3 mm, 5 s, 1 time
Pull-off strength	5 N {0.51 kgf} 10 s

{ } : Reference only

ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions	Specifications
Thermal shock	-65 ~ 125 °C (0.5 h), 5 cycles	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Humidity	-10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h	[ΔR/R ≤ 1 %]
Shock	981 m/s ² , 6 ms 6 directions for 3 times each	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Vibration	Amplitude 1.52 mm or Acceleration 196 m/s ² , 10 ~ 2000 Hz, 3 directions, 12 times each	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Load life	85 °C, 0.25 W, 1000 h	[ΔR/R ≤ 2 %] [S.S. ≤ 1 %]
Low temp. operation	-55 °C, 2 h	[ΔR/R ≤ 2 %] [S.S. ≤ 2 %]
High temp. exposure	120 °C, 250 h	[ΔR/R ≤ 2 %] [S.S. ≤ 2 %]
Immersion seal	85 °C, 60 s	No leaks (No continuous bubbles)
Soldering heat	Flow : 260 ± 3 °C as the temperature in a pot of molten solder, immersion from head of terminal to backside of board, 5 ~ 6 s, two times maximum Reflow : Peak temperature 255 °C (Please refer to the profile below.) Manual soldering : 350 ± 10 °C, 3 ~ 4 s	[ΔR/R ≤ 1 %]

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

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SURFACE MOUNT TRIMMERS

MAXIMUM INPUT RATINGS

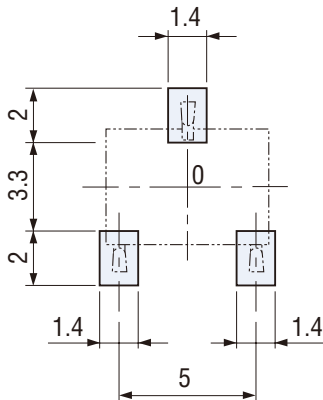
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
↻ 10	100	1.00	100
↻ 20	200	2.00	100
50	500	3.53	70.7
100	101	5.00	50.0
200	201	7.07	35.4
500	501	11.2	22.4
1 k	102	15.8	15.8
2 k	202	22.4	11.2
5 k	502	35.4	7.07
10 k	103	50.0	5.00
20 k	203	70.7	3.54
50 k	503	112	2.24
100 k	104	158	1.58
200 k	204	200	1.00
500 k	504	200	0.40
1 M	105	200	0.20
2 M	205	200	0.10

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

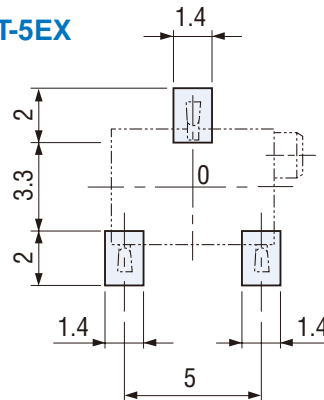
RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

(Unit: mm)

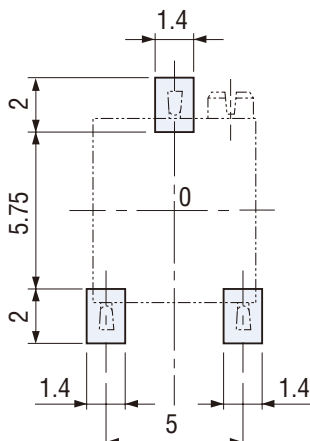
● ST-5EW



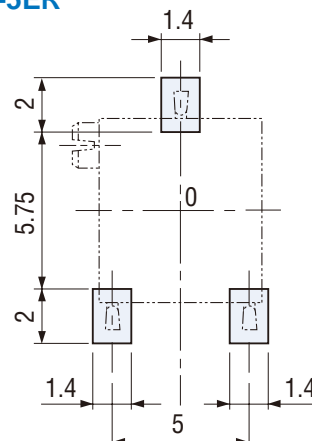
● ST-5EX



● ST-5EP



● ST-5ER



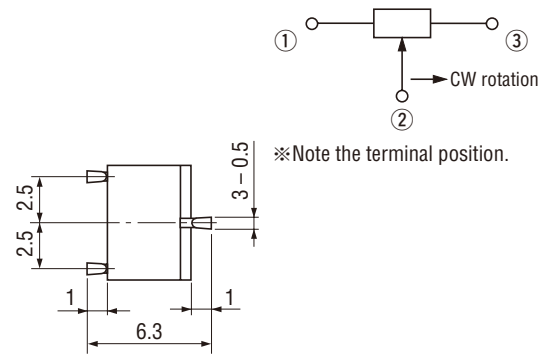
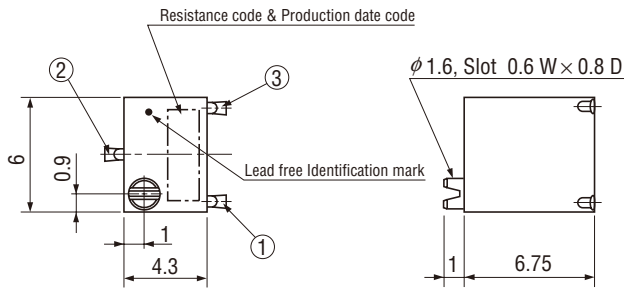
Note) The zero point is the center of mounting.

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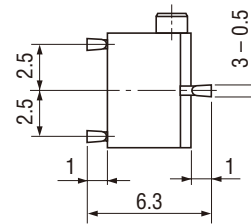
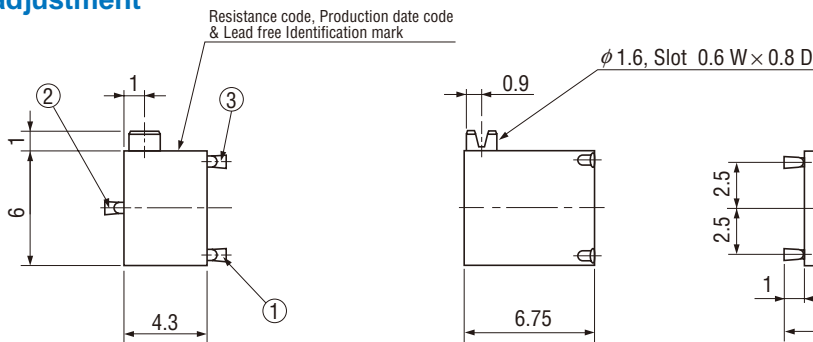
OUTLINE DIMENSIONS

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

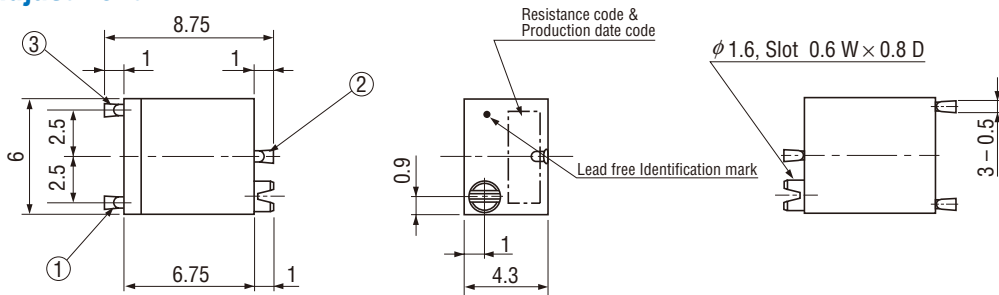
ST-5EW Top adjustment



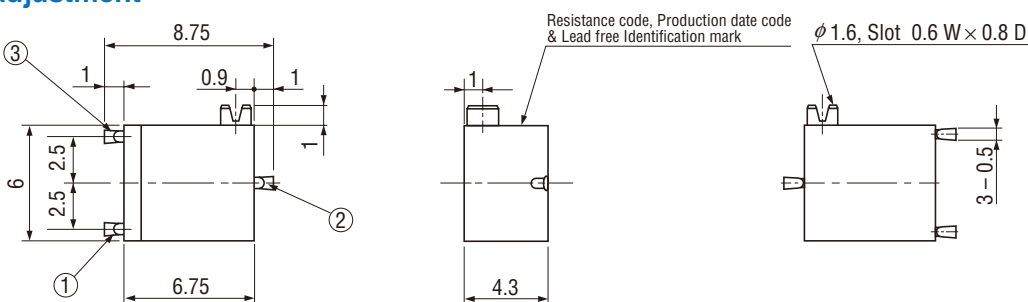
ST-5EX Side adjustment



ST-5EP Side adjustment



ST-5ER Side adjustment



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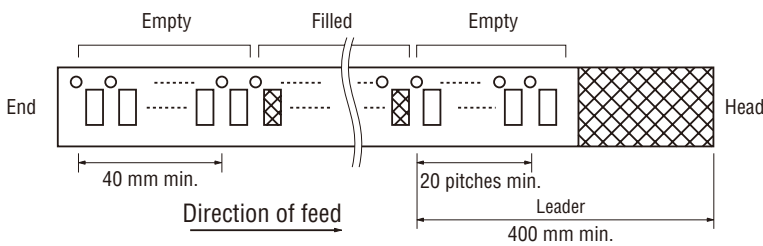
PACKAGING SPECIFICATIONS

<Taping packaging specifications>

- Taping version is packaged in 500 pcs. per reel.
Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.
- Taping version is boxed with one reel (500 pcs.).

Maximum number of consecutive missing pieces = 2
Leader length and reel dimension are shown in the dia-grams below.

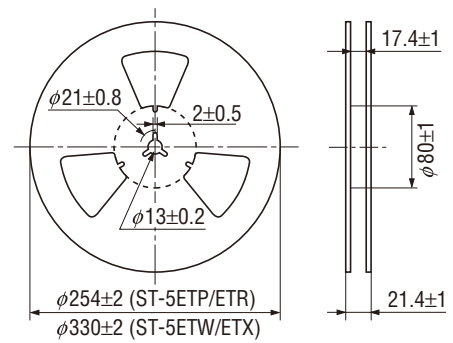
EMBOSSED TAPE DIMENSIONS



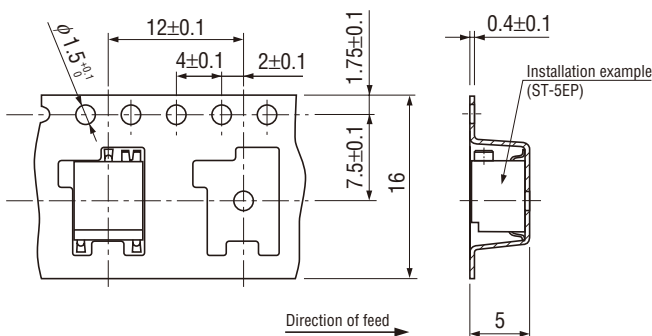
REEL DIMENSIONS

(Conforms to JIS C 0806-3)
(In accordance with EIAJ ET-7200A)

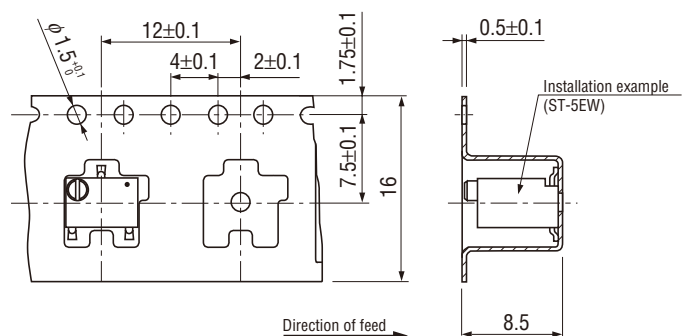
(Unit: mm)



ST-5ETP/ETR



ST-5ETW/ETX



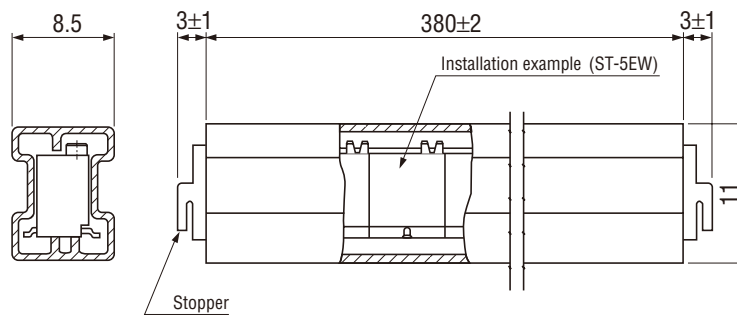
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<Magazine packaging specifications>

- Magazine is packed 50 pcs. per stick.
Orders will be accepted for units of 50 pcs., i.e., 50, 100, 150 pcs., etc.
- Magazines are packed 2000 pcs. per box.

● Magazine dimensions

(Unit: mm)



<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 200 pcs. per box.