

SURFACE MOUNT CERMET TRIMMERS (14 TURNS) **ST-5**

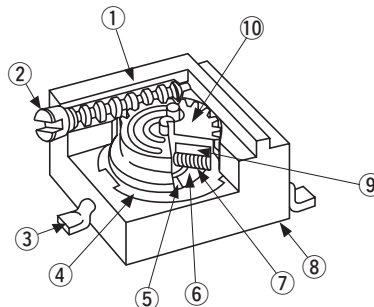
RoHS compliant



FEATURES

- RoHS compliant
- Precise adjustment is possible
- Automatic mounting is possible (Taping)
- Flow/reflow soldering is possible
- Sealed construction (Washable: Refer to A-328)

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	UL-94HB
⑩	Rotor gear	Polyamide	

PART NUMBER DESIGNATION

S T - 5		E T W		5 0 0 Ω		(5 0 1)	
Series name						Resistance code	
Terminal pin						Resistance value	
E : Sn (Lead-free)							
Form of packaging						Product shape (Shape of terminal)	
T : Taping (Reel)						W : Gull wing (Top adjustment)	
M : Magazine (Stick)						X : Gull wing (Side adjustment)	
Blank : Bulk in plastic bag						P : Gull wing (Side adjustment)	
						R : Gull wing (Side adjustment)	

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

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SURFACE MOUNT TRIMMERS

LIST OF PART NUMBERS

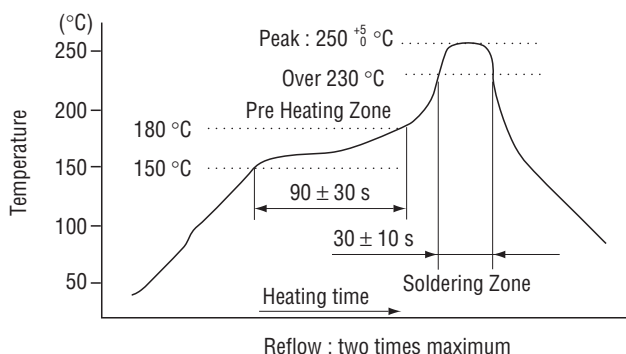
Adjustment position	Shape of terminal	Form of packaging		
		Taping (reel)	Magazine (stick)	Plastic bag
Top adjustment	W (Gull wing)	ST-5ETW	ST-5EMW	ST-5EW
Side adjustment	X (Gull wing)	ST-5ETX	ST-5EMX	ST-5EX
	P (Gull wing)	ST-5ETP	ST-5EMP	ST-5EP
	R (Gull wing)	ST-5ETR	ST-5EMR	ST-5ER
Pieces in package		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 [Δ R/R ≤ ± (0.5 Ω + 3 %)] 500 Ω ~ 2 MΩ [Δ R/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	[Δ R/R ≤ 1 %] [S.S. ≤ 1 %]
Humidity	−10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h	[Δ R/R ≤ 1 %]
Shock	981 m/s ² , 6 ms 6 directions for 3 times each	[Δ R/R ≤ 1 %] [S.S. ≤ 1 %]
Vibration	Amplitude 1.52 mm or Acceleration 196 m/s ² , 10 ~ 2000 Hz, 3 directions, 12 times each	
Load life	85 °C, 0.25 W, 1000 h	[Δ R/R ≤ 2 %] [S.S. ≤ 1 %]
Low temp. operation	−55 °C, 2 h	[Δ R/R ≤ 2 %] [S.S. ≤ 2 %]
High temp. exposure	120 °C, 250 h	[Δ R/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	[Δ R/R ≤ 1 %]

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

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SURFACE MOUNT TRIMMERS

MAXIMUM INPUT RATINGS

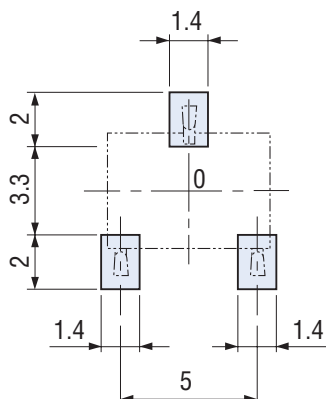
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
<div> <div> <div>→</div> <div>→</div> </div> <div> 10 20 50 100 200 500 </div> </div>	100 200 500 101 201 501	1.00 2.00 3.53 5.00 7.07 11.2	100 100 70.7 50.0 35.4 22.4
1 k 2 k 5 k 10 k 20 k 50 k	102 202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

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

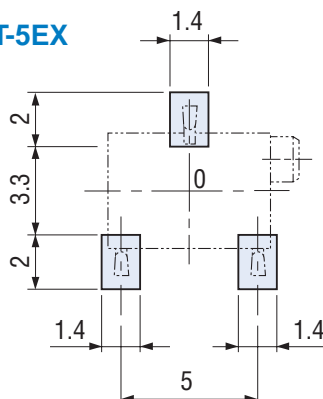
RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

(Unit: mm)

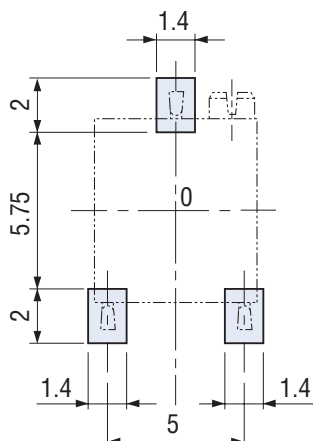
ST-5EW



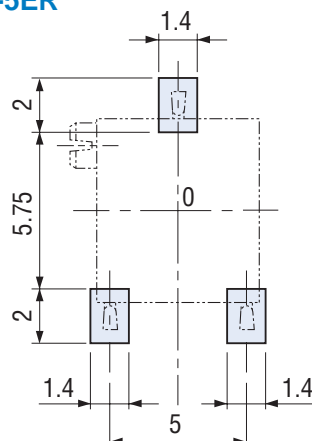
ST-5EX



ST-5EP



ST-5ER



Note) The zero point is the center of mounting.

Specifications are subject to change without notice.

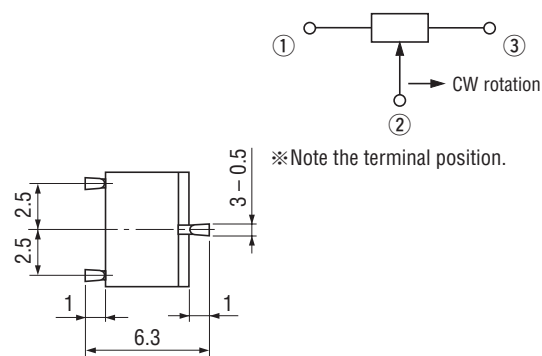
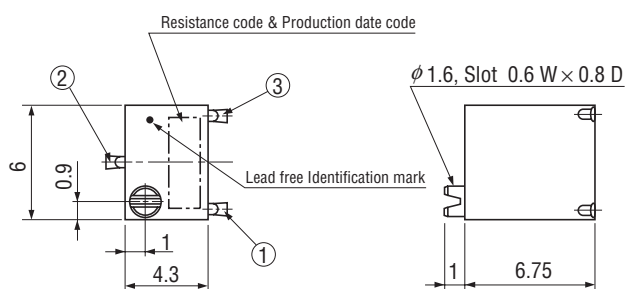
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SURFACE MOUNT TRIMMERS

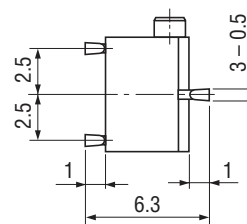
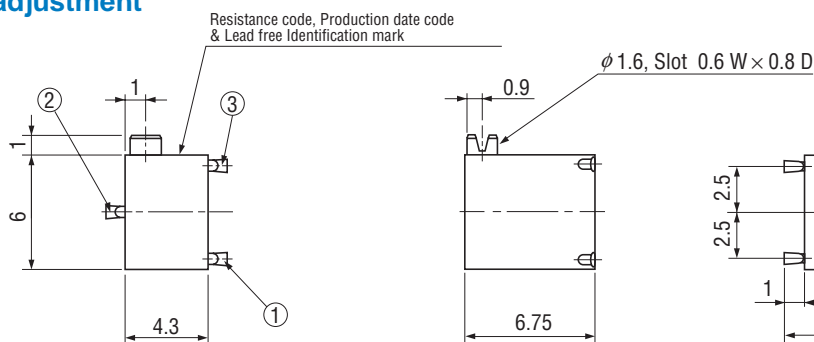
OUTLINE DIMENSIONS

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

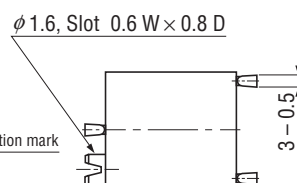
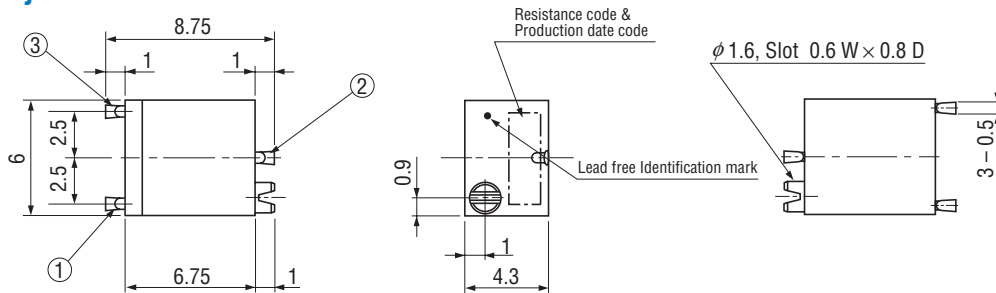
ST-5EW Top adjustment



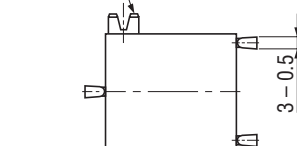
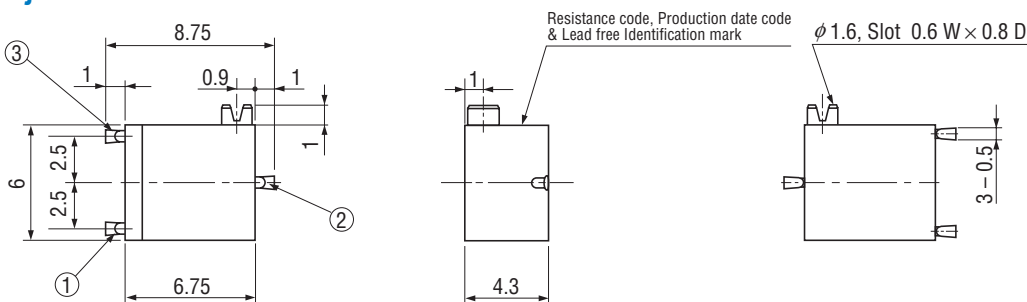
ST-5EX Side adjustment



ST-5EP Side adjustment



ST-5ER Side adjustment



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SURFACE MOUNT TRIMMERS

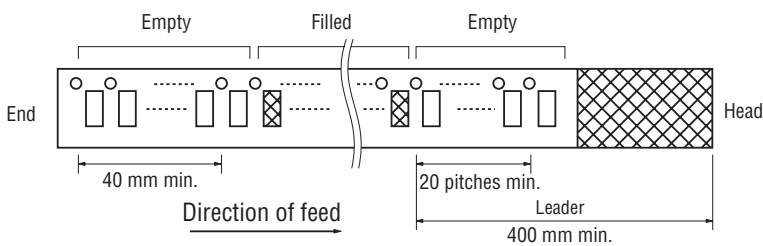
PACKAGING SPECIFICATIONS

<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.

EMBOSED TAPE DIMENSIONS

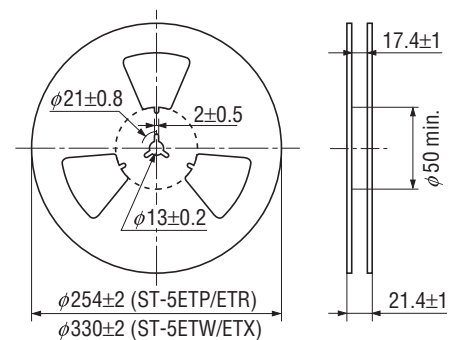


REEL DIMENSIONS

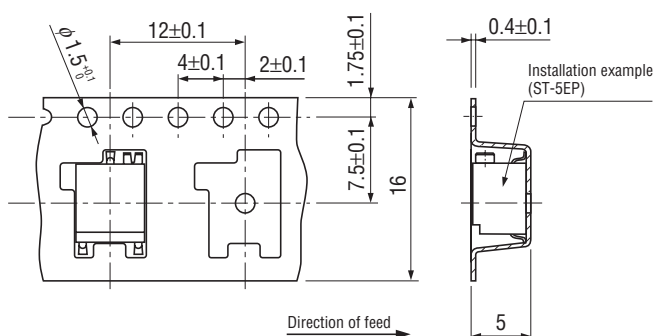
(Conforms to JIS C 0806-3)

(In accordance with EIAJ ET-7200A)

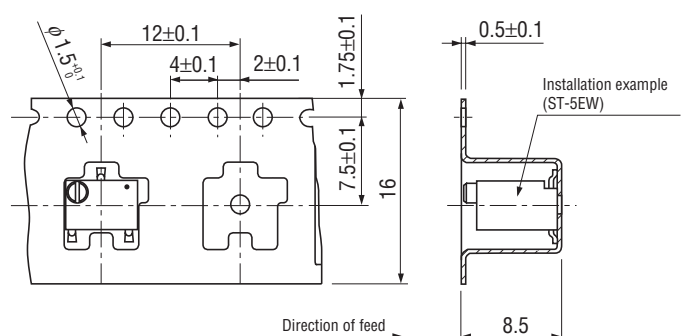
(Unit: mm)



ST-5ETP/ETR



ST-5ETW/ETX



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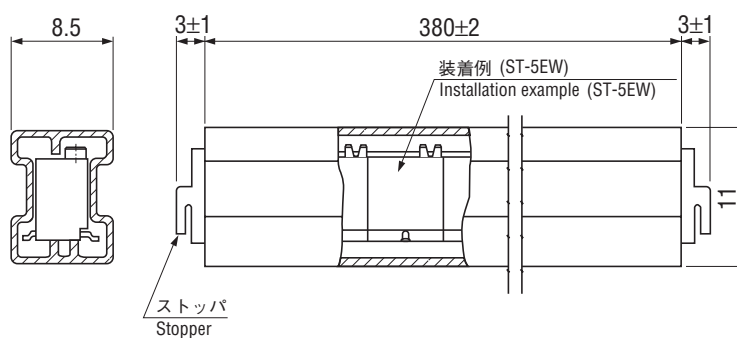
SURFACE MOUNT TRIMMERS

<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.