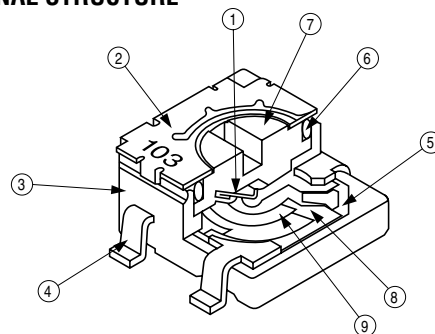




FEATURES

- Wide variety (7 types) to choose from
- Automatic mounting is possible (Taping)
- Flow/reflow soldering is possible
- Sealed construction (Washable)
- Sure mechanical stops
- Cross slot rotor available

INTERNAL STRUCTURE



	Part name	Material	Flammability
①	Wiper	Multi metal alloy	—
②	Cover	Stainless steel (SUS 304)	
③	Housing	Epoxy	UL-94V-0
④	Terminal pin	Copper alloy, Solder-plated	—
⑤	Base element	Ceramic	
⑥	"O" ring	Silicone rubber	UL-94HB
⑦	Rotor	PPS (Polyphenylenesulphide)	UL-94V-0
⑧	Electrode	Ag-Pd cermet	—
⑨	Resistive element	RuO ₂ cermet	

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

PART NUMBER DESIGNATION

S T - 4 2 T A 2 0 0 Ω (2 0 1)	
Series name	Resistance code
Form of slot Blank : - 2 : +	Resistance value
Form of packaging T : Taping (Reel) M : Magazine (Stick) Blank : Bulk in vinyl bags	Product shape (Shape of terminal) A, G : J-hook B, D, H : Gull wing C, F : Through hole pins

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

ST-4

SURFACE MOUNT TYPE TRIMMERS

LIST OF PART NUMBERS

Adjustment position	Shape of terminal	Form of packaging		
		Taping (reel)	Bulk packaging	Magazine (Stick)
Top adjustment	A (J-hook)	ST-4TA	ST-4A	ST-4MA
	B (Gull wing)	ST-4TB	ST-4B	ST-4MB
	C (Through hole pins)		ST-4C	ST-4MC
Rear adjustment	D (Gull wing)	ST-4TD	ST-4D	
	F (Through hole pins)		ST-4F	
Side adjustment	G (J-hook)	ST-4TG	ST-4G	
	H (Gull wing)	ST-4TH	ST-4H	
Pieces in package		500 pcs./reel	100 pcs./pack	50pcs./stick

ELECTRICAL CHARACTERISTICS

Nominal resistance range	10 Ω ~ 2 MΩ
Total resistance tolerance	± 20 %
Power ratings	0.25 W (70 °C) 0 W (125 °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 angle	210° (1 turn)
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 ~ 50 Ω : ± 250 ppm/°C maximum 100 Ω ~ 2 MΩ : ± 100 ppm/°C maximum
Insulation resistance	1000 MΩ minimum (DC500 V)
Dielectric strength	AC500 V, 60 s
Net weight	Approx. 0.12 g (ST-4A, B, C, D, F) Approx. 0.22 g (ST-4G, H)

<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

☐ : Not manufactured

* 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 versions must be purchased in reel units.

* Cross slot available : ST-42 ☐☐

☞ : Semi-standard

MECHANICAL CHARACTERISTICS

Mechanical angle	240° (1 turn)
Operating torque	10 mN·m {102 gf·cm} maximum
Stop strength	30 mN·m {306 gf·cm} minimum
Rotational life	100 cycles [$\Delta R/R \leq \pm (2 \Omega + 3 \%)$]
Thrust to rotor	5 N {0.51 kgf} minimum
Solderability	235 °C, 2 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	[$\Delta R/R \leq 2 \%$] [S.S. $\leq 1 \%$]
Humidity	-10 ~ +65 °C (80 ~ 98 %RH), 10 cycles, 240 h	[$\Delta R/R \leq 2 \%$]
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, 0.25 W 1000 h	[$\Delta R/R \leq 3 \%$] [S.S. $\leq 1 \%$]
Low temp. operation	-55 °C, 2 h	[$\Delta R/R \leq 2 \%$] [S.S. $\leq 2 \%$]
High temp. exposure	125 °C, 250 h	[$\Delta R/R \leq 3 \%$] [S.S. $\leq 2 \%$]
Immersion seal	85 °C, 60 s	No leaks (No continuous bubbles)
Soldering heat	260 °C, 10 s or 215 °C, 35 s	[$\Delta R/R \leq 1 \%$]

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

MAXIMUM INPUT RATINGS

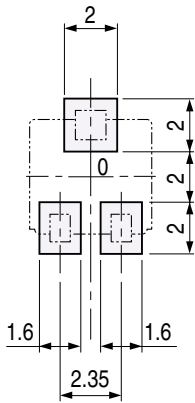
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
⤵ 10 ⤵ 20 50 100 200 500	100 200 500 101 201 501	1.00 2.00 3.53 5.00 7.07 11.2	100 100 70.7 50.0 35.4 22.4
1 k 2 k 5 k 10 k 20 k 50 k	102 202 502 103 203 503	15.8 22.4 35.4 50.0 70.7 112	15.8 11.2 7.07 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

⤵ : Semi-standard

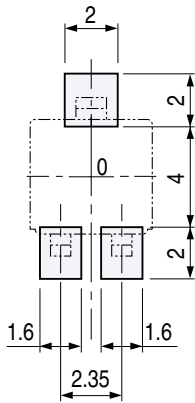
RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

(Unit: mm)

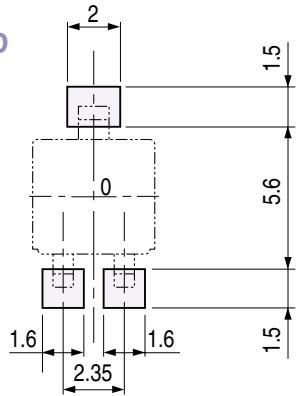
ST-4A



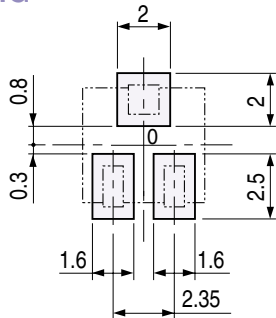
ST-4B



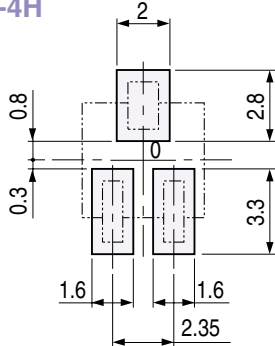
ST-4D



ST-4G



ST-4H



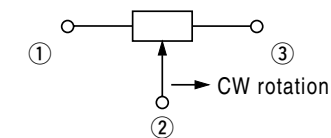
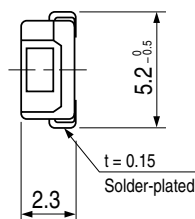
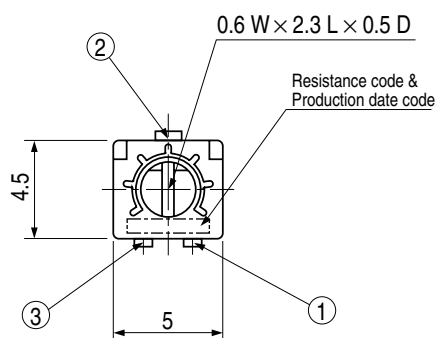
Note) The zero point is the center of mounting.

ST-4

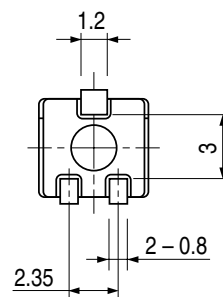
SURFACE MOUNT TYPE TRIMMERS

OUTLINE DIMENSIONS

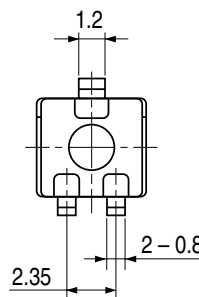
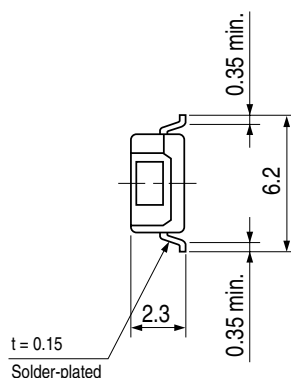
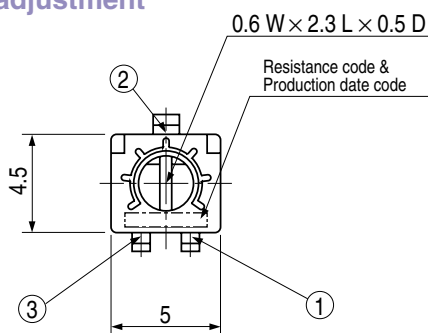
ST-4A Top adjustment



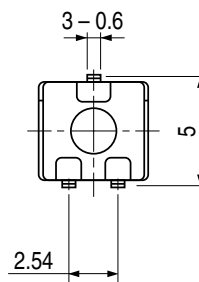
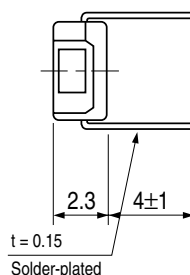
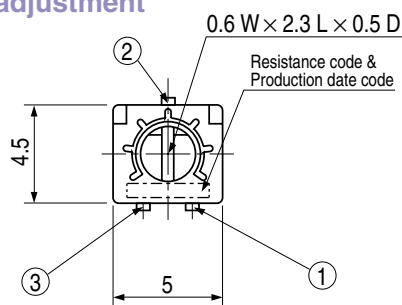
※ Note the terminal position.



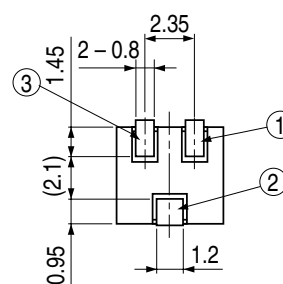
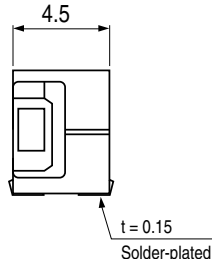
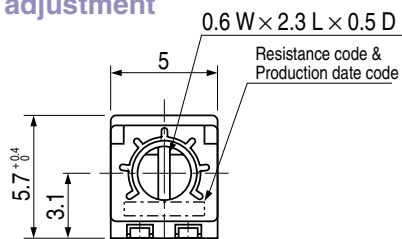
ST-4B Top adjustment



ST-4C Top adjustment



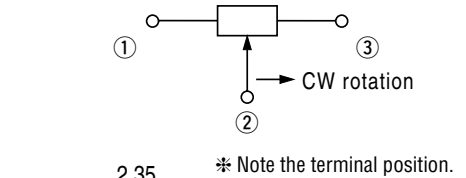
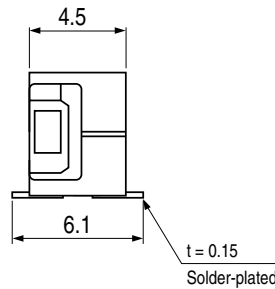
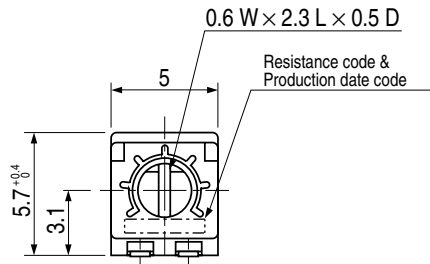
ST-4G Side adjustment



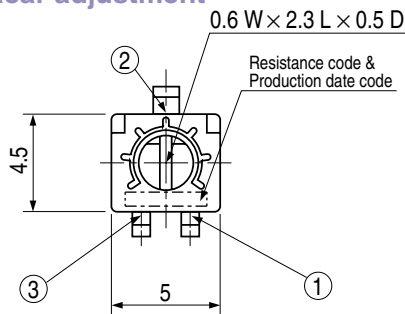
OUTLINE DIMENSIONS

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

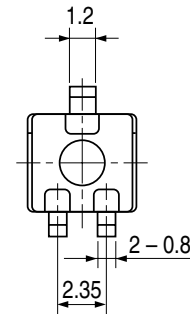
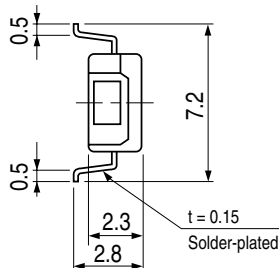
ST-4H Side adjustment



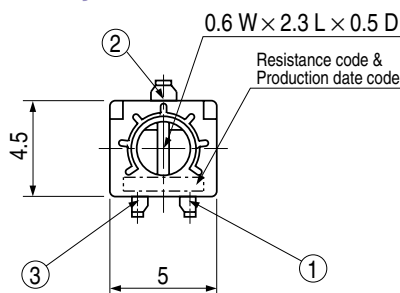
ST-4D Rear adjustment



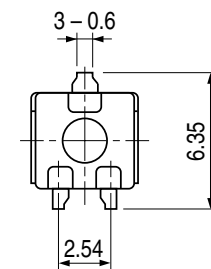
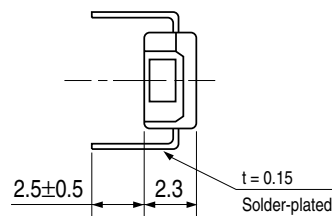
<Semi-standard products>



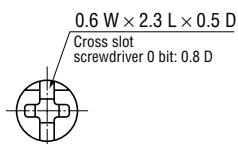
ST-4F Rear adjustment



<Semi-standard products>



CROSS SLOT DIMENSION



ST-4

SURFACE MOUNT TYPE TRIMMERS

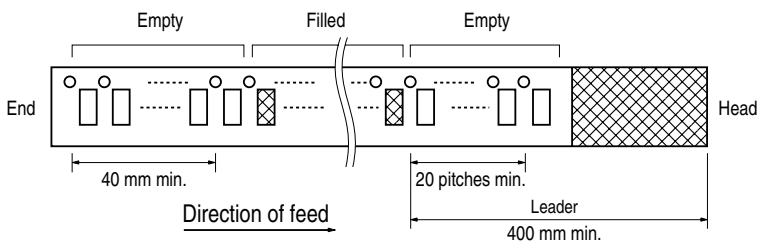
PACKAGING SPECIFICATIONS

<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.
- ST-4TA, TB and TD versions are boxed with 4 reels (2000 pcs.).
ST-4TG and TH versions are boxed with one reel (500 pcs.).

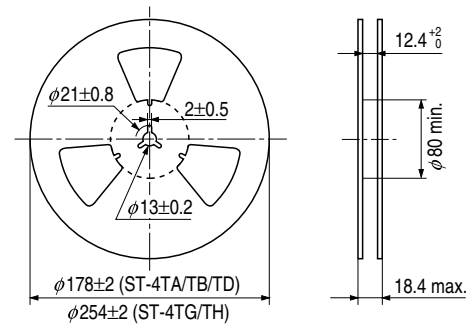
Maximum number of consecutive missing pieces=2
Leader length and reel dimension are shown in the diagrams below.

EMBOSSED TAPE DIMENSIONS



REEL DIMENSIONS

(Unit: mm)



Reel & embossed tape materials

Embossed tape: Plastic
Reel: Paper

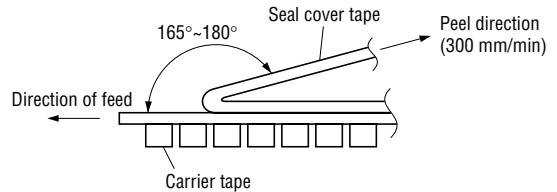
Embossed tape pull strength

9.8 N {1kgf} minimum

Peeling strength of seal tape

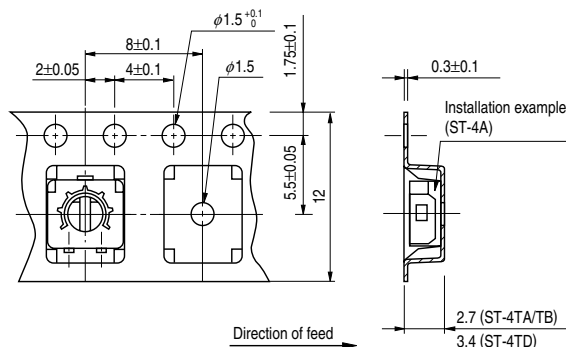
0.098~0.69 N {10~70gf}

Test method for peeling strength of seal tape

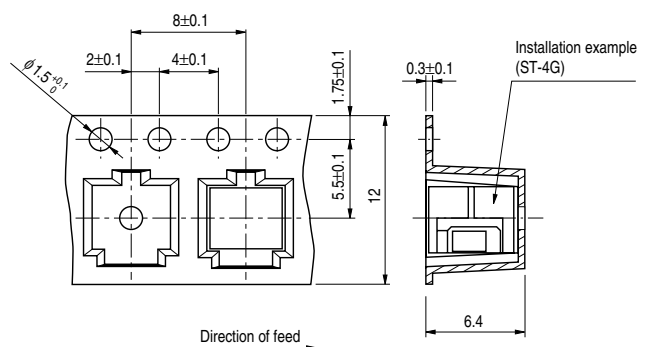


{ } : Reference only

ST-4TA/TB/TD



ST-4TG/TH



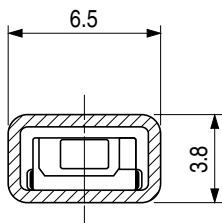
<Magazine packaging specifications>

- 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.

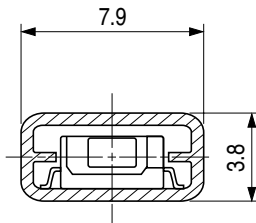
● Magazine dimensions

(Unit: mm)

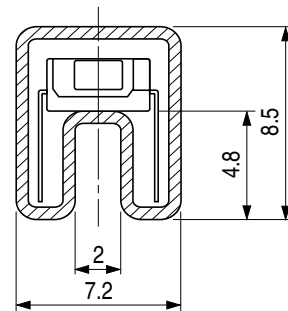
● ST-4MA



● ST-4MB



● ST-4MC



※ Magazine length = 270 ± 2 mm (Without rubber cap)

<Bulk packaging specifications>

- Unit of bulk in vinyl bag packaging is 100 pcs. per pack.
- Boxing of bulk in vinyl bags is performed with 500 pcs. per box.