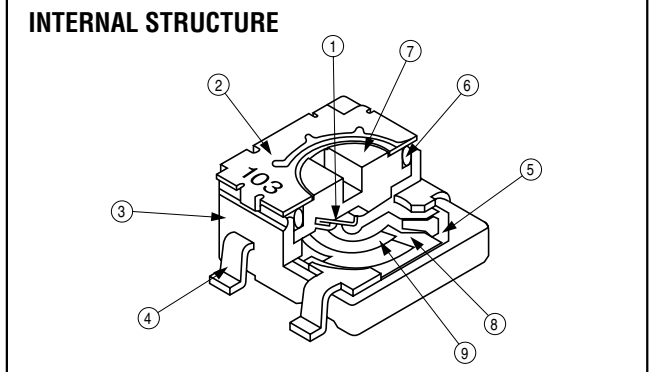




**FEATURES**

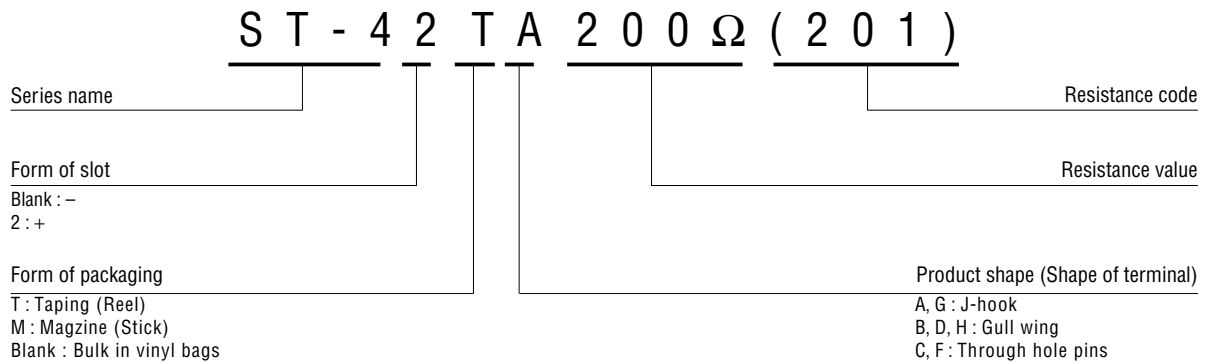
- Wide variety (7 types) to choose from
- Automatic mounting is possible (Taping)
- Flow/reflow soldering is possible
- Sealed construction (Washable)
- Sure mechanical stops
- Cross slot rotor available



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 <sub>2</sub> cermet	

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.

# ST-4

## SURFACE MOUNT TYPE TRIMMERS

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 <sup>2</sup> , 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 <sup>2</sup> , 10~2000 Hz, 3 directions, 12 times each	[ $\Delta R/R \leq 1 \%$ ] [S.S. $\leq 1 \%$ ]
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**

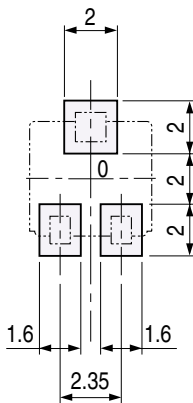
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
↻ 10	100	1.00	100
↻ 20	200	2.00	100
↻ 50	500	3.53	70.7
↻ 100	101	5.00	50.0
↻ 200	201	7.07	35.4
↻ 500	501	11.2	22.4
1 k	102	15.8	15.8
2 k	202	22.4	11.2
5 k	502	35.4	7.07
10 k	103	50.0	5.00
20 k	203	70.7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

↻ : Semi-standard

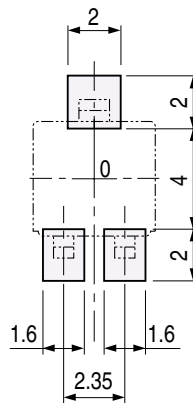
**RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS**

(Unit: mm)

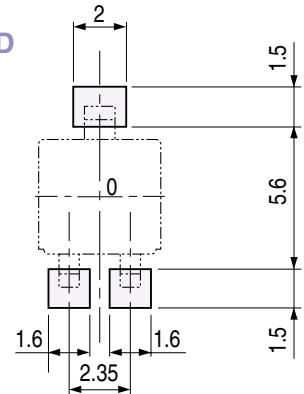
● ST-4A



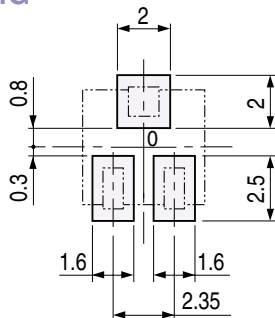
● ST-4B



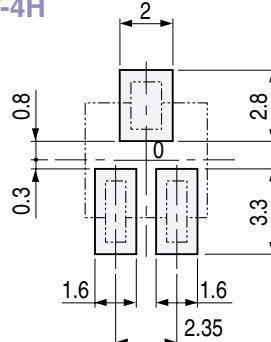
● ST-4D



● ST-4G



● ST-4H



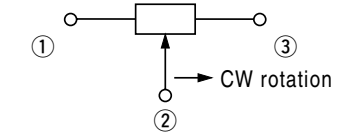
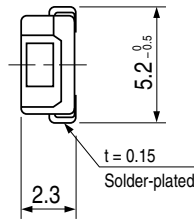
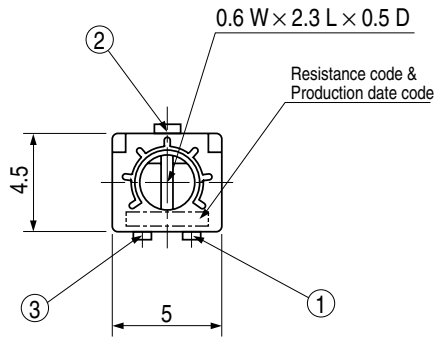
Note) The zero point is the center of mounting.

# ST-4

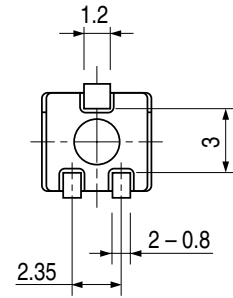
## SURFACE MOUNT TYPE TRIMMERS

### OUTLINE DIMENSIONS

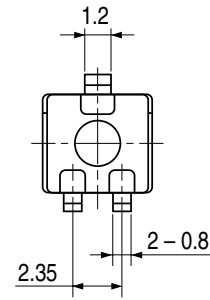
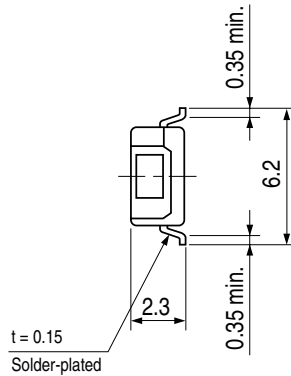
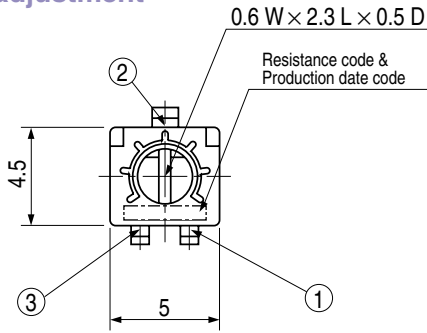
● **ST-4A**  
Top adjustment



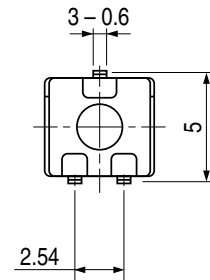
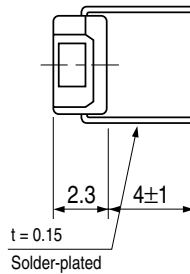
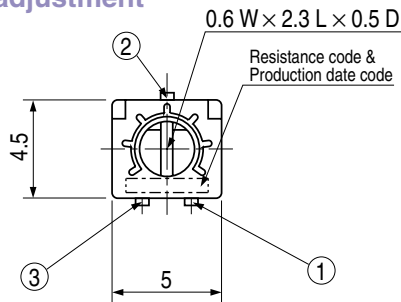
※ Note the terminal position.



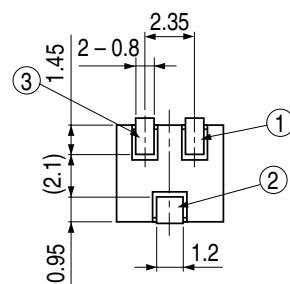
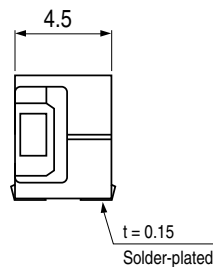
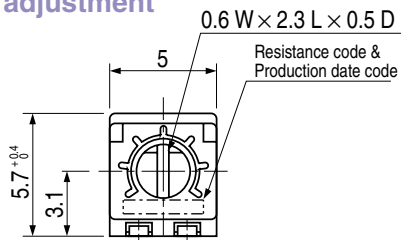
● **ST-4B**  
Top adjustment



● **ST-4C**  
Top adjustment

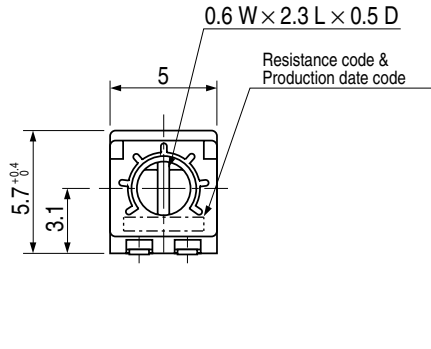


● **ST-4G**  
Side adjustment

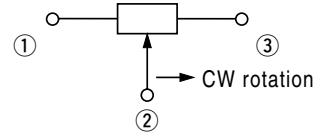


**OUTLINE DIMENSIONS**

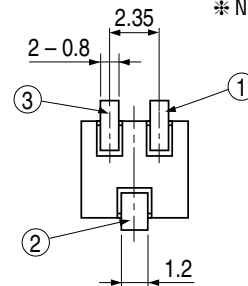
● **ST-4H**  
**Side adjustment**



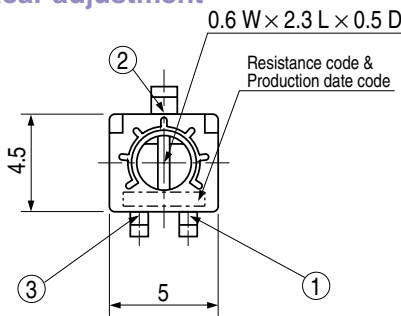
Unless otherwise specified, tolerance : ± 0.3 (Unit: mm)



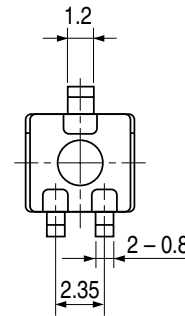
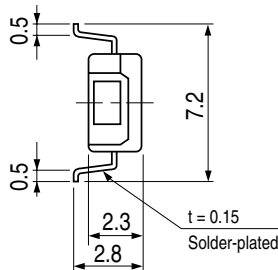
\* Note the terminal position.



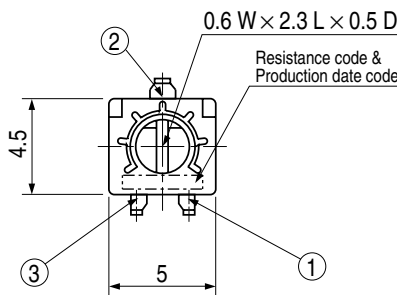
● **ST-4D**  
**Rear adjustment**



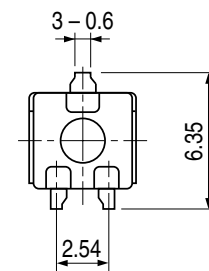
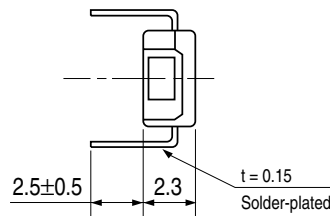
<Semi-standard products>



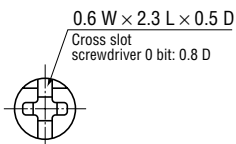
● **ST-4F**  
**Rear adjustment**



<Semi-standard products>



● **CROSS SLOT DIMENSION**



# ST-4

## SURFACE MOUNT TYPE TRIMMERS

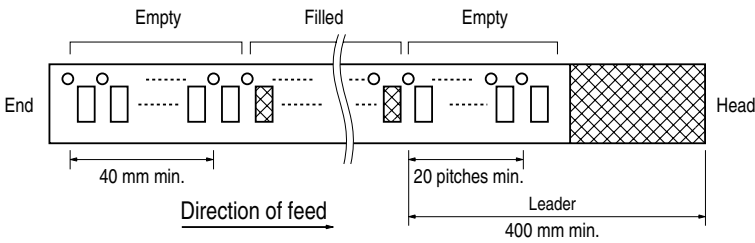
### PACKAGING SPECIFICATIONS

#### <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.).

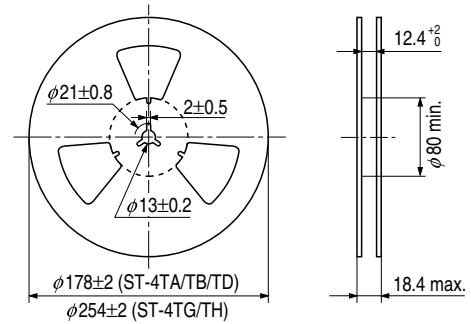
Maximum number of consecutive missing pieces=2  
Leader length and reel dimension are shown in the diagrams below.

#### EMBOSSED TAPE DIMENSIONS



#### REEL DIMENSIONS

(Unit: mm)



#### Reel & embossed tape materials

Embossed tape: Plastic  
Reel: Paper

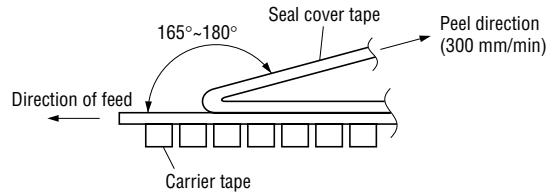
#### Embossed tape pull strength

9.8 N {1kgf} minimum

#### Peeling strength of seal tape

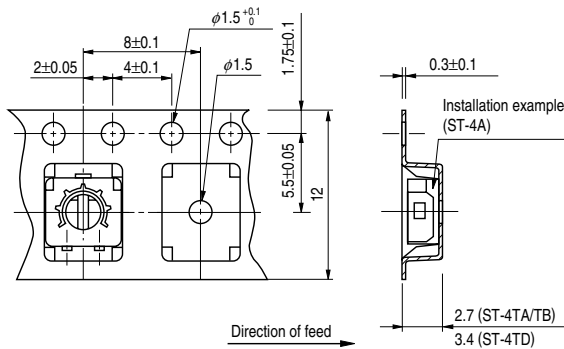
0.098~0.69 N {10~70gf}

#### Test method for peeling strength of seal tape

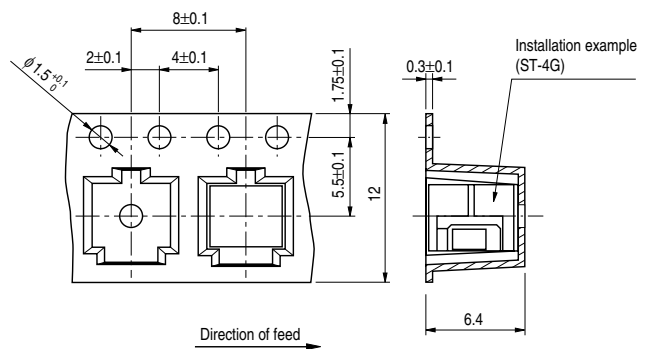


{ } : Reference only

#### ST-4TA/TB/TD



#### ST-4TG/TH



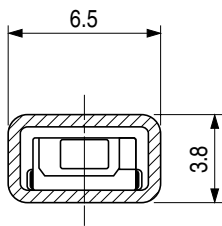
**<Magazine packaging specifications>**

- 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.

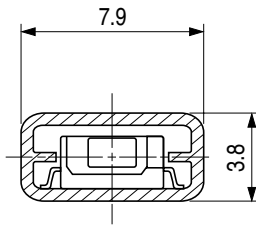
● **Magazine dimensions**

(Unit: mm)

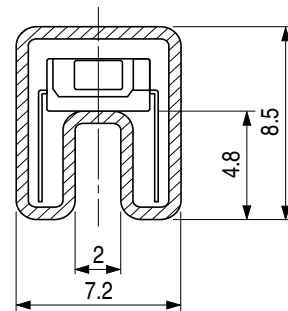
● **ST-4MA**



● **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.