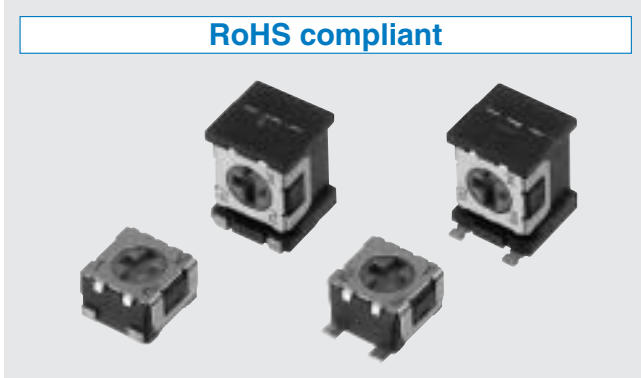


# SURFACE MOUNT CERMET TRIMMERS (SINGLE TURN)

# ST-32

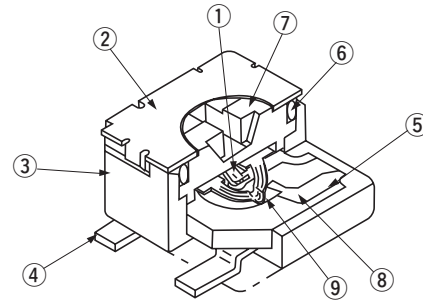
## RoHS compliant



## FEATURES

- Lead-free soldering, Cadmium-free
- Top and side adjustment styles
- Rotor with a cross slot for ease of adjustment
- Leaded terminals provide strong adhesive strength against P.C.B. bending
- J-hook, Gull wing and leaded terminal configurations
- Sealed / Washable

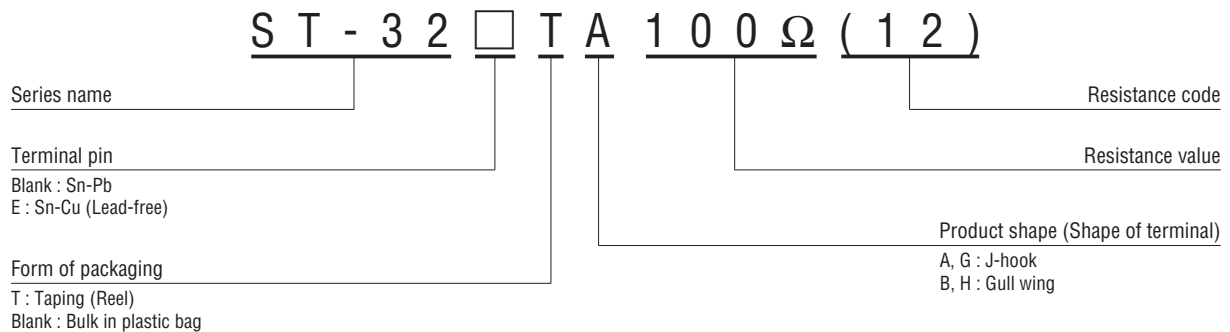
## INTERNAL STRUCTURE



Part name		Material	Flammability	
①	Wiper	Multi metal alloy	—	
②	Cover	Stainless steel (SUS 304)		
③	Housing	Epoxy	UL-94V-0	
④	Terminal	Sn-Pb	Copper alloy, Solder-plated	—
		Sn-Cu	Copper alloy, Sn-Cu-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-32 SURFACE MOUNT TRIMMERS

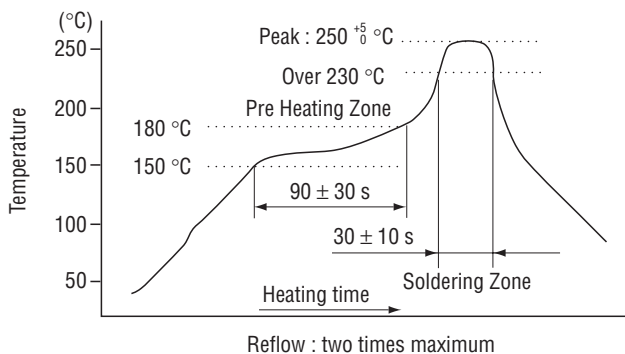
## LIST OF PART NUMBERS

Adjustment position	Shape of terminal	Form of packaging			
		Taping (reel)		Plastic bag	
		Sn-Pb	Sn-Cu (Lead-free)	Sn-Pb	Sn-Cu (Lead-free)
Top adjustment	A ( J-hook )	ST-32TA	ST-32ETA	ST-32A	ST-32EA
	B ( Gull wing )	ST-32TB	ST-32ETB	ST-32B	ST-32EB
Side adjustment	G ( J-hook )	ST-32TG	ST-32ETG	ST-32G	ST-32EG
	H ( Gull wing )	ST-32TH	ST-32ETH	ST-32H	ST-32EH
Pieces in package		500 pcs./reel		100 pcs./pack	

## ELECTRICAL CHARACTERISTICS

Nominal resistance range	10 Ω ~ 2 MΩ
Resistance tolerance	± 20 %
Power ratings	0.125 W (70 °C) 0 W (125 °C)
Resistance law	Linear law (B)
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 10 <sup>-6</sup> /°C maximum 100 Ω ~ 2 MΩ : ± 100 10 <sup>-6</sup> /°C maximum
Insulation resistance	1000 MΩ minimum (DC500 V)
Dielectric strength	AC500 V, 60 s
Net weight	Approx. 0.05 g (ST-32A, B, EA, EB) Approx. 0.11 g (ST-32G, H, EG, EH)

### <Reflow profile for soldering heat evaluation>



### <Nominal resistance values>

⊕ 10 Ω	⊕ 20 Ω	50 Ω	100 Ω	200 Ω	300 Ω	500 Ω
1 kΩ	2 kΩ	3 kΩ	5 kΩ	10 kΩ	20 kΩ	30 kΩ
50 kΩ	100 kΩ	200 kΩ	500 kΩ	1 MΩ	2 MΩ	

Fig.1

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

- \* The part numbers on the left are all available with the respective combination of <Nominal resistance values> (Fig. 1).
- \* Verify the above part numbers when placing orders.
- \* Taping specification is not sold separately and must be purchased in reel units.

## MECHANICAL CHARACTERISTICS

Mechanical angle	250 ° (1 turn)
Operating torque	5 mN·m {51 gf·cm} maximum
Stop strength	20 mN·m {204 gf·cm} minimum
Rotational life	100 cycles [ΔR/R ≤ ± (2 Ω + 3 %)]
Thrust to rotor	5 N {0.51 kgf} minimum
Solderability	Sn-Pb : 235 °C, 2 s Sn-Cu (Lead-free) : 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 ≤ 2 %] [S.S. ≤ 1 %]
Humidity	-10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h	[ΔR/R ≤ 2 %]
Shock	981 m/s <sup>2</sup> , 6 ms 6 directions for 3 times each	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Vibration	Amplitude 1.52 mm or Acceleration 196 m/s <sup>2</sup> , 10 ~ 2000 Hz, 3 directions, 12 times each	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Load life	70 °C, 0.125 W, 1000 h	[ΔR/R ≤ 3 %] [S.S. ≤ 1 %]
Low temp. operation	-55 °C, 2 h	[ΔR/R ≤ 2 %] [S.S. ≤ 2 %]
High temp. exposure	125 °C, 250 h	[ΔR/R ≤ 3 %] [S.S. ≤ 2 %]
Immersion seal	85 °C, 60 s	No leaks (No continuous bubbles)
Soldering heat	Sn-Pb 260 °C, 10 s or 215 °C, 35 s  Sn-Cu 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

# ST-32

## SURFACE MOUNT TRIMMERS

### MAXIMUM INPUT RATINGS

Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
↻ 10	11	1.00	100
↻ 20	21	1.58	79.1
50	51	2.50	50.0
100	12	3.53	35.4
200	22	5.00	25.0
300	32	6.12	20.4
500	52	7.91	15.8
1 k	13	11.2	11.2
2 k	23	15.8	7.91
3 k	33	19.4	6.45
5 k	53	25.0	5.00
10 k	14	35.4	3.54
20 k	24	50.0	2.50
30 k	34	61.2	2.04
50 k	54	79.1	1.58
100 k	15	112	1.12
200 k	25	158	0.79
500 k	55	200	0.40
1 M	16	200	0.20
2 M	26	200	0.10

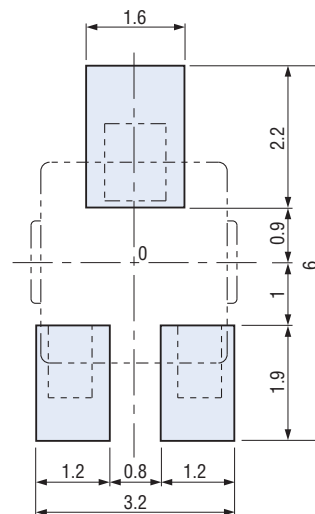
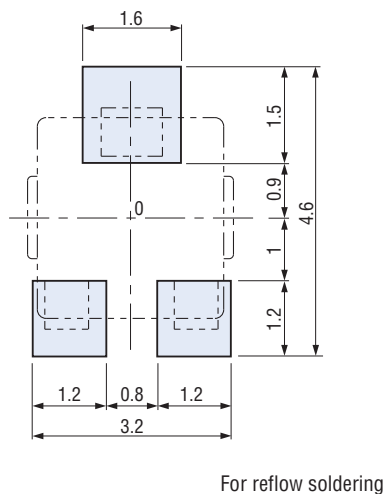
The products indicated by ↻ mark are manufactured upon receipt of order basis.

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

● ST-32A, G, EA, EG

● ST-32B, H, EB, EH

(Unit : mm)



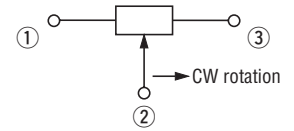
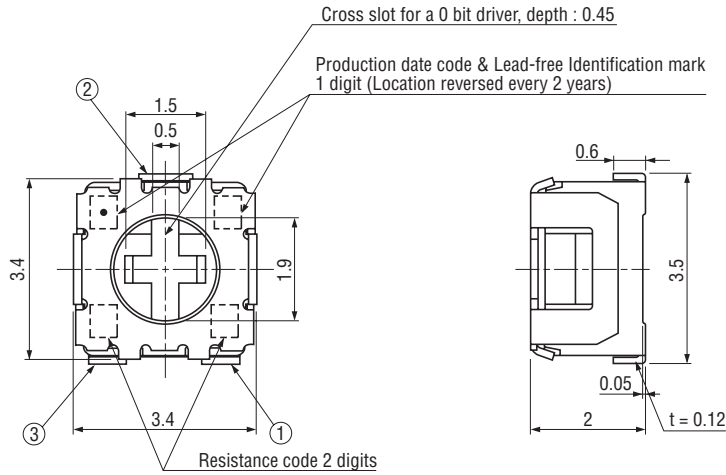
Note) The zero point is the center of mounting.

# ST-32 SURFACE MOUNT TRIMMERS

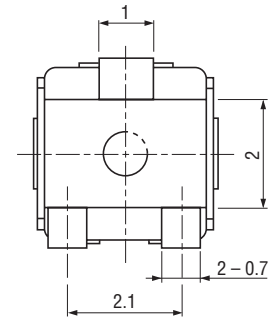
## OUTLINE DIMENSIONS

Unless otherwise specified, tolerance :  $\pm 0.3$  (Unit : mm)

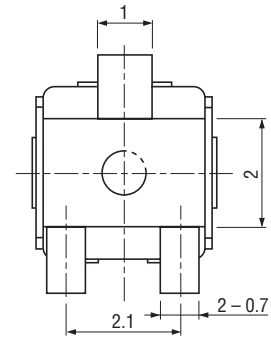
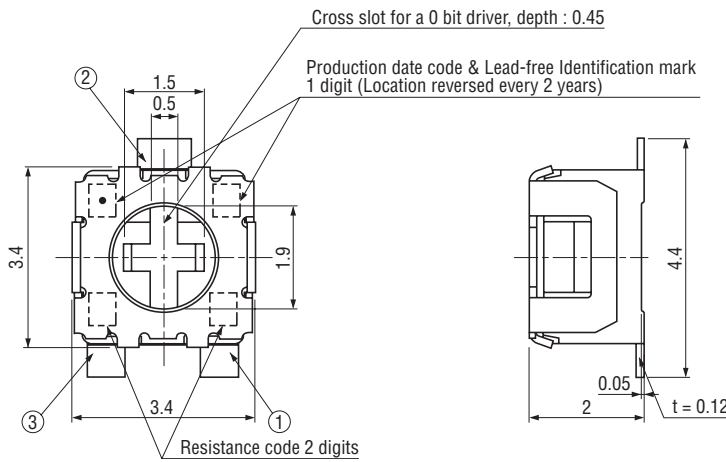
### ST-32A, ST-32EA Top adjustment



\* Note the terminal position.



### ST-32B, ST-32EB Top adjustment

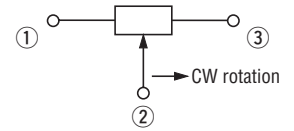
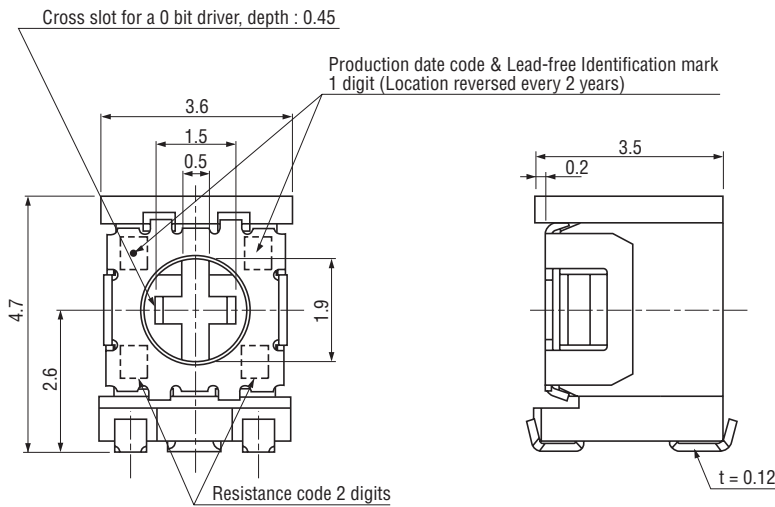


# ST-32 SURFACE MOUNT TRIMMERS

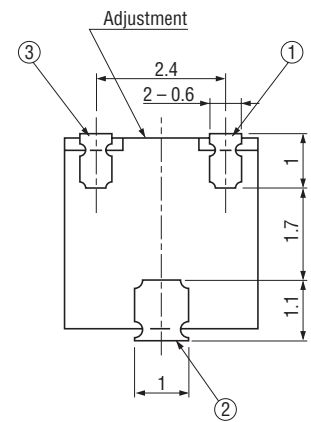
## OUTLINE DIMENSIONS

Unless otherwise specified, tolerance :  $\pm 0.3$  (Unit : mm)

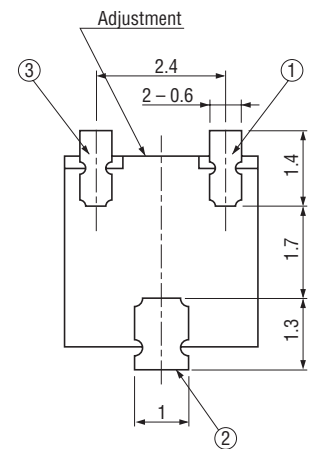
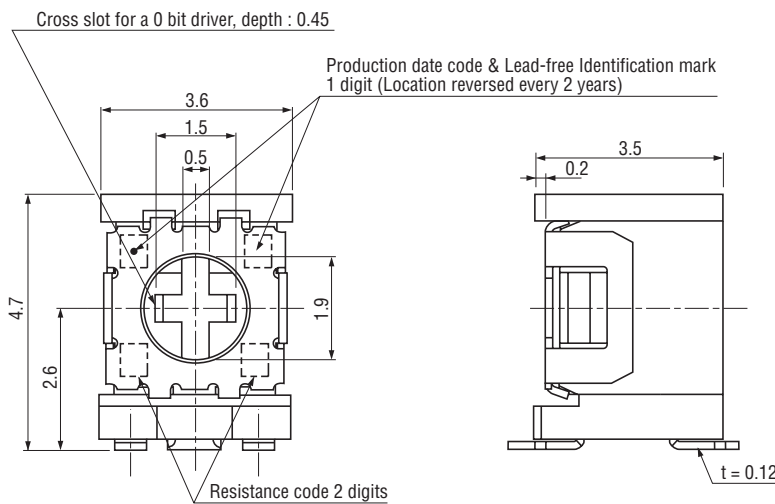
### ST-32G, ST-32EG Side adjustment



\* Note the terminal position.



### ST-32H, ST-32EH Side adjustment



# ST-32 SURFACE MOUNT TRIMMERS

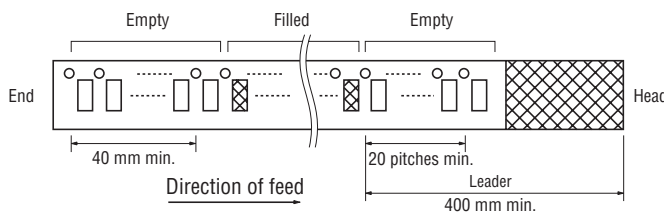
## PACKAGING SPECIFICATIONS

### <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.
- ST-32TA, ETA, TB and ETB versions are boxed with 4 reels (2000 pcs.). ST-32TG, ETG, TH and ETH 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.

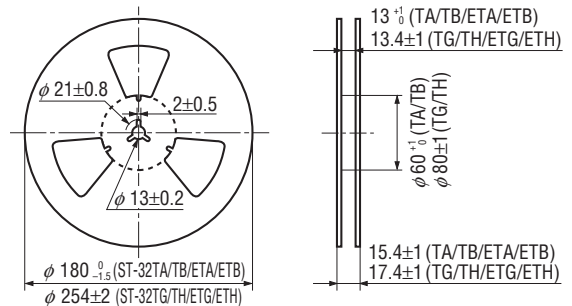
### EMBOSSED TAPE DIMENSIONS



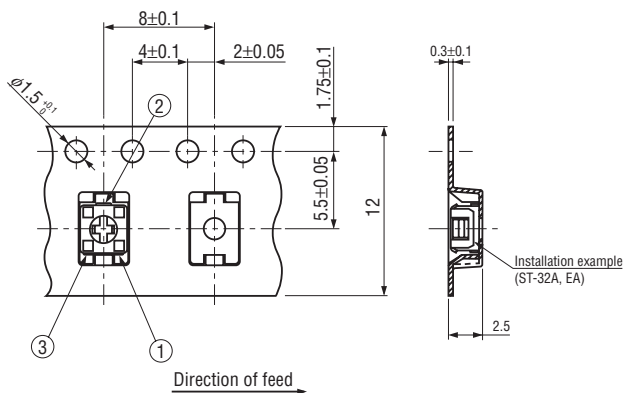
### REEL DIMENSIONS

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

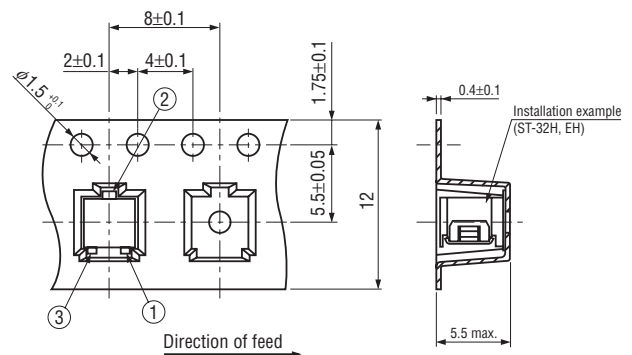
(Unit: mm)



### ST-32TA, TB, ETA, ETB



### ST-32TG, TH, ETG, ETH



### <Bulk pack specifications>

- Unit of bulk in a plastic bag is 100 pcs. per pack.
- Boxing of bulk in a plastic bag is performed with 500 pcs. per box.