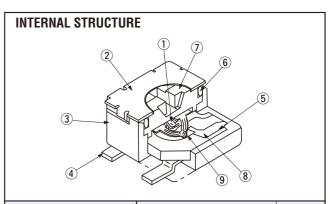
ST-32

SURFACE MOUNT CERMET TRIMMERS (SINGLE TURN)



FEATURES

- RoHS compliant
- Rotor with a cross slot for ease of adjustment
- Leaded terminals provide strong as adhesive strength against P.C.B. bending
- J-hook, Gull wing and leaded terminal configurations
- Sealed / Washable



	Part name Material		Flammability	
1	Wiper	Multi metal alloy	lloy	
2	Cover	Stainless steel (SUS 304)	_	
3	Housing	Ероху	UL-94V-0	
4	Terminal pin	Copper alloy, Sn-Cu-plated		
5	Base element	Ceramic		
6	"O" ring	Silicone rubber	UL-94HB	
7	Rotor	Polyphenylenesulphide	UL-94V-0	
8	Electrode	Ag-Pd cermet		
9	Resistive element	RuO₂ cermet		

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

■ PART NUMBER DESIGNATION

Series name

Resistance code

Terminal pin

E: Sn-Cu (Lead-free)

Form of packaging

T: Taping (Reel)
Blank: Bulk in plastic bag

Resistance value

A, G: J-hook
B, H: Gull wing

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

SURFACE MOUNT TRIMMERS

■ LIST OF PART NUMBERS

Adjustment	Shape of	Form of packaging		
position	terminal	Taping (reel)	Plastic bag	
Тор	A (J-hook)	ST-32ETA	ST-32EA	
adjustment	B (Gull wing)	ST-32ETB	ST-32EB	
Side	G (J-hook)	ST-32ETG	ST-32EG	
adjustment	H (Gull wing)	ST-32ETH	ST-32EH	
Pieces in package		500 pcs./reel	100 pcs./pack	

(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 ΜΩ	2 ΜΩ	

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.

■ 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	rrent 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	$10~\Omega\sim50~\Omega$: $\pm~250~10^{\circ}/^{\circ}C$ maximum $100~\Omega\sim2~M\Omega$: $\pm~100~10^{\circ}/^{\circ}C$ maximum	
Insulation resistance	1000 MΩ minimum (DC500 V)	
Dielectric strength	AC500 V, 60 s	
Net weight	Approx. 0.05 g (ST-32EA, EB) Approx. 0.11 g (ST-32EG, EH)	

■ 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 [Δ R/R \leq ± (2 Ω +3 %)]	
Thrust to rotor	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	

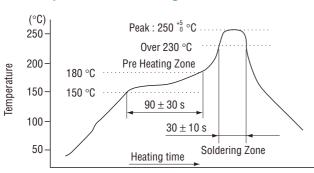
{ }: Reference only

■ ENVIRONMENTAL CHARACTERISTICS

Test item	Test conditions	Specifications
Thermal shock	-65 ~ 125 °C (0.5 h), 5 cycles	$\begin{bmatrix} \Delta R/R \leq 2 \% \\ [S.S. \leq 1 \%] \end{bmatrix}$
Humidity	-10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h	$[\Delta R/R \le 2\%]$
Shock	981 m/s², 6 ms 6 directions for 3 times each	
Vibration	Amplitude 1.52 mm or Acceleration 196 m/s², 10 ~ 2000 Hz, 3 directions, 12 times each	$\begin{bmatrix} \triangle R/R \le 1 \% \\ [S.S. \le 1 \%] \end{bmatrix}$
Load life	70 °C, 0.125 W, 1000 h	$\begin{bmatrix} \Delta R/R \leq 3 \% \\ [S.S. \leq 1 \%] \end{bmatrix}$
Low temp. operation	−55 °C, 2 h	$\begin{bmatrix} \Delta R/R \le 2 \% \\ [S.S. \le 2 \%] \end{bmatrix}$
High temp. exposure	125 °C, 250 h	$\begin{bmatrix} \Delta R/R \le 3 \% \\ [S.S. \le 2 \%] \end{bmatrix}$
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, $3\sim4$ s	[∆R/R ≤ 1 %]

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

⟨Reflow profile for soldering heat evaluation⟩



Reflow: two times maximum

■ 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 $\ensuremath{ \widehat{ \Theta} }$ mark are manufactured upon receipt of order basis.

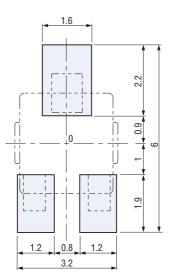
■ RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

• ST-32EA, EG

1.6

For reflow soldering

● ST-32EB, EH



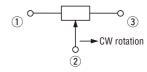
Note) The zero point is the center of mounting.

(Unit : mm)

SURFACE MOUNT TRIMMERS

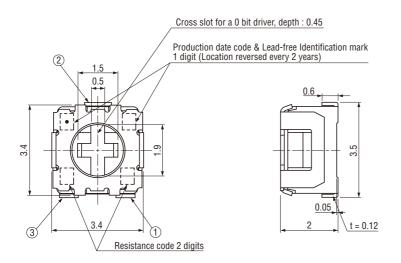
OUTLINE DIMENSIONS

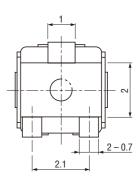
Unless otherwise specified, tolerance : \pm 0.3 (Unit : mm)



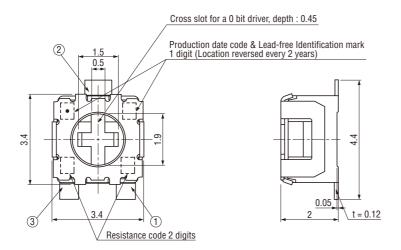
Note the terminal position.

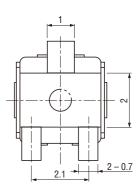
ST-32EATop adjustment





ST-32EBTop adjustment





SURFACE MOUNT TRIMMERS

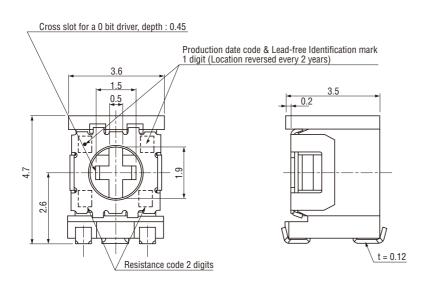
OUTLINE DIMENSIONS

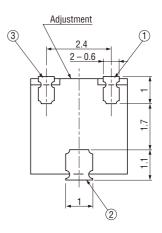
Unless otherwise specified, tolerance : \pm 0.3 (Unit : mm)

① ③ ③ CW rotation ②

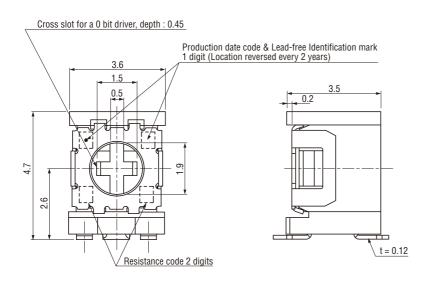
Note the terminal position.

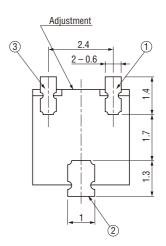
ST-32EGSide adjustment





ST-32EHSide adjustment





■ 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-32ETA, ETB versions are boxed with 4 reels (2000 pcs.). ST-32ETG, ETH versions are boxed with one reel (500 pcs.).

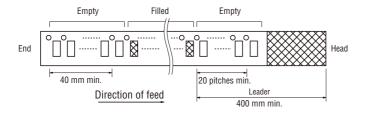
Maximum number of consecutive missing pieces = 2 Leader length and reel dimension are shown in the diagrams below.

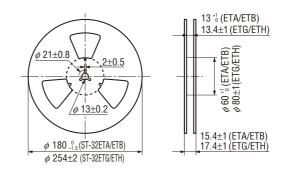
EMBOSSED TAPE DIMENSIONS

REEL DIMENSIONS

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

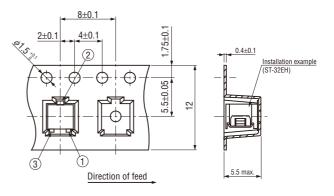
(Unit: mm)





ST-32ETA, ETB

• ST-32ETG, 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.