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SURFACE MOUNT CERMET TRIMMERS (SINGLE TURN) ST-32

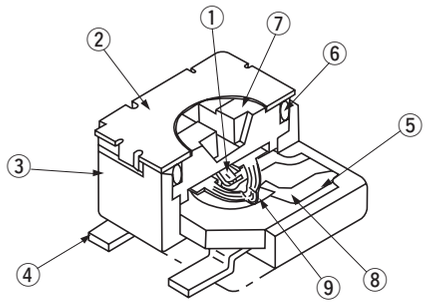
RoHS compliant



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: Refer to page 698.)
- Resin materials are UL Recognized 94V-0 or 94V-1 equivalent

INTERNAL STRUCTURE



	Part name	Material
①	Wiper	Multi metal alloy
②	Cover	Stainless steel (SUS 304)
③	Housing	Epoxy
④	Terminal pin	Copper alloy, Sn-Cu-plated
⑤	Base element	Ceramic
⑥	“O” ring	Silicone rubber
⑦	Rotor	PPS Polyphenylenesulphide
⑧	Electrode	Ag-Pd cermet
⑨	Resistive element	RuO_2 cermet

PART NUMBER DESIGNATION

S T - 3 2 E T A 1 0 0 Ω (1 2)

- Series name
- Terminal pin
  - E : Sn-Cu (Lead-free)
- Form of packaging
  - T : Taping (Reel)
  - Blank : Bulk in plastic bag
- Product shape (Shape of terminal)
  - A : J-hook(Top adjustment)
  - B : Gull wing(Top adjustment)
  - G : J-hook (Side adjustment)
  - H : Gull wing(Side adjustment)
- Resistance value
- Resistance code

※ 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)	Plastic bag
Top adjustment	A (J-hook)	ST-32ETA	ST-32EA
	B (Gull wing)	ST-32ETB	ST-32EB
Side adjustment	G (J-hook)	ST-32ETG	ST-32EG
	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 MΩ	2 MΩ	

Fig.1

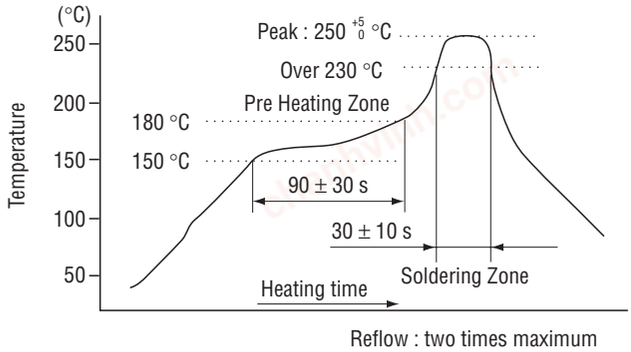
The products indicated by ➔ mark are manufactured upon receipt of order basis.

※ 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.

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^{-6}/°C maximum 100 Ω ~ 2 MΩ : ± 100 10^{-6}/°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)

〈Reflow profile for soldering heat evaluation〉



Reflow : two times maximum

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 ≦ ± (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	[Δ R/R ≦ 2 %] [S.S. ≦ 1 %]
Humidity	− 10 ~ 65 °C (80 ~ 98 %), 10 cycles, 240 h	[Δ R/R ≦ 2 %]
Shock	981 m/s², 6 ms 6 directions for 3 times each	[Δ R/R ≦ 1 %] [S.S. ≦ 1 %]
Vibration	(Amplitude) 1.52 mm or (Acceleration) 196 m/s², 10 ~ 2000 Hz, 3 directions, 12 times each	
Load life	70 °C, 0.125 W, 1000 h	[Δ R/R ≦ 3 %] [S.S. ≦ 1 %]
Low temp. operation	− 55 °C, 2 h	[Δ R/R ≦ 2 %] [S.S. ≦ 2 %]
High temp. exposure	125 °C, 250 h	[Δ R/R ≦ 3 %] [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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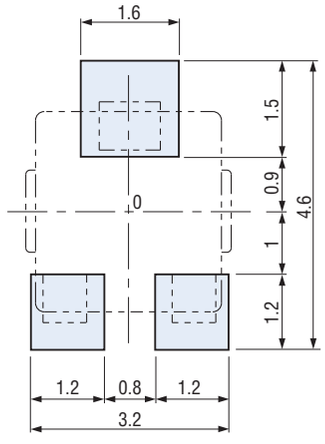
MAXIMUM INPUT RATINGS

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

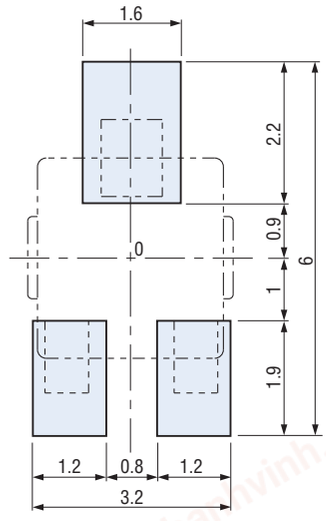
ST-32EA, EG



For reflow soldering

ST-32EB, EH

(Unit : mm)



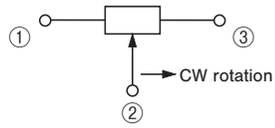
Note) The zero point is the center of mounting.

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SURFACE MOUNT TRIMMERS

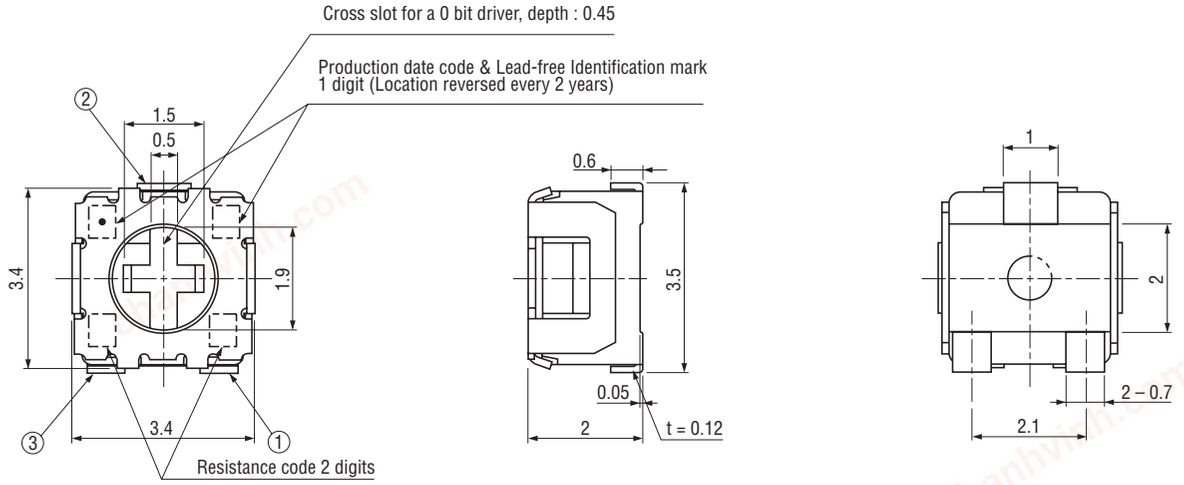
OUTLINE DIMENSIONS

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

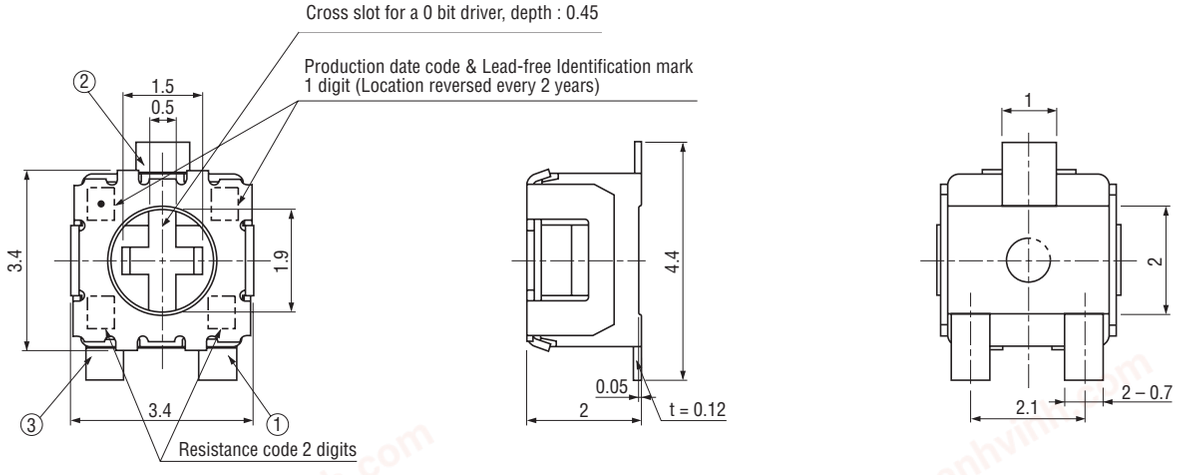


※ Note the terminal position.

ST-32EA
Top adjustment



ST-32EB
Top adjustment

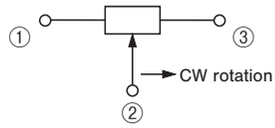


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SURFACE MOUNT TRIMMERS

OUTLINE DIMENSIONS

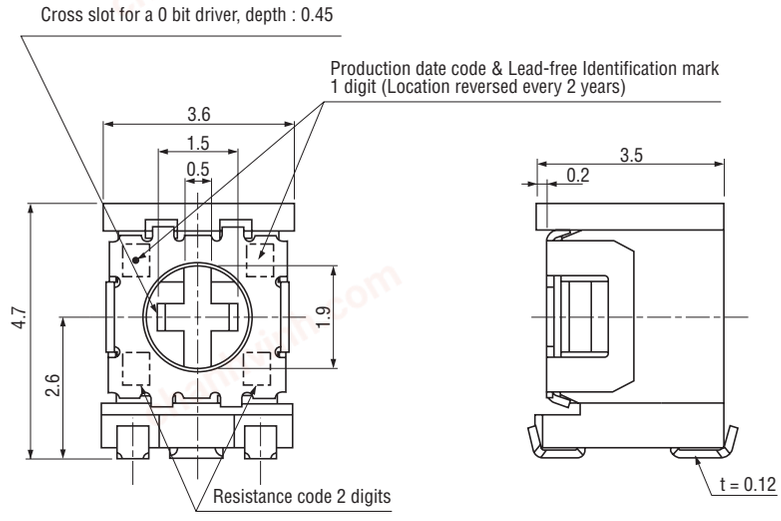
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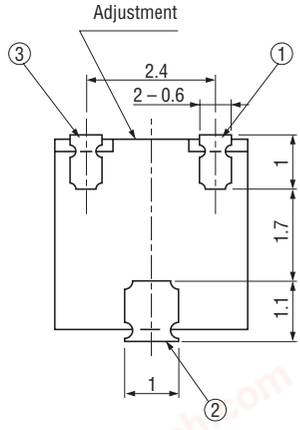


※ Note the terminal position.

ST-32EG

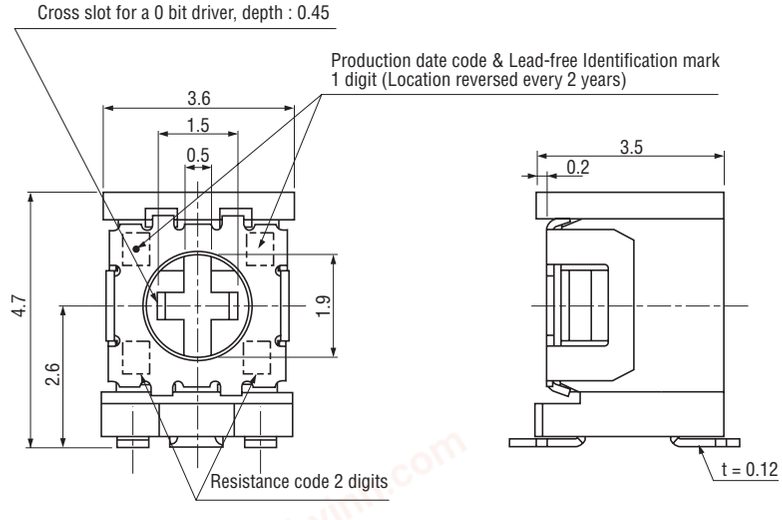
Side adjustment

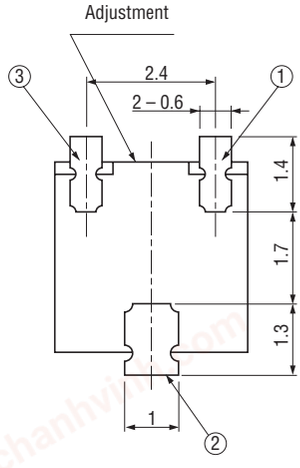




ST-32EH

Side adjustment





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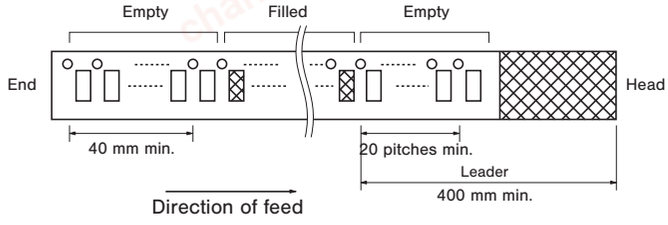
PACKAGING SPECIFICATIONS

<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.

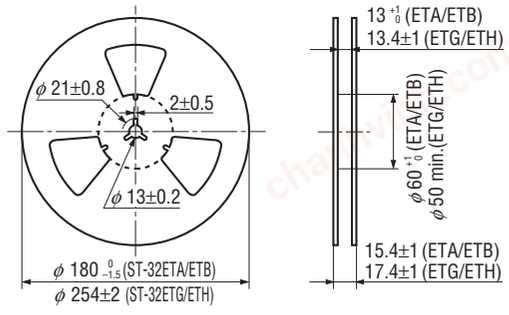
EMBOSSED TAPE DIMENSIONS



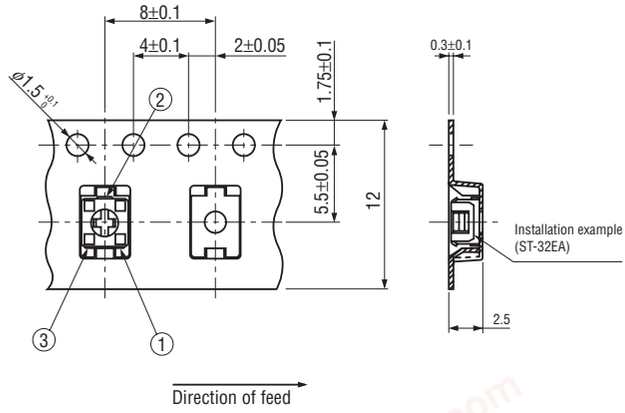
REEL DIMENSIONS

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

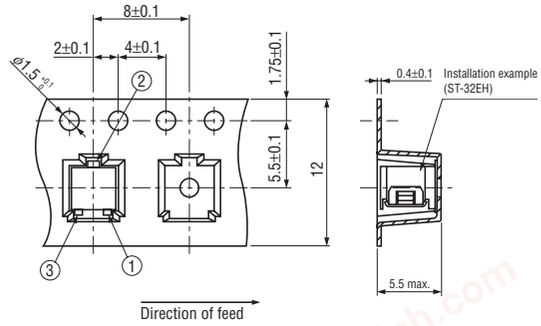
(Unit: mm)



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.