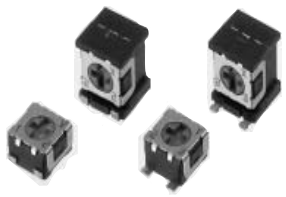
ST-32

Vishay

Surface Mount Cermet Trimmers (single turn)



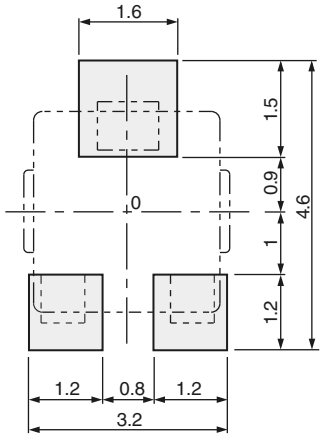
FEATURES

- Lead (Pb)-free soldering, Cadmium-free
- Top and side adjustment styles
- 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
- RoHS compliant

DIMENSIONS in millimeters

RECOMMENDED P.C.B. PAD OUTLINE DIMENSIONS

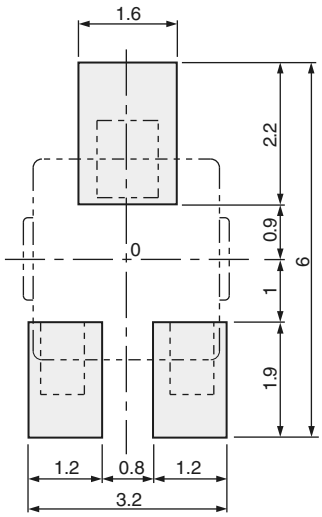
ST-32A, G, EA, EG



For reflow soldering

ST-32B, H, EB, EH

(Unit: mm)



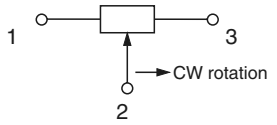
Note) The zero point is the center of mounting.

For technical questions contact: copalsupport@vishay.com
Document Number: 58009
Revision: 06-Mar-06

DIMENSIONS in millimeters

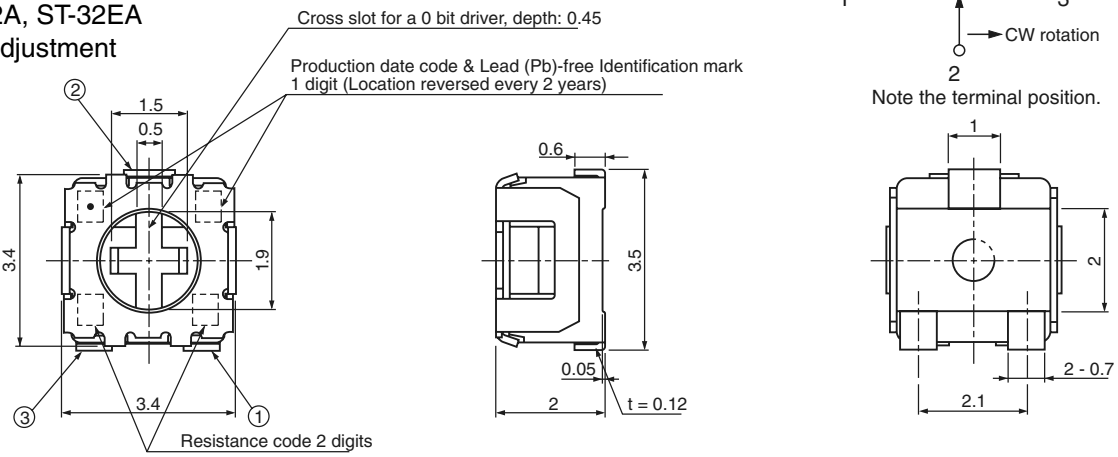
OUTLINE DIMENSIONS

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

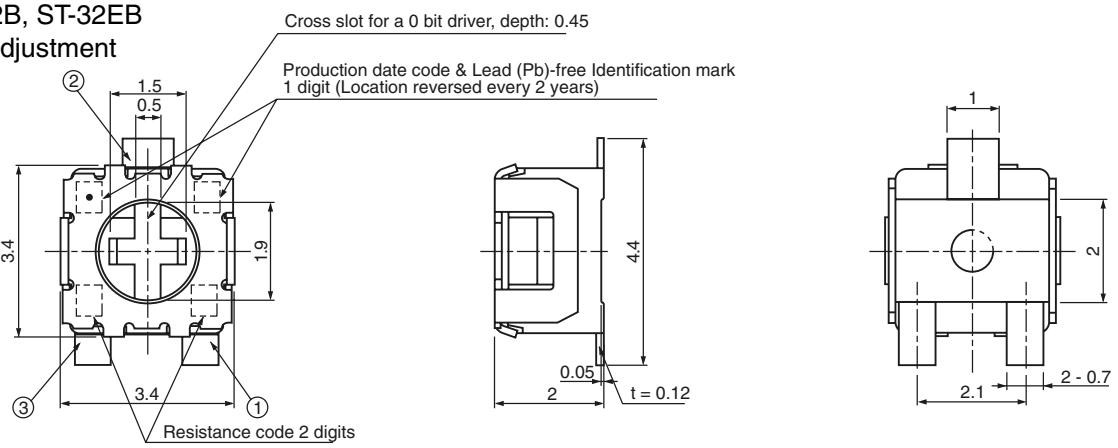


Note the terminal position.

ST-32A, ST-32EA
Top adjustment

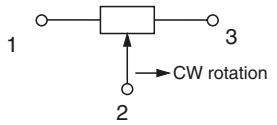


ST-32B, ST-32EB
Top adjustment



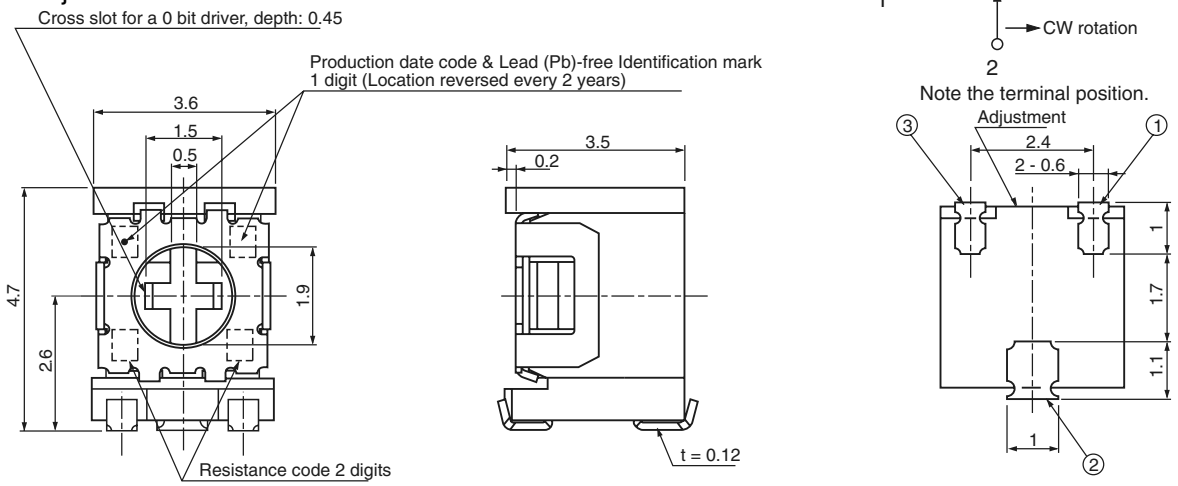
Specifications are subject to change without notice. Specifications in this catalog are for reference. The formal specification sheets will be submitted upon request.

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



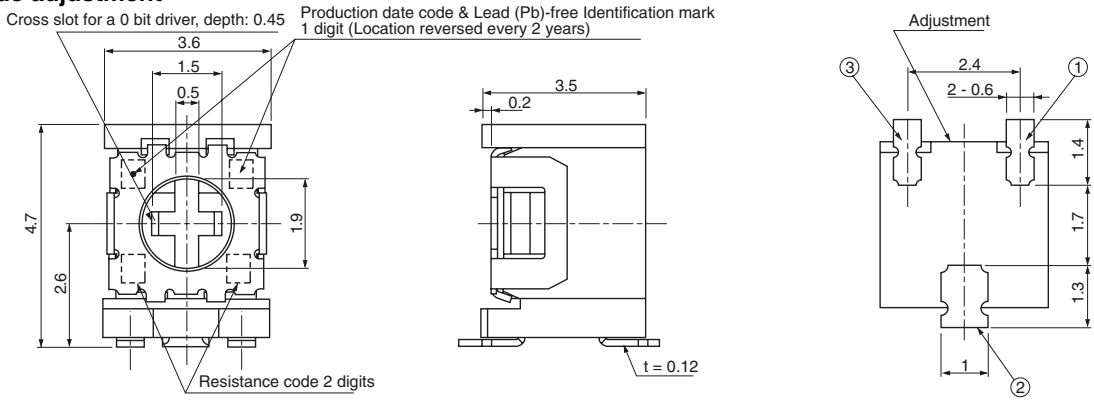
Note the terminal position.

ST-32G, ST-32EG
Side adjustment



DIMENSIONS in millimeters

ST-32H, ST-32EH
Side adjustment

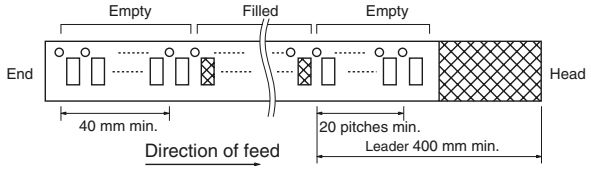


PACKAGING SPECIFICATIONS

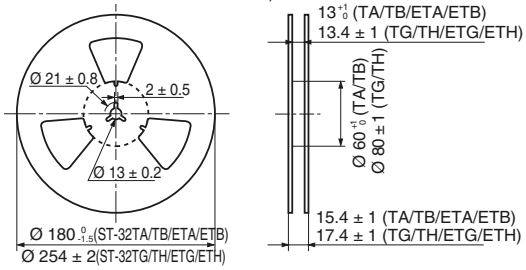
Taping packaging specifications
Taping version is packaged in 500 pcs. per reel.
Orders will be accepted for units of 500 pcs., i.e., 500, 1000, 1500 pcs., etc.
ST-32TA, ETA, TB and ETB versions are boxed with 4 reels (2000 pcs.). ST-32TG, ETG, TH and ETH versions are boxed with one reel (500 pcs.).

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

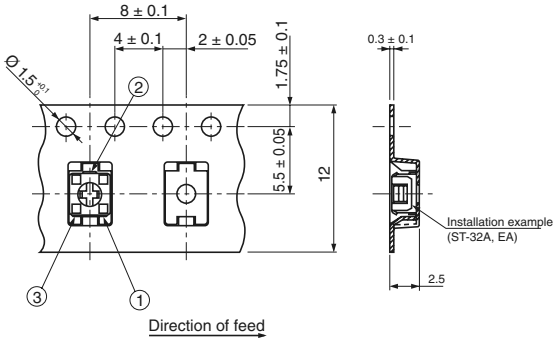
EMBOSSED TAPE DIMENSIONS



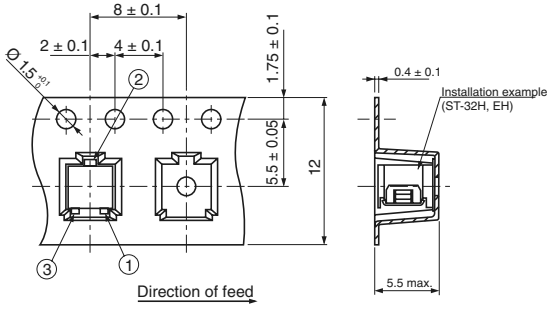
REEL DIMENSIONS
(Conforms to JIS C 0806-3)
(In accordance with EIAJ ET-7200A)
(Unit: mm)



ST-32TA, TB, ETA, ETB



ST-32TG, TH, ETG, ETH



Vinyl bag 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.

MECHANICAL SPECIFICATIONS

Mechanical turn	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 (Pb)-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

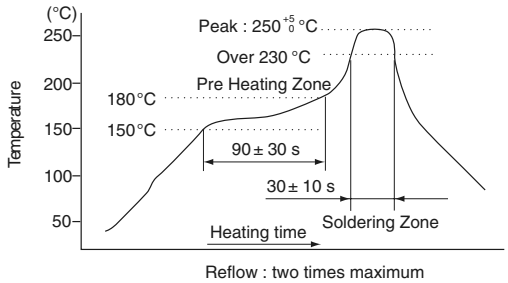
ELECTRICAL CHARACTERISTICS

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-32A, B, EA, EB) Approx. 0.11 g (ST-32G, H, EG, EH)

ENVIRONMENTAL SPECIFICATIONS

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 (Relative humidity 80 ~ 98 %), 10 cycles, 240 h	[ΔR/R ≤ 2 %]
Shock	981 m/s^2, 6 ms 6 directions for 3 times each	[ΔR/R ≤ 1 %] [S.S. ≤ 1 %]
Vibration	Amplitude 1.52 mm or Acceleration 196 m/s^2, 10 ~ 2000 Hz, 3 directions, 12 times each	
Load Life	70 °C, 0.125 W, 1000 h	[ΔR/R ≤ 3 %] [S.S. ≤ 1 %]
Low temperature operation	- 55 °C, 2 h	[ΔR/R ≤ 2 %] [S.S. ≤ 2 %]
High temperature 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	[ΔR/R ≤ 1 %]
	S-Cu Flow: 260 °C ± 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	

Reflow profile for soldering heat evaluation



Reflow : two times maximum

MAXIMUM INPUT RATINGS

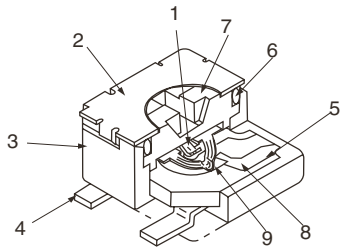
Nominal resistance values (Ω)	Resistance code	Maximum input voltage (V)	Maximum wiper current (mA)
10*	11	1.00	100
20*	21	1.58	79.1
50	51	2.50	50.0
100	12	3.53	35.4
200	22	5.00	25.0
300	32	6.12	20.4
500	52	7.91	15.8
1 k	13	11.2	11.2
2 k	23	15.8	7.91
3 k	33	19.4	6.45
5 k	53	25.0	5.00
10 k	14	35.4	3.54
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 * mark are manufactured upon receipt of order basis

CONSTRUCTION

	Part Name		Material	Flammability
1	Wiper		Multi metal alloy	-
2	Cover		Stainless steel (SUS 304)	
3	Housing		Epoxy	UL-94V-0
4	Terminal pin	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_2 cermet	

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



LIST OF PART NUMBERS

Adjustment position	Shape of terminal	Form of packing			
		Taping (reel)		Vinyl bag	
		Sn-Pb	Sn-Cu (Lead (Pb)-free)	Sn-Pb	Sn-Cu (Lead (Pb)-free)
Top adjustment	A (J-hook)	ST-32TA	ST-32ETA	ST-532A	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./reel	

FIG. 1: 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	-

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

* The above part numbers are all available with the respective combination of <Nominal resitance values> (Fig.1)

* Verify the above part numbers when placing orders.

* Taping specification is not sold seperately and must be purchased in reel units.

ORDERING INFORMATION

ST-32		T	A	204
SERIES NAME	TEMINAL PIN	FORM OF PACKAGING	PRODUCT SHAPE (SHAPE OF TERMINAL)	RESISTANCE CODE
	Blank: Sn-Pb	T: Taping (Reel)	A, G: J-hook	
	E: Sn-Cu (Lead (Pb)-free)	Blank: Bulk in vinyl bags	B, H: Gull wing	

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