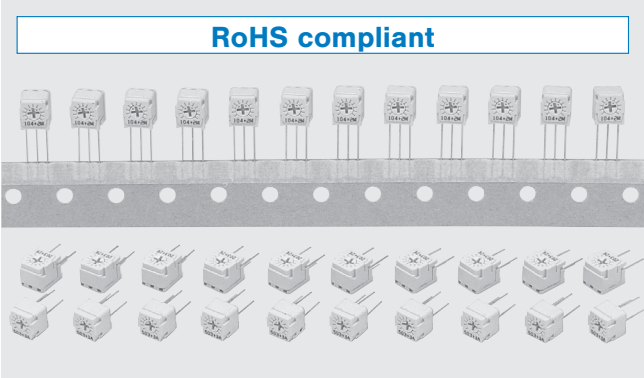




# THE DATASHEET OF FT-63ETV302

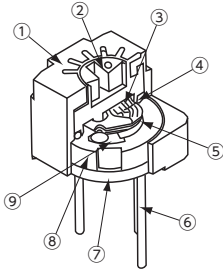
SINGLE TURN CERMET TRIMMERS

FT-63

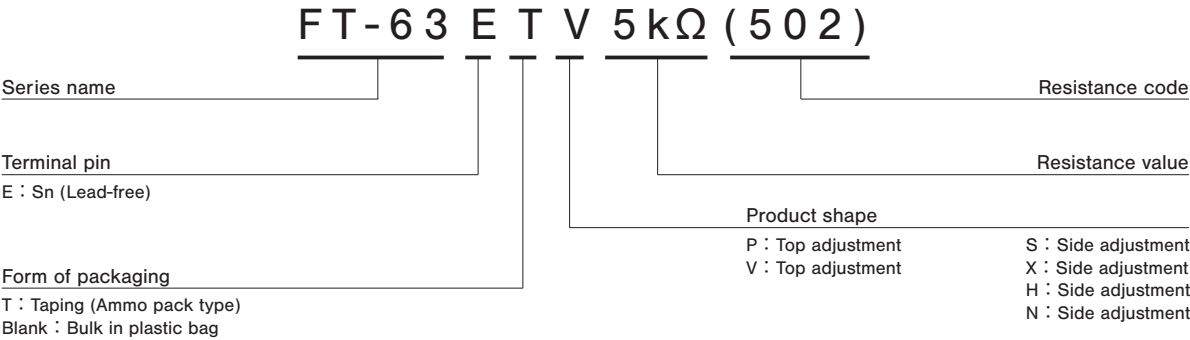


FEATURES

- RoHS compliant
- Resistance tolerance  $\pm 10\%$
- “O” ring sealed ((Washable: Refer to page 628.)
- Suitable for automatic insertion and automatic adjustment
- Increase in the level of characteristics in the high-frequency field (In house comparison)
- Resin material is UL Recognized 94V-0

| INTERNAL STRUCTURE                                                                  |                                 |  |
|-------------------------------------------------------------------------------------|---------------------------------|--|
|  |                                 |  |
| Part name                                                                           | Material                        |  |
| ① Housing                                                                           | PBT (Polybutyleneterephthalate) |  |
| ② Rotor                                                                             |                                 |  |
| ③ Wiper                                                                             | Nickel silver                   |  |
| ④ “O” ring                                                                          | Silicone rubber                 |  |
| ⑤ Resistive element                                                                 | RuO <sub>2</sub> cermet         |  |
| ⑥ Terminal pin                                                                      | Copper, Tin-plated              |  |
| ⑦ Adhesive                                                                          | Epoxy                           |  |
| ⑧ Base element                                                                      | Ceramic                         |  |
| ⑨ Electrode                                                                         | Ag-Pd cermet                    |  |

PART NUMBER DESIGNATION



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

# FT-63

## CERMET TRIMMERS

### LIST OF PART NUMBERS

| Adjustment position | Form of packaging        |             |
|---------------------|--------------------------|-------------|
|                     | Taping ( Ammo pack type) | Plastic bag |
| Top adjustment      | FT-63ETP                 | FT-63EP     |
|                     | FT-63ETV                 | FT-63EV     |
| Side adjustment     | FT-63ETS                 | FT-63ES     |
|                     |                          | FT-63EX     |
|                     | FT-63ETH                 | FT-63EH     |
|                     |                          | FT-63EN     |

□ : Not manufactured

### 〈Nominal resistance values〉

Fig. 1

|        |        |        |        |        |       |       |
|--------|--------|--------|--------|--------|-------|-------|
| ⊖ 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 | 300 kΩ | 500 kΩ | 1 MΩ  | 2 MΩ  |

※ 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 specification is not sold separately and must be purchased in taping unit.

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

### ELECTRICAL CHARACTERISTICS

|                            |                                                                                                      |
|----------------------------|------------------------------------------------------------------------------------------------------|
| Nominal resistance range   | 10 Ω ~ 2 MΩ                                                                                          |
| Resistance tolerance       | ± 10 %                                                                                               |
| Power ratings              | 0.5 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      | Power ratings                                                                                        |
| Effective electrical angle | 220 ° (1 turn)                                                                                       |
| End resistance             | 1 % or 2 Ω, whichever is greater                                                                     |
| C.R.V.                     | 2 % or 3 Ω, whichever is greater                                                                     |
| Operating temp. range      | -55 ~ 125 °C                                                                                         |
| Temp. coefficient          | 10 Ω ~ 20 Ω : ± 150 10 <sup>-6</sup> /°C maximum<br>50 Ω ~ 2 MΩ : ± 100 10 <sup>-6</sup> /°C maximum |
| Insulation resistance      | 1000 MΩ minimum (DC500 V)                                                                            |
| Dielectric strength        | AC900 V, 60 s                                                                                        |
| Net weight                 | Approx. 0.52 g (FT-63EP, EV)<br>Approx. 0.66 g (FT-63ES, EH, EX, EN)                                 |

### MECHANICAL CHARACTERISTICS

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| Mechanical angle  | 260 ° (1 turn)                                         |
| Operating torque  | 20 mN·m {204 gf·cm} maximum                            |
| Stop strength     | 50 mN·m {510 gf·cm} minimum                            |
| Rotational life   | 100 cycles [ $\Delta R/R \leq \pm (2 \Omega + 3 \%)$ ] |
| Terminal strength | 10 N {1.02 kgf} minimum<br>(Tensile strength)          |
| Thrust to rotor   | 10 N {1.02 kgf} minimum                                |
| Solderability     | 245 ± 3 °C, 2 ~ 3 s                                    |

{ } : Reference only

### ENVIRONMENTAL CHARACTERISTICS

| Test item           | Test conditions                                                                                             | Specifications                                  |
|---------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| Thermal shock       | -65 ~ 125 °C<br>(0.5 h), 5 cycles                                                                           | [ $\Delta R/R \leq 1\%$ ]<br>[S.S. $\leq 1\%$ ] |
| Humidity            | -10 ~ 65 °C (Relative humidity 80 ~ 98 %),<br>10 cycles, 240 h                                              | [ $\Delta R/R \leq 2\%$ ]                       |
| Shock               | 981 m/s <sup>2</sup> , 6 ms<br>6 directions for 3 times each                                                | [ $\Delta R/R \leq 1\%$ ]<br>[S.S. $\leq 1\%$ ] |
| Vibration           | Amplitude 1.52 mm or<br>Acceleration 196 m/s <sup>2</sup> ,<br>10 ~ 2000 Hz, 3 directions,<br>12 times each |                                                 |
| Load life           | 70 °C, 0.5 W<br>1000 h                                                                                      | [ $\Delta R/R \leq 3\%$ ]<br>[S.S. $\leq 1\%$ ] |
| Low temp. operation | -55 °C, 2 h                                                                                                 | [ $\Delta R/R \leq 2\%$ ]<br>[S.S. $\leq 2\%$ ] |
| High temp. exposure | 125 °C, 250 h                                                                                               | [ $\Delta R/R \leq 3\%$ ]<br>[S.S. $\leq 2\%$ ] |
| Immersion seal      | 85 °C, 60 s                                                                                                 | No leaks<br>(No continuous bubbles)             |
| Soldering heat      | Flow :<br>260 ± 3 °C, 5 ~ 6 s, two times<br>maximum<br>Manual soldering : 380 ± 10 °C,<br>3 ~ 4 s           | [ $\Delta R/R \leq 1\%$ ]                       |

$\Delta R/R$ : Change in total resistance  
S.S. : Setting stability

### MAXIMUM INPUT RATINGS

| Nominal resistance values ( $\Omega$ ) | Resistance code | Maximum input voltage (V) | Maximum wiper current (mA) |
|----------------------------------------|-----------------|---------------------------|----------------------------|
| ⊖ 10                                   | 100             | 2.24                      | 223                        |
| ⊕ 20                                   | 200             | 3.16                      | 158                        |
| 50                                     | 500             | 5.00                      | 100                        |
| 100                                    | 101             | 7.07                      | 70.7                       |
| 200                                    | 201             | 10.0                      | 50.0                       |
| 300                                    | 301             | 12.2                      | 40.8                       |
| 500                                    | 501             | 15.8                      | 31.6                       |
| 1 k                                    | 102             | 22.4                      | 22.4                       |
| 2 k                                    | 202             | 31.6                      | 15.8                       |
| 3 k                                    | 302             | 38.7                      | 12.9                       |
| 5 k                                    | 502             | 50.0                      | 10.0                       |
| 10 k                                   | 103             | 70.7                      | 7.07                       |
| 20 k                                   | 203             | 100                       | 5.00                       |
| 30 k                                   | 303             | 122                       | 4.08                       |
| 50 k                                   | 503             | 158                       | 3.16                       |
| 100 k                                  | 104             | 200                       | 2.00                       |
| 200 k                                  | 204             | 200                       | 1.00                       |
| 300 k                                  | 304             | 200                       | 0.66                       |
| 500 k                                  | 504             | 200                       | 0.40                       |
| 1 M                                    | 105             | 200                       | 0.20                       |
| 2 M                                    | 205             | 200                       | 0.10                       |

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

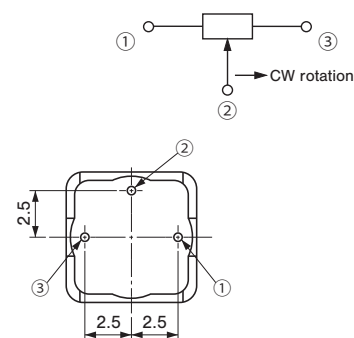
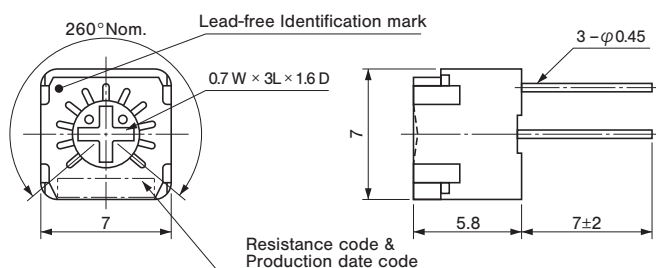
# FT-63

## CERMET TRIMMERS

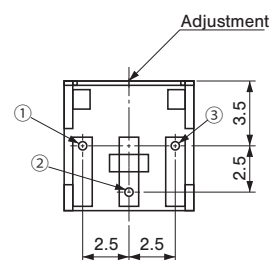
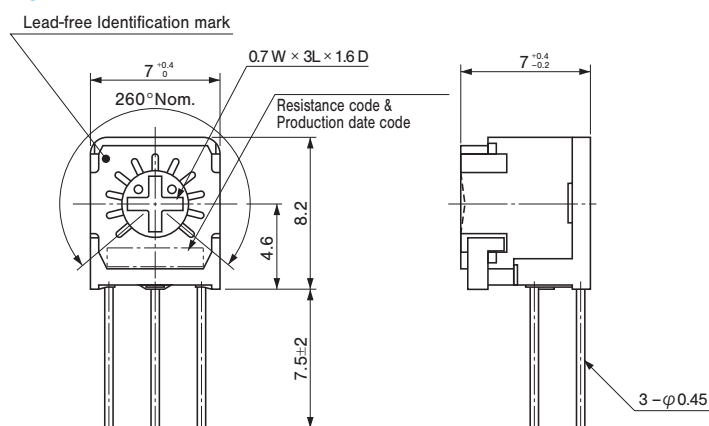
### OUTLINE DIMENSIONS

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

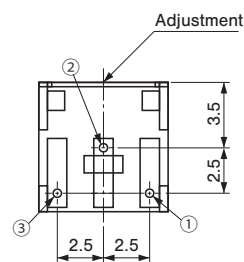
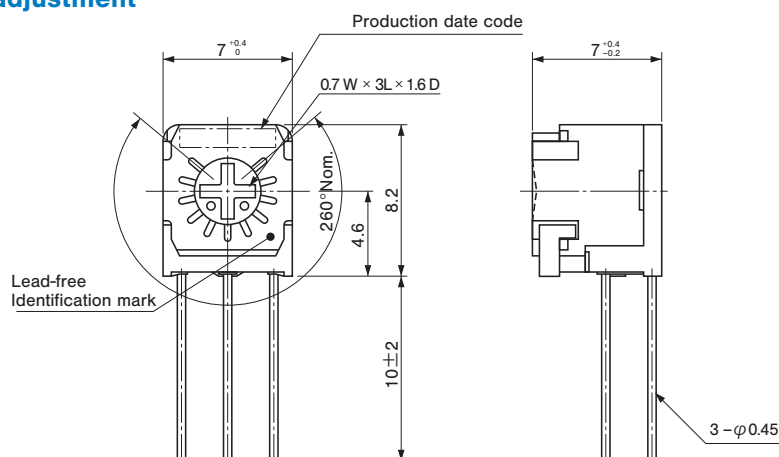
#### FT-63EP Top adjustment



#### FT-63ES Side adjustment



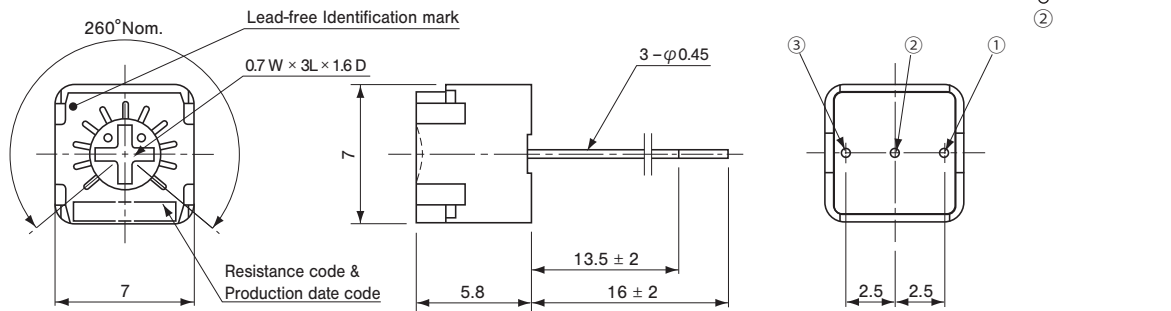
#### FT-63EX Side adjustment



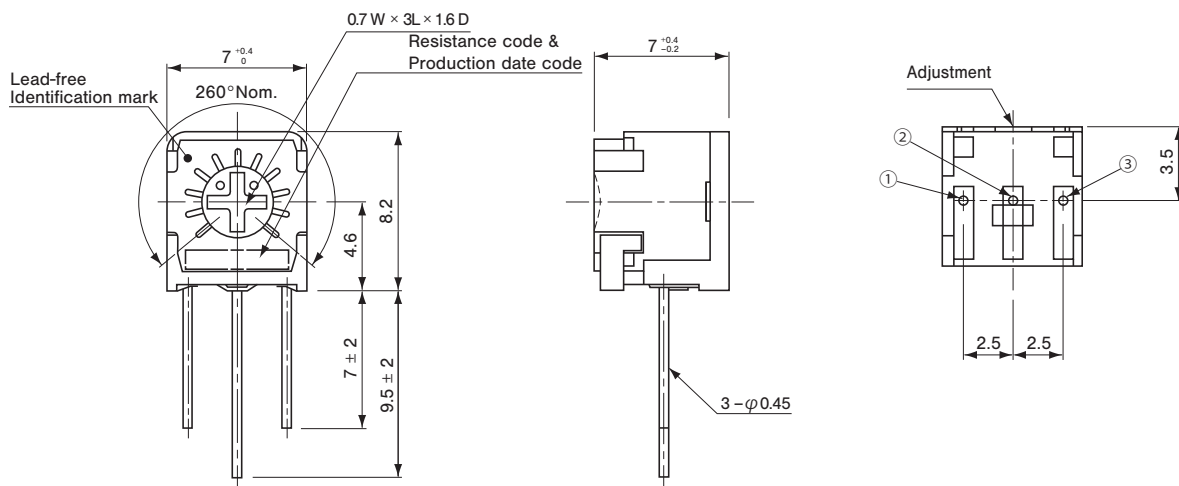
### OUTLINE DIMENSIONS

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

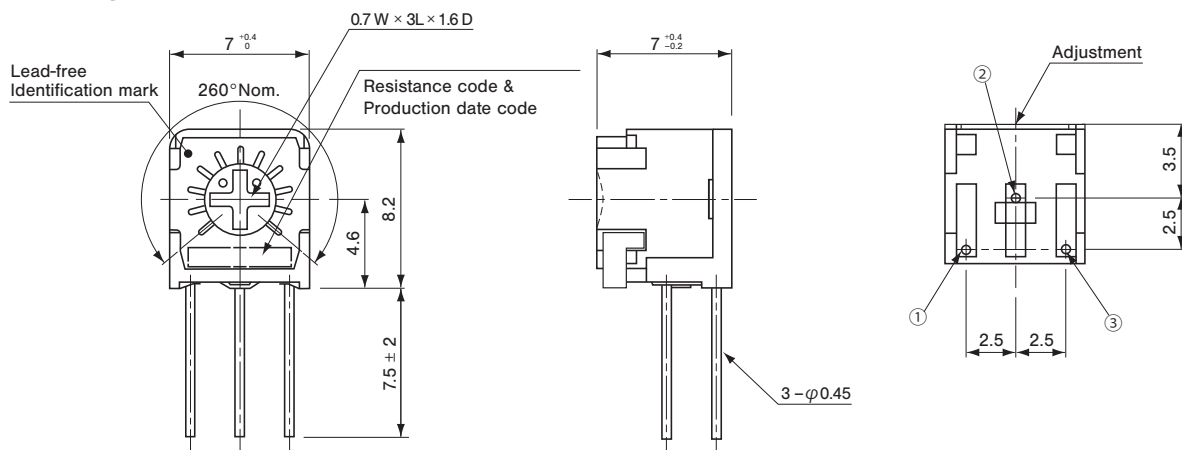
#### FT-63EV Top adjustment



#### FT-63EH Side adjustment



#### FT-63EN Side adjustment



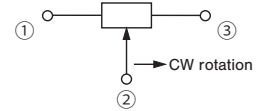
★ Terminals 1 & 3 position in N type is different from X type.

# FT-63

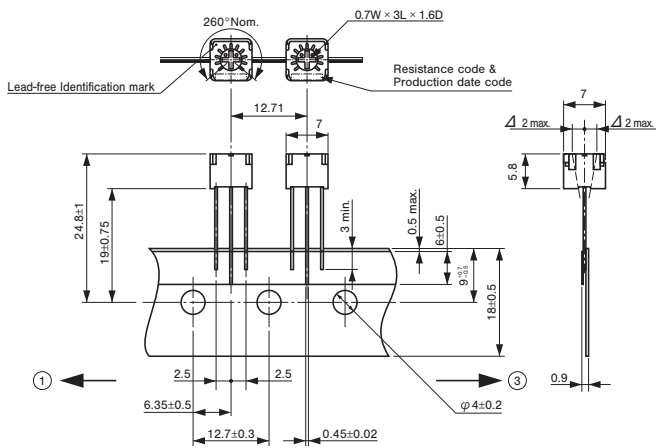
## CERMET TRIMMERS

### OUTLINE DIMENSIONS

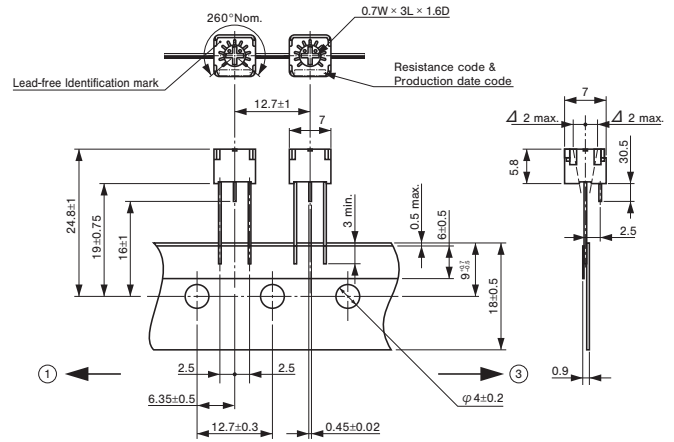
Unless otherwise specified, tolerance:  $\pm 0.3$  (Unit: mm)



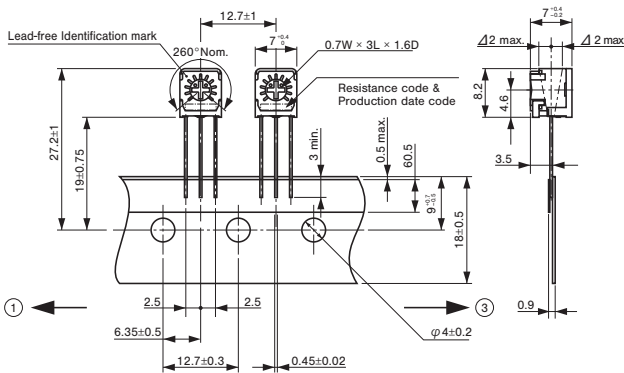
#### FT-63ETV Top adjustment



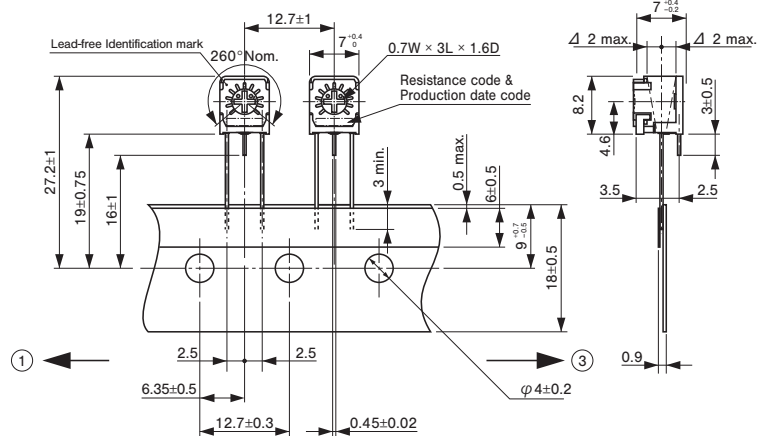
#### FT-63ETP Top adjustment



#### FT-63ETH Side adjustment



#### FT-63ETS Side adjustment



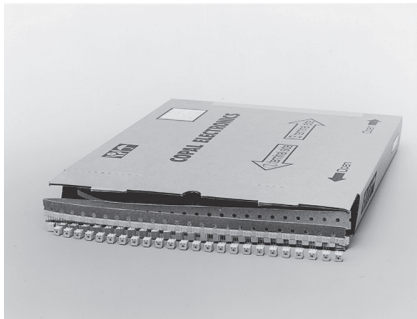
### ■ PACKAGING SPECIFICATIONS

#### <Taping packaging specifications>

- Taping version is packaged in 1000 pcs. per reel.  
Orders will be accepted for units of 1000 pcs., i.e., 1000, 2000, 3000 pcs., etc.
- Tape & reel version contains 1000 pcs. in one box.

#### <Bulk pack specifications>

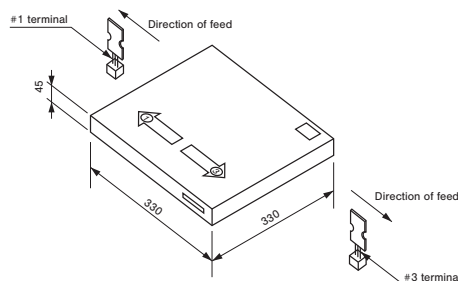
- Unit of bulk pack in a plastic bag is 100 pcs. per pack.
- Boxing of bulk in a plastic bag is performed with 1000 pcs. per box.



Ammo pack type

#### Ammo Pack

- Package size: 330 mm × 330 mm × 45 mm
- The leader and end of the tape have an empty part of minimum 300 mm respectively.
- There are two tape outlets on the package for different terminal alignment directions, for which details refer to the sketch above.  
(e.g.) When the tape is fed from the right outlet marked 3, #3 terminal comes out first.
- Gross weight of the boxing version ETV : Approx. 850 g  
ETH : Approx. 940 g  
ETP : Approx. 820 g  
ETS : Approx. 940 g



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