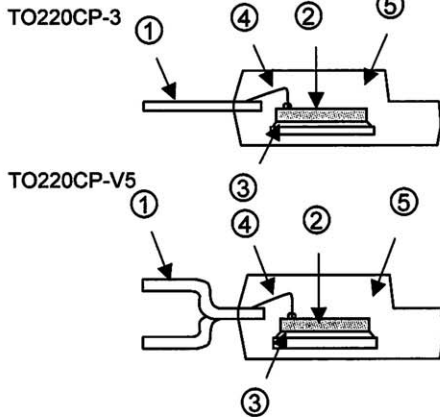


Package : TO220CP

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1. Structure and materials



| No. | Item | Materials |
|-----|------------|--|
| ① | Lead Frame | Cu-Alloy (External lead : Pb free solder plating) |
| ② | Die | Silicon |
| ③ | Die Attach | Solder |
| ④ | Wire | Au |
| ⑤ | Molding | Epoxy Resin |

Fig. 1 Structure

2. Tape and Reel information

2. 1. Packing specification

| | |
|-------------------|---------------------------|
| Tape | Embossed carrier tape |
| Quantity | See the table on page 4/4 |
| Direction of feed | E2 (See Fig. 2) |

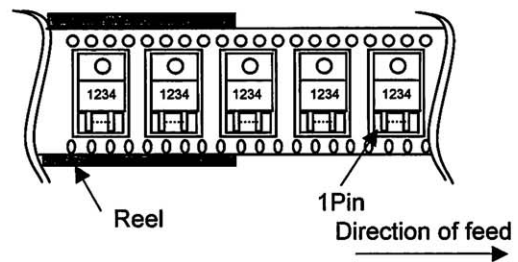


Fig. 2 Typical Tape and Reel configuration

2. 2. Tape and Reel specification

2. 2. 1. Tape and reel dimensions (See the table on page 4/4)

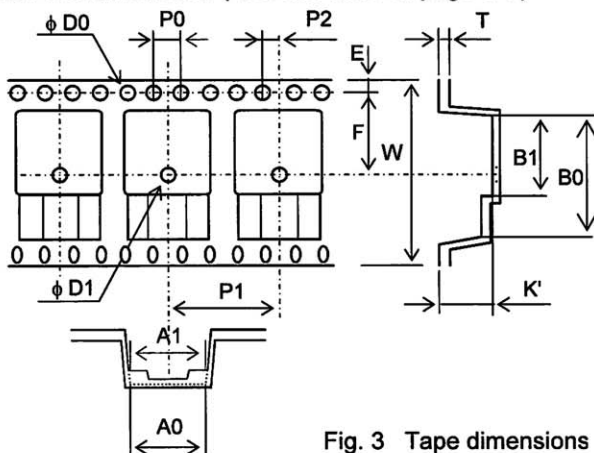


Fig. 3 Tape dimensions

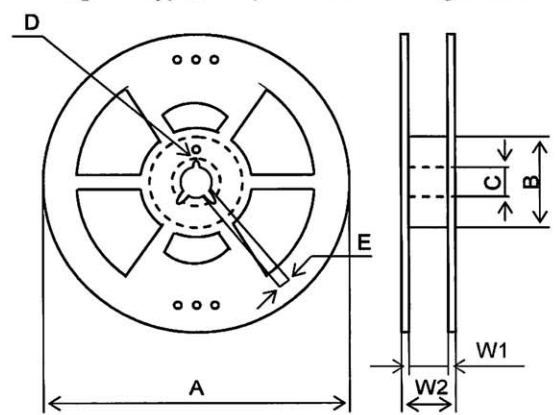


Fig. 4 Reel dimensions

2. 3. Leader and Trailer

2. 3. 1. Leader

No component pockets are 40 pockets or more.

2. 3. 2. Trailer

No component pockets are 10 pockets or more.
Tape is free from reel.

2. 4. Label for Reel and Box

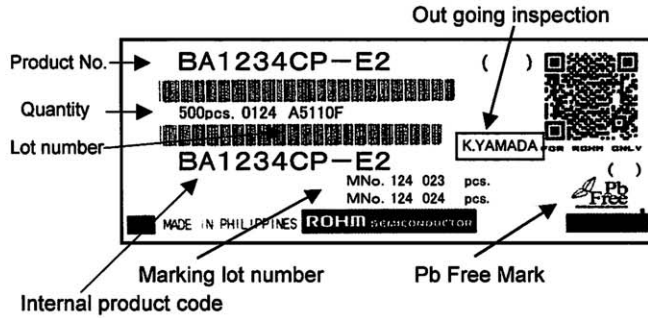


Fig. 5 Label example

2. 5. Packing style

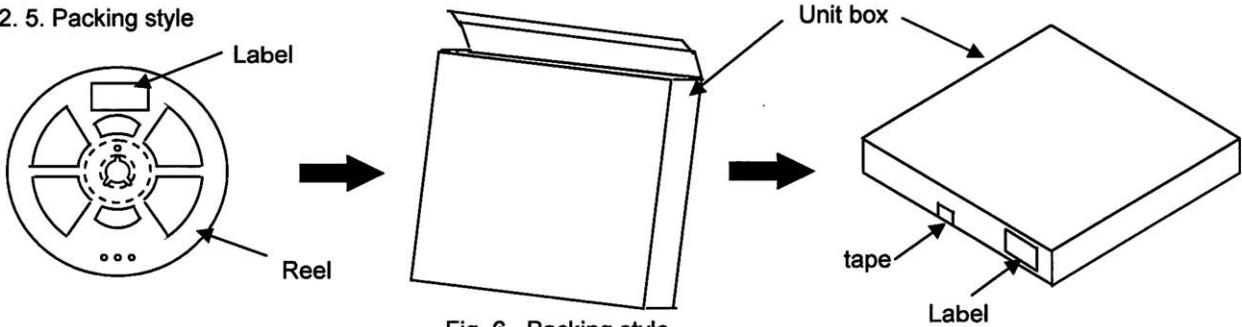


Fig. 6 Packing style

2. 6. Shipping style

5 unit boxes or less per shipping box

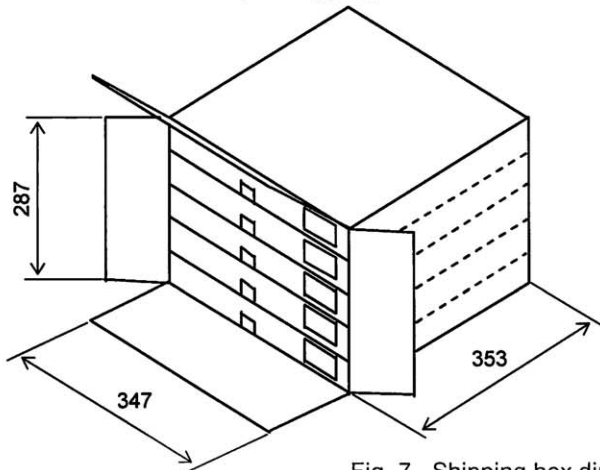


Fig. 7 Shipping box dimensions and Shipping style

2. 7. Packing materials

| Item | Material |
|-----------------------|-----------|
| Embossed carrier tape | PS |
| Cover tape | PET + PE |
| Reel | PS |
| Unit box | Cardboard |
| Shipping box | Cardboard |

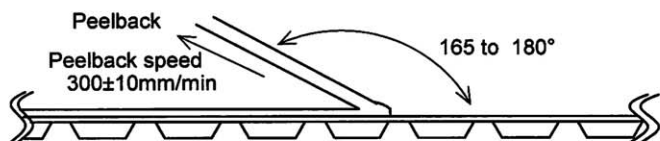
(all dimensions in mm)

2. 8. Others

2. 8. 1. Peelback strength

Cover tape peelback strength is 0.2 to 0.7N.

Fig. 8 Test method



2. 8. 2. Missing lcs

- (1) No consecutive dropouts.
- (2) A maximum 0.1% of specified number of products in each packing may be missing.

3. Storage conditions

3. 1. Storage environment

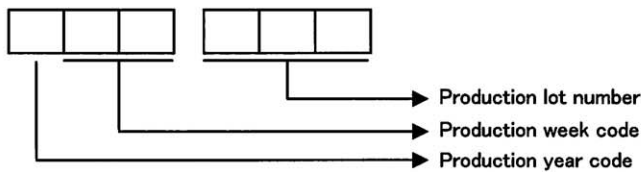
Recommended storage conditions are as follows :

- Temperature : 5 to 30°C
- Humidity : 40 to 70% RH

3. 2. Storage period

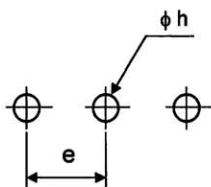
- Specified storage period : 1 year

4. Marking lot number



5. Footprint dimensions (Optimize footprint dimensions to the board design and soldering condition)

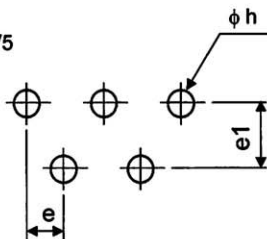
TO220CP-3



(all dimensions in mm)

| Package | Land pitch e | Inside land terminal dimension e1 | Land diameter phi h |
|------------|-----------------|---|------------------------|
| TO220CP-3 | 2.54 | / | 1.20 |
| TO220CP-V5 | 1.778 | | 2.54 |

TO220CP-V5



6. Soldering conditions

6. 1. Recommended condition for wave soldering

| Process | Conditions | |
|------------|----------------|-----------|
| | Temperature | Time |
| Preheating | 120°C to 150°C | 60sec MAX |
| Soldering | 260°C ± 3°C | 12sec MAX |

(Notice) Soldering time is provided for total soldering time in case of dual wave soldering.

6. 2. 1. Notes for wave soldering

- (1) Do not use other soldering methods with wave soldering.
- (2) Recommend to clean the board to eliminate flux, solder waste, and other impurities for reliability, after soldering.
- (3) Optimize soldering condition to prevent solder bridging.

6. 3. Recommended condition for solder iron

- Recommended condition for solder iron
- Solder iron temperature : 380°C or less
- Mounting time : 4sec or less

< Tape dimensions >

| Package | Quantity (pcs) | Tape dimensions (all dimensions in mm) | | | | | | | | | | | | | |
|------------|----------------|--|------|------|------|-------------------------------|------|------|------|------|------|------|------|------|------|
| | | A0 | A1 | B0 | B1 | D0 | D1 | E | F | K' | P1 | P2 | T | W | P0 |
| TO220CP-3 | 500 | 10.4 | 9.5 | 21.6 | 15.4 | φ1.5 | φ2.0 | 1.75 | 14.2 | 4.8 | 16.0 | 2.0 | 0.35 | 32.0 | 4.0 |
| TO220CP-V5 | 500 | 10.4 | 9.5 | 21.6 | 15.4 | φ1.5 | φ2.0 | 1.75 | 14.2 | 4.8 | 16.0 | 2.0 | 0.35 | 32.0 | 4.0 |
| Tolerance | | ±0.1 | ±0.2 | ±0.2 | ±0.1 | ^{+0.1} ₋₀ | MIN | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | - | ±0.3 | ±0.1 |

< Reel dimensions >

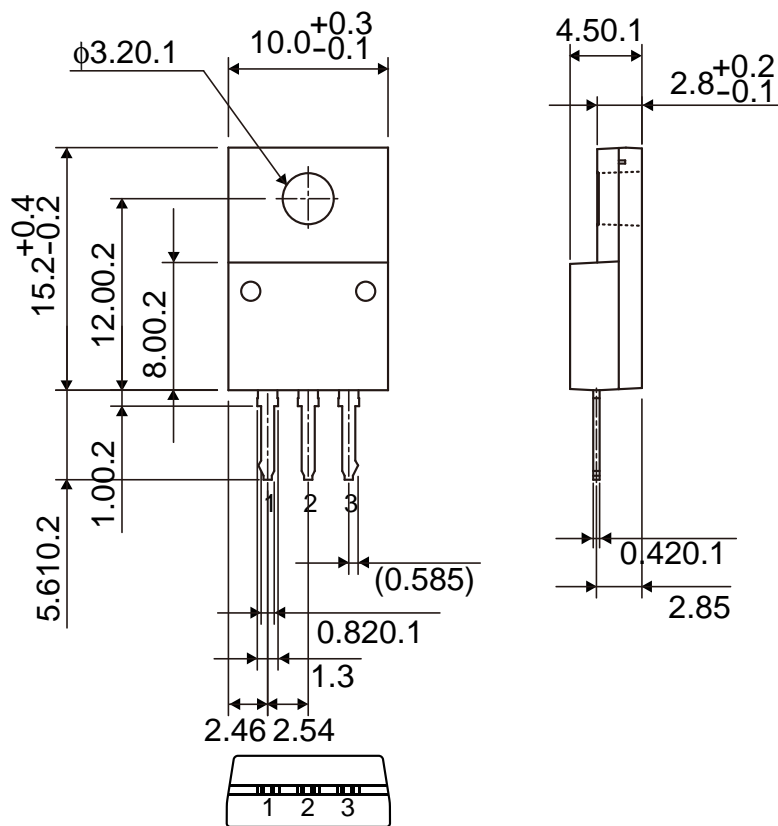
| Package | Reel dimensions (all dimensions in mm) | | | | | | |
|------------|--|------|-------|-------|-----|------|-----------------------------------|
| | A | B | C | D | E | W1 | W2 |
| TO220CP-3 | φ330 | φ100 | φ13.0 | φ20.2 | 1.5 | 34.5 | 38.5 |
| TO220CP-V5 | φ330 | φ100 | φ13.0 | φ20.2 | 1.5 | 34.5 | 38.5 |
| Tolerance | | - | - | ±0.2 | MIN | MIN | ^{+2.0} ₋₀ MAX |

< Dehydrated weight >

| Dehydrated weight dimensions in g |
|-----------------------------------|
| 1.42 |
| 1.44 |

Package Dimensions

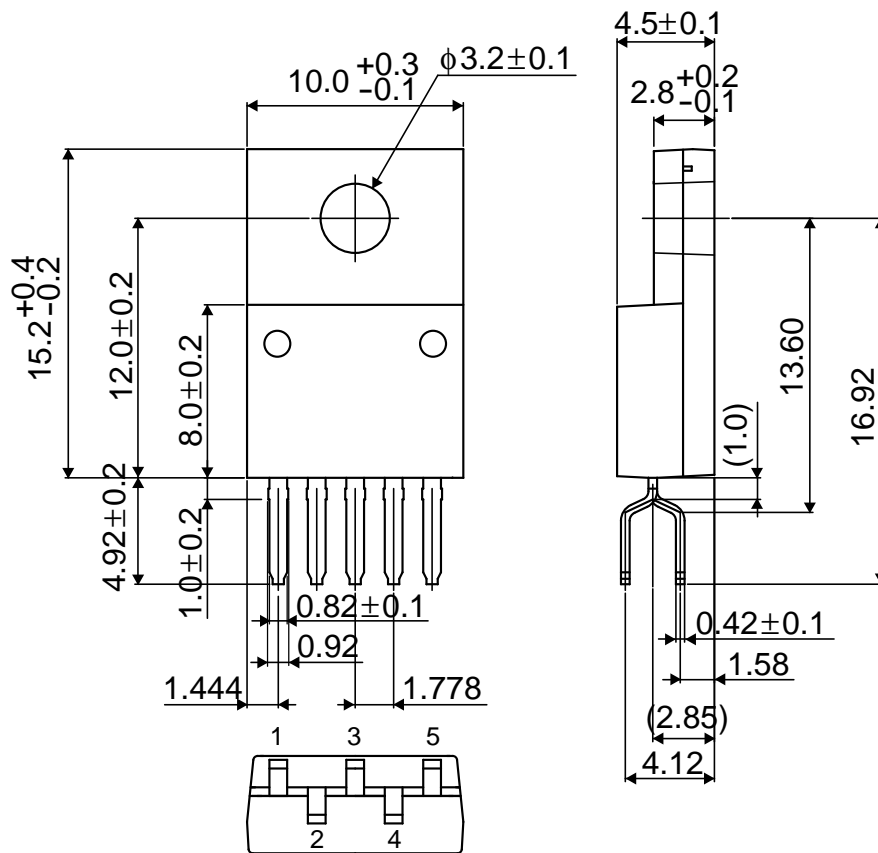
TO220CP-3



(Unit : mm)

Package Dimensions

TO220CP-V5



(Unit : mm)

Notes

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