# Package : HTSSOP-B

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## 1. Structure and materials

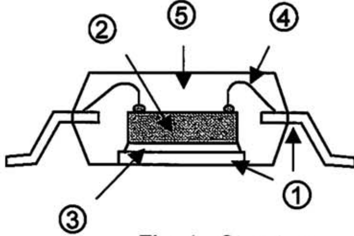


Fig. 1 Structure

| 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 |

## 2. Tape and Reel information

2. 1. Packing specification

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

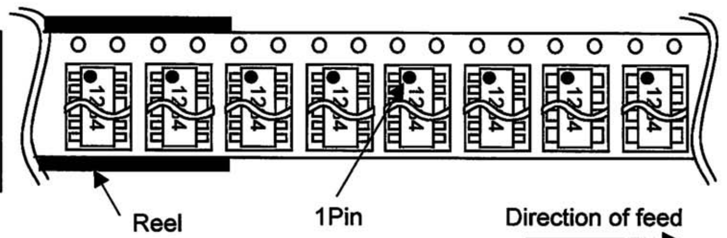


Fig. 2 Typical Tape and Reel configuration

2. 2. Tape and Reel specification

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

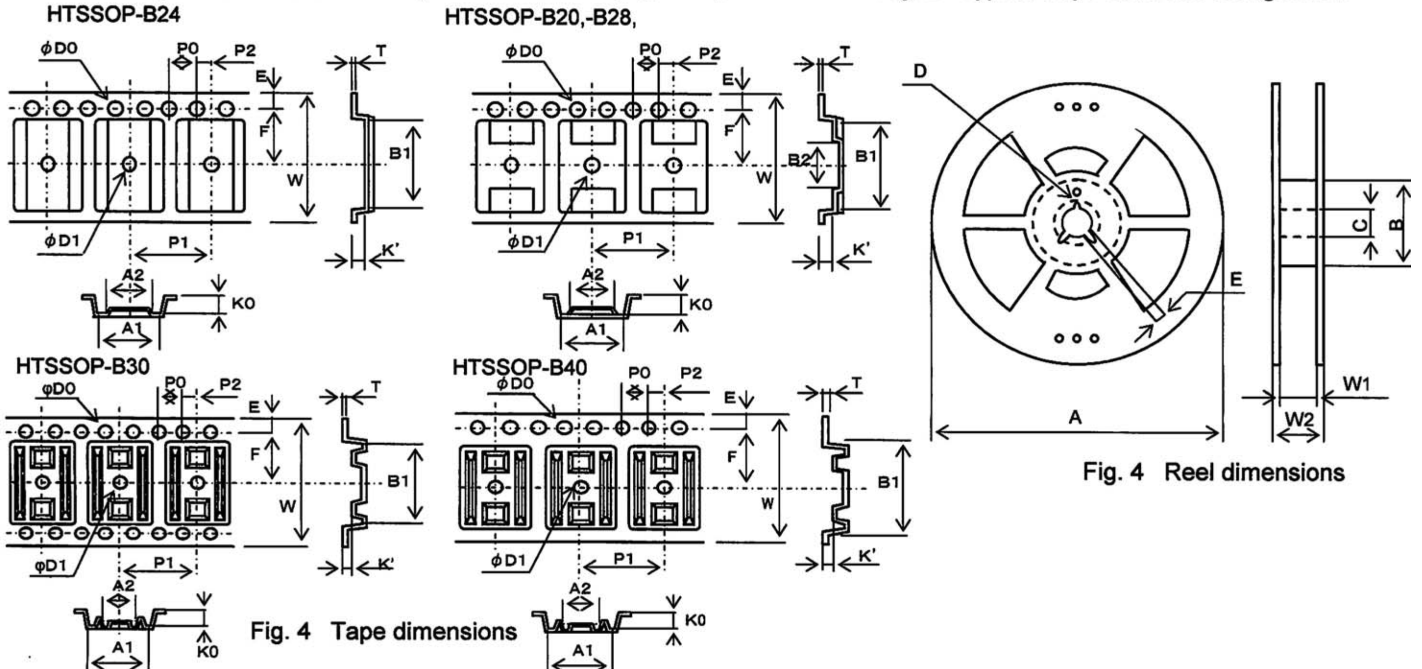


Fig. 4 Tape dimensions

Fig. 4 Reel dimensions


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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

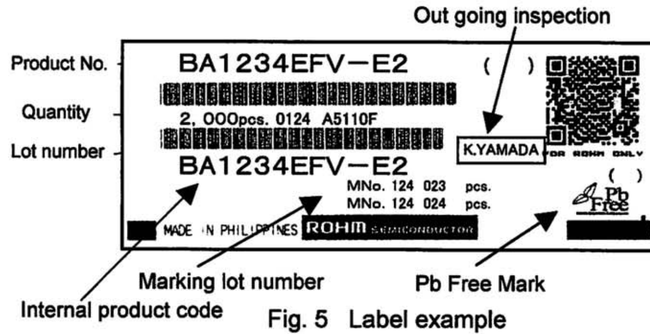



Fig. 5 Label example

2. 5. Packing style

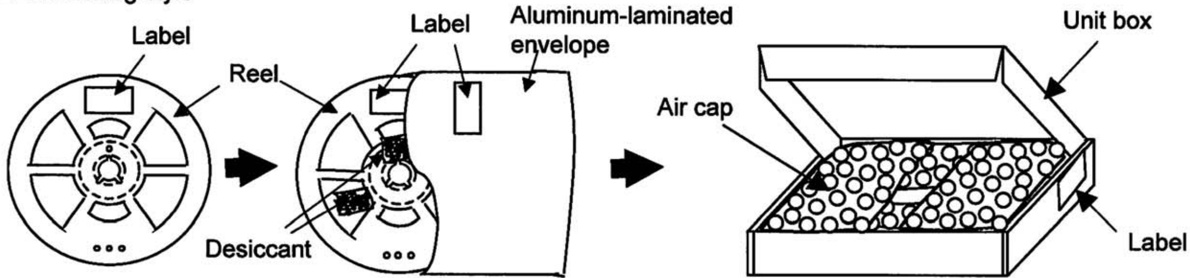
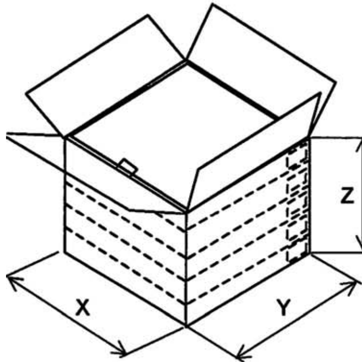



Fig. 6 Packing style

2. 6. Shipping style

5 unit boxes or less per shipping box




| Package | box dimensions (all dimensions in mm) | | |
|---|---|---|---|
| | X | Y | Z |
| HTSSOP-B20 | 372 | 368 | 305 |
| HTSSOP-B24 | 372 | 368 | 305 |
| HTSSOP-B28 | 372 | 368 | 305 |
| HTSSOP-B30 | 372 | 368 | 305 |
| HTSSOP-B40 | 372 | 368 | 355 |

2. 7. Packing materials

| Item | Material |
|---|---|
| Embossed carrier tape | PS |
| Cover tape | PET + PE |
| Reel | PS |
| Desiccant | Silicagel |
| Envelope | Aluminume-laminated |
| Air cap | Polyethylene |
| Unit box | Cardboard |
| Shipping box | Cardboard |

*Please obey the indication of top side in a shipping box.

Fig. 7 Shipping box dimensions and Shipping style

2. 8. Others

2. 8. 1. Peelback strength

Cover tape peelback strength is 0.2 to 0.7N.

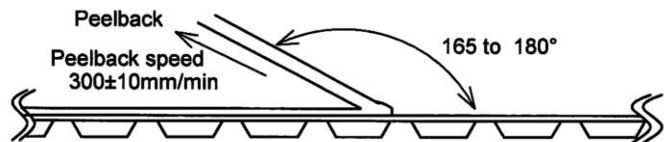



Fig. 8 Test method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2. 8. 2. Missing Ics
(1) No consecutive dropouts.
(2) A maximun 0.1% of specified number of products in each packing may be missing.

## 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

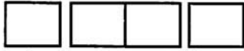
-Specified storage period : 1 year

3. 3. Specified storage period until soldering

Dry process before mounting is necessary in the following two case.
1.After the package is opened , the product is left unused over 168 hours.
2.Before the package is opened , the product is left in the package unused over 1year.
Please excute dry processing in a reel state with 60℃ for 48 hours.
At this time, peelback strength of cover tape become 0.2N - 0.9N.
Case of transferring to heatproof container such as trays, excute dry processing with 125℃ for 24 hours.
In addition, the dry processing should be max, 2 times due to influence on the product's solderability.

## 4. Marking lot number

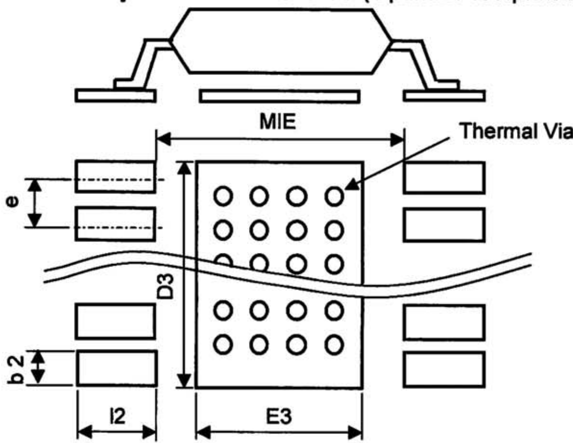
HTSSOP-B20



HTSSOP-B24,-B28,-B30,-B40

Production lot number
Production week code
Production year code

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



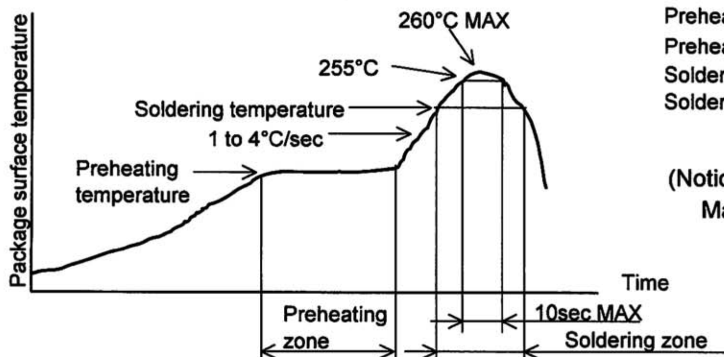

(all dimensions in mm)

| Package | Land pitch e | Land space MIE | Land length ≥ l2 | Land width b2 |
|---|---|---|---|---|
| HTSSOP-B20 | 0.65 | 4.60 | 1.20 | 0.35 |
| HTSSOP-B24 | 0.65 | 5.74 | 1.23 | 0.35 |
| HTSSOP-B28 | 0.65 | 4.60 | 1.20 | 0.35 |
| HTSSOP-B30 | 0.65 | 5.80 | 1.20 | 0.35 |
| HTSSOP-B40 | 0.65 | 6.00 | 1.20 | 0.35 |

| Package | Radiaton land lengt D3 | Radiaton land width E3 | Thermal via Pitch | Thermal via Diameter |
|---|---|---|---|---|
| HTSSOP-B20 | 6.50 | 3.60 | 1.20 | ϕ0.3 |
| HTSSOP-B24 | 7.80 | 4.74 | 1.20 | ϕ0.3 |
| HTSSOP-B28 | 9.70 | 3.60 | 1.20 | ϕ0.3 |
| HTSSOP-B30 | 10.00 | 4.80 | 1.20 | ϕ0.3 |
| HTSSOP-B40 | 13.60 | 5.00 | 1.20 | ϕ0.3 |

## 6. Soldering conditions

6. 1. Recommended temperature profile for reflow




Preheating temperature ; 130°C to 190°C
Preheating zone ; 120sec MAX
Soldering temperature ; 220°C to 230°C
Soldering zone ; 60sec MAX

(Notice)
Maximum 2-times soldering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### 6. 2. 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) The heatsink may not be connected using wave soldering methods.
(2) Do not use other soldering methods with wave soldering.
(3) Recommend to clean the board to eliminate flux, solder waste, and other impurities for reliability, after soldering.
(4) 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
(Notice) The heatsink may not be connected using solder iron.

< Tape dimensions >

| Package | Quantity (pcs) | Tape dimensions (all dimensions in mm) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | A1 | A2 | B1 | B2 | D0 | D1 | E | F | K' | K0 | P1 | P2 | T | W | P0 |
| HTSSOP-B20 | 2500 | 6.7 | (4.0) | 6.9 | (3.2) | ϕ1.5 | ϕ1.5 | 1.75 | 5.5 | 1.25 | 1.65 | 8.0 | 2.0 | 0.3 | 12.0 | 4.0 |
| HTSSOP-B24 | 2000 | 8.2 | (5.5) | 8.4 | — | ϕ1.5 | ϕ1.5 | 1.75 | 7.5 | 1.2 | 1.5 | 12.0 | 2.0 | 0.3 | 16.0 | 4.0 |
| HTSSOP-B28 | 2500 | 6.8 | (4.0) | 10.3 | (6.0) | ϕ1.5 | ϕ1.5 | 1.75 | 7.5 | 1.15 | 1.65 | 8.0 | 2.0 | 0.3 | 16.0 | 4.0 |
| HTSSOP-B30 | 2000 | 8.3 | 5.35 | 10.6 | — | ϕ1.5 | ϕ1.5 | 1.75 | 7.5 | 1.0 | 1.65 | 12.0 | 2.0 | 0.3 | 16.0 | 4.0 |
| HTSSOP-B40 | 2000 | 8.5 | (3.0) | 14.2 | (6.0) | ϕ1.5 | ϕ2.0 | 1.75 | 11.5 | 0.85 | 1.50 | 12.0 | 2.0 | 0.3 | 24.0 | 4.0 |
| Tolerance | | ±0.1 | ±0.05 | ±0.1 | - | $^{+0.1}_{-0}$ | $^{+0.1}_{-0}$ | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.1 | ±0.05 | ±0.3 | ±0.1 |

< Reel dimensions >

| Package | Reel dimensions (all dimensions in mm) | | | | | | |
|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | W1 | W2 |
| HTSSOP-B20 | ϕ330 | ϕ80 | ϕ13.0 | ϕ20.2 | 1.5 | 13.5 | 18.5 |
| HTSSOP-B24 | ϕ330 | ϕ80 | ϕ13.0 | ϕ20.2 | 1.5 | 17.5 | 22.5 |
| HTSSOP-B28 | ϕ330 | ϕ80 | ϕ13.0 | ϕ20.2 | 1.5 | 17.5 | 22.5 |
| HTSSOP-B30 | ϕ330 | ϕ80 | ϕ13.0 | ϕ20.2 | 1.5 | 17.5 | 22.5 |
| HTSSOP-B40 | ϕ330 | ϕ80 | ϕ13.0 | ϕ20.2 | 1.5 | 24.4 | 32.4 |
| Tolerance | - | - | ±0.2 | MIN | MIN | $^{+2.0}_{-0}$ | MAX |

< Dehydrated weight >

| Dehydrated weight dimensions in g |
|---|
| 0.08 |
| 0.12 |
| 0.12 |
| 0.15 |
| 0.20 |


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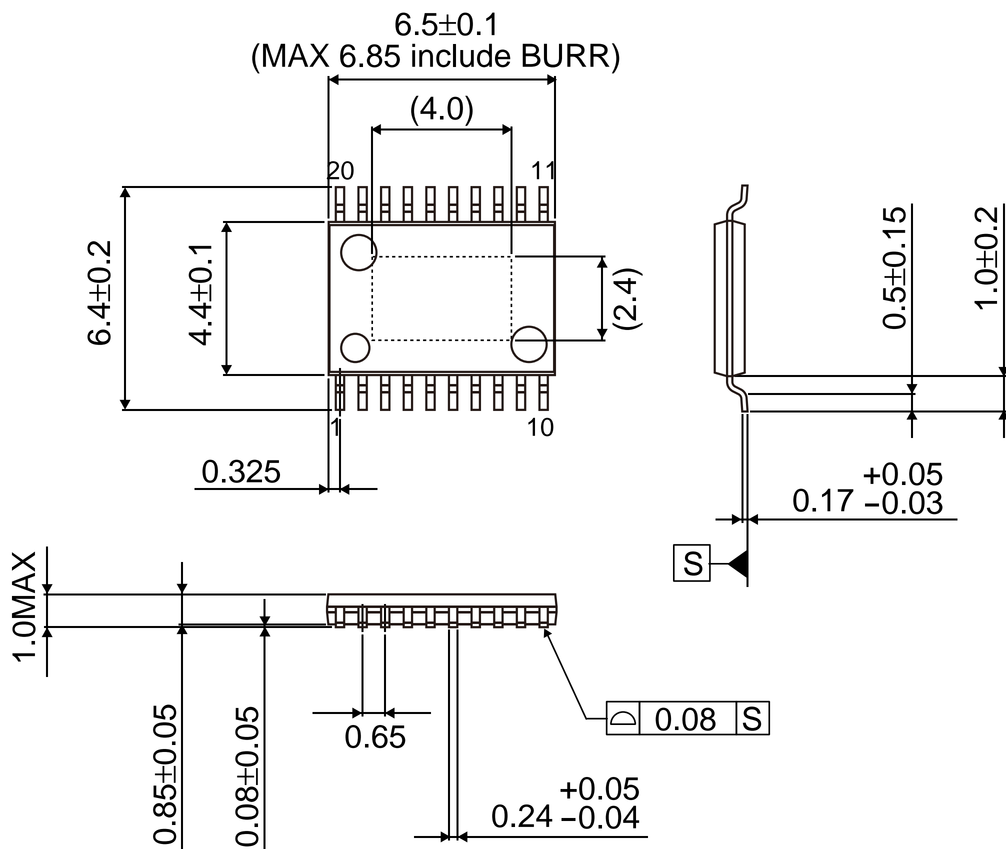
# Package Dimensions

**HTSSOP-B20**




(Unit : mm)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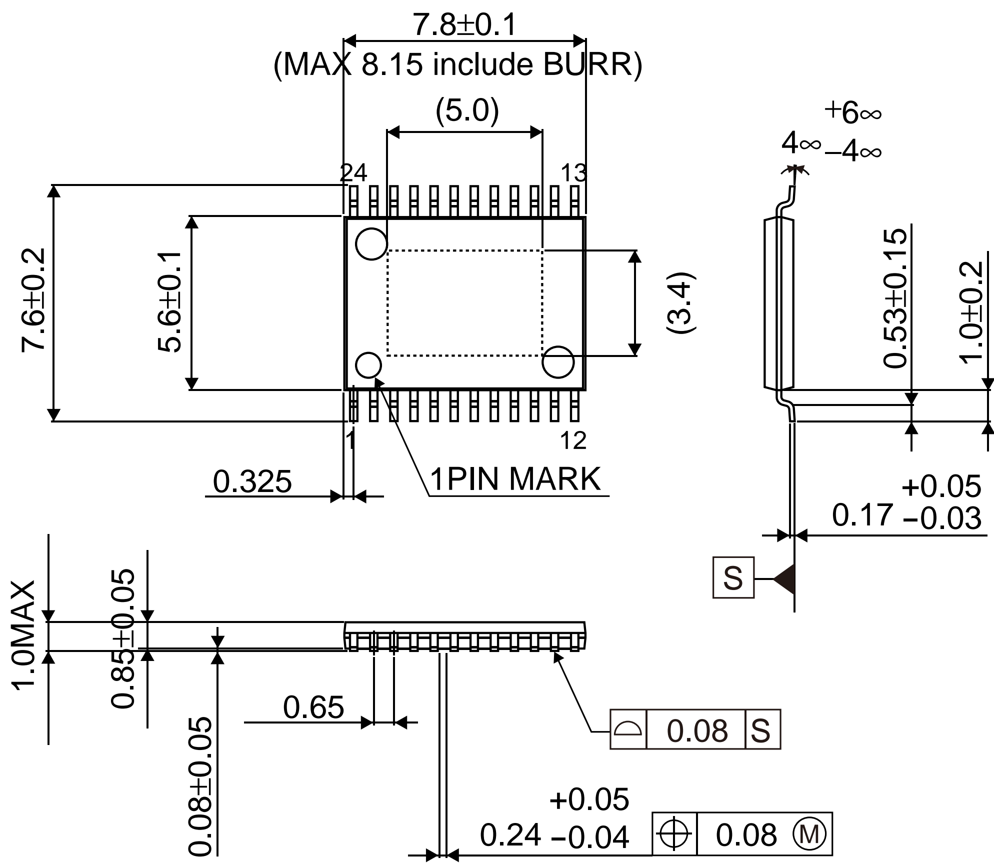
# Package Dimensions

**HTSSOP-B24**




(Unit : mm)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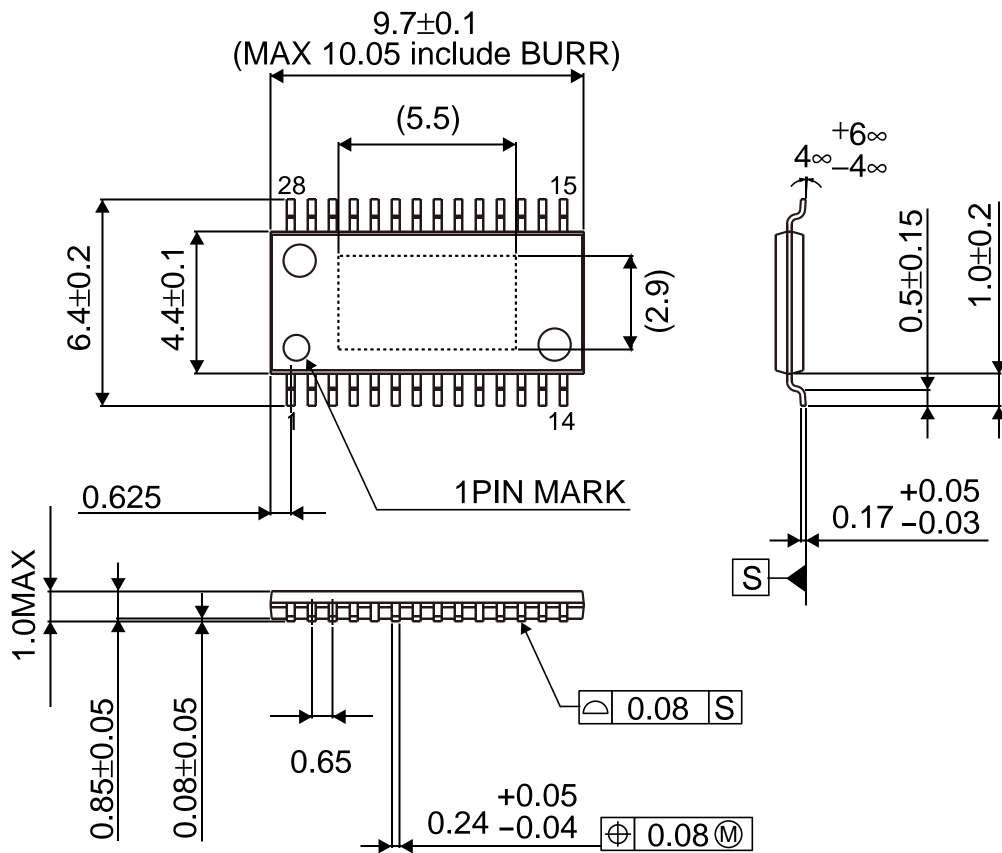
# Package Dimensions

**HTSSOP-B28**




(Unit : mm)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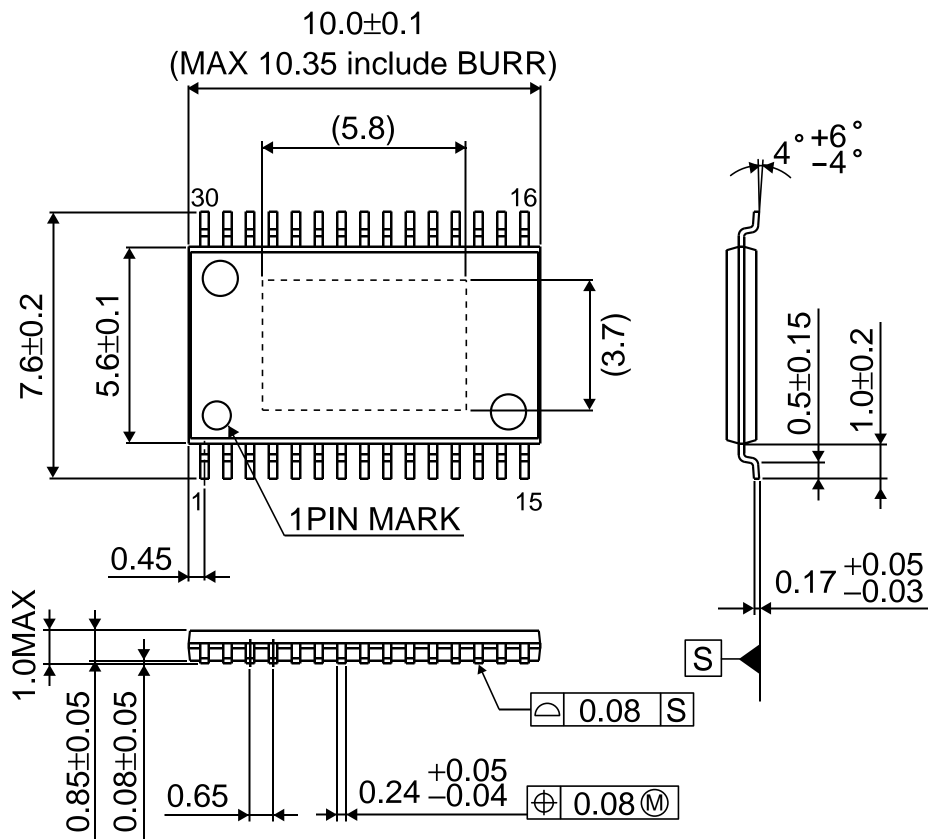
# Package Dimensions

**HTSSOP-B30**




(Unit : mm)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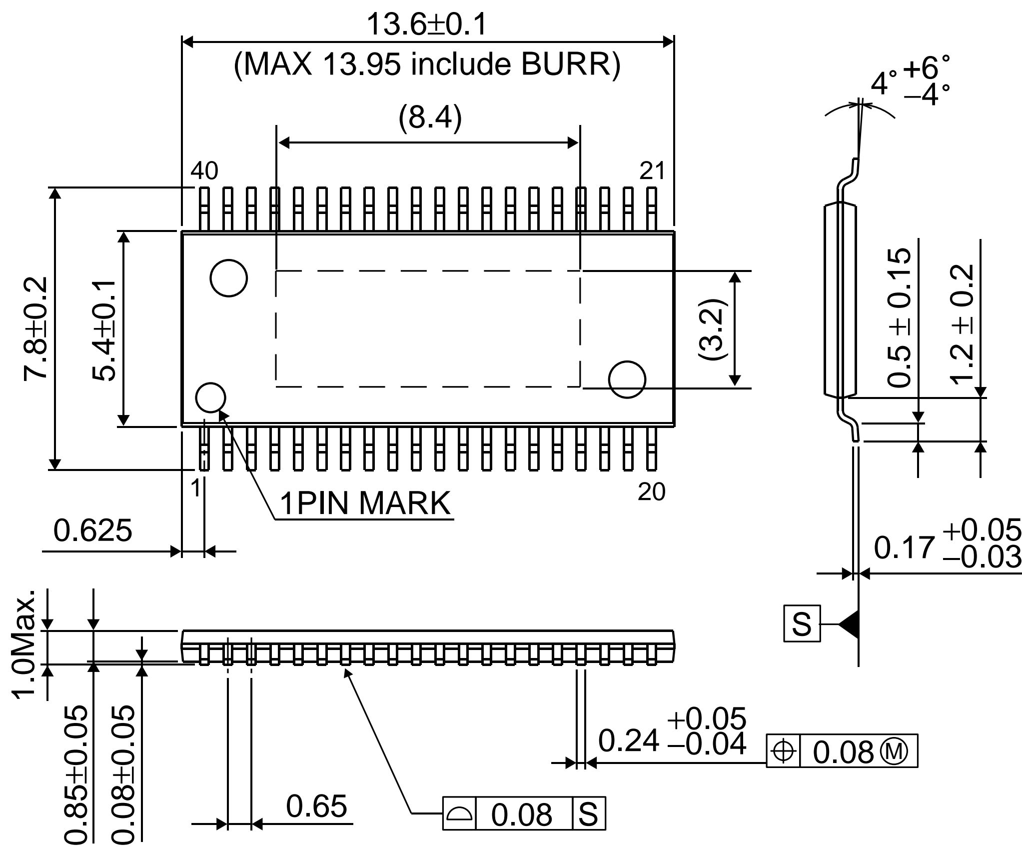
# Package Dimensions

**HTSSOP-B40**




(Unit : mm)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