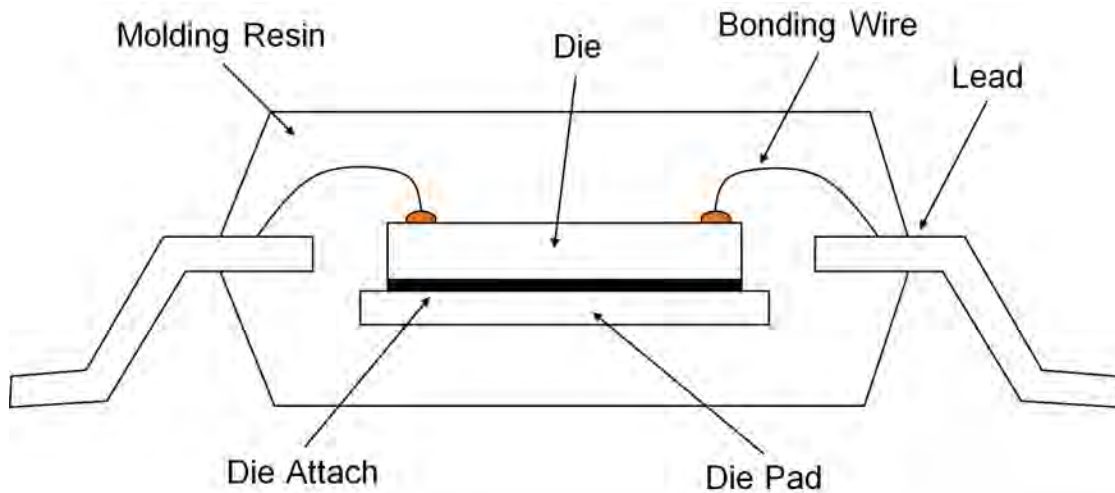


1. Package Information

Package Name	TSSOP-C48V
Type	SOP
Pin Count	48
Package Weight [g]	0.16
Lead Finish	Pure Tin
MSL	Level3

2. Package Structure



3. Packing Specification

3.1 Packing form, Quantity, PIN1 Orientation

Packing Form		Tape&Reel
Packing Quantity	[pcs]	2,000
PIN 1 Orientation		E2

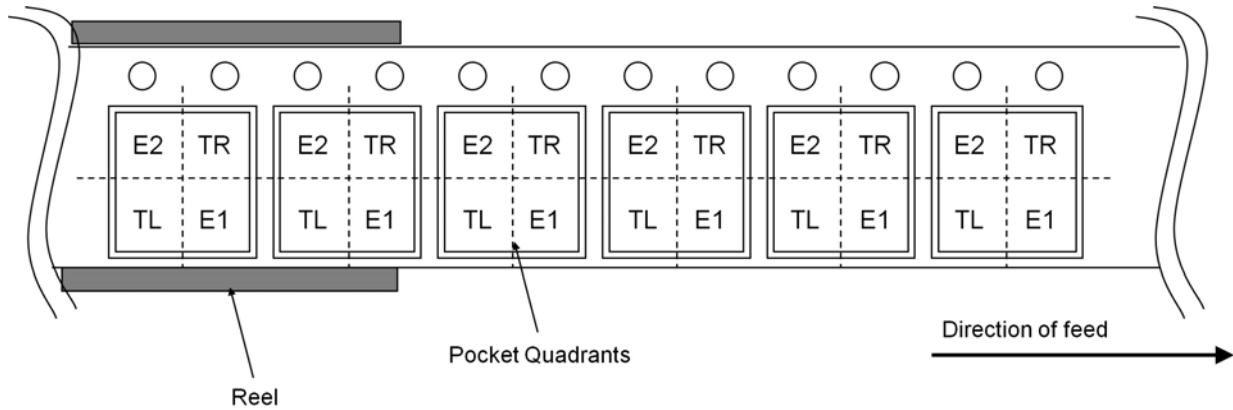


Fig.1 Quadrant Assignments for PIN 1 Orientation in Tape

E2 : PIN1 is placed to the top left corner. TR : PIN1 is placed to the top right corner.
 TL : PIN1 is placed to the lower left. E1 : PIN1 is placed to the lower right.

3.2 Use material

Item	Material
Embossed carrier tape	PS
Cover tape	PET+PE
Reel	PS
Desiccant	Clay
Envelope	Aluminum-laminated
Air cap	PE
Unit box	Cardboard
Shipping box	Cardboard

3.3 Leader specification

No component pockets are 480 mm or more.

3.4 Trailer specification

No component pockets are 120 mm or more. Tape is free from reel.

3.5 Peelback strength

Cover tape peelback strength is 0.2 N to 0.7 N.

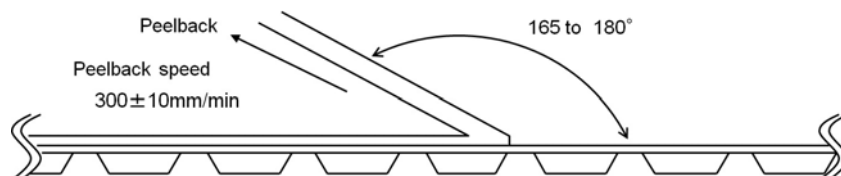


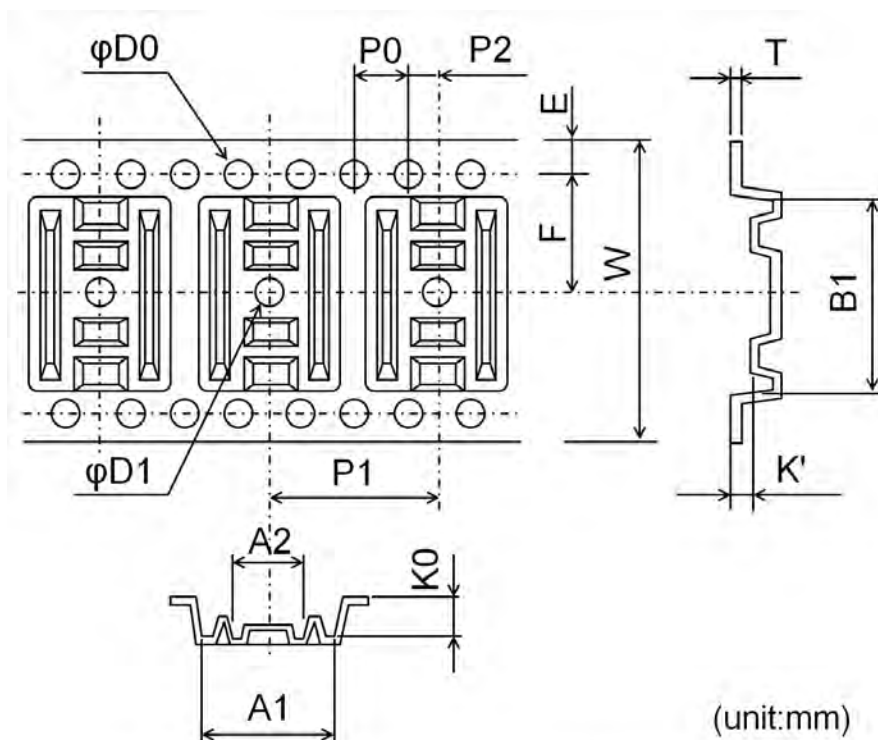
Fig. 2 Test method

3.6 Missing lcs

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

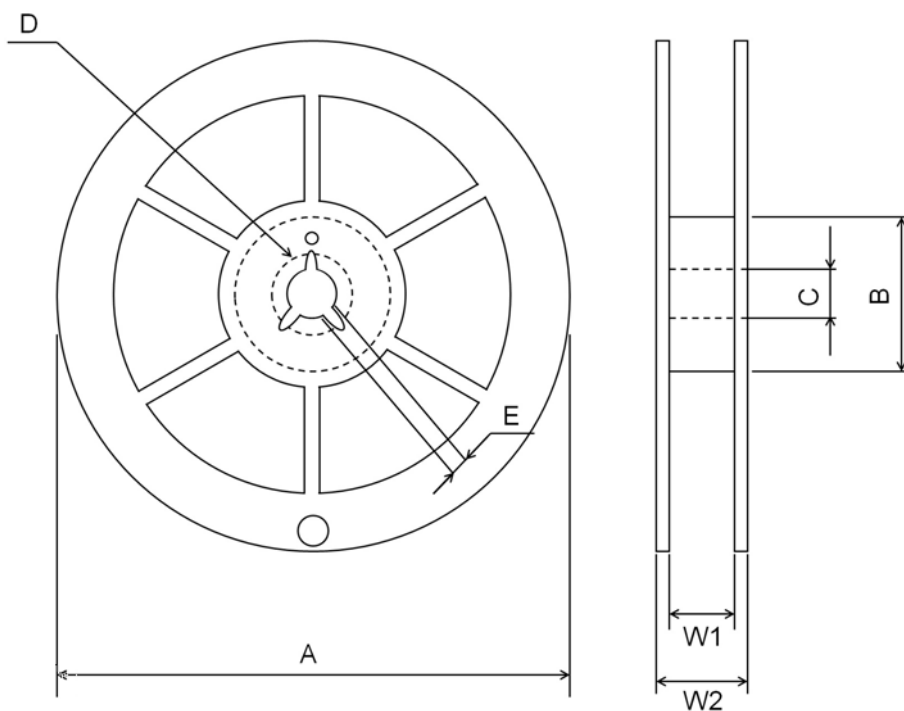
3.7 Tape and Reel Specification

3.7.1 Tape Dimension



	Tape Dimension	Tape Tolerance
A1	8.80	±0.1
A2	5.89	±0.05
B1	13.15	±0.1
D0	φ1.5	+0.1/-0
D1	φ2.0	+0.1/-0
E	1.75	±0.1
F	11.5	±0.1
K'	0.85	±0.05
K0	1.50	±0.1
P0	4.00	±0.1
P1	12.0	±0.1
P2	2.00	±0.1
T	0.30	±0.05
W	24.0	±0.3

3.7.2 Reel Dimension

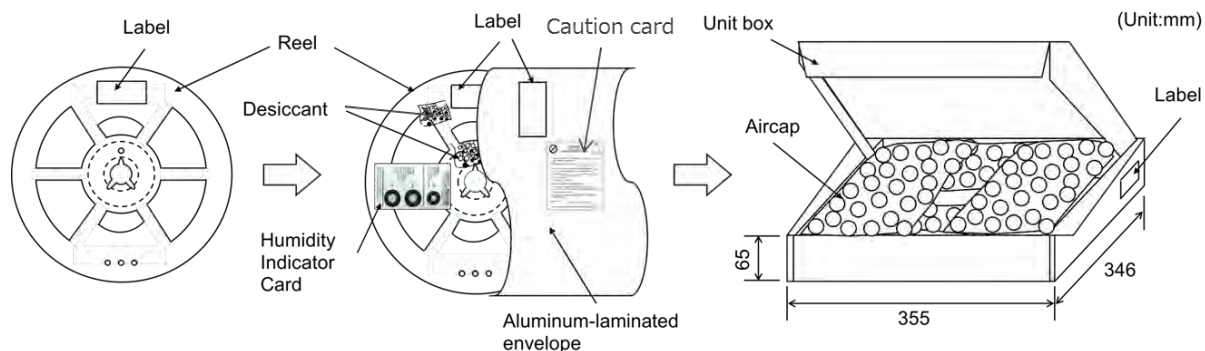


(unit:mm)

	Reel Dimension	Reel Tolerance
A	330	±2.0
B	100	±1.0
C	13	±0.2
D	21	±0.8
E	2	±0.5
W1	25.5	±1.0
W2	29.5	±1.0

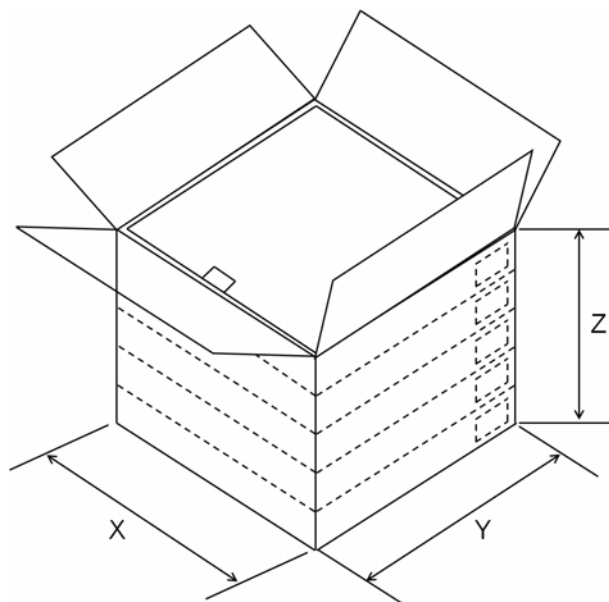
3.8 Packing Method

1 reel(s) or less per unit box



3.9 Packing Style

5 unit boxes or less per shipping box



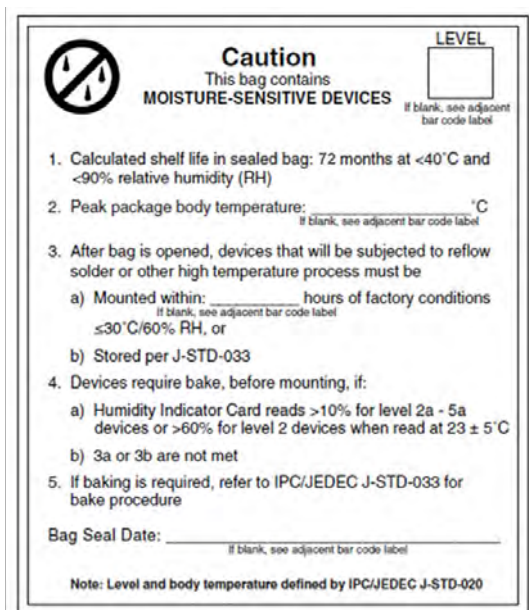
(unit:mm)

Shipping Box Dimension	
X	372
Y	368
Z	355

3.10 Label Specification

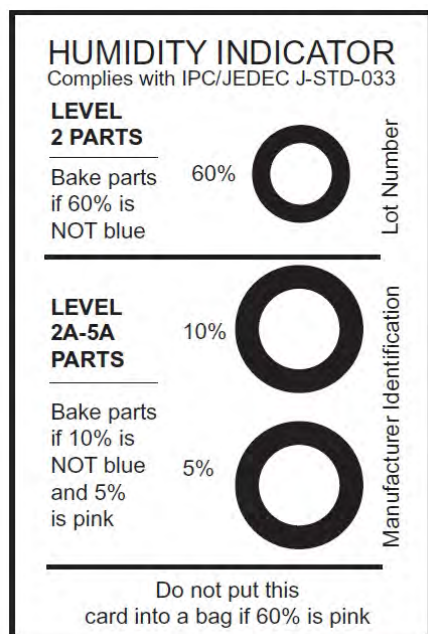


3.11 Caution card specification

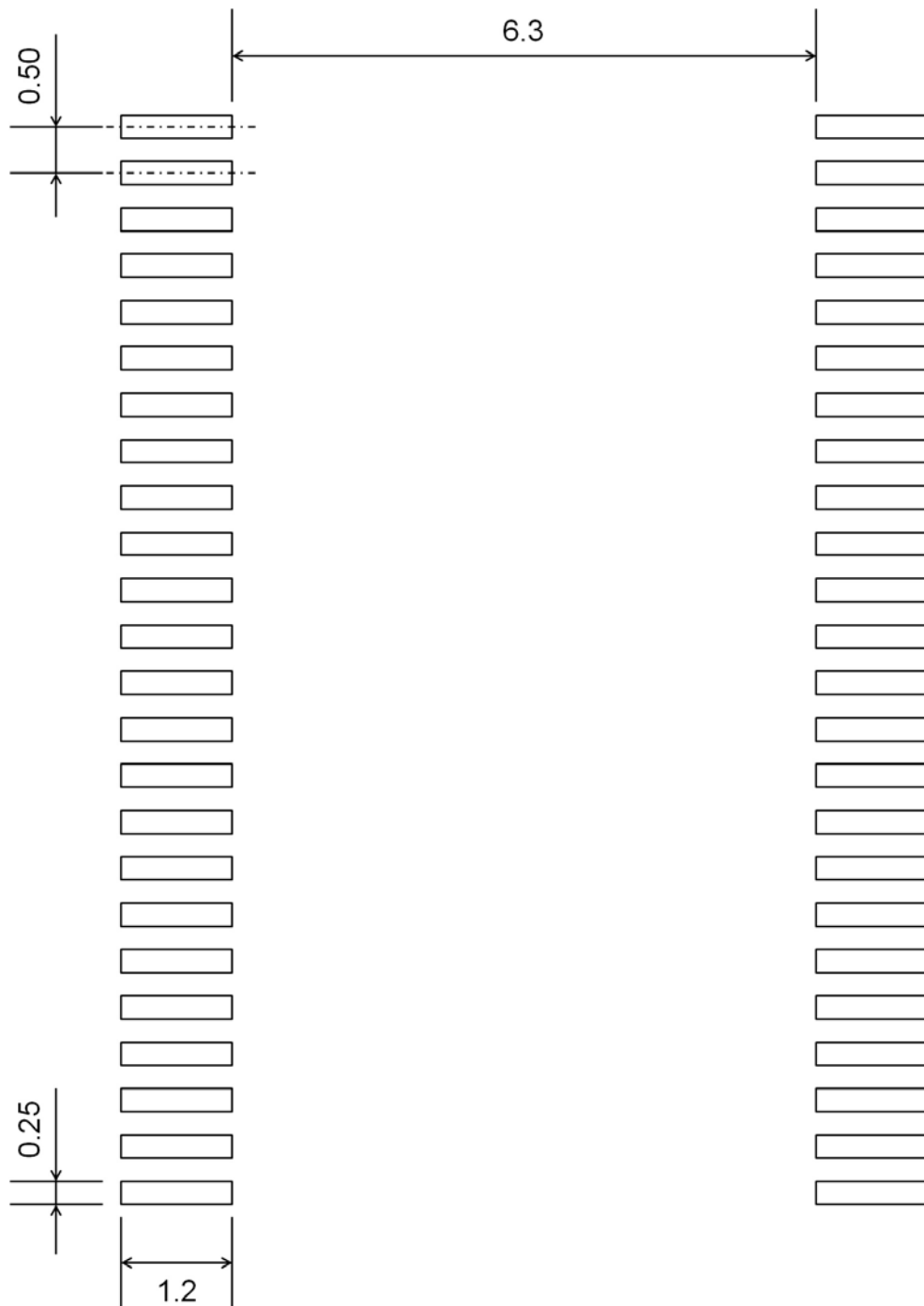


Remark) Standard item 1. calculated shelf life in caution card is not applied for MSL1 product.

3.12 Indicator card specification



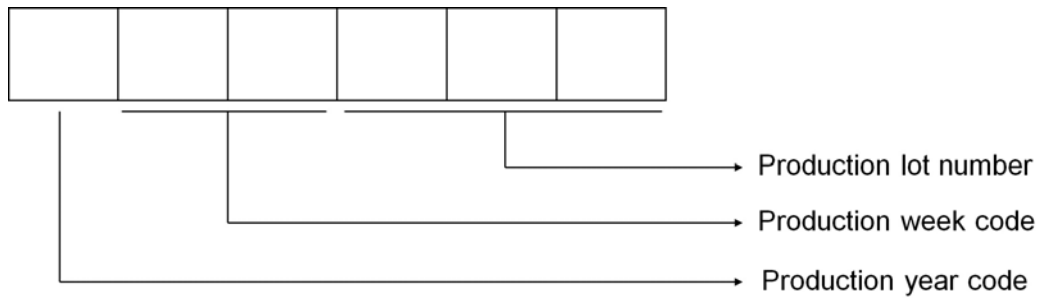
4. Footprint dimensions



(unit:mm)

In actual design, please optimize in accordance with the situation of your board design and soldering condition.

5. Marking Specification



6. Storage conditions

6.1 Storage environment

Recommended storage conditions

	Min.	Max.	Unit
Temperature	5	30	°C
Humidity	-	70	% RH

6.2 Storage period (Start to count since delivery date)

	Min.	Max.	Unit
Storage period	-	1	year

6.3 Specified storage period until soldering

	Min.	Max.	Unit
Acceptable time	-	168	h

The above value is a time from opening the moisture-proof packaging until the soldering. Cases where it is necessary to perform the drying process is the following.

Case 1 : in excess of the above-mentioned "Acceptable time"

Case 2 : it has passed more than 6 years not open

Recommended the dry process conditions

	Temperature [°C]	Time [h]
Reel (Note1)	60	48
Other Heat-proof container	125	24

(Note1) When carrying out the dry process in a "Reel" state, the peelback strength will change. Please refer to the following values:

	Min.	Max.	Unit
Peelback strength	0.2	0.9	N

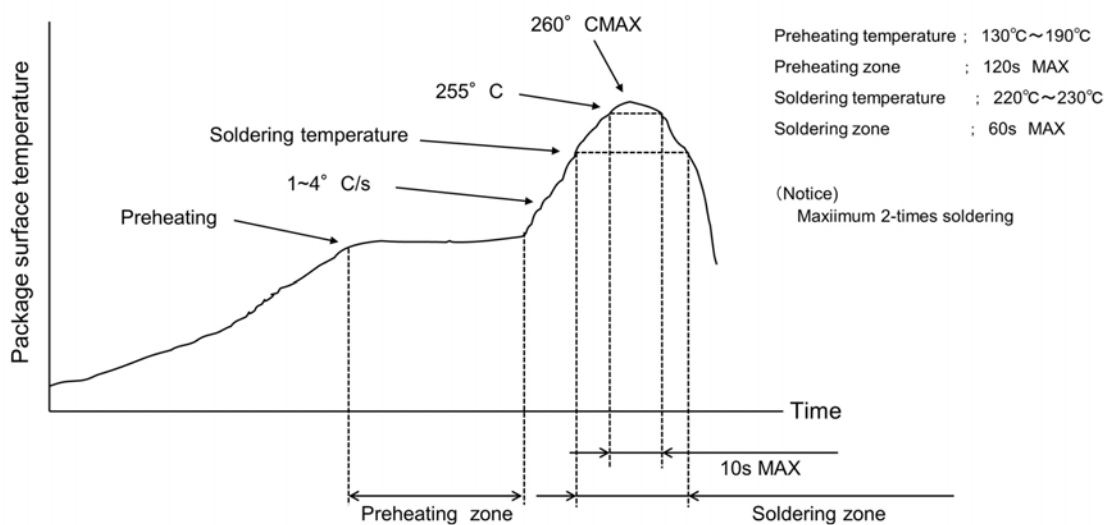
The drying process is the impact on the solderability because the oxidation of the terminal portion will occur. Therefore, specify the maximum times of the dry processing as follows:

Recommended execution count of the dry process

	Min.	Max.	Unit
Reel		1	times
Other Heat-proof container		2	times

7. Soldering conditions

7.1 Recommended temperature profile for reflow



7.2 Recommended condition for wave soldering

Preheating temperature	:	120 °C to 150 °C
Preheating time	:	60 s MAX
Soldering temperature	:	260 °C ± 3 °C
Soldering time	:	12 s MAX

Notes for wave soldering

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

7.3 Recommended condition for solder iron

Solder iron temperature	:	380 °C or less
Mounting time	:	4 s or less

Notes for solder iron

- (1) Solder mounting time is the time per 1 lead

Notes

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