

Package : SOP

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1. Structure and materials

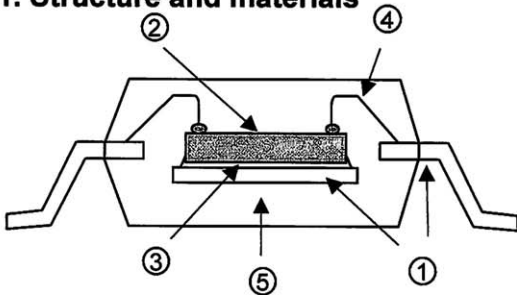


Fig. 1 Structure

No.	Item	Materials
①	Lead Frame	SOP8 , SOP-J8 to -J14 : Cu-Alloy (External lead : Pb free solder plating) except SOP8 , SOP-J8 to -J14 : Alloy42 (External lead : Pb free solder plating)
②	Die	Silicon
③	Die Attach	Ag Paste
④	Wire	Au
⑤	Molding	Epoxy Resin

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)

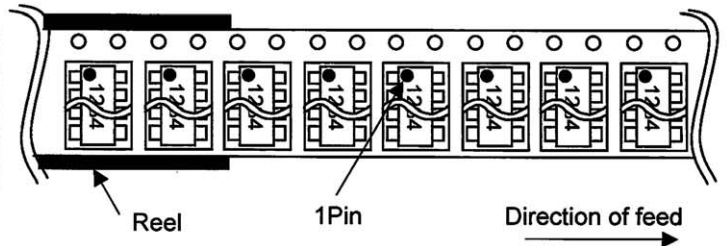


Fig. 2 Typical Tape and Reel configuration

2. 2. Tape and Reel specification

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

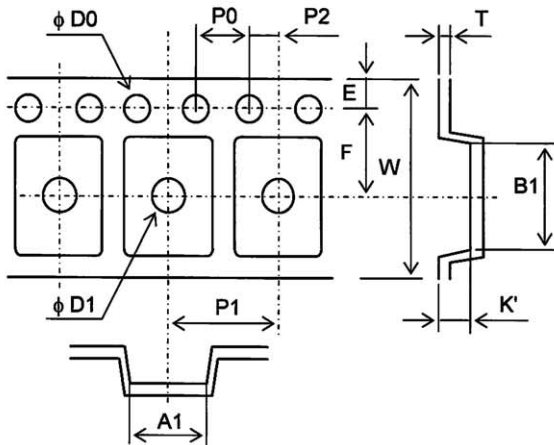


Fig. 3 Tape dimensions

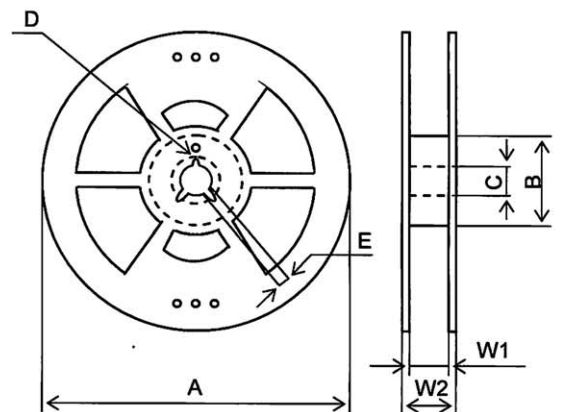


Fig. 4 Reel dimensions

2. 3. Leader and Trailer

2. 3. 1. Leader

No component pockets are 40 pockets or more.

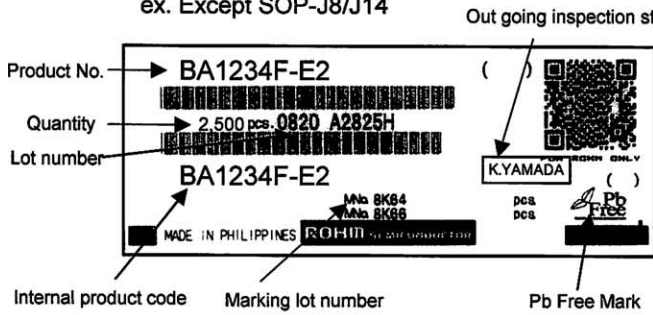
2. 3. 2. Trailer

No component pockets are 10 pockets or more.

Tape is free from reel.

2. 4. Label for Reel and Box

ex. Except SOP-J8/J14



ex. SOP-J8 to -J14

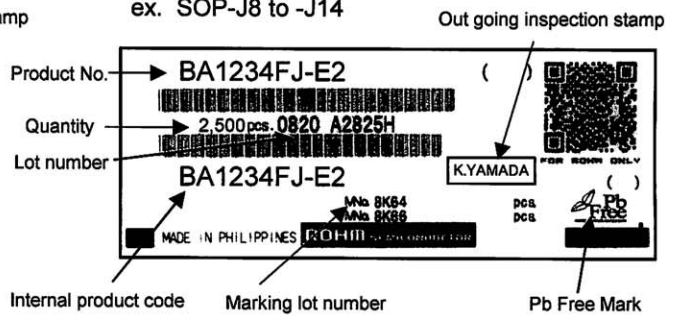


Fig. 5 Label example

2. 5. Packing style

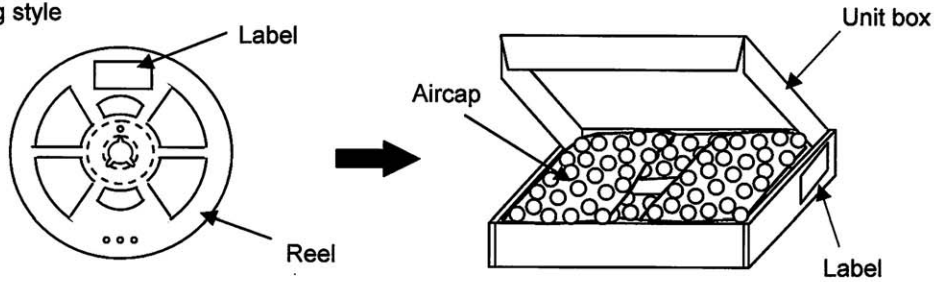
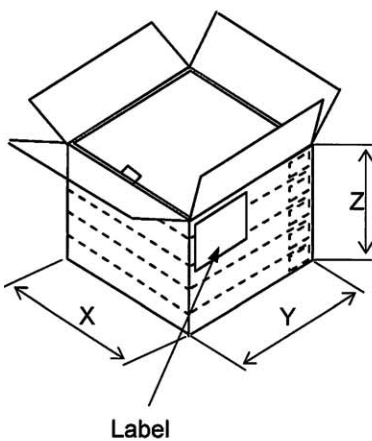


Fig. 6 Packing style

2. 6. Shipping style

5 unit boxes or less per shipping box



Package	box dimensions (all dimensions in mm)		
	X	Y	Z
SOP8	372	368	305
SOP14	372	368	305
SOP16	372	368	305
SOP18	372	368	355
SOP20	372	368	355
SOP22	372	368	355
SOP24	372	368	355
SOP28	372	368	355
SOP-J8	372	368	305
SOP-J14	372	368	305

2. 7. Packing materials

Item	Material
Embossed carrier tape	PS
Cover tape	PET + PE
Reel	PS
Air cap	Polyethylene
Unit box	Cardboard
Shipping box	Cardboard

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

(all dimensions in mm)

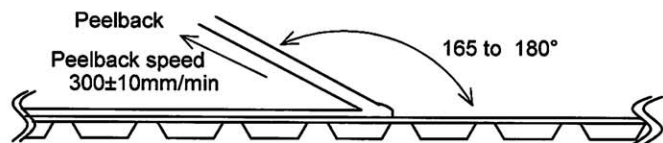
Fig. 7 Shipping box dimensions and Shipping style

2. 8. Others

2. 8. 1. Peelback strength

Cover tape peelback strength is 0.2 to 0.7N.

Fig. 8 Test method



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 :

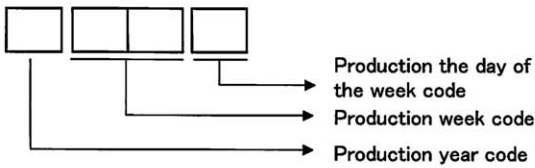
- Temperature : 5 to 30°C
- Humidity : 40 to 70% RH

3. 2. Storage period

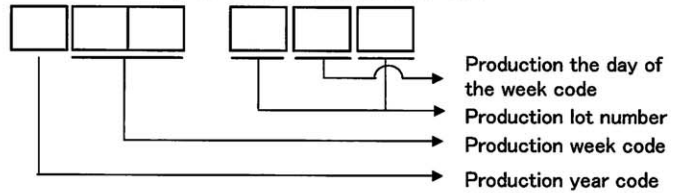
-Specified storage period : 1 year

4. Marking lot number

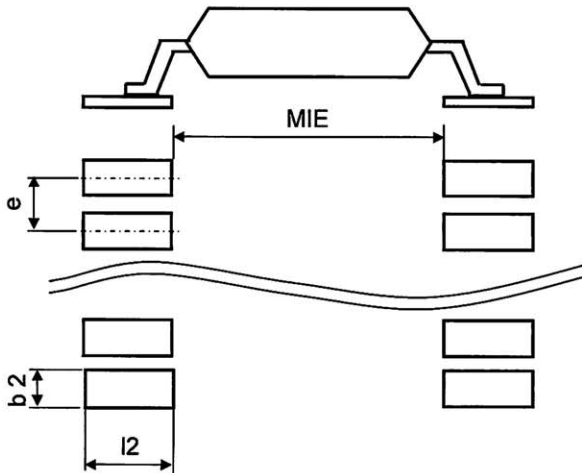
ex. SOP8 , SOP-J8



ex. SOP14,16,18,20,22,24,28, SOP-J14



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

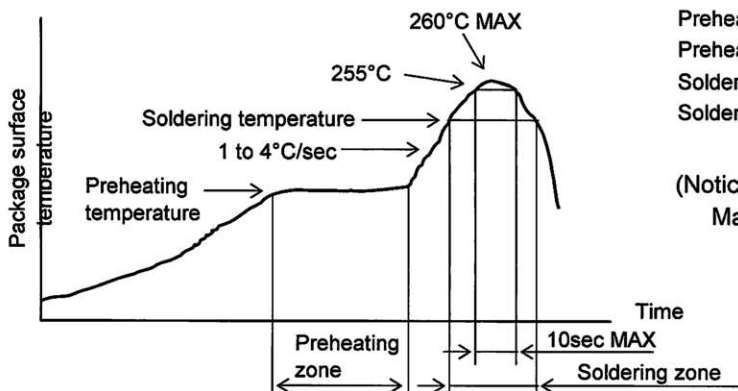


(all dimensions in mm)

Package	Land pitch e	Land space MIE	Land length ≥ l2	Land width b2
SOP8 to 16	1.27	4.60	1.10	0.76
SOP18 to 24	1.27	6.00	1.20	0.76
SOP28	1.27	8.10	1.20	0.76
SOP-J8 to J14	1.27	3.90	1.35	0.76

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

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) 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)											
		A1	B1	D0	D1	E	F	K'	P1	P2	T	W	P0
SOP8	2500	6.8	5.5	φ1.5	φ1.5	1.75	5.5	2.0	8.0	2.0	0.3	12.0	4.0
SOP14	2500	6.8	9.3	φ1.5	φ1.5	1.75	7.5	2.1	8.0	2.0	0.3	16.0	4.0
SOP16	2500	6.8	10.6	φ1.5	φ1.5	1.75	7.5	2.1	8.0	2.0	0.3	16.0	4.0
SOP18	2000	8.4	12.0	φ1.5	φ2.0	1.75	11.5	2.1	12.0	2.0	0.3	24.0	4.0
SOP20	2000	8.4	12.95	φ1.5	φ2.0	1.75	11.5	2.15	12.0	2.0	0.3	24.0	4.0
SOP22	2000	8.4	14.5	φ1.5	φ2.0	1.75	11.5	2.3	12.0	2.0	0.3	24.0	4.0
SOP24	2000	8.5	15.6	φ1.5	φ2.0	1.75	11.5	2.15	12.0	2.0	0.3	24.0	4.0
SOP28	1500	10.7	18.9	φ1.5	φ2.0	1.75	11.5	3.0	16.0	2.0	0.3	24.0	4.0
SOP-J8	2500	6.8	5.5	φ1.5	φ1.5	1.75	5.5	2.0	8.0	2.0	0.3	12.0	4.0
SOP-J14	2500	6.55	9.15	φ1.5	φ1.5	1.75	7.5	1.8	8.0	2.0	0.3	16.0	4.0
Tolerance		±0.1	±0.1	$\begin{smallmatrix} +0.1 \\ -0 \end{smallmatrix}$	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
SOP8	φ330	φ80	φ13.0	φ20.2	1.5	12.4	20.4
SOP14	φ330	φ80	φ13.0	φ20.2	1.5	16.4	24.4
SOP16	φ330	φ80	φ13.0	φ20.2	1.5	16.4	24.4
SOP18	φ330	φ80	φ13.0	φ20.2	1.5	24.5	32.4
SOP20	φ330	φ80	φ13.0	φ20.2	1.5	24.5	32.4
SOP22	φ330	φ80	φ13.0	φ20.2	1.5	24.5	32.4
SOP24	φ330	φ80	φ13.0	φ20.2	1.5	24.5	32.4
SOP28	φ330	φ80	φ13.0	φ20.2	1.5	24.5	32.4
SOP-J8	φ330	φ80	φ13.0	φ20.2	1.5	12.4	20.4
SOP-J14	φ330	φ80	φ13.0	φ20.2	1.5	16.4	24.4
Tolerance	-	-	±0.2	MIN	MIN	$\begin{smallmatrix} +2.0 \\ -0 \end{smallmatrix}$	MAX

< Dehydrated weight >

Dehydrated weight dimensions in g
0.084
0.14
0.16
0.26
0.28
0.31
0.34
0.67
0.08
0.12

Notes

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