

WLCSP ASSEMBLY GUIDELINES

Our WLCSP (Wafer Level Chip Size Package) can be mounted using the same processes and equipment as conventional BGA packages:

- Solder paste printing
- WLCSP placement
- Reflow

Precautions

- ◆ Please implement proper ESD (electrostatic discharge) protection when handling this package.
- ◆ Avoid mechanical shock during mounting and other processes.
- ◆ Since our WLCSP complies with JEDEC Level 1, pre-baking before mounting is not required.

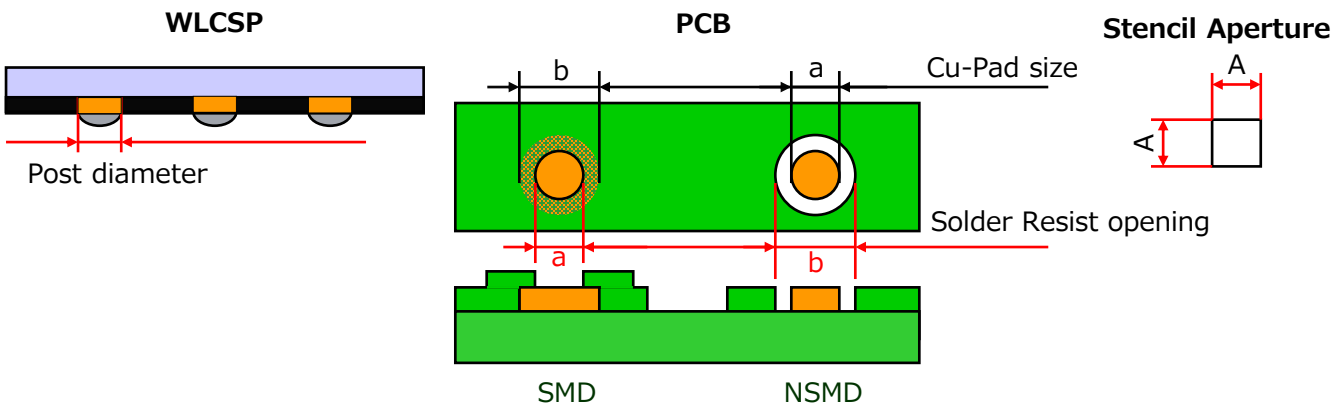
SUMMARY OF PCB PAD AND STENCIL

Printed Circuit Board (PCB Design)

- To ensure uniform stress distribution in solder joints after mounting, it is recommended that the PCB pad diameter matches the WLCSP bump (post) diameter.

Stencil (Solder Paste Printing Mask)

- Design stencil aperture dimensions according to the PCB pad size.
- A square aperture shape is recommended.
- Recommended stencil thickness: 120 μm to 150 μm
- For fine pitch applications: additive stencil is recommended
- Recommended aspect ratio (stencil thickness / aperture dimension): ≤ 0.6



WLCSP		PCB Pad size		Stencil		(unit : mm)
Pitch	Post dia.	a	b	Aperture A	Thickness	
0.80	φ0.400	φ0.400	φ0.520	0.400	0.12 - 0.15	
0.65	φ0.325	φ0.325	φ0.450	0.325		
0.50	φ0.250	φ0.250	φ0.370	0.250	0.12	
0.40	φ0.200	φ0.200	φ0.320	0.225	0.10	
0.30	φ0.150	φ0.150	φ0.270	0.175	0.08	

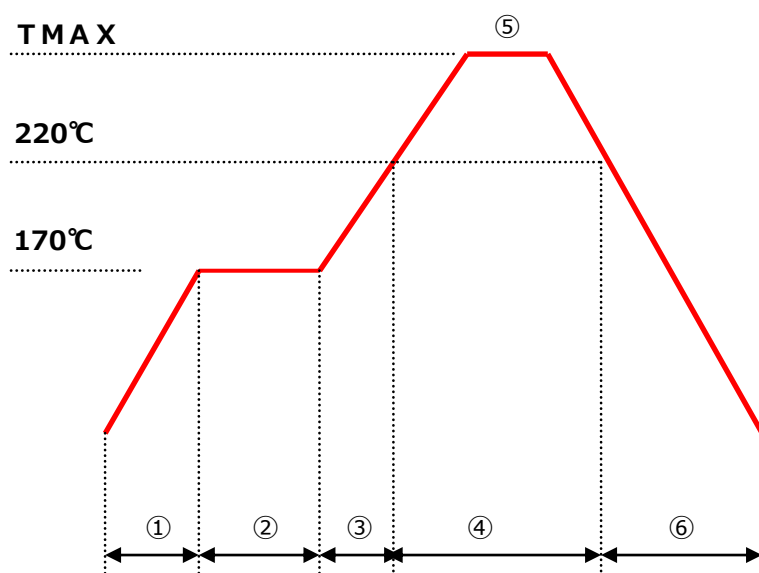
Note: It is better to design Solder mask opening does not overlap Cu pad.

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Recommended Solder Paste

- ◆ **Lead-Free Solder Paste**
- ◆ **Alloy composition**
 - Sn-3.0Ag-0.5Cu
- ◆ **Flux**
 - RMA type (no-clean)
- ◆ **Solder Powder Size**
 - Max 38 μm (recommended for pitch $\geq 0.5\text{ mm}$)
 - Max 25 μm (recommended for pitch $< 0.5\text{ mm}$)

Recommended Reflow Profile



- ① **Ramp-up rate**
 - 1°C ~ 4°C/sec
- ② **Preheating (*)**
 - 170°C $\pm$ 20°C
 - 60 ~ 120 sec
- ③ **Ramp-up rate**
 - 1°C ~ 4°C/sec
- ④ **Main heating**
 - $\geq 220^\circ\text{C}$
 - Within 30 sec
- ⑤ **Peak temperature (TMAX)**
 - 240°C ~ 260°C
 - Within 10 sec
- ⑥ **Cooling**
 - Natural or forced cooling

(*): During reflow, it is desirable to set the temperature distribution across the PCB to $\Delta T \leq 10^\circ\text{C}$

Cleaning After Mounting

- When using RMA-type solder paste, cleaning after mounting is generally not required.
- However, if underfill is applied and flux residue prevents proper filling, cleaning is required.

Notes and Disclaimer

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