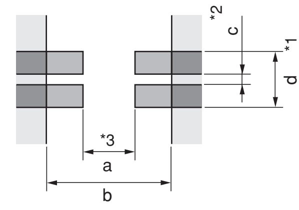
1. Standard Land Pattern Dimensions

Land Pattern + Solder Resist
Land Pattern
Solder Resist

(in mm)

DLW31S

●Reflow Soldering



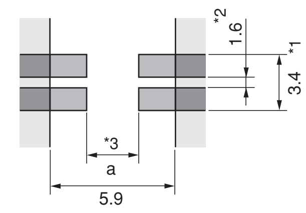
Series	a	b	c	d
DLW31S	1.6	3.7	0.4	1.6

* 1 : If the pattern is made with wider than 1.6mm (DLW31S) it may result in components turning around, because melting speed is different. In the worst case, short circuit between lines may occur.
* 2 : If the pattern is made with less than 0.4mm, in the worst case, short circuit between lines may occur due to spread of soldering paste or mount placing accuracy.
* 3 : If the pattern is made with wider than 1.6mm (DLW31S), the bending strength will be reduced.

Do not use gilded pattern; excess soldering heat may dissolve metal of a copper wire.

DLW43S

●Reflow Soldering



Series	a
DLW43SH110XK2	3.0
DLW43SH220XK2	
DLW43SH510XK2	
DLW43SH101XK2	3.2
DLW43SH101XP2	

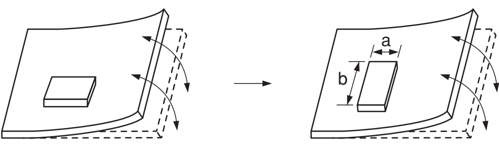
* 1 : If the pattern is made with wider than 3.4mm, it may result in components turning around, because melting speed is different. In the worst case, short circuit between lines may be occur.
* 2 : If the pattern is made with less than 1.6mm, in the worst case, short circuit between lines may occur due to the spread of soldering paste or mount placing accuracy.
* 3 : If the pattern is made with wider, the strength of bending will be reduced. Moreover, if the pattern is made with less than "a" dimension, in the worst case short circuit may be occurred.

Do not use gilded pattern; excess soldering heat may dissolve metal of a copper wire.

● PCB Warping

PCB should be designed so that products are not subjected to the mechanical stress caused by warping the board.

Products should be located in the sideways direction (Length: a<b) to the mechanical stress.



Poor example　　Good example

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2. Solder Paste Printing and Adhesive Application

When reflow soldering the Chip Common Mode Choke Coils, the printing must be conducted in accordance with the following cream solder printing conditions.
If too much solder is applied, the chip will be prone to damage by mechanical and thermal stress from the PCB and may crack. In contrast, if too little solder is applied, there is the potential that the termination strength will be insufficient, creating the potential for detachment.
Standard land dimensions should be used for resist and copper foil patterns.
When flow soldering the Chip Common Mode Choke Coils, apply the adhesive in accordance with the following conditions.
If too much adhesive is applied, then it may overflow into the land or termination areas and yield poor solderability.
In contrast, if insufficient adhesive is applied, or if the adhesive is not sufficiently hardened, then the chip may become detached during flow soldering process.

(in mm)

<table>
<tr><th>Series</th><th>Solder Paste Printing</th><th>Adhesive Application</th></tr>
<tr><td>DLW31S</td><td>●Use Sn/Pb=60/40 or Sn-3.0Ag-0.5Cu solder for pattern printing.
●Guideline of solder paste thickness: 100-150μm
*Solderability is subject to reflow condition and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
<table><tr><th>Series</th><th>a</th><th>b</th><th>c</th><th>d</th></tr><tr><td>DLW31S</td><td>1.6</td><td>3.7</td><td>0.4</td><td>1.6</td></tr></table></td><td></td></tr>
<tr><td>DLW43S</td><td>●Use Sn/Pb=60/40 or Sn-3.0Ag-0.5Cu solder for pattern printing.
●Guideline of solder paste thickness: 150μm
*Solderability is subject to reflow condition and thermal conductivity. Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
<table><tr><th>Series</th><th>a</th><th>b</th><th>c</th><th>d</th></tr><tr><td>DLW43S</td><td>3.0 (510)
3.2 (101)</td><td>5.9</td><td>1.6</td><td>3.4</td></tr></table></td><td></td></tr>
</table>

3. Standard Soldering Conditions

(1) Soldering Methods

Use flow and reflow soldering methods only.
Use standard soldering conditions when soldering chip EMI suppression filters.
In cases where several different parts are soldered, each having different soldering conditions, use those conditions requiring the least heat and minimum time.

Solder: H60A H63A solder (JIS Z 3238)
In case of lead-free solder, use Sn-3.0Ag-0.5Cu solder. Use of Sn-Zn based solder will deteriorate performance of products.

Flux:

- Use Rosin-based flux.
  In case of DLW31/43 series, use Rosin-based flux with converting chlorine content of 0.06 to 0.1wt%.
  In case of using RA type solder, products should be cleaned completely with no residual flux.
- Do not use strong acidic flux (with chlorine content exceeding 0.20wt%)
- Do not use water-soluble flux.

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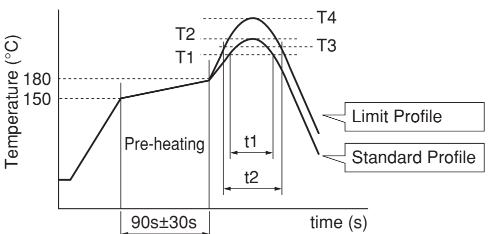
(2) Soldering Profile

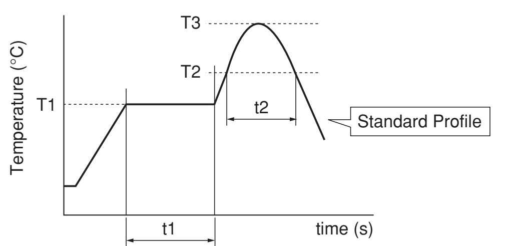
●Reflow Soldering profile

①Soldering profile for Lead-free solder (Sn-3.0Ag-0.5Cu)



<table>
<tr><th rowspan="3">Series</th><th colspan="4">Standard Profile</th><th colspan="4">Limit Profile</th></tr>
<tr><th colspan="2">Heating</th><th rowspan="2">Peak temperature (T2)</th><th rowspan="2">Cycle of reflow</th><th colspan="2">Heating</th><th rowspan="2">Peak temperature (T4)</th><th rowspan="2">Cycle of reflow</th></tr>
<tr><th>Temp. (T1)</th><th>Time. (t1)</th><th>Temp. (T3)</th><th>Time. (t2)</th></tr>
<tr><td>DLW31S</td><td rowspan="2">220°C min.</td><td rowspan="2">30 to 60s</td><td rowspan="2">245 ±3°C</td><td rowspan="2">2 times max.</td><td>230°C min.</td><td>60s max.</td><td>260°C /10s</td><td rowspan="2">2 times max.</td></tr>
<tr><td>DLW43S</td><td>240°C min.</td><td>30s max.</td><td>260°C</td></tr>
</table>

②Soldering profile for Eutectic solder
(Limit profile: refer to ①)



<table>
<tr><th rowspan="3">Series</th><th colspan="2" rowspan="2">Pre-heating</th><th colspan="4">Standard Profile</th></tr>
<tr><th colspan="2">Heating</th><th rowspan="2">Peak temperature (T3)</th><th rowspan="2">Cycle of reflow</th></tr>
<tr><th>Temp. (T1)</th><th>Time. (t1)</th><th>Temp. (T2)</th><th>Time. (t2)</th></tr>
<tr><td>DLW</td><td>150°C</td><td>60s min.</td><td>183°C min.</td><td>60s max.</td><td>230°C</td><td>2 times max.</td></tr>
</table>

(3) Reworking with Soldering Iron

The following conditions must be strictly followed when using a soldering iron.

Pre-heating: 150°C 60s min.

Soldering iron power output: 30W max.

Temperature of soldering iron tip / Soldering time:

DLW31S/DLW43S

— 350°C max./3s max. (2 Times max.)

Do not allow the tip of the soldering iron to directly contact the chip.

For additional methods of reworking with a soldering iron, please contact Murata engineering.

4. Cleaning

Do not clean DLW31S/43S series. Before cleaning, please contact Murata engineering.