

## 1. Standard Land Pattern Dimensions

A high Q value is achieved when the PCB electrode land pattern is designed so that it does not project beyond the chip inductor (chip coil) electrode.

Land Pattern + Solder Resist  
 Land Pattern  
 Solder Resist  
 (in mm)

Series	Standard Land Dimensions																																																																
<b>LQM18F/18P</b> <b>LQM21D/21F/21P</b> <b>LQM2HP</b> <b>LQM2MP</b> <b>LQM31F</b> <b>LQM31P</b> <b>LQH2MC</b> <b>LQH32P</b> <b>LQH31C</b> <b>LQH55D/66S</b> <b>LQH44P</b> <b>LQH5BP</b> <b>LQW15C</b> <b>LQW18C</b>		<table border="1"> <thead> <tr> <th>Part Number</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td rowspan="2"><b>LQM18F/18P</b></td> <td>Flow</td> <td>0.7</td> <td>2.2-2.6</td> <td rowspan="2">0.7</td> </tr> <tr> <td>Reflow</td> <td></td> <td>1.8-2.0</td> </tr> <tr> <td><b>LQM21D/21F/21P</b></td> <td>1.0</td> <td>3.0-4.0</td> <td>1.2</td> </tr> <tr> <td><b>LQM2HP</b></td> <td>1.5</td> <td>3.0</td> <td>1.6</td> </tr> <tr> <td><b>LQM2MP</b></td> <td>1.8</td> <td>2.4</td> <td>0.8</td> </tr> <tr> <td><b>LQM31F/31P</b></td> <td>1.2</td> <td>4.2-5.2</td> <td>2.0</td> </tr> <tr> <td><b>LQH2MC</b></td> <td>1.0</td> <td>2.6</td> <td>0.8</td> </tr> <tr> <td><b>LQH32P</b></td> <td>2.0</td> <td>3.8</td> <td>1.3</td> </tr> <tr> <td><b>LQH31C</b></td> <td>1.5</td> <td>4.5</td> <td>1.0</td> </tr> <tr> <td><b>LQH55D/66S</b></td> <td>3.5</td> <td>8.0</td> <td>2.0</td> </tr> <tr> <td><b>LQH44P</b></td> <td>3.0</td> <td>4.4</td> <td>1.3</td> </tr> <tr> <td><b>LQH5BP</b></td> <td>4.1</td> <td>5.5</td> <td>1.8</td> </tr> <tr> <td><b>LQW15C</b></td> <td>0.6</td> <td>1.4</td> <td>0.4</td> </tr> <tr> <td><b>LQW18C</b></td> <td>1.0</td> <td>2.2</td> <td>0.7</td> </tr> </tbody> </table>	Part Number	a	b	c	<b>LQM18F/18P</b>	Flow	0.7	2.2-2.6	0.7	Reflow		1.8-2.0	<b>LQM21D/21F/21P</b>	1.0	3.0-4.0	1.2	<b>LQM2HP</b>	1.5	3.0	1.6	<b>LQM2MP</b>	1.8	2.4	0.8	<b>LQM31F/31P</b>	1.2	4.2-5.2	2.0	<b>LQH2MC</b>	1.0	2.6	0.8	<b>LQH32P</b>	2.0	3.8	1.3	<b>LQH31C</b>	1.5	4.5	1.0	<b>LQH55D/66S</b>	3.5	8.0	2.0	<b>LQH44P</b>	3.0	4.4	1.3	<b>LQH5BP</b>	4.1	5.5	1.8	<b>LQW15C</b>	0.6	1.4	0.4	<b>LQW18C</b>	1.0	2.2	0.7			
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Attention should be paid to potential magnetic coupling effects when using the inductor (coil) as a resonator.

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2. Standard Soldering Conditions

(1) Soldering method

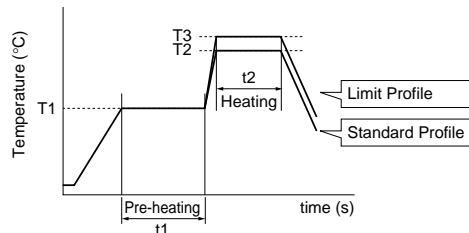
Chip inductor (Chip coils) can be flow or reflow soldered. Please contact Murata regarding other soldering methods. As for LQH2MC/55D/66S/32P/3NP/44P/5BP/55P, LQW15C/18C series, please use reflow soldering.

Solder: Use Sn-3.0Ag-0.5Cu solder.

Flux: Use rosin-based flux, but not strongly acidic flux (with chlorine content exceeding 0.2wt%). Do not use water-soluble flux. The flux used for LQW15C/18C series should use the rosin-based flux that includes middle activator equivalent to 0.06wt% to 0.1wt% chlorine. For additional mounting methods, please contact Murata.

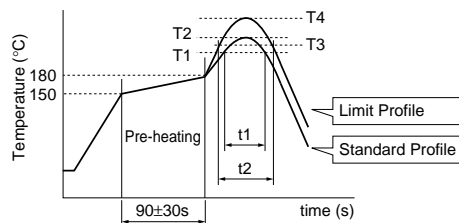
(2) Soldering profile

● Flow Soldering profile (Sn-3.0Ag-0.5Cu solder)



Series	Pre-heating		Standard Profile			Limit Profile		
	Temp. (T1)	Time. (t1)	Heating		Cycle of flow	Heating		Cycle of flow
			Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
LQM18F/18P LQM21D/21F/21P/2HP/2MP LQM31F/31P LQH31C	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.
LQH32C LQH43C	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	1 times

● Reflow Soldering profile (Sn-3.0Ag-0.5Cu solder)



Series	Standard Profile				Limit Profile			
	Heating		Peak temperature (T2)	Cycle of reflow	Heating		Peak temperature (T4)	Cycle of reflow
	Temp. (T1)	Time. (t1)			Temp. (T3)	Time. (t2)		
LQM18F/18P LQM21D/21F/21P/2HP/2MP LQM31F/31P, LQH2MC LQH31C LQH32P/3NP/44P/5BP/55P LQW15C/18C	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	2 times max.
LQH32C LQH43C LQH55D, LQH66S	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	1 time

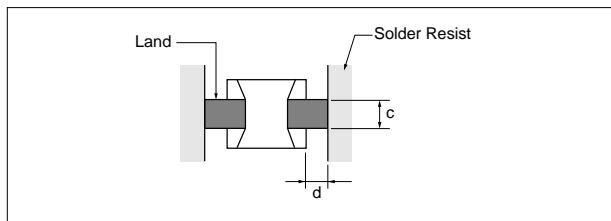
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(3) Reworking with Soldering Iron  
 Preheating at 150°C for 1 minute is required. Do not directly touch the ceramic element with the tip of the soldering iron. The reworking soldering conditions are as follows:

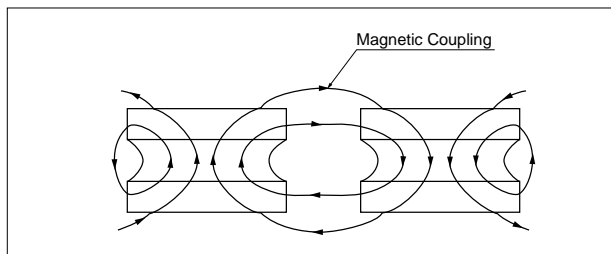
Soldering iron power output: 80W max.  
 Temperature of soldering iron tip: 350°C  
 Diameter of soldering iron end: 3.0mm max.  
 Soldering time: within 3 s

**3. Mounting Instructions**

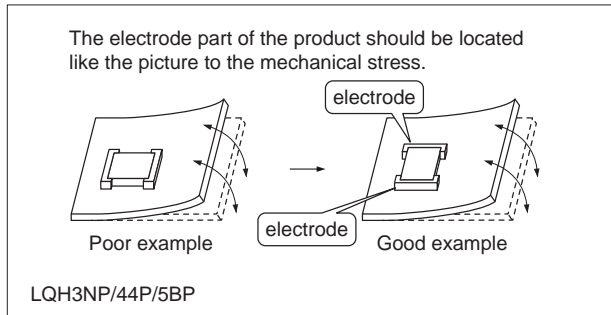
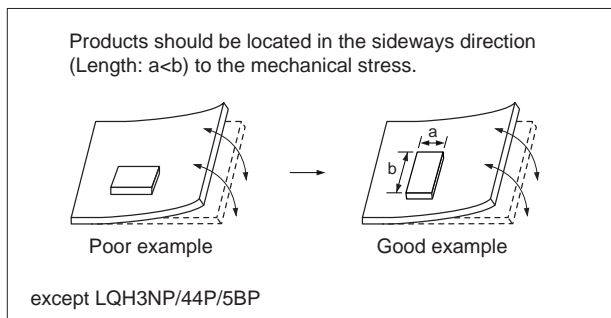
(1) Land Pattern Dimensions  
 Large lands reduce Q of the mounted chip. Also, large protruding land areas (bordered by lines having dimensions 'c' and 'd' shown) cause floating and electrode leaching.



(2) Magnetic Coupling  
 Since some chip inductors (chip coils) are constructed like an open magnetic circuit, narrow spacing between inductors (coils) may cause magnetic coupling. LQM, LQH66S and LQH\_P series have a magnetically shielded structure. The structure makes their coupling coefficient smaller than that of conventional chip inductors (chip coils).



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

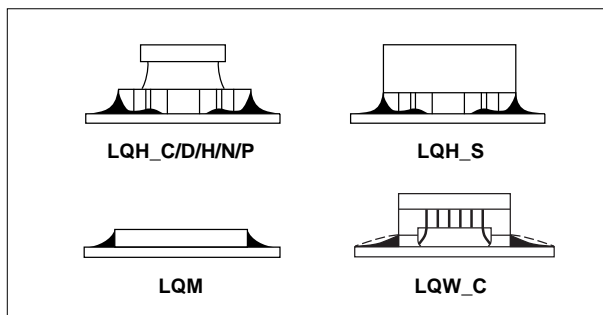


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(4) Amount of Solder Paste

Excessive solder causes electrode corrosion, while insufficient solder causes low electrode bonding strength. Adjust the amount of solder paste as shown on the right so that solder is applied.

- Guideline of solder paste thickness
  - LQW15C: 50 to 100µm
  - LQM, LQW18C, LQH2MC, LQH44P/5BP/55P: 100 to 150µm
  - LQHs except for ones written above: 200 to 300µm



(5) Amount of Adhesive

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. Apply the adhesive in accordance with the conditions shown in chart.

Part Number	Typical Application Amount (in:mg)
	IR-100
LQM18F/18P	0.06-0.07
LQM21D/21F/21P/2MP	0.20-0.25
LQM31F/31P/2HP	0.25-0.30
LQH31C	0.20-0.25
LQH32C	0.27-0.35
LQH43C	0.60-0.80

4. Cleaning

The following conditions should be observed when cleaning chip inductors (chip coils):

- (1) Cleaning Temperature: 60°C max. (40°C max. for alcohol cleaning agents)
- (2) Ultrasonic
  - Output: 20W/l max.
  - Duration: 5 minutes max.
  - Frequency: 28 to 40kHz
  - Care should be taken not to cause resonance of the PCB and mounted products.
- (3) Cleaning agent
  - The following cleaning agents have been tested on individual components. Evaluation in complete assembly should be done prior to production.
  - (a) Alcohol cleaning agents
    - Isopropyl alcohol (IPA)
  - (b) Aqueous cleaning agents
    - Pine Alpha ST-100S
    - LQH66S series: Aqueous agents should not be used because they may cause quality deterioration or damage to appearance.

- (4) Ensure that flux residue is completely removed. Component should be thoroughly dried after aqueous agents have been removed with deionized water.

For additional cleaning methods, please contact Murata.