

1. Standard Land 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																																																																																																																				
LQG15H LQG18H LQM18N/18F LQM21N/21D/21F/21P LQM2HP LQM2MP LQM31F LQM31P LQP02T LQP03T LQP15M/15T LQP18M LQH2MC LQH32P LQW04A LQW15A LQW18A LQW18C LQW21H LQW2BH LQW2BA LQW2UA LQW31H LQH31M/31C/31H LQH55D/66S LQH44P LQH5BP LQH6PP LQH88P		<table border="1"> <thead> <tr> <th>Part Number</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>LQG15H</td> <td>0.5-0.6</td> <td>1.4-1.5</td> <td>0.4</td> </tr> <tr> <td>LQG18H</td> <td>0.6-0.8</td> <td>1.8-2.2</td> <td>0.6-0.8</td> </tr> <tr> <td rowspan="2">LQM18N /18F</td> <td rowspan="2">0.7</td> <td>2.2-2.6</td> <td rowspan="2">0.7</td> </tr> <tr> <td>1.8-2.0</td> </tr> <tr> <td>LQM21N/21D/21F/21P</td> <td>1.0</td> <td>3.0-4.0</td> <td>1.2</td> </tr> <tr> <td>LQM2HP</td> <td>1.5</td> <td>3.0</td> <td>1.6</td> </tr> <tr> <td>LQM2MP</td> <td>1.8</td> <td>2.4</td> <td>0.8</td> </tr> <tr> <td>LQM31F/31P</td> <td>1.2</td> <td>4.2-5.2</td> <td>2.0</td> </tr> <tr> <td>LQP02T</td> <td>0.2-0.23</td> <td>0.4-0.56</td> <td>0.16-0.2</td> </tr> <tr> <td>LQP03T</td> <td>0.2-0.3</td> <td>0.8-0.9</td> <td>0.2-0.3</td> </tr> <tr> <td>LQP15M/15T</td> <td>0.5-0.6</td> <td>1.4-1.5</td> <td>0.4</td> </tr> <tr> <td>LQP18M</td> <td>0.7-0.9</td> <td>1.8-2.2</td> <td>0.6-0.8</td> </tr> <tr> <td>LQH2MC</td> <td>1.0</td> <td>2.6</td> <td>0.8</td> </tr> <tr> <td>LQH32P</td> <td>2.0</td> <td>3.8</td> <td>1.3</td> </tr> <tr> <td>LQW04A</td> <td>0.40</td> <td>1.0</td> <td>0.40</td> </tr> <tr> <td>LQW15A</td> <td>0.65</td> <td>1.2</td> <td>0.50</td> </tr> <tr> <td>LQW18A</td> <td>0.7-1.0</td> <td>1.8-2.0</td> <td>0.6-0.8</td> </tr> <tr> <td>LQW18C</td> <td>1.0</td> <td>2.2</td> <td>0.7</td> </tr> <tr> <td>LQW21H</td> <td>1.2</td> <td>2.6</td> <td>1.0</td> </tr> <tr> <td>LQW2BH</td> <td>1.2</td> <td>3.0</td> <td>0.8</td> </tr> <tr> <td>LQW2BA</td> <td>1.78</td> <td>2.8</td> <td>0.76</td> </tr> <tr> <td>LQW2UA</td> <td>2.54</td> <td>3.3</td> <td>1.27</td> </tr> <tr> <td>LQH31M/31C/31H</td> <td rowspan="2">1.5</td> <td rowspan="2">4.5</td> <td rowspan="2">1.0</td> </tr> <tr> <td>LQW31H</td> </tr> <tr> <td>LQH55D/66S</td> <td>3.5</td> <td>8.0</td> <td>2.0</td> </tr> <tr> <td>LQH44P</td> <td>3.0</td> <td>4.4</td> <td>1.3</td> </tr> <tr> <td>LQH5BP</td> <td>4.1</td> <td>5.5</td> <td>1.8</td> </tr> <tr> <td>LQH6PP</td> <td>4.2</td> <td>6.5</td> <td>2.4</td> </tr> <tr> <td>LQH88P</td> <td>5.2</td> <td>8.5</td> <td>3.9</td> </tr> </tbody> </table>	Part Number	a	b	c	LQG15H	0.5-0.6	1.4-1.5	0.4	LQG18H	0.6-0.8	1.8-2.2	0.6-0.8	LQM18N /18F	0.7	2.2-2.6	0.7	1.8-2.0	LQM21N/21D/21F/21P	1.0	3.0-4.0	1.2	LQM2HP	1.5	3.0	1.6	LQM2MP	1.8	2.4	0.8	LQM31F/31P	1.2	4.2-5.2	2.0	LQP02T	0.2-0.23	0.4-0.56	0.16-0.2	LQP03T	0.2-0.3	0.8-0.9	0.2-0.3	LQP15M/15T	0.5-0.6	1.4-1.5	0.4	LQP18M	0.7-0.9	1.8-2.2	0.6-0.8	LQH2MC	1.0	2.6	0.8	LQH32P	2.0	3.8	1.3	LQW04A	0.40	1.0	0.40	LQW15A	0.65	1.2	0.50	LQW18A	0.7-1.0	1.8-2.0	0.6-0.8	LQW18C	1.0	2.2	0.7	LQW21H	1.2	2.6	1.0	LQW2BH	1.2	3.0	0.8	LQW2BA	1.78	2.8	0.76	LQW2UA	2.54	3.3	1.27	LQH31M/31C/31H	1.5	4.5	1.0	LQW31H	LQH55D/66S	3.5	8.0	2.0	LQH44P	3.0	4.4	1.3	LQH5BP	4.1	5.5	1.8	LQH6PP	4.2	6.5	2.4	LQH88P	5.2	8.5	3.9	
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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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Land Pattern + Solder Resist
 Land Pattern
 Solder Resist
 (in mm)

Series	Standard Land Dimensions
LQH3NP	
LQH43M LQH43N LQH43C	
LQH55P	

Attention should be paid to potential magnetic coupling effects when using the inductor (coil) as a resonator.

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 LQG, LQP, LQW04A/15A/18A/18C/21H/2BA/2UA, LQH2MC/55D/66S/32P/3NP/44P/5BP/55P/6PP/88P 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 LQW04/15/18/21/2BA/2UA series should use the rosin-based flux that includes middle activator equivalent to 0.06wt% to 0.1wt% chlorine.

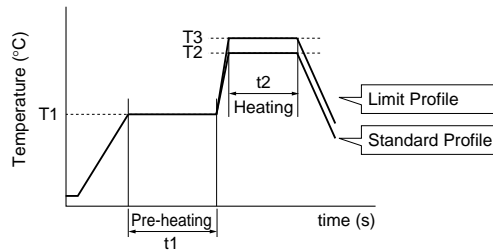
For additional mounting methods, please contact Murata.

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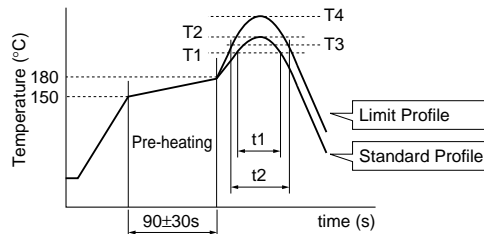
(2) Soldering profile

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



Series	Pre-heating		Standard Profile			Limit Profile		
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)	Cycle of flow	Temp. (T3)	Time. (t2)	Cycle of flow
LQM18N/18F LQM21N/21D/21F/21P/2HP/2MP LQM31F/31P LQW2BH/31H LQH31C/31H/31M	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.
LQH32C/32M LQH43C/43M(N)	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)		
LQG15H/18H LQW04A/15A/18A/18C/21H LQW2BA/2UA LQP02T/03T/15M/15T/18M LQW2BH/31H LQM18N/18F LQM21N/21D/21F/21P/2HP/2MP LQM31F/31P, LQH2MC LQH31C/31H/31M LQH32P/3NP/44P/5BP/55P/6PP/88P	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	2 times max.
LQH32C/32M LQH43C/43M(N) LQH55D, LQH66S	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	1 time

(3) Reworking with Soldering Iron *Except LQP02T Series
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

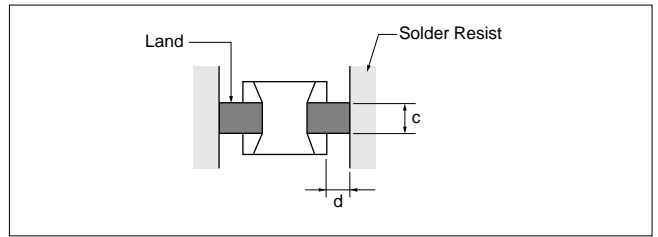
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3. Mounting Instructions

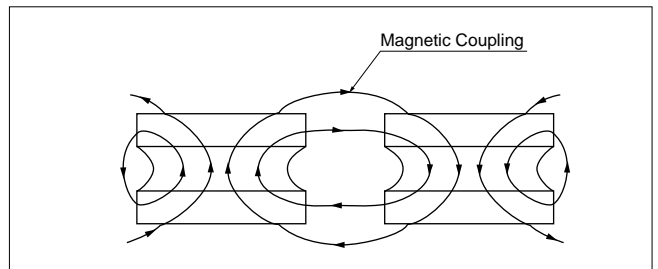
(1) Land Pattern Dimensions

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.



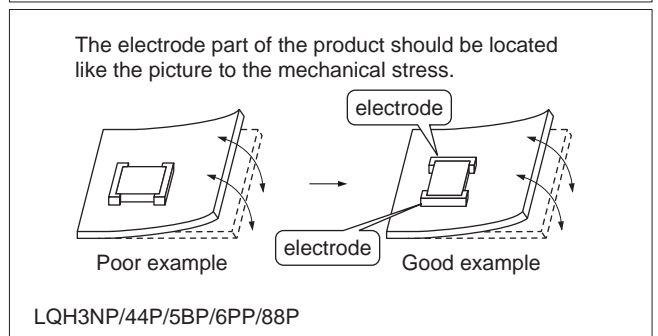
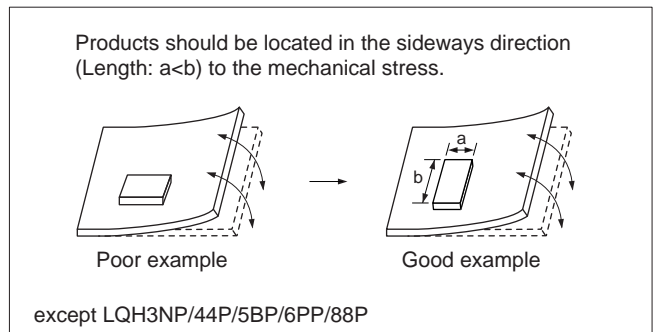
(2) Magnetic Coupling

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 LQH32P/3NP 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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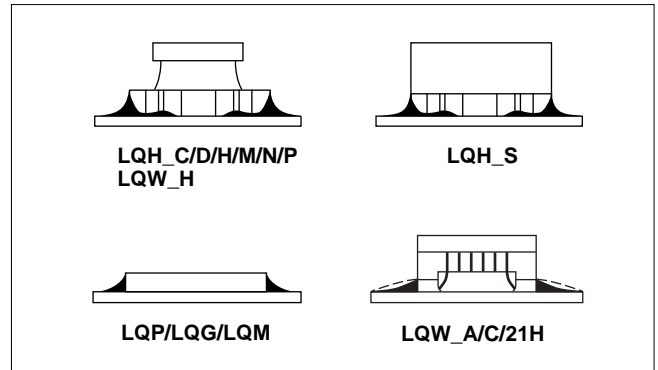
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(4) Amount of Solder Paste

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.

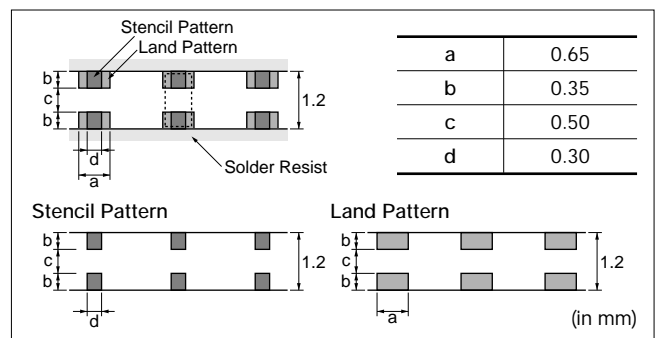
● Guideline of solder paste thickness

- LQP (Except LQP02T), LQG, LQM, LQW15A/18A/18C/21H/2BA/2UA, LQH2MC, LQH44P/5BP/55P/6PP/88P: 100 to 150μm
- LQP02T: 50 to 80μm
- LQW04A: 80 to 100μm
- LQW_H, LQHs except for ones written above: 200 to 300μm



LQW15A Series:

Too much solder may cause slant or rotation of chip at the time of solder melting. Please reduce the amount of solder by using smaller solder area than land pattern, as shown in figure at right.



(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
LQM18N/18F	0.06-0.07
LQM21N/21D/21F/21P/2MP	0.20-0.25
LQM31F/31P/2HP	0.25-0.30
LQW2BH	0.15-0.20
LQH31M/31C/31H	0.20-0.25
LQW31H	0.20-0.25
LQH32M/32C	0.27-0.35
LQH43M(N)	0.60-0.80
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/LQH6PP/LQH88P 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.