



**THE DATASHEET OF
LQH32PNR47NN0L**



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 | | | | | |
|--|--------------------------|----------------|--------|---------|---------|-----|
| LQM18F/18P LQM21D/21F/21P LQM2MP LQM2HP LQM31P LQM32P LQH2MC LQH31C LQH32P LQH44P LQH5BP LQH55D/66S LQW15C_00 LQW15C_10 LQW18C | | Part Number | a | b | c | |
| | | LQM18F/18P | Flow | 0.7 | 2.2-2.6 | 0.7 |
| | | | Reflow | | 1.8-2.0 | |
| | | LQM21D/21F/21P | 1.2 | 3.0-4.0 | 1.0 | |
| | | LQM2MP | 0.8 | 2.4 | 1.8 | |
| | | LQM2HP | 1.6 | 3.0 | 1.5 | |
| | | LQM31P | 2.0 | 4.2-5.2 | 1.2 | |
| | | LQM32P | 1.9 | 3.6 | 2.7 | |
| | | LQH2MC | 0.8 | 2.6 | 1.0 | |
| | | LQH31C | 1.0 | 4.5 | 1.5 | |
| | | LQH32P | 1.3 | 3.8 | 2.0 | |
| | | LQH44P | 1.3 | 4.4 | 3.0 | |
| | | LQH5BP | 1.8 | 5.5 | 4.1 | |
| | | LQH55D/66S | 2.0 | 8.0 | 3.5 | |
| | | LQW15C_00 | 0.4 | 1.4 | 0.6 | |
| LQW15C_10 | 0.4 | 1.4 | 0.66 | | | |
| LQW18C | 0.7 | 2.2 | 1.0 | | | |
| LQH2HP | | | | | | |
| LQH32C | | | | | | |
| LQH3NP | | | | | | |
| LQH43C LQH43P | | | | | | |
| LQH55P | | | | | | |

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

Continued on the following page.

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/2HP/3NP/32P/44P/5BP/55D/55P/66S, LQM32P, 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%).

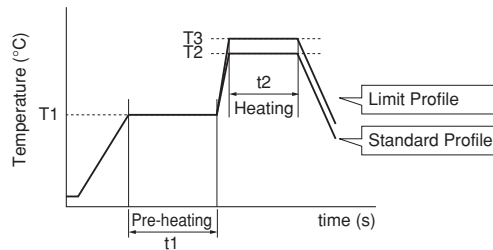
Do not use water-soluble flux.

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.

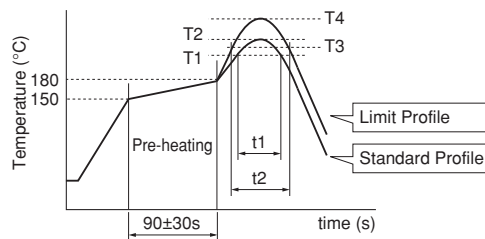
(2) Soldering profile

● 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/2MP/2HP LQM31P LQH31C | 150°C | 60s min. | 250°C | 4 to 6s | 2 times max. | 265±3°C | 5s max. | 2 times max. |
| LQH32C LQH43C/43P | 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)



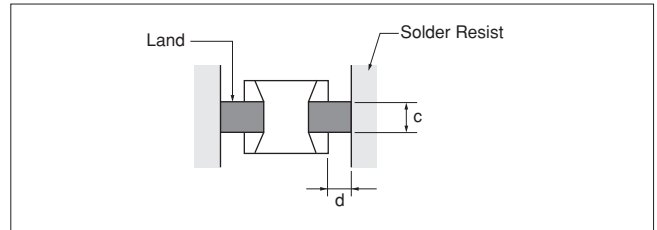
| Series | Standard Profile | | | | Limit Profile | | | |
|--|------------------|------------|-----------------------|-----------------|---------------|------------|-----------------------|-----------------|
| | Heating | | Peak temperature (T2) | Cycle of reflow | Heating | | Peak temperature (T4) | Cycle of reflow |
| | Temp. (T1) | Time. (t1) | | | Temp. (T3) | Time. (t2) | | |
| LQM18F/18P LQM21D/21F/21P/2MP/2HP LQM31P/32P LQH2MC, LQH2HP LQH31C LQH3NP/32P/43P/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 |

- (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:

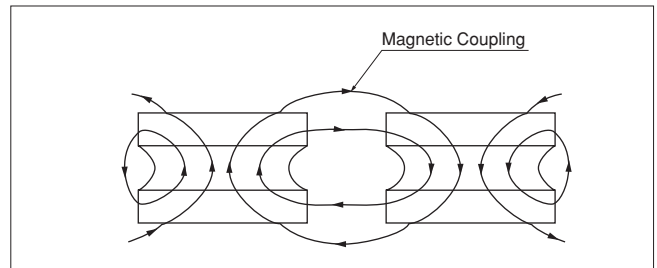
Soldering iron power output: 80W max.
 Temperature of soldering iron tip: 350°C
 Diameter of soldering iron end: 3.0mm max.
 Soldering time: within 3 s

3. Mounting Instructions

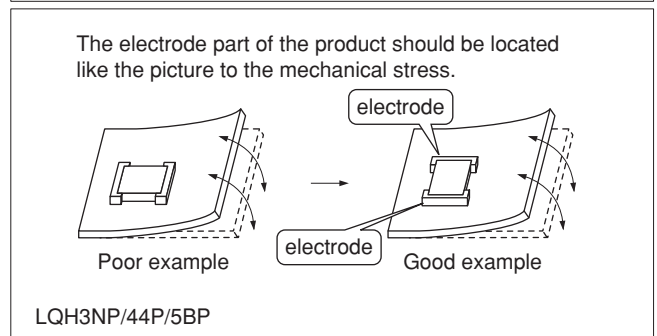
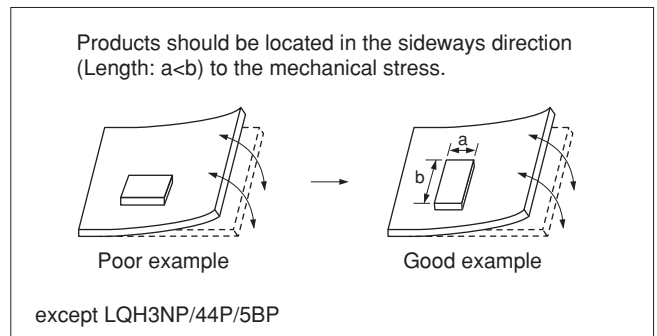
- (1) Land Pattern Dimensions
 Large lands reduce Q of the mounted chip. Also, large protruding land areas (bordered by lines having dimensions 'c' and 'd' shown) cause floating and electrode leaching.
- (2) Land Pattern Designing (LQH series)
 Please follow the recommended patterns. Otherwise, their performance which includes electrical performance or solderability may be affected, or result to "position shift" in soldering process.



- (3) 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).



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



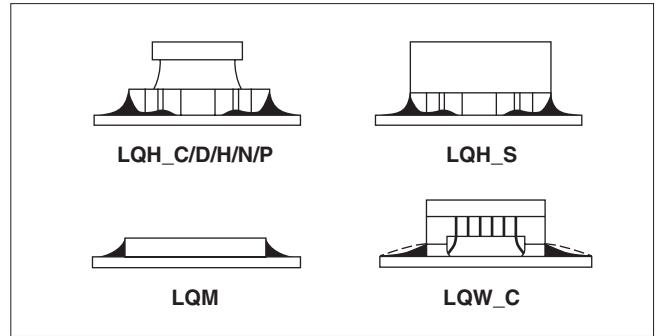
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(5) Amount of Solder Paste

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/2HP, LQH3NP/32P, LQH44P/5BP/55P: 100 to 150µm
- LQH31C/32C, LQH43C/43P, LQH55D, LQH66S: 200 to 300µm



(6) 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.

The image shows two cross-sectional diagrams of inductor components on a PCB pad. The left diagram is for LQH_C/H/M/N and the right is for LQM. Both show the correct application of adhesive to the component's leads.

| Part Number | Typical Application Amount (in:mg) |
|--------------------|------------------------------------|
| | IR-100 |
| LQM18F/18P | 0.06-0.07 |
| LQM21D/21F/21P/2MP | 0.20-0.25 |
| LQM2HP/31P | 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.

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