

● Part Numbering

Chip Coils (SMD)

(Part Number)

LQ	H	32	M	N	331	K	2	3	L
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩

① Product ID

Product ID	
LQ	Chip Coils

② Structure

Code	Structure
G	Monolithic Type (Air-core Coil)
H	Winding Type (Ferrite Core)
M	Monolithic (Ferrite Core)
P	Film Type
W	Winding Type (Air-core Coil)

③ Dimensions (L×W)

Code	Dimensions (L×W)	EIA
03	0.6×0.3mm	0201
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
21	2.0×1.25mm	0805
2B	2.0×1.5mm	0805
31	3.2×1.6mm	1206
32	3.2×2.5mm	1210
3K	3.3×3.3mm	1212
43	4.5×3.2mm	1812
55	5.7×5.0mm	2220
66	6.3×6.3mm	2525

④ Applications and Characteristics

Code	Series	Applications and Characteristics
H	LQG	Monolithic Air-core
N	LQM	for Resonant Circuit
D		for Choke (Low-current DC Power Supplies)
F	LQP	for Choke (DC Power Supplies)
M		Film Type
T	LQW	Film Type (Low DC Resistance Type)
A		High Q Type (UHF-SHF)
H	LQH	High Q Type (VHF-UHF)
N		for Resonant Circuit
M	LQH	for Resonant Circuit (Coating Type)
D		for Choke
C	LQH	for Choke (Coating Type)
S		for Choke (Magnetically Shielded Type)
H	LQH	for High-frequency Resonant Circuit

⑤ Category

Code	Category
N	Standard Type
S	

⑥ Inductance

Expressed by three figures. The unit is micro-henry (μH). The first and second figures are significant digits, and the third figure expresses the number of zeros which follow the two figures. If there is a decimal point, it is expressed by the capital letter "R". In this case, all figures are significant digits. If inductance is less than $0.1\mu\text{H}$, the inductance code is expressed by a combination of two figures and the capital letter "N", and the unit of inductance is nano-henry (nH).

The capital letter "N" indicates the unit of "nH", and also expresses a decimal point. In this case, all figures are significant digits.

⑦ Inductance Tolerance

Code	Inductance Tolerance
B	$\pm 0.1\text{nH}$
C	$\pm 0.2\text{nH}$
D	$\pm 0.5\text{nH}$
G	$\pm 2\%$
H	$\pm 3\%$
J	$\pm 5\%$
K	$\pm 10\%$
M	$\pm 20\%$
N	$\pm 30\%$
S	$\pm 0.3\text{nH}$
W	$\pm 0.05\text{nH}$

⑧ Features

Code	Features	Series
0	Standard Type	LQG/LQP/LQW/LQM*1/LQH*2
1	High-Q/ Low DC Resistance	LQW15A/LQW18A/LQW2BH
	Standard Type	LQM21N
2	Low DC Resistance	LQH32C
	Standard Type	LQH32C/LQH32M/LQH3KS
3	Low DC Resistance	LQH32C
5	Low Profile Type	LQH32C/LQH3KS


*1 : Except LQM21N series

*2 : Except LQH32/LQH3K series

⑨ Electrode

•Lead (Pb) Free

Code	Electrode	Series
0	Sn	LQG18H/LQP03T/LQW□□A/LQM
2		LQG15H/LQP (Except LQP03T)
3	LF Solder	LQW□□H/LQH

Continued on the following page. 

Continued from the preceding page.

(Part Number)

LQ	H	32	M	N	331	K	2	3	L
1	2	3	4	5	6	7	8	9	10

10 Packaging

Code	Packaging	Series
K	Plastic Taping (ø330mm Reel)	LQH*1 /LQW□□H/LQM31F/LQM21*2
L	Plastic Taping (ø180mm Reel)	LQH/LQW□□H/LQM31F/LQM21*2
B	Bulk	All series
J	Paper Taping (ø330mm Reel)	LQW18A/LQG/LQM18N/LQM21*3 /LQP*4
D	Paper Taping (ø180mm Reel)	LQW□□A/LQG/LQM18N/LQM21*3 /LQP

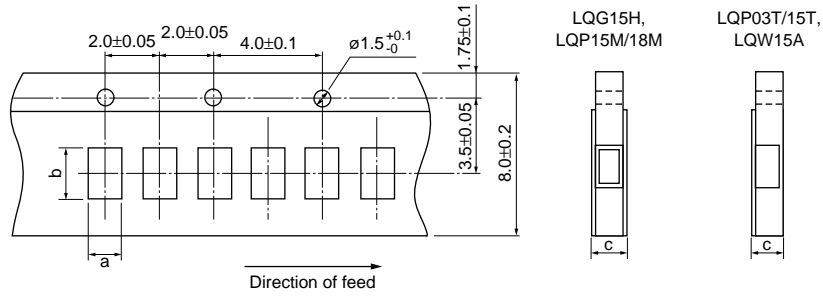
*1 Except LQH43C/LQH66S

*2 LQM21D(22 - 47μH)/LQM21F(4.7 - 47μH)/LQM21N(2.7 - 4.7μH) only.

*3 LQM21D(1.0 - 10μH)/LQM21F(1.0 - 2.2μH)/LQM21N(0.1 - 2.2μH) only.

*4 Except LQP15T

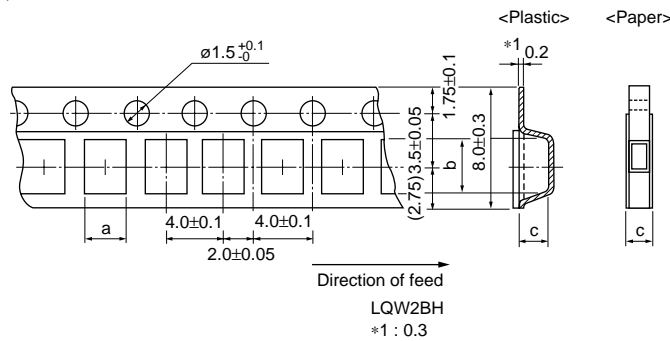
■ Minimum Quantity and 8mm Width Taping Dimension



Paper Tape

Part Number	Dimensions (in mm)			Minimum QTY. (pcs.)		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQG15H	0.62	1.12	1.0 max.	10000	50000	1000
LQP03T	0.38	0.68			-	
LQP15T	0.62	1.12			50000	
LQP15M	0.70	1.20			10000	
LQP18M	1.19	2.0			4000	
LQW15A *	0.64/0.66 0.69	1.18	0.8 max.	10000	-	500

* 0.69 (5.1nH, 7.5nH, 10nH, 13nH exclud)
 * 0.66 (5.1, 7.5, 10, 13, 16-22nH)
 * 0.64 (24nH-)



Paper Tape

Part Number	Dimensions (in mm)			Minimum QTY. (pcs.)			
	a	b	c	ø180mm reel	ø330mm reel	Bulk	
LQM21N (0.1-2.2μH)	1.45	2.25	1.1 max.	4000	10000	1000	
LQM21D (1-10μH)							
LQM21F (1-2.2μH)							
LQG18H	1.05	1.85					500
LQM18N							
LQW18A_00	1.0	1.8					
LQW18A_10	1.1	1.9					

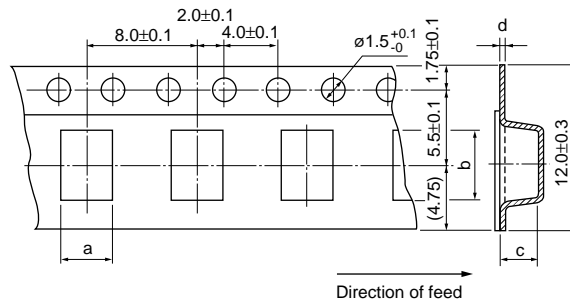
Plastic Tape

Part Number	Dimensions (in mm)			Minimum QTY. (pcs.)		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQM21N (2.7-4.7μH)	1.45	2.25	1.3	3000	10000	1000
LQM21D (22-47μH)						
LQM21F (4.7-47μH)						
LQM31F	1.9	3.5	1.3	2000	7500	-
LQH31M/31C/31H, LQW31H	1.9	3.6	2.0			
LQW2BH	1.75	2.3	2.0			
LQH32M, LQH32C_33/_23	2.9	3.6	2.1			
LQH32C_53			1.7			

(in mm)

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Minimum Quantity and 12mm Width Plastic Taping Dimension



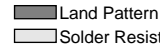
Plastic Tape

Part Number	Dimensions (in mm)				Minimum QTY. (pcs.)	
	a	b	c	d	ø180mm reel	ø330mm reel
LQH3KS	3.9	3.7	1.9	0.3	1000	4000
LQH43M(N)	3.6	4.9	2.7		500	2500
LQH43C						-
LQH55D	5.4	6.1	5.0	0.4	350	1500
LQH66S	6.7	6.7	5.6			-

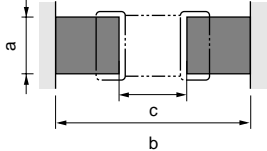
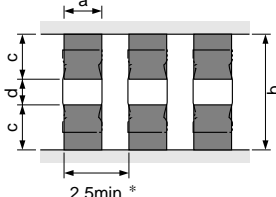
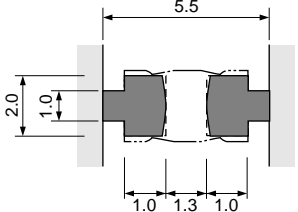
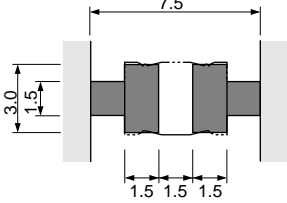
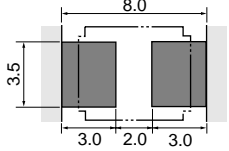
(in mm)


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 coil electrode.



 Land Pattern
 Solder Resist
 (in mm)

Series	Standard Land Dimensions																																							
LQG15H LQG18H LQM18N LQM21N/21D/21F LQM31F LQP03T LQP15M/15T LQP18M		<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</td> <td rowspan="2">0.7</td> <td>Flow</td> <td>2.2-2.6</td> </tr> <tr> <td>Reflow</td> <td>1.8-2.0</td> </tr> <tr> <td>LQM21N/21D/21F</td> <td>1.0</td> <td>3.0-4.0</td> <td>1.2</td> </tr> <tr> <td>LQM31F</td> <td>1.2</td> <td>4.2-5.2</td> <td>2.0</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> </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	0.7	Flow	2.2-2.6	Reflow	1.8-2.0	LQM21N/21D/21F	1.0	3.0-4.0	1.2	LQM31F	1.2	4.2-5.2	2.0	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
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	0.7	Flow	2.2-2.6																																					
		Reflow	1.8-2.0																																					
LQM21N/21D/21F	1.0	3.0-4.0	1.2																																					
LQM31F	1.2	4.2-5.2	2.0																																					
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																																					
LQW15A LQW18A LQW2BH LQW31H LQH31M/31C/31H	 <p style="text-align: center;">* 2.0 min. (LQW15A/18A)</p>	<table border="1"> <thead> <tr> <th>Part Number</th> <th>a</th> <th>b</th> <th>c</th> <th>d</th> </tr> </thead> <tbody> <tr> <td>LQH31M/31C/31H</td> <td>1.5</td> <td>4.5</td> <td>1.75</td> <td>1.0</td> </tr> <tr> <td>LQW31H</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>LQW2BH</td> <td>1.2</td> <td>3.0</td> <td>1.1</td> <td>0.8</td> </tr> <tr> <td>LQW18A</td> <td>0.7-1.0</td> <td>1.8-2.0</td> <td>0.6-0.7</td> <td>0.6-0.8</td> </tr> <tr> <td>LQW15A</td> <td>0.65</td> <td>1.2</td> <td>0.35</td> <td>0.50</td> </tr> </tbody> </table> <p>If mounted at 2.5 (2.0) mm intervals as indicated in the diagram, attention should be paid to potential magnetic coupling effects when using the coil as a resonator.</p>	Part Number	a	b	c	d	LQH31M/31C/31H	1.5	4.5	1.75	1.0	LQW31H					LQW2BH	1.2	3.0	1.1	0.8	LQW18A	0.7-1.0	1.8-2.0	0.6-0.7	0.6-0.8	LQW15A	0.65	1.2	0.35	0.50								
Part Number	a	b	c	d																																				
LQH31M/31C/31H	1.5	4.5	1.75	1.0																																				
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LQW15A	0.65	1.2	0.35	0.50																																				
LQH32M LQH32C LQH3KS																																								
LQH43M LQH43N LQH43C																																								
LQH55D LQH66S																																								

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2. Standard Soldering Conditions

(1) Soldering method

Chip coils can be flow or reflow soldered.

Please contact Murata regarding other soldering methods.

As for LQG, LQP, LQW15A/18A, LQH3KS/55D/66S series, please use reflow soldering.

(2) Soldering Temperature and Time

Solder within the temperature and time combinations indicated by the slanted lines in the following graphs. If soldering is repeated, please note that the allowed time is the accumulated time.

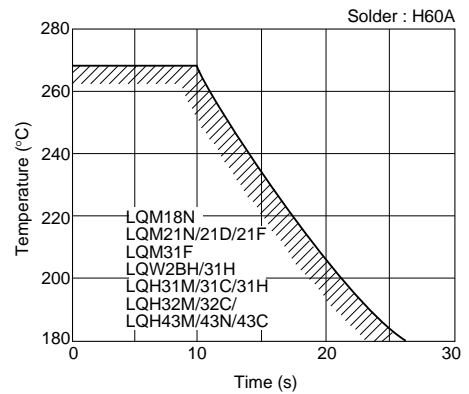
Solder : Use H60A, H63A(JIS Z 3282) or equivalent.

Use solder paste equivalent to H60A for LQP03T/15M/15T/18M and LQG15H/18H.

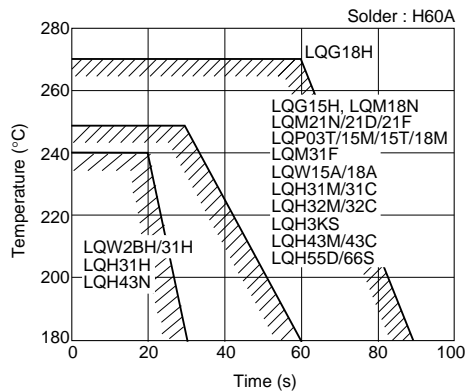
Flux : Use rosin-based flux, but not strongly acidic flux (with chlorine content exceeding 0.2wt%).

Do not use water-soluble flux.

Allowable Flow Soldering Temperature and Time

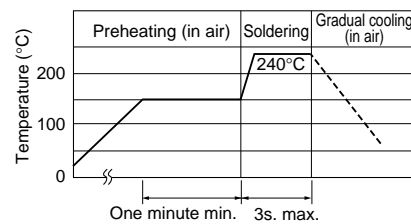


Allowable Reflow Soldering Temperature and Time

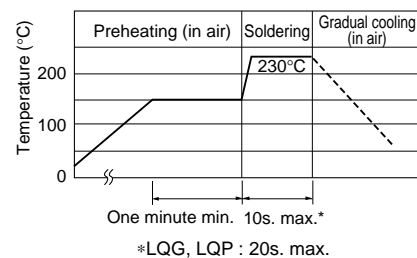


(3) Standard Soldering Conditions

Flow Soldering



Reflow Soldering



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(4) Reworking with Soldering Iron

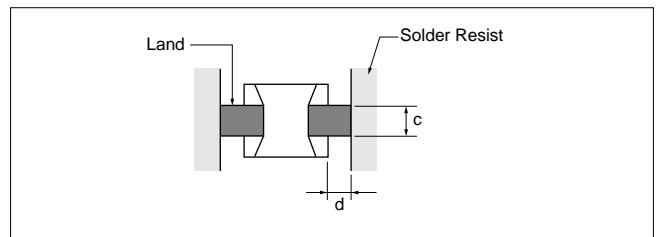
Preheating at 150°C for 1 minute is required. Do not directly touch the ceramic element with the tip of the soldering iron. The reworking soldering conditions are as follows:

- Soldering iron power output : 30W max.
- Temperature of soldering iron tip : 280°C
- Diameter of soldering iron end : 3.0mm max.
- Soldering time : within 3 s

3. Mounting Instructions

(1) Land Pattern Dimensions

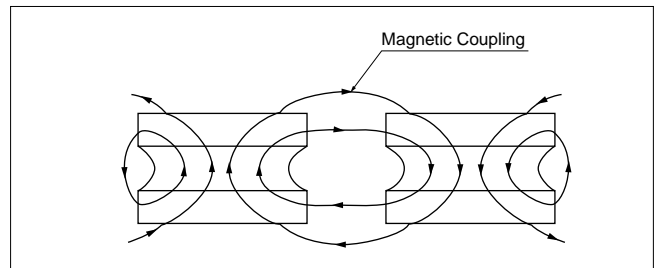
Large lands reduce Q of the mounted chip. Also, large protruding land areas (bordered by lines having dimensions 'c' and 'd' shown below) cause floating and electrode leaching.



(2) Magnetic Coupling

Since some chip coils are constructed like an open magnetic circuit, narrow spacing between coils may cause magnetic coupling.

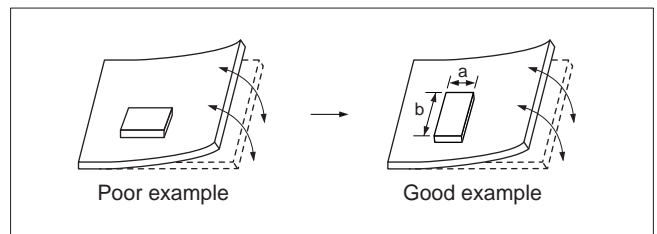
The LQG and LQM LQH3KS/66S series have a magnetically shielded structure. The structure makes their coupling coefficient smaller than that of conventional chip coils.



(3) 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.

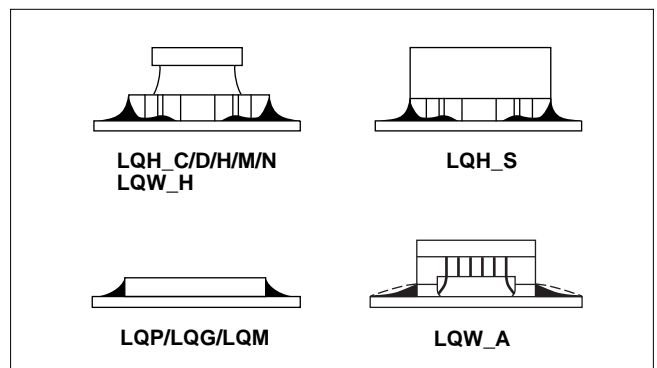


(4) Amount of Solder Paste

Excessive solder causes electrode corrosion, while insufficient solder causes low electrode bonding strength.

Adjust the amount of solder paste so that solder is applied as shown on the right.

- Standard thickness of solder paste
- LQP/LQG/LQM/LQW_A : 100 to 150µm
- LQH/LQW_H : 200 to 300µm




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(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 following conditions:



Part Number	Typical Application Amount (in:mg)	
	MR-8153RA	NF-3000
LQM18N	0.05-0.06	0.06-0.07
LQM21N/21D/21F	0.15-0.20	0.20-.025
LQM31F	0.20-0.25	0.25-0.30
LQW2BH	0.116-0.18	–
LQH31M/31C/31H LQW31H	0.18-0.20	0.20-0.25
LQH32M/32C	0.20-0.23	0.27-0.35
LQH43M(N) LQH43C	0.45-0.50	0.60-0.80

4. Cleaning

The following conditions should be observed when cleaning 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

- Surface active agent (Clean Thru 750H *1)
 - High grade alcohol (Pine Alpha ST-100S *1)
 - Hydrocarbon (Techno Cleaner 375)
 - Alkaline Saponifier (Aqua Cleaner 210SEI *2)
- LQH, LQH_S series : Aqueous agents should not be used because they may cause quality deterioration.
- *1 LQH series : Surface active agent and high grade alcohol can be used.
 - *2 cleaner should be diluted to 15% using deionized water.

- (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.

Chip Coils Recommended conversion table

ex.

Winding Type
for High-frequency

Part Number
LQH31HN54NK01K

Recommended Part Number
LQH31HN54NK03K

Type	P/N	Recommended P/N
Film Type for High-frequency	LQP18M _ _ _ _ _ 00	LQP18M _ _ _ _ _ 02
Winding Type for High-frequency	LQW2BH _ _ _ _ _ 01	LQW2BH _ _ _ _ _ 03
	LQW2BH _ _ _ _ _ 11	LQW2BH _ _ _ _ _ 13
	LQW31H _ _ _ _ _ 01	LQW31H _ _ _ _ _ 03
	LQH31H _ _ _ _ _ 01	LQH31H _ _ _ _ _ 03
Winding Type for General use	LQH31M _ _ _ _ _ 01	LQH31M _ _ _ _ _ 03
	LQH32M _ _ _ _ _ 21	LQH32M _ _ _ _ _ 23
	LQH43M _ _ _ _ _ 01	LQH43M _ _ _ _ _ 03
	LQH43N _ _ _ _ _ 01	LQH43N _ _ _ _ _ 03
Winding Type for Choke	LQH31C _ _ _ _ _ 01	LQH31C _ _ _ _ _ 03
	LQH32C _ _ _ _ _ 11	LQH32C _ _ _ _ _ 33
	LQH32C _ _ _ _ _ 21	LQH32C _ _ _ _ _ 23
	LQH32C _ _ _ _ _ 51	LQH32C _ _ _ _ _ 53
	LQH43C _ _ _ _ _ 01	LQH43C _ _ _ _ _ 03
Magnetic Shielded Type For Choke	LQH3KS _ _ _ _ _ 21	LQH3KS _ _ _ _ _ 23
Winding Type for Choke	LQH55D _ _ _ _ _ 01	LQH55D _ _ _ _ _ 03
Magnetic Shielded Type For Choke and Large Current	LQH66S _ _ _ _ _ 01	LQH66S _ _ _ _ _ 03