	Series	Structure	Size Code in inch (in mm)	Inductance Range (H) 0.1n 1n 10n 100n 1μ 10μ 100μ 1m 10m	Rated Current (A) 10m 100m 1 10 100
Inductors for Power Lines	LQH3NPN_MR p34	Wire Wound Ferrite Core Type	1212 (3030)	1μH 47μH	460mA 2.15A
	LQH31CN_03 p121		1206 (3216)	120nH 100μH	80mA 970mA
	LQH32CN_23 p123		1210 (3225)	1μH 560μH	60mA 800mA
	LQH32CN_33 p125		1210 (3225)	150nH 10μH	450mA 1.45A
	LQH32CN_53 p127		1210 (3225)	1μH 100μH	100mA 1A
	LQH32DN_23 p129		1210 (3225)	1μH 560μH	60mA 800mA
	LQH32DN_53 p131		1210 (3225)	1μH 100μH	100mA 1A
	LQH32PB_N0 p20		1210 (3225)	470nH 120μH	200mA 3.4A
	LQH32PB_NC p22		1210 (3225)	470nH 22μH	650mA 4.4A
	LQH32PN_N0 p24		1210 (3225)	470nH 120μH	200mA 3.4A
	LQH32PN_NC p26		1210 (3225)	470nH 22μH	650mA 4.4A
	DEM3512C p391		1514 (3735)	680nH 22μH	530mA 2.5A
	DEM3518C p392		1514 (3735)	560nH 22μH	880mA 3.4A
	LQH44PN_GR p40		1515 (4040)	680nH 47μH	410mA 2.5A
	LQH44PN_J0 p42		1515 (4040)	1μH 47μH	380mA 2A
	LQH44PN_P0 p44		1515 (4040)	1μH 22μH	800mA 2.95A
	LQH43CN_03 p133		1812 (4532)	1μH 470μH	90mA 1.08A
	LQH43CN_33 p135		1812 (4532)	560nH 3.9μH	1.6A 2.95A
	LQH43PB_26 p36		1812 (4532)	1μH 220μH	240mA 3.4A
	LQH43PN_26 p38		1812 (4532)	1μH 220μH	240mA 3.4A
	DEM4518C p393		1818 (4745)	1.2μH 22μH	1A 3.5A
	LQH5BPB_T0 p46		2020 (5050)	470nH 22μH	1.4A 7.7A
	LQH5BPN_38 p48		2020 (5050)	1μH 150μH	650mA 7A
	LQH5BPN_T0 p50		2020 (5050)	470nH 22μH	1.4A 7.7A
	D52LC p394		2020 (5252)	1.2μH 100μH	260mA 2.44A
	D53LC High Current p395		2020 (5252)	1.1μH 100μH	460mA 3.87A
	D53LC Low Rdc p396		2020 (5252)	4.7μH 220μH	350mA 2.31A
	LQH55DN_03 p137		2220 (5750)	120nH 10mH	50mA 6A
	DG6045C p399		2424 (6060)	1μH 100μH	900mA 9.5A
	DG6050C p401		2424 (6060)	1.2μH 100μH	1.2A 9.8A
	D63LCB p397		2524 (6362)	1μH 150μH	440mA 4.52A
	LQH66SN_03 p139		2525 (6363)	270nH 10mH	50mA 6A
	DS75LC p402		2929 (7373)	1μH 470μH	430mA 9.2A
	DEM8030C p405		3131 (8080)	1.5μH 47μH	1.3A 7.5A
	DEM8040C p406		3131 (8080)	1.5μH 33μH	2.4A 10A
	DEM8045C p407		3131 (8080)	1.5μH 47μH	2.1A 11.2A
	DG8040C p404		3131 (8080)	1μH 100μH	1.3A 10.4A
	DEM10050C p408		3939 (100100)	1.5μH 33μH	3.5A 15.3A
	DS104C2 p409		4040 (101101)	1.1μH 120μH	970mA 11.7A
	DS106C2 p411		4040 (101101)	1.2μH 330μH	690mA 12A
	DS126C2 p413		4949 (125125)	1.7μH 680μH	580mA 11.8A
	DFE201208S p302	Wire Wound Metal Alloy Core Type	0805 (2012)	470nH 2.2μH	1.8A 4A
	DFE201210S p304		0805 (2012)	470nH 2.2μH	2.1A 4.8A
	DFE201210U p340		0805 (2012)	240nH 2.2μH	2A 6.5A
	DFE201610C p306		0806 (2016)	560nH 2.2μH	1.5A 2.8A
	DFE201610E p336		0806 (2016)	240nH 10μH	1A 6.3A
	DFE201610P p328		0806 (2016)	240nH 2.2μH	2A 5.4A
	DFE201610R p320		0806 (2016)	470nH 2.2μH	1.6A 3A
	DFE201612C p308		0806 (2016)	470nH 2.2μH	1.6A 3.4A
	DFE201612E p338		0806 (2016)	330nH 4.7μH	1.8A 6.3A
	DFE201612P p330		0806 (2016)	240nH 2.2μH	2.1A 6.5A
	DFE201612R p322		0806 (2016)	470nH 2.2μH	1.7A 3.5A
	DFE252007F p342		1008 (2520)	470nH 4.7μH	1.2A 3.3A

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Part Numbering

Inductors for Power Lines

(Part Number)

LQ	M	21	P	N	R54	M	G	0	D
❶	❷	❸	❹	❺	❻	❼	❽	❾	❿

❶Product ID

Product ID	
LQ	Chip Inductors (Chip Coils)

❷Structure

Code	Structure
H	Wire Wound Type (Ferrite Core)
W	
M	Multilayer Type (Ferrite Core)

❸Dimensions (LxW)

Code	Nominal Dimensions (LxW)	Size Code (in inch)
15	1.0x0.5mm	0402
18	1.6x0.8mm	0603
21	2.0x1.25mm	0805
2M	2.0x1.6mm	0806
2H	2.5x2.0mm	1008
3N	3.0x3.0mm	1212
31	3.2x1.6mm	1206
32	3.2x2.5mm	1210
43	4.5x3.2mm	1812
44	4.0x4.0mm	1515
5B	5.0x5.0mm	2020
55	5.7x5.0mm	2220
66	6.3x6.3mm	2525

❹Applications and Characteristics

Code	Series	Applications and Characteristics
D	LQM	for Choke (Low-current DC Power Supplies)
F		for Choke (DC Power Supplies)
D	LQH	for Choke
S		for Choke (Magnetically Shielded Type)
C	LQH/LQW	for Choke (Coating Type)
P	LQM/LQH	for Power Line

❺Category

Code	Category
N	Standard Type
B	Special Feature Classification
W	

❻Inductance

Expressed by three-digit alphanumerics. The unit is micro-henry (μH). The first and second figures are significant digits, and the third figure expresses the number of zeros that 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 0.1μH, 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. For those products whose inductance values are specified using three designated digits, these values may be indicated using the closest two digits instead.

❼Inductance Tolerance

Code	Inductance Tolerance
D	±0.5nH
J	±5%
K	±10%
M	±20%
N	±30%

❽Features (Except for **LQH□□P/LQM□□P**)

Code	Features	Series
0	Standard Type	**LQM/LQH***1 **/LQW**
1	Low DC Resistance	**LQW**
2	Standard Type	**LQH32C/32D**
3	Low DC Resistance	**LQH32C/43CN**
5	Low Profile Type	**LQH2MC/32C/32D**
7	Large Current Type	**LQM21F**
8	Low DC Resistance /Large Current Type	

*1 Except for LQH32 Series

❽Thickness

(**LQH□□P/LQM□□P** Only • Except for **LQH43P/LQH5BPN_38**)

Code	Nominal Dimensions (T)
B	0.35mm
C	0.5mm
D	0.6mm
E	0.7mm
F	0.8mm
0	0.85mm
G	0.9mm
J	1.1mm
M	1.4mm
N	1.55mm
P	1.65mm
T	2.0mm

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❾Electrode (Except for **LQH□□P/LQM□□P**)

•Lead (Pb) Free

Code	Electrode	Series
0	Sn	**LQM/LQW**
2		**LQH2MC**
3	LF Solder	**LQH** (Except for **LQH2MC**)

❾Specification

(**LQH□□P/LQM□□P** Only • Except for **LQH43P/LQH5BPN_38**)

Code	Specification
0/S	Standard Type
C	Good Bias Current Characteristics Type
H/A/E	High Spec Type (Low DC Resistance; Good Bias Current Characteristics Type)
R	Low DC Resistance Type

❽❾Thickness (**LQH43P/LQH5BPN_38** Only)

Code	Dimensions (T)
26	2.6mm
38	4.0mm max.

❿Packaging

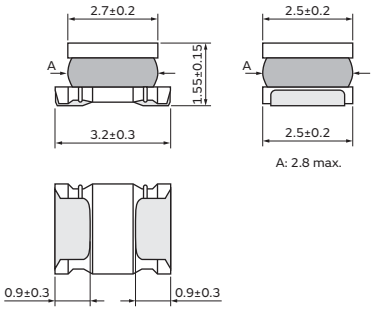
Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	**LQH***1 **/LQM21***2
F		**LQH3NP_MR**
L	Embossed Taping (ø180mm Reel)	**LQH***5**/LQM18P/LQM21***2 **/LQM31P/LQM32P/LQM2HP/LQM2MP**
E		**LQH3NP_MR**
B	Bulk	**LQH2MC/LQM/LQW**
J	Paper Taping (ø330mm Reel)	**LQM18/LQM21***3
D	Paper Taping (ø180mm Reel)	**LQM18/LQM21***4 **/LQW**

*1 Except for LQH2MC/LQH2HP_G0/LQH3NP/LQH43C
*2 LQM21D(22 - 47μH)/LQM21F(4.7 - 47μH)
*3 LQM21D(1.0 - 10μH)/LQM21F(1.0 - 2.2μH)
*4 LQM21D(1.0 - 10μH)/LQM21F(1.0 - 2.2μH)/LQM21P
*5 Except for LQH3NP_MR

Inductors for Power Lines

LQH32PN_N0 Series 1210 (3225) inch (mm)

Appearance/Dimensions



(in mm)

Packaging

Code	Packaging	Minimum Quantity
K	ø330mm Embossed Taping	7500
L	ø180mm Embossed Taping	2000

Rated Value (□: packaging code)

Part Number	Inductance	Inductance Test Frequency	Rated Current (Isat)*	Rated Current (Itemp)*	DC Resistance	S.R.F.* (min.)
LQH32PNR47NN0□	0.47µH ±30%	1MHz	3400mA	2550mA	0.03Ω±20%	100MHz
LQH32PN1R0NN0□	1.0µH ±30%	1MHz	2300mA	2050mA	0.045Ω±20%	100MHz
LQH32PN1R5NN0□	1.5µH ±30%	1MHz	1750mA	1750mA	0.057Ω±20%	70MHz
LQH32PN2R2NN0□	2.2µH ±30%	1MHz	1550mA	1600mA	0.076Ω±20%	70MHz
LQH32PN3R3NN0□	3.3µH ±30%	1MHz	1250mA	1200mA	0.12Ω±20%	50MHz
LQH32PN4R7NN0□	4.7µH ±30%	1MHz	1000mA	1000mA	0.18Ω±20%	40MHz
LQH32PN6R8NN0□	6.8µH ±30%	1MHz	850mA	850mA	0.24Ω±20%	40MHz
LQH32PN100MN0□	10µH ±20%	1MHz	750mA	700mA	0.38Ω±20%	30MHz
LQH32PN150MN0□	15µH ±20%	1MHz	600mA	520mA	0.57Ω±20%	20MHz
LQH32PN220MN0□	22µH ±20%	1MHz	500mA	450mA	0.81Ω±20%	20MHz
LQH32PN330MN0□	33µH ±20%	1MHz	380mA	390mA	1.15Ω±20%	13MHz
LQH32PN470MN0□	47µH ±20%	1MHz	330mA	310mA	1.78Ω±20%	11MHz
LQH32PN680MN0□	68µH ±20%	1MHz	280mA	275mA	2.28Ω±20%	11MHz
LQH32PN101MN0□	100µH ±20%	1MHz	180mA	250mA	2.70Ω±20%	8MHz
LQH32PN121MN0□	120µH ±20%	1MHz	170mA	200mA	4.38Ω±20%	8MHz

Operating temp. range (Self-temp. rise included): -40 to 125°C
Operating temp. range (Self-temp. rise not included): -40 to 85°C
Class of Magnetic Shield: Magnetic Resin
For reflow soldering only
*Isat: Rated Current based on Inductance change
*Itemp: Rated Current based on Temperature rise
*S.R.F.: Self-Resonant Frequency
When rated current is applied to the products, inductance will be within ±30% of nominal inductance value. When rated current is applied to the products, the temperature rise caused by self-generated heat shall be limited to 40°C max. Keep the temperature (ambient temperature plus self-generation of heat) under 125°C.

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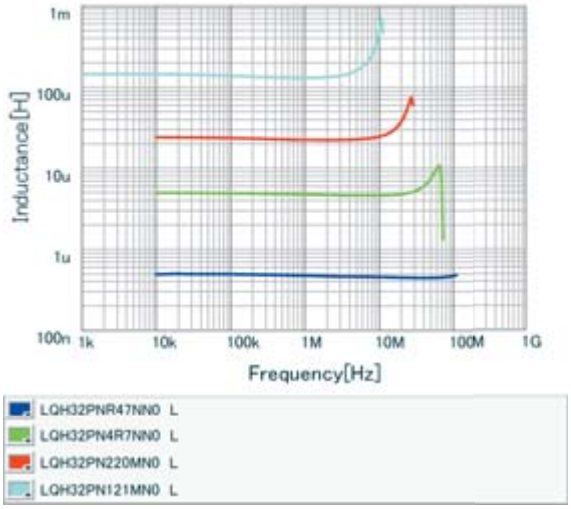
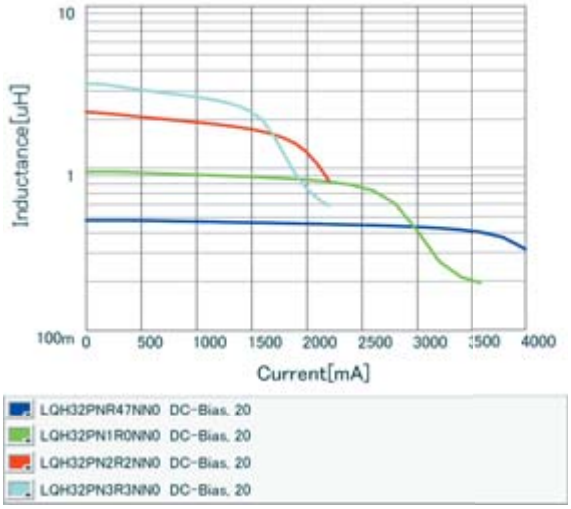
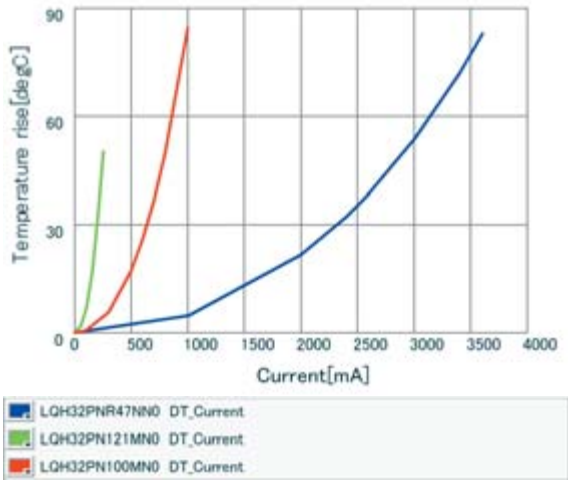
Inductance-Frequency Characteristics (Typ.)



Inductance-Current Characteristics (Typ.)



Temperature Rise Characteristics (Typ.)

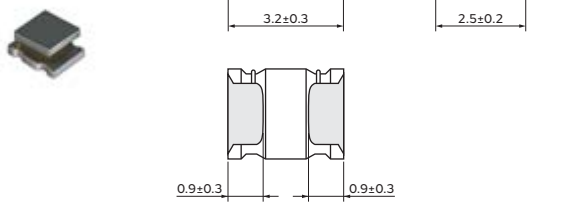


muRata

Inductors for Power Lines

LQH32PN_NC Series 1210 (3225) inch (mm)

Appearance/Dimensions



(in mm)

Packaging

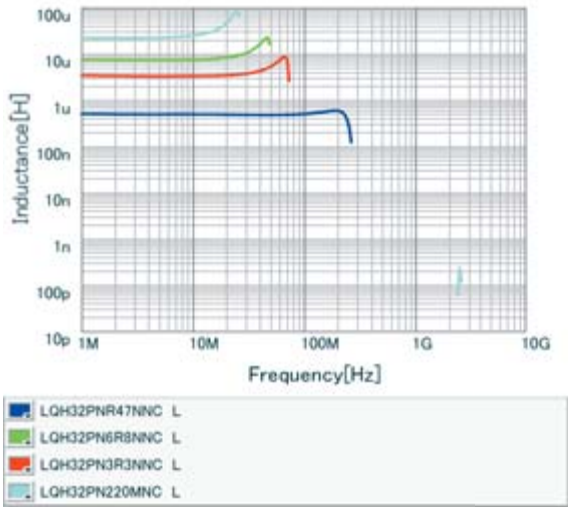
Code	Packaging	Minimum Quantity
K	ø330mm Embossed Taping	7500
L	ø180mm Embossed Taping	2000

Rated Value (□: packaging code)

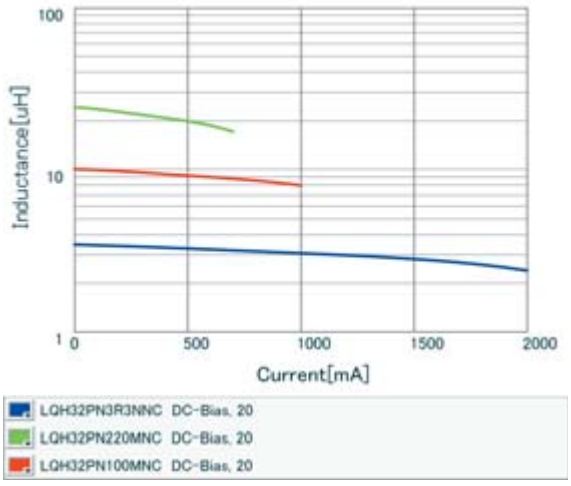
Part Number	Inductance	Inductance Test Frequency	Rated Current (Isat)*	Rated Current (Itemp)*	DC Resistance	S.R.F.* (min.)
LQH32PNR47NNC□	0.47µH ±30%	1MHz	4400mA	2900mA	0.024Ω±20%	100MHz
LQH32PN1R0NNC□	1.0µH ±30%	1MHz	3000mA	2500mA	0.036Ω±20%	100MHz
LQH32PN1R5NNC□	1.5µH ±30%	1MHz	2600mA	2100mA	0.053Ω±20%	70MHz
LQH32PN2R2NNC□	2.2µH ±30%	1MHz	2000mA	1850mA	0.064Ω±20%	70MHz
LQH32PN3R3NNC□	3.3µH ±30%	1MHz	1900mA	1550mA	0.100Ω±20%	50MHz
LQH32PN4R7NNC□	4.7µH ±30%	1MHz	1600mA	1200mA	0.155Ω±20%	40MHz
LQH32PN6R8NNC□	6.8µH ±30%	1MHz	1300mA	1100mA	0.220Ω±20%	40MHz
LQH32PN100MNC□	10µH ±20%	1MHz	1000mA	900mA	0.295Ω±20%	30MHz
LQH32PN150MNC□	15µH ±20%	1MHz	800mA	700mA	0.475Ω±20%	20MHz
LQH32PN220MNC□	22µH ±20%	1MHz	650mA	550mA	0.685Ω±20%	20MHz

Operating temp. range (Self-temp. rise included): -40 to 125°C
Operating temp. range (Self-temp. rise not included): -40 to 85°C
Class of Magnetic Shield: Magnetic Resin
For reflow soldering only
*Isat: Rated Current based on Inductance change
*Itemp: Rated Current based on Temperature rise
*S.R.F.: Self-Resonant Frequency
When rated current is applied to the products, inductance will be within ±30% of nominal inductance value. When rated current is applied to the products, the temperature rise caused by self-generated heat shall be limited to 40°C max. Keep the temperature (ambient temperature plus self-generation of heat) under 125°C.

Inductance-Frequency Characteristics (Typ.)



Inductance-Current Characteristics (Typ.)



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muRata

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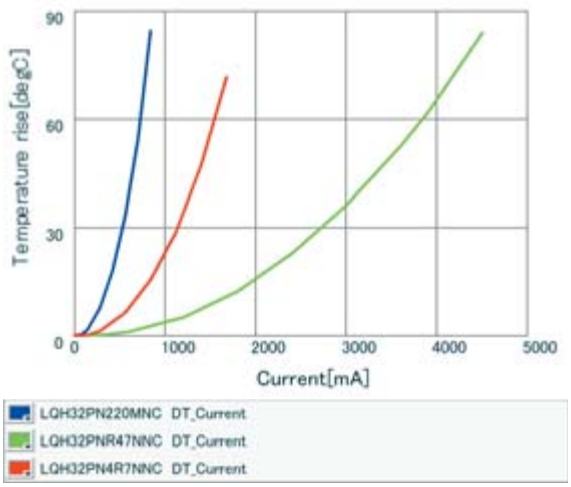
Temperature Rise Characteristics (Typ.)



Inductors for Power Lines ⚠Caution/Notice

⚠Caution

Rating

1. About the Rated Current
Do not use products beyond the rated current as this may create excessive heat and deteriorate the insulation resistance.

2. About Excessive Surge Current
Surge current (pulse current or rush current) greater than the specified rated current applied to the product may cause a critical failure, such as an open circuit or burnout caused by excessive temperature rise.
Please contact us in advance if applying a surge current.

Notice

Storage and Operating Condition

<Operating Environment>
Do not use products in a chemical atmosphere such as chlorine gas, acid or sulfide gas.
<Storage Requirements>
1. Storage Period
The LQM series should be used within 6 months; the other products should be used within 12 months.
Check solderability if this period is exceeded.
2. Storage Conditions
(1) Store products in a warehouse in compliance with the following conditions:
Temperature: -10 to +40°C.
Humidity: 15 to 85% (relative humidity)
Do not subject products to rapid changes in temperature and humidity.
Do not store them in a chemical atmosphere such as one containing sulfurous acid gas or alkaline gas.
This will prevent electrode oxidation, which causes poor solderability and possible corrosion of inductors.
(2) Do not store products in bulk packaging to prevent collision among inductors, which causes core chipping and wire breakage.
(3) Store products on pallets to protect from humidity, dust, etc.
(4) Avoid heat shock, vibration, direct sunlight, etc.

Handling

This item is designed to have sufficient strength, but handle with care to avoid chipping or breaking its ceramic structure.
LQW_C series
- To prevent breaking the wire, avoid touching with sharp materials, such as tweezers or other materials such as the bristles of a cleaning brush, to the wire wound portion.
- To prevent breaking the core, avoid applying excessive mechanical shock to products mounted on the board.
- In some mounting machines, when picking up components, a support pin pushes the components up from the bottom of the base tape. In this case, please remove the support pin. The support pin may damage the components and break the wire.
- In rare cases, the laser recognition cannot recognize this component. Please contact us when you use laser recognizion. (There is no problem with the permeation and reflection type.)
- The product temperature rises about 40°C maximum when the permissible current is applied to LQW15C/LQW18C. Please use caution regarding the temperature of the substrate and air around the part.

LQH_C/D/H/M/N/P series
- To prevent breaking the wire, avoid touching with sharp materials, such as tweezers or the bristles of a cleaning brush, to the wire wound portion of this product.
- To prevent breaking the core, avoid applying excessive mechanical shock to products mounted on the board.
- Temperature may rise up to max. 40°C when applying the rated current to Inductors for Power Lines. Use caution regarding the temperature rating of the circuit board and components around the chip Inductors.

LQM series
- There is the possibility that magnetism may change the inductance value. Do not use a magnet or tweezers with magnetism when handling chip inductors. (The tip of the tweezers should be molded with resin or pottery.)
- When the excessive current over rated current is applied, it may cause the inductance value to change due to magnetism.

<Transportation>
Do not apply excessive vibration or mechanical shock to products.

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Inductors for Power Lines ⚠Caution/Notice

Continued from the preceding page.↘

<Resin Coating>

When coating products with resin, the relatively high resin curing stress may change inductance values.
For exterior coating, select resin carefully so that electrical and mechanical performance of the product is not affected. Prior to use, please evaluate reliability with the product mounted in your application set.
(LQW, LQH series)
An open circuit issue may occur by mechanical stress caused by the resin, amount/cured shape of resin, or operating conditions, etc. Some resins containing impurities or chloride may possibly generate chlorine by hydrolysis under some operating conditions, causing corrosion of the inductor wire and leading to an open circuit.

<Rated Current>

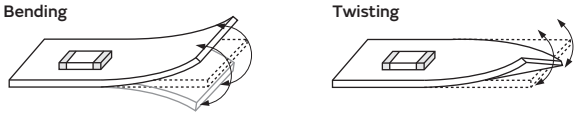
(LQH2HP_GR/JR, LQH2MPN_GR, LQH3NP_GR/JR/ME, LQH44P_GR, LQH5BPN_38 Series)
When rated current is applied to the products, Inductance will be within ±30% of specified inductance value range.

(Other LQH_P Series except for LQH2HP_G0 Series)
When rated current is applied to the products, Inductance will be within ±30% of nominal inductance value.

- Rated Current Based on Temperature Rise
  For LQH2MC series and LQH_P series, rated current is set to keep the temperature rise caused by self heating 40°C or less.
  For other Inductors for Power Lines, please refer to individual specifications.

<Handling of a Substrate>

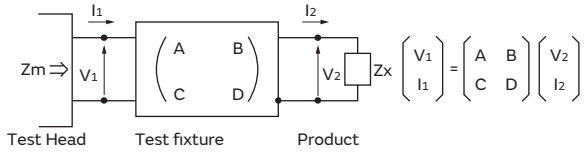
After mounting products on a substrate, do not apply any stress to the product caused by bending or twisting the substrate when cropping the substrate, inserting and removing a connector from the substrate, or tightening a screw to the substrate.
Excessive mechanical stress may cause cracking in the Product.



Measuring Method

Measuring Method of Inductance/Q

1. Residual elements and stray elements of test fixtures can be described by F-parameter as shown in the following:



2. The impedance of chip inductors (chip coils) Zx and measured value Zm can be described by input/output current/voltage.

$$Zm = \frac{V_1}{I_1}, \quad Zx = \frac{V_2}{I_2}$$

3. Thus, the relation between Zx and Zm is shown in the following:

$$Zx = \alpha \frac{Zm - \beta}{1 - Zm\Gamma}$$

where, $\alpha = D / A = 1$
$\beta = B / D = Zsm - (1 - Yom\ Zsm)\ Zss$
$\Gamma = C / A = Yom$

Zsm: measured impedance of short chip
Zss: residual impedance of short chip*
Yom: measured admittance when opening the fixture

*Residual impedance of short chip

Residual Impedance	Series
0.556nH	**LQW15C**
0.771nH	**LQW18C**

4. Lx and Qx should be calculated with the following equation.

$$Lx = \frac{Im(Zx)}{2\pi f}, \quad Qx = \frac{Im(Zx)}{Re(Zx)}$$

Lx: Inductance of chip Inductors (chip coils)
Qx: Q of chip Inductors (chip coils)
f: Measuring frequency

Inductors for Power Lines Soldering and Mounting

1. Standard Land Pattern Dimensions

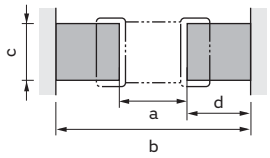
A high Q value is achieved when the PCB electrode land pattern is designed so that it does not project beyond the chip Inductor's (chip coil's) electrode.

Land Pattern + Solder Resist Land Pattern Solder Resist

(in mm)

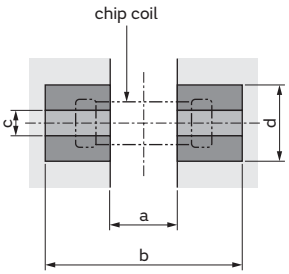
Series	Standard Land Dimensions

LQM18F/18P
(Except for **LQM18P_CH/FH/GH**)
LQM21D/21F/21P
(Except for **LQM21P_CA/CH/EH/GH**)
LQM2MP
(Except for **LQM2MP_GH**)
LQM2HP
(Except for **LQM2HP_CH/EH/GH/JH**)
LQM31P
LQM32P
LQH2MC
LQH31C
LQH32P
LQH44P_P0/J0/GR
LQH5BP
LQH55D/66S
LQW15CN_00
LQW15C_10
LQW18C



Part Number		a	b	c	d
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_P0		1.3	4.4	3.0	–
LQH44P_J0/GR		1.5	4.4	2.7	–
LQH5BP		1.8	5.5	4.1	1.85
LQH55D/66S		2.0	8.0	3.5	–
LQW15CN_00		0.4	1.4	0.6	–
LQW15C_10		0.4	1.4	0.66	–
LQW18C		0.7	2.2	1.0	–

LQM18P_CH/FH/GH
LQM21P_CA/CH/EH/GH
LQM2MP_GH
LQM2HP_CH/EH/GH/JH



Part Number	Rated Current (A)	a	b	c	Land Pad Thickness and Dimension d		
					18μm	35μm	70μm
LQM18P_CH	0-0.7	0.7	1.8-2.0	0.7	0.7	0.7	0.7
	0.7-1.05				1.1	0.7	0.7
LQM18P_FH	0-0.7	0.7	1.8-2.0	0.7	0.7	0.7	0.7
	0.7-1.7				1.4	0.7	0.7
LQM18P_GH	0-0.7	0.7	1.8-2.0	0.7	0.7	0.7	0.7
	0.7-1.15				1.2	0.7	0.7
LQM21P_CA	–	1.2	3.0-4.0	1.0	1.3	1.0	1.0
LQM21P_CH	0-1.0	1.2	3.0-4.0	1.0	1.0	1.0	1.0
	1.0-1.5				1.5	1.0	1.0
	1.5-				2.0	1.5	1.0
LQM21P_EH LQM21P_GH	0-1.0	1.2	3.0-4.0	1.0	1.0	1.0	1.0
	1.0-1.5				1.5	1.0	1.0
	1.5-3.1				3.0	1.5	1.0
LQM2MP_GH	0-1.5	0.8	2.4	1.8	1.8	1.8	1.8
	1.5-2.5				2.4	1.8	1.8
	2.5-5.0				5.0	2.4	1.8
LQM2HP_CH	0-1.5	1.6	3.0	1.5	1.5	1.5	1.5
	1.5-3.0				3.0	1.5	1.5
LQM2HP_EH	0-1.5	1.6	3.0	1.5	1.5	1.5	1.5
	1.5-3.0				3.0	1.5	1.5
	3.0-5.0				5.0	3.0	1.5
LQM2HP_GH	0-1.5	1.6	3.0	1.5	1.5	1.5	1.5
	1.5-2.6				2.4	1.5	1.5
	3.3-4.2				4.4	3.6	2.4
LQM2HP_JH	0-1.6	1.6	3.0	1.5	1.5	1.5	1.5
	1.6-2.4				2.4	1.5	1.5
	2.4-3.5				3.6	2.4	1.5

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

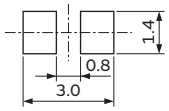
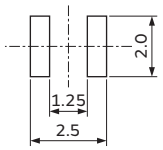
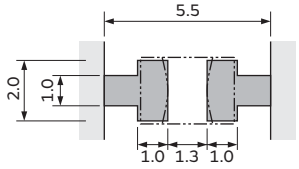
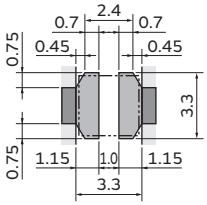
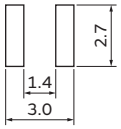
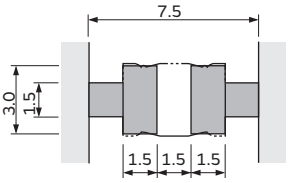
Continued on the following page.↗

Inductors for Power Lines Soldering and Mounting

Continued from the preceding page.↘

Land Pattern + Solder Resist Land Pattern Solder Resist

(in mm)

Series	Standard Land Dimensions
LQH2HP (Except for **LQH2HP_GR**)	
LQH2HP_GR/JR	
LQH32C/D	
LQH3NP (Except for **LQH3NP_JR/GR/ME**)	
LQH3NP_JR/GR/ME	
LQH43C **LQH43P**	

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 Inductors (Chip coils) can be flow or reflow soldered.

Please contact Murata regarding other soldering methods.

For LQH2MC/2MP/2HP/3NP/32D/32P/43PB/44P/5BP/55D/66S, LQM2MP_DH/EH/GH/2HP_CH/EH/GH/JH/18P_CH/DH/FH/GH/21P_CA/CH/EH/GH/32P, 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 the LQW15C/18C series should be a rosin-based flux that includes a middle activator equivalent to 0.06wt% to 0.1wt% chlorine.

For additional mounting methods, please contact Murata.

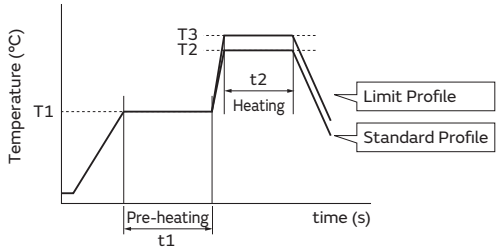
Continued on the following page.↗

Inductors for Power Lines Soldering and Mounting

Continued from the preceding page. ↘

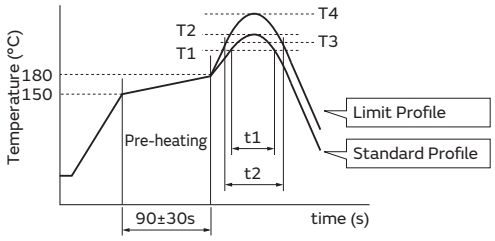
(2) Soldering profile

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



Series	Pre-heating		Standard Profile			Limit Profile		
			Heating		Cycle of flow	Heating		Cycle of flow
	Temp. (T1)	Time. (t1)	Temp. (T2)	Time. (t2)		Temp. (T3)	Time. (t2)	
LQM18F/18P (Except for **CH/DH/FH/GH**) **LQM21D/21F/21P** (Except for **CA/CH/EH/GH**) **LQM2MP** (Except for **DH/EH/GH**) **LQM2HP** (Except for **CH/EH/GH/JH**) **LQM31P** **LQH31C**	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	2 times max.
LQH32C **LQH43C/43PN**	150°C	60s min.	250°C	4 to 6s	2 times max.	265±3°C	5s max.	1 time

●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** **LQH32D_23** (Except for **391/471/561**) **LQH32D_53** **LQH3NP/32P/43P/44P/5BP** **LQW15C/18C**	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	2 times max.
LQH32C **LQH32D_23** (**391/471/561** only) **LQH43C** **LQH55D, LQH66S**	220°C	30 to 60s	245±3°C	2 times max.	230°C	60s max.	260°C/10s	1 time

Continued on the following page. ↗

Inductors for Power Lines Soldering and Mounting

Continued from the preceding page.↘

(3) Reworking with a 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:

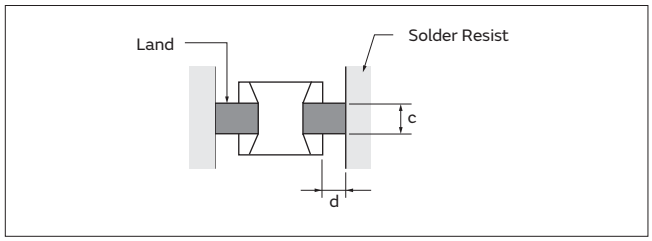
Soldering iron power output: 80W max.
Temperature of soldering iron tip: 350°C
Diameter of soldering iron end: 3.0mm max.
Soldering time: within 3 s

Please keep the fix time with the soldering iron within 2 times.

3. Mounting Instructions

(1) Land Pattern Dimensions

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

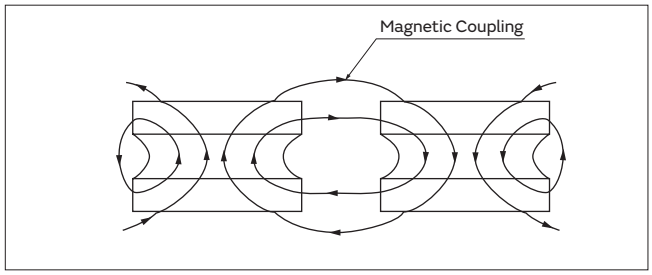


(2) Land Pattern Designing (LQH series, LQW series)

Please follow the recommended patterns. Otherwise, their performance, which includes electrical performance or solderability, may be affected, or result in “position shift” in the soldering process.

(3) Magnetic Coupling

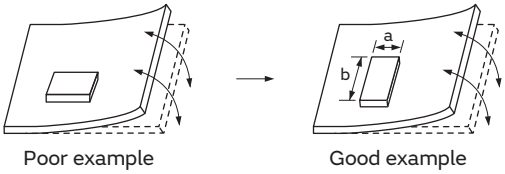
Since some chip inductors (chip coils) are constructed like an open magnetic circuit, narrow spacing between inductors (coils) may cause magnetic coupling. LQM, LQH66S, and LQH_P series have a magnetically shielded structure. The structure makes their coupling coefficient smaller than that of conventional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



(4) PCB Warping

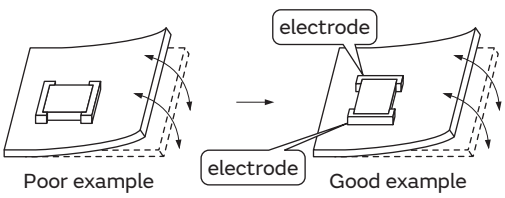
The PCB should be designed so that products are not subjected to mechanical stress caused by warping the board.

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



Except LQH3NP/44P/5BP

The electrode part of the product should be located as in the figure to avoid mechanical stress.



LQH3NP/44P/5BP

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Inductors for Power Lines Soldering and Mounting

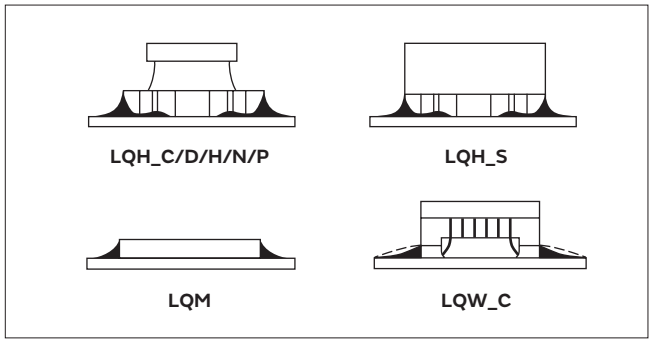
Continued from the preceding page. ↘

(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 the correct amount is applied.

Guideline of solder paste thickness

- LQW15C: 50 to 100μm
- LQM, LQW18C, LQH2MC/2HP, LQH3NP/32P, LQH43PB/LQH44P/5BP: 100 to 150μm
- LQH31C/32C, LQH43C/43PN, LQH55D, LQH66S: 200 to 300μm



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.

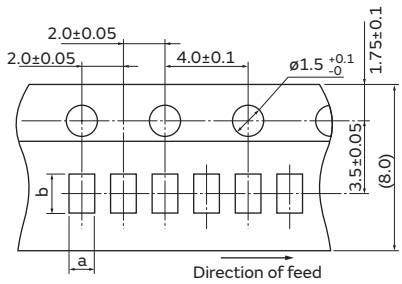
(4) Ensure that flux residue is completely removed.

Component should be thoroughly dried after aqueous agents have been removed with deionized water.

For additional cleaning methods, please contact Murata.

Inductors for Power Lines Packaging

Minimum Quantity and 8mm Width Taping Dimensions



Paper Tape

Part Number	Dimensions		Total Thickness of Tape	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQW15CN_00	0.64: 70nH to 200nH 0.66: 18nH to 48nH	1.18	0.8 max.	**D** (10000)	—	**B** (500)
LQW15C_10	0.69	1.18	0.8 max.	**D** (10000)	—	**B** (500)

(in mm)

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Inductors for Power Lines Packaging

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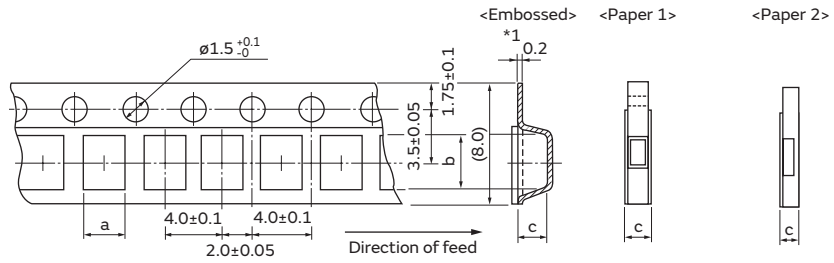
Minimum Quantity and 8mm Width Taping Dimensions



The dimension of the cavity of embossed tape is measured at the bottom side.

*1: 0.25 LQM2HP/2MP/31P_00, LQH2, LQM21P

Paper Tape 1

Part Number	Dimensions		Total Thickness of Tape	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQM21D (1 to 10μH)	1.45	2.25	1.1 max.	**D** (4000)	**J** (10000)	**B** (1000)
LQM21F (1 to 2.2μH)	1.45	2.25	1.1 max.	**D** (4000)	**J** (10000)	**B** (1000)
LQM21P_C0	1.45	2.25	0.8 max.	**D** (4000)	—	**B** (1000)
LQM21P_CA	1.45	1.45	0.9 max.	**D** (3000)	—	**B** (1000)
LQM21P_CH	1.45	2.25	0.7 max.	**D** (3000)	—	**B** (1000)
LQM21P_EH	1.45	2.25	1.0 max.	**D** (3000)	—	**B** (1000)
LQM21P_G	1.45	2.25	1.1 max.	**D** (4000)	—	**B** (1000)
LQM18F	1.05	1.85	1.1 max.	**D** (4000)	**J** (10000)	**B** (1000)
LQM18P_D0	1.05	1.85	0.85 max.	**D** (4000)	—	**B** (1000)
LQM18P_CH	1.1	1.9	0.95 max.	**D** (4000)	—	**B** (1000)
LQM18P_GH	1.1	1.9	1.25 max.	**D** (4000)	—	**B** (1000)
LQW18C	1.0	1.8	1.1 max.	**D** (4000)	—	**B** (500)

Paper Tape 2

Part Number	Dimensions		Total Thickness of Tape	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQM18PN_DH	1.05	1.85	1.05 max.	**D** (4000)	—	**B** (1000)

(in mm)

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Inductors for Power Lines Packaging

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Minimum Quantity and 8mm Width Taping Dimensions

Embossed Tape

Part Number	Dimensions		Depth of Cavity	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQM18P_B0	1.0	1.8	0.50	**L** (4000)	—	**B** (1000)
LQM18P_C0	1.0	1.8	0.60	**L** (4000)	—	**B** (1000)
LQM18P_F0	1.0	1.8	1.0	**L** (4000)	—	**B** (1000)
LQM21D (22 to 47μH)	1.45	2.25	1.3	**L** (3000)	**K** (10000)	**B** (1000)
LQM21F (4.7 to 47μH)	1.45	2.25	1.3	**L** (3000)	**K** (10000)	**B** (1000)
LQM21P_GH	1.45	2.25	1.05	**L** (3000)	—	**B** (1000)
LQM2HP_CH	2.3	2.8	0.6	**L** (3000)	—	**B** (1000)
LQM2HP_J0/JC	2.25	2.75	1.3	**L** (3000)	—	**B** (1000)
LQM2HP_JH	2.25	2.75	1.3	**L** (3000)	—	—
LQM2HP_G	2.3	2.8	1.1	**L** (3000)	—	**B** (1000)
LQM2HP_GH	2.3	2.8	1.1	**L** (3000)	—	—
LQM2HP_E0/EH	2.3	2.8	0.9	**L** (3000)	—	**B** (1000)
LQM2MP_DH/EH	1.9	2.4	0.9	**L** (3000)	—	**B** (1000)
LQM2MP_G0	1.85	2.25	1.1	**L** (3000)	—	**B** (1000)
LQM2MP_GH	1.9	2.4	1.1	**L** (3000)	—	—
LQM31P_00	1.9	3.5	1.05	**L** (3000)	—	**B** (1000)
LQM31P_C0	1.9	3.5	0.75	**L** (4000)	—	**B** (1000)
LQM32P_G0/GC	2.9	3.6	1.15	**L** (3000)	—	**B** (1000)
LQH31C	1.9	3.6	2.0	**L** (2000)	**K** (7500)	—
LQH32C_33/_23, LQH32D_23	2.9	3.6	2.1	**L** (2000)	**K** (7500)	—
LQH32C_53, LQH32D_53	2.9	3.6	1.7	**L** (2000)	**K** (7500)	—
LQH32P	2.9	3.6	1.7	**L** (2000)	**K** (7500)	—
LQH2MC_02	1.9	2.3	1.05	**L** (3000)	—	**B** (100)
LQH2MC_52	1.9	2.3	0.8	**L** (3000)	—	**B** (100)

(in mm)

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Inductors for Power Lines Packaging

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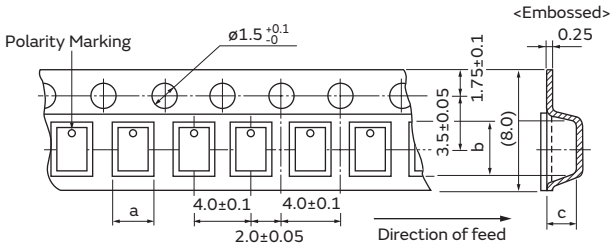
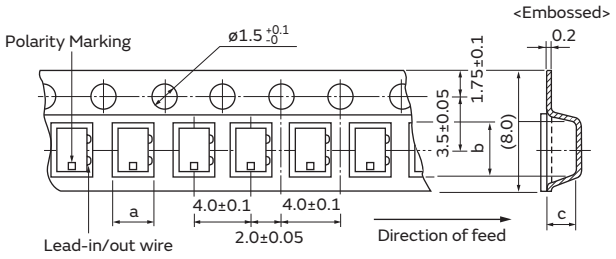
Minimum Quantity and 8mm Width Taping Dimensions



The dimension of the cavity is measured at the bottom side.

Embossed Tape

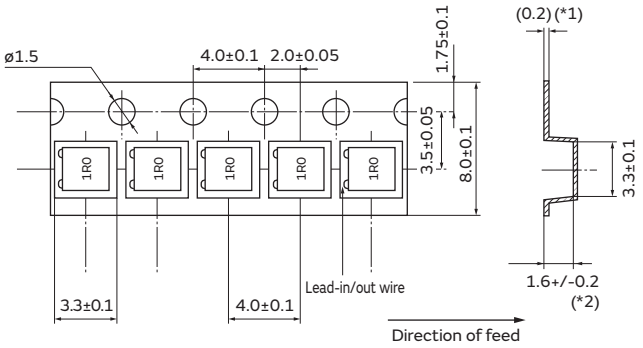
Part Number	Dimensions		Depth of Cavity	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQH2HP_GR	2.3	2.8	1.1	**L** (3000)	—	—
LQH2HP_JR	2.3	2.8	1.3	**L** (2000)	—	—



The dimension of the cavity is measured at the bottom side.

Embossed Tape

Part Number	Dimensions		Depth of Cavity	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQH3NP_MR	3.3	3.3	1.6	**E** (2000)	**F** (8000)	—



The dimension of the cavity is measured at the bottom side.

*1 0.3 LQH3NP_GR
*2 1.1±0.1 LQH3NP_GR

Embossed Tape

Part Number	Dimensions		Depth of Cavity	Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	ø180mm reel	ø330mm reel	Bulk
LQH3NP_GR	3.3	3.3	1.1	**L** (3000)	—	—
LQH3NP_JR	3.3	3.3	1.6	**L** (2000)	—	—
LQH3NP_ME	3.3	3.3	1.6	**L** (2000)	—	—

(in mm)

Continued on the following page.↗

Inductors for Power Lines Packaging

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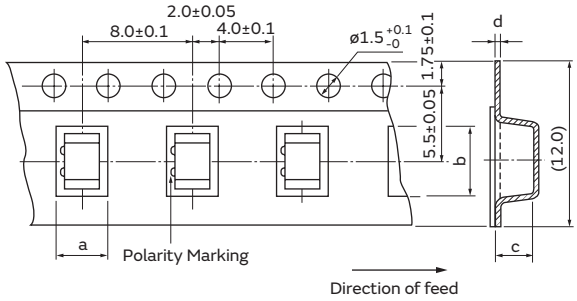
Minimum Quantity and 12mm Width Embossed Taping Dimensions



The dimension of the cavity of embossed tape is measured at the bottom side.

Embossed Tape

Part Number	Dimensions (*c: Depth of Cavity)				Packaging Code (Minimum Qty. (pcs.))		
	a	b	c	d	ø180mm reel	ø330mm reel	Bulk
LQH43C	3.6	4.9	2.7	0.3	**L** (500)	—	—
LQH43P	3.6	4.9	2.7	0.3	**L** (500)	**K** (2500)	—
LQH44P_J0/GR	4.3	4.3	1.4	0.3	**L** (1000)	**K** (3500)	—
LQH44P_P0	4.3	4.3	1.9	0.3	**L** (1000)	**K** (3500)	—
LQH5BP_38	5.3	5.3	4.2	0.4	**L** (400)	**K** (1500)	—
LQH5BP_T0	5.3	5.3	2.4	0.3	**L** (500)	**K** (3000)	—
LQH55D	5.4	6.1	5.0	0.4	**L** (350)	**K** (1500)	—
LQH66S	6.7	6.7	5.6	0.4	**L** (350)	**K** (1500)	—

(in mm)