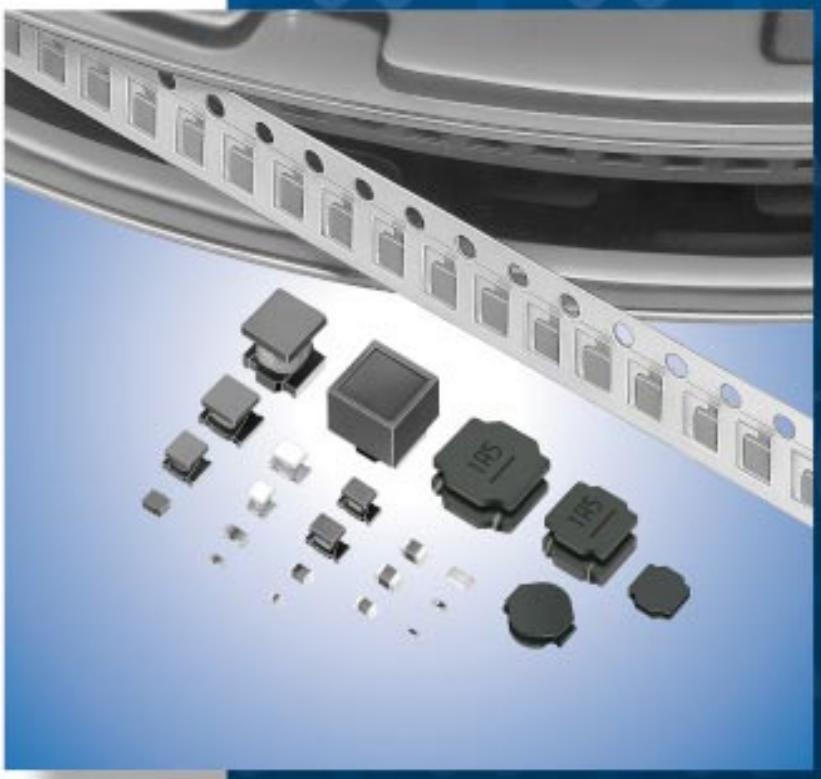
Chip Inductors (Chip Coils)



muRata Innovator in Electronics

Murata
Manufacturing Co., Ltd.

Cat.No.O05E-21

● Part Numbering

Chip Inductors (Chip Coils)(SMD)

(Part Number) LQ H 32 M N 331 K 2 3 L
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

❶Product ID

Product ID	
LQ	Chip Inductors (Chip Coils)

❷Structure

Code	Structure
G	Multilayer Type (Air-core Inductor (Coil))
H	Wire Wound Type (Ferrite Core)
M	Multilayer Type (Ferrite Core)
P	Film Type
W	Wire Wound Type (Air-core Inductor (Coil))

❸Dimensions (L×W)

Code	Dimensions (L×W)	EIA
02	0.4×0.2mm	01005
03	0.6×0.3mm	0201
04	0.8×0.4mm	03015
15	1.0×0.5mm	0402
18	1.6×0.8mm	0603
21	2.0×1.25mm	0805
2B	2.0×1.5mm	0805
2M	2.0×1.6mm	0806
2H	2.5×2.0mm	1008
3N	3.0×3.0mm	1212
31	3.2×1.6mm	1206
32	3.2×2.5mm	1210
43	4.5×3.2mm	1812
44	4.0×4.0mm	1515
55	5.7×5.0mm (5.87×5.2mm)	2220
6P	6.0×6.0mm	2424
66	6.3×6.3mm	2525
88	8.0×8.0mm	3131

❹Applications and Characteristics

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

❺Category

Code	Category
N	Standard Type
S	

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 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 0.1μH, 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.

❼Inductance Tolerance

Code	Inductance Tolerance
B	±0.1nH
C	±0.2nH
D	±0.5nH
G	±2%
H	±3%
J	±5%
K	±10%
M	±20%
N	±30%
S	±0.3nH
W	±0.05nH

❽Features (Except **LQH□□P/LQM□□P**)

Code	Features	Series
0	Standard Type	**LQG/LQP/LQW/LQM***1**/LQH***2
1	High-Q/ Low DC Resistance	**LQW15A/18A/2BH**
	Standard Type	**LQM21N**
2	Standard Type	**LQH32C/32M**
3	Low DC Resistance	**LQH32C**
5	Low Profile Type	**LQH2MC/32C**
7	Large Current Type	**LQM21F**
8	Low DC Resistance /Large Current Type	

*1 Except LQM21N Series
*2 Except LQH32 Series

Continued on the following page.

Continued from the preceding page.

(Part Number) LQ H 32 M N 331 K 2 3 L
❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿

❽Thickness (**LQH□□P/LQM□□P** Only · Except **LQH6PP/LQH88P**)

Code	Dimensions (T)
C	0.5mm
E	0.7mm
0	0.85mm
G	0.9mm
J	1.1mm
M	1.4mm
N	1.55mm
P	1.65mm
R	1.85mm

❾Electrode (Except **LQH□□P/LQM□□P**)

•Lead (Pb) Free

Code	Electrode	Series
0	Sn	**LQG18H/LQP03T/LQW□□A/LQM**
2		**LQG15H/LQP02T/LQP03T/LQP15T/ LQP□□M/LQH2MC**
3	LF Solder	**LQW□□H/LQH** (Except **LQH2MC**)
4	Au	**LQP03T**

❾Specification (**LQH□□P/LQM□□P** Only · Except **LQH6PP/LQH88P**)

Code	Specification
0	Standard Type

❽❾Thickness (**LQH6PP/LQH88P** Only)

Code	Dimension (T)
38	3.8mm
43	4.3mm

❿Packaging

Code	Packaging	Series
K	Embossed Taping (ø330mm Reel)	**LQH***1 **/LQW□□H***6 **/LQM31F/LQM21***2
L	Embossed Taping (ø180mm Reel)	**LQH/LQW□□H/LQM31F/LQM21***2 **/LQM31P/LQM2HP/LQM2MP**
B	Bulk	**LQH2MC/LQW/LQG/LQM/LQP**
J	Paper Taping (ø330mm Reel)	**LQW18A/LQG/LQM18/LQM21***3 **/LQP***5
D	Paper Taping (ø180mm Reel)	**LQW□□A/LQG/LQM18/LQM21***4 **/LQP**

*1 Except LQH2MC/LQH32P/LQH3NP/LQH43C
*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 LQM21D (1.0 - 10µH)/LQM21F (1.0 - 2.2µH)/LQM21N (0.1 - 2.2µH)/LQM21P only.
*5 Except LQP02T/15T
*6 Except LQW21H

Product Guide

Murata's LQ□ series of chip inductors (chip coils) consists of compact, high-performance inductors. Their innovative coil and case structures mean low DC resistance and outstanding high-frequency characteristics. The series is designed for a variety of applications, facilitating component selection for individual circuit requirements.

		Part Number	Structure	Size Code Inch (mm)	Inductance Range (1n 10n 100n 1μ 10μ 100μ 1m 10m)	Rated Current (mA) (10 100 1000 10000)
Power Inductor		LQM21P	Magnetically Shielded Multilayer	0805 (2012)	470nH – 2.2μH	600 – 1300
		LQM2MP		0806 (2016)	470nH – 4.7μH	1100 – 1600
		LQM2HP_J0		1008 (2520)	1.0μH – 3.3μH	1000 – 1500
		LQM2HP_G0		1008 (2520)	470nH – 4.7μH	1100 – 1800
		LQM2HP_E0		1008 (2520)	560nH	1500
		LQM31P_00		1206 (3216)	470nH – 4.7μH	700 – 1400
		LQM31P_C0		1206 (3216)	470nH – 2.2μH	900 – 1300
		LQH2MC_02	Wire Wound	0806 (2016)	1.0μH – 82μH	90 – 485
		LQH2MC_52		0806 (2016)	1.0μH – 22μH	130 – 595
		LQH3NP_M0		1212 (3030)	1.0μH – 100μH	200 – 1400
		LQH3NP_J0		1212 (3030)	1.0μH – 47μH	200 – 1620
		LQH3NP_G0		1212 (3030)	1.0μH – 250μH	80 – 1525
		LQH32P		1210 (3225)	470nH – 22μH	450 – 2550
		LQH44P_P0		1515 (4040)	1.0μH – 22μH	790 – 2450
		LQH44P_J0		1515 (4040)	1.0μH – 47μH	300 – 1530
		LQH55P		2220 (5852)	1.2μH – 22μH	670 – 2600
		LQH6PP		2424 (6060)	1.0μH – 100μH	800 – 4300
		LQH88P		3131 (8080)	1.0μH – 100μH	1000 – 8000
	Chokes	LQM18F	Magnetically Shielded Multilayer	0603 (1608)	1.0μH – 10μH	50 – 150
		LQM21D		0805 (2012)	1.0μH – 47μH	7 – 60
		LQM21F		0805 (2012)	1.0μH – 47μH	7 – 220
		LQM31F		1206 (3216)	10μH	70
		LQH31C	Wire Wound	1206 (3216)	120nH – 100μH	80 – 970
		LQH32C_23/_33		1210 (3225)	150nH – 560μH	60 – 1450
		LQH32C_53		1210 (3225)	1.0μH – 100μH	100 – 1000
		LQH43C		1812 (4532)	1.0μH – 470μH	90 – 1080
		LQH55D		2220 (5750)	120nH – 10mH	50 – 6000
		LQH66S	Magnetically Shielded	2525 (6363)	270nH – 10mH	50 – 6000
General Frequency Range		LQM18N	Magnetically Shielded Multilayer	0603 (1608)	47nH – 2.2μH	15 – 50
		LQM21N		0805 (2012)	100nH – 4.7μH	30 – 250
		LQH31M	Wire Wound (ferrite core)	1206 (3216)	150nH – 100μH	45 – 250
		LQH32M		1210 (3225)	1.0μH – 560μH	40 – 445
		LQH43M(N)		1812 (4532)	1.0μH – 2.2mH	30 – 500
High Frequency Range		LQG15H	Multilayer	0402 (1005)	1.0nH – 270nH	110 – 300
		LQG18H		0603 (1608)	1.2nH – 100nH	300 – 500
	Tight Inductance Tolerance	LQP02T	Film	01005 (0402)	0.4nH – 18nH	140 – 320
		LQP03T_02		0201 (0603)	0.6nH – 120nH	40 – 850
		LQP03T_00		0201 (0603)	0.6nH – 56nH	100 – 840
		LQP03T_04		0201 (0603)	0.6nH – 56nH	50 – 420
		LQP15T		0402 (1005)	1.0nH – 18nH	80 – 300
		LQP15M		0402 (1005)	1.0nH – 33nH	60 – 400
		LQP18M		0603 (1608)	1.3nH – 100nH	50 – 300
		LQW04A	Wire Wound (air core)	03015 (0804)	1.1nH – 33nH	140 – 990
		LQW15A		0402 (1005)	1.3nH – 120nH	110 – 1200
		LQW18A		0603 (1608)	2.2nH – 470nH	75 – 1400
		LQW2BH		0805 (2015)	2.7nH – 470nH	160 – 1900
		LQW31H		1206 (3216)	8.8nH – 100nH	230 – 750
		LQW21H	Wire Wound (ferrite core)	0805 (2012)	470nH – 2.2μH	75 – 160
		LQH31H		1206 (3216)	54nH – 880nH	180 – 920

Inductance Lineup
: E-24 or Higher
: E-12
: Other
*There are some items which do not match to E step.

CAUTION: Use rosin-based flux, but not strong acidic flux (with chlorine content exceeding 0.2wt%) when soldering chip inductor (chip coil).
Do not use water-soluble flux.

Selection Guide

Construction?

Circuit Type?	Application?		Wire Wound	Multilayer	Film
Power Line	Voltage Conversion		**LQH2MC_02** 0806/1.0–82µH/90–485mA **LQH2MC_52** (Low profile type) 0806/1.0–22µH/130–595mA **LQH3NP_M0** 1212/1.0–100µH/200–1400mA **LQH3NP_J0** 1212/1.0–47µH/200–1620mA **LQH3NP_G0** 1212/1.0–250µH/80–1525mA **LQH32P** 1210/0.47–22µH/450–2550mA **LQH44P_P0** 1515/1.0–22µH/790–2450mA **LQH44P_J0** 1515/1.0–47µH/300–1530mA **LQH55P** 2220/1.2–22µH/670–2600mA **LQH6PP** 2424/1.0–100µH/0.8–4.3A **LQH88P** 3131/1.0–100µH/1.0–8.0A	**LQM21P** 0805/0.47–2.2µH/600–1300mA **LQM2MP** 0806/0.47–4.7µH/1100–1600mA **LQM2HP_J0** 1008/1.0–3.3µH/1000–1500mA **LQM2HP_G0** 1008/0.47–4.7µH/1100–1800mA **LQM2HP_E0** 1008/0.56µH/1500mA **LQM31P_00** (Standard type) 1206/0.47–4.7µH/700–1400mA **LQM31P_C0** (Low profile type) 1206/0.47–2.2µH/900–1300mA	
		Choke	**LQH31C** 1206/0.12–100µH/80–970mA **LQH32C** (Standard type) 1210/0.15–560µH/60–1450mA **LQH32C_53** (Low profile type) 1210/1.0–100µH/100–1000mA **LQH43C** 1812/1.0–470µH/90–1080mA **LQH55D** 2220/0.12–10000µH/0.05–6.0A **LQH66S** 2525/0.27–10000µH/0.05–6.0A	**LQM18F** 0603/1.0–10µH/50–150mA **LQM21D** 0805/1.0–47µH/7–60mA **LQM21F** 0805/1.0–47µH/7–220mA **LQM31F** 1206/10µH/70mA	
Signal Line	Operating Frequency?	Less than 100MHz General	**LQH31M** 1206/0.15–100µH **LQH32M** 1210/1.0–560µH **LQH43M(N)** 1812/1.0–2200µH	**LQM18N** 0603/47–2200nH **LQM21N** 0805/0.1–4.7µH	
		Greater than 100MHz High Frequency	**LQW04A** 03015/1.1–33nH **LQW15A** 0402/1.3–120nH **LQW18A** 0603/2.2–470nH **LQW2BH** 0805/2.7–470nH **LQW31H** 1206/8.8–100nH **LQW21H** 0805/0.47–2.2µH **LQH31H** 1206/54–880nH	**LQG15H** 0402/1.0–270nH **LQG18H** 0603/1.2–100nH	**LQP02T** 01005/0.4–18nH **LQP03T** 0201/0.6–120nH **LQP15T** 0402/1.0–18nH **LQP15M** 0402/1.0–33nH **LQP18M** 0603/1.3–100nH

Guidance of Digits in This Chart

●for **LQH2MC_02** 0806/1.0–82µH/90–485mA

Size (inch) | Inductance | Rated Current

Product Guide by Thickness

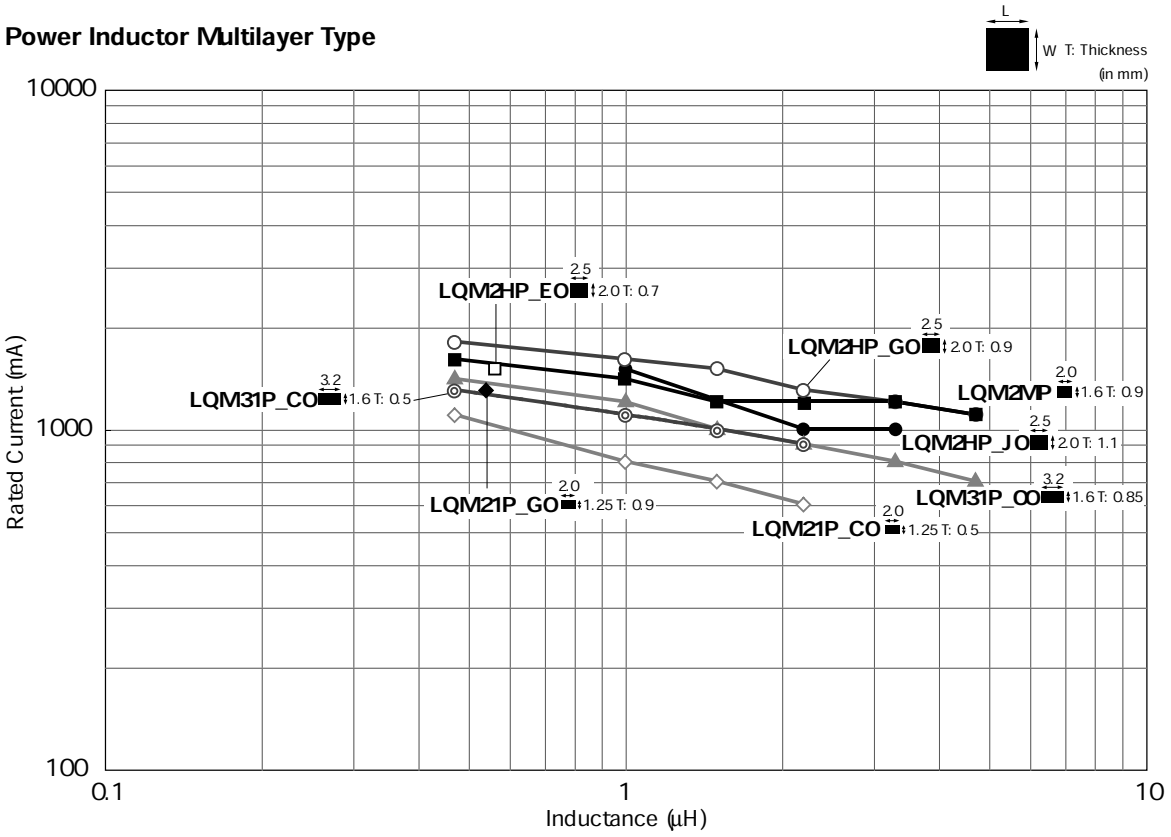
Which Thickness?

	Power Inductor			
	Multilayer Type	Wire Wound Type	Multilayer Type for Choke	Wire Wound Type for Choke
0.2mm				
0.3mm				
0.35mm				
0.4mm				
0.5mm	LQM21P_C0 / LQM31P_C0			
0.65mm		LQH2MC_52		
0.7mm	LQM2HP_E0			
0.8mm			LQM18F	
0.85mm	LQM31P_00		LQM21D (1.0 to 10μH) / LQM21F_00	
0.9mm	LQM21P_G0 / LQM2HP_G0 / LQM2MP	LQH2MC_02 / LQH3NP_G0		
1.0mm			LQM31F	
1.1mm	LQM2HP_J0	LQH3NP_J0 / LQH44P_J0		
1.25mm			LQM21D (22 to 47μH) / LQM21F_70 / LQM21F_80	
1.4mm		LQH3NP_M0		
1.55mm		LQH32P		LQH32C_53
1.65mm		LQH44P_P0		
1.7mm				
1.8mm				LQH31C
1.85mm		LQH55P		
2.0mm				LQH32C_23/33
2.6mm				LQH43C
3.8mm		LQH88P		
4.3mm		LQH6PP		
4.7mm				LQH55D / LQH66S

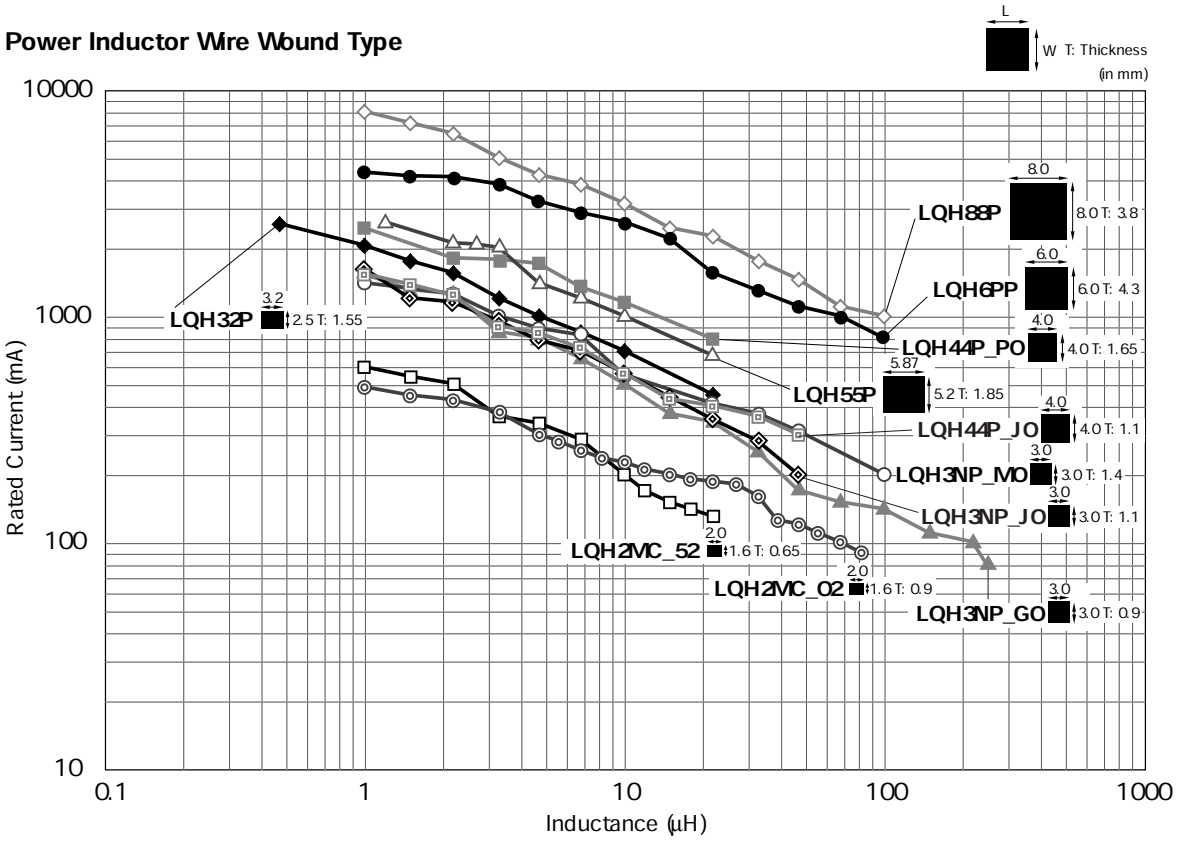
Which Thickness?

	Inductor for General Use		Inductor for High Frequency		
	Multilayer Type	Wire Wound Type	Multilayer Type	Film Type	Wire Wound Type
0.2mm				LQP02T	
0.3mm				LQP03T	
0.35mm				LQP15M	
0.4mm				LQP15T	LQW04A
0.5mm			LQG15HN / LQG15HS	LQP18M	LQW15A
0.65mm					
0.7mm					
0.8mm	LQM18N		LQG18H		LQW18A
0.85mm	LQM21N (0.1 to 2.2μH)				
0.9mm					LQW21H
1.0mm					
1.1mm					
1.25mm	LQM21N (2.7 to 4.7μH)				
1.4mm					
1.55mm					
1.65mm					
1.7mm					LQW2BH
1.8mm		LQH31M			LQH31H / LQW31H
1.85mm					
2.0mm		LQH32M			
2.6mm		LQH43M(N)			
3.8mm					
4.3mm					
4.7mm					

Power Inductor Multilayer Type



Power Inductor Wire Wound Type



Power Inductor Wire Wound Type

muRata

LQH32P_N0 Series (1210 Size)

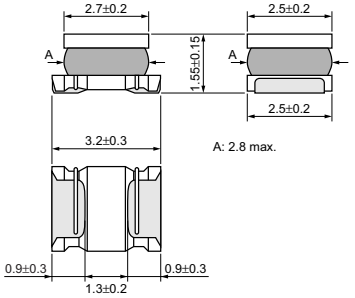
■ Features

1. Large allowable DC current of 2550mA (0.47 micro H)
2. The series has an inductance range from 0.47 to 22 micro H.
3. Magnetically shielded structure
4. Lead-free reflow soldering is available.

■ Applications

1. DSC, DVC, and 3.5/2.5 inch HDD
2. DC-DC converter for communication module of WiMAX

■ Dimension



(in mm)

■ Rated Value (□: packaging code)

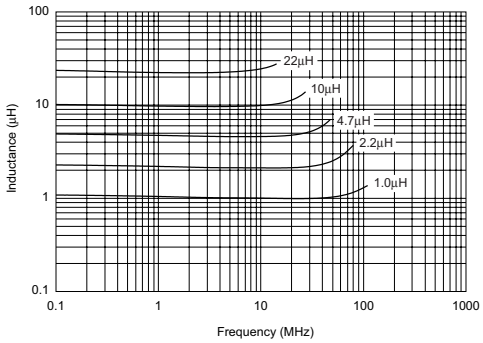
Part Number	Inductance	Inductance Test Frequency	*1 Allowable DC Current (Based on Temperature Rise)	*2 Allowable DC Current (Based on Inductance Change)	DC Resistance	Self Resonance Frequency (min.)	Class of Magnetic Shield
LQH32PNR47NN0□	0.47µH±30%	1MHz	2550mA	3400mA	0.03ohm±20%	100MHz	Magnetic shield of magnetic powder in resin
LQH32PN1R0NN0□	1.0µH±30%	1MHz	2050mA	2300mA	0.045ohm±20%	100MHz	Magnetic shield of magnetic powder in resin
LQH32PN1R5NN0□	1.5µH±30%	1MHz	1750mA	1750mA	0.057ohm±20%	70MHz	Magnetic shield of magnetic powder in resin
LQH32PN2R2NN0□	2.2µH±30%	1MHz	1600mA	1550mA	0.076ohm±20%	70MHz	Magnetic shield of magnetic powder in resin
LQH32PN3R3NN0□	3.3µH±30%	1MHz	1200mA	1250mA	0.12ohm±20%	50MHz	Magnetic shield of magnetic powder in resin
LQH32PN4R7NN0□	4.7µH±30%	1MHz	1000mA	1000mA	0.18ohm±20%	40MHz	Magnetic shield of magnetic powder in resin
LQH32PN6R8NN0□	6.8µH±30%	1MHz	850mA	850mA	0.24ohm±20%	40MHz	Magnetic shield of magnetic powder in resin
LQH32PN100MN0□	10µH±20%	1MHz	700mA	750mA	0.38ohm±20%	30MHz	Magnetic shield of magnetic powder in resin
LQH32PN220MN0□	22µH±20%	1MHz	450mA	500mA	0.81ohm±20%	20MHz	Magnetic shield of magnetic powder in resin

Operating Temperature Range: -40°C to +85°C Only for reflow soldering.

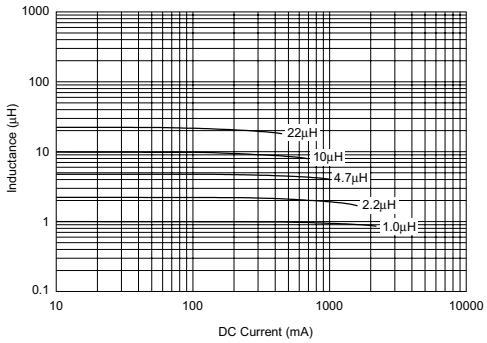
*1: When applied Allowable DC Current is applied to the Products, self-generation of heat will rise to 40°C or less.

*2: When applied Allowable DC Current is applied to the Products, Inductance will be within ±30% of nominal Inductance value.

■ Inductance - Frequency Characteristics (Typ.)



■ Inductance - Current Characteristics (Typ.)



Design Kits

Continued from the preceding page.

No.	Part Number	Quantity (pcs.)	Inductance		DC Resistance (Ω)	Allowable DC Current (mA)	
			Nominal	Tolerance		Based on Temperature Rise	Based on Inductance Change
7	**LQH3NPN100NG0**	10	10µH	±30%	0.57±20%	630	500
8	**LQH3NPN150NG0**	10	15µH	±30%	0.91±20%	475	370
9	**LQH3NPN220MG0**	10	22µH	±20%	1.1±20%	430	340
10	**LQH3NPN330MG0**	10	33µH	±20%	2.1±20%	345	250
11	**LQH3NPN470MG0**	10	47µH	±20%	3.0±20%	270	170
12	**LQH3NPN680MG0**	10	68µH	±20%	4.2±20%	235	150
13	**LQH3NPN101MG0**	10	100µH	±20%	8.0±20%	165	140
14	**LQH3NPN151MG0**	10	150µH	±20%	11±20%	145	110
15	**LQH3NPN221MG0**	10	220µH	±20%	14±20%	130	100
16	**LQH3NPN251MG0**	10	250µH	±20%	15±20%	130	80
17	**LQH3NPN1R0NJ0**	10	1.0µH	±30%	0.048±20%	1620	1650
18	**LQH3NPN1R5NJ0**	10	1.5µH	±30%	0.066±20%	1500	1200
19	**LQH3NPN2R2NJ0**	10	2.2µH	±30%	0.0828±20%	1460	1150
20	**LQH3NPN3R3NJ0**	10	3.3µH	±30%	0.126±20%	1270	950
21	**LQH3NPN4R7NJ0**	10	4.7µH	±30%	0.156±20%	1120	780
22	**LQH3NPN6R8NJ0**	10	6.8µH	±30%	0.252±20%	850	700
23	**LQH3NPN100NJ0**	10	10µH	±30%	0.36±20%	710	560
24	**LQH3NPN150NJ0**	10	15µH	±30%	0.528±20%	590	440
25	**LQH3NPN220MJ0**	10	22µH	±20%	0.72±20%	510	350
26	**LQH3NPN330MJ0**	10	33µH	±20%	1.08±20%	410	280
27	**LQH3NPN470MJ0**	10	47µH	±20%	1.56±20%	350	200
28	**LQH3NPN1R0MM0**	10	1.0µH	±20%	0.044±20%	2050	1400
29	**LQH3NPN2R2MM0**	10	2.2µH	±20%	0.073±20%	1600	1250
30	**LQH3NPN3R3MM0**	10	3.3µH	±20%	0.092±20%	1450	1000
31	**LQH3NPN4R7MM0**	10	4.7µH	±20%	0.13±20%	1250	880
32	**LQH3NPN6R8MM0**	10	6.8µH	±20%	0.20±20%	1000	820
33	**LQH3NPN100MM0**	10	10µH	±20%	0.26±20%	870	550
34	**LQH3NPN1R0NM0**	10	1.0µH	±30%	0.044±20%	2050	1400
35	**LQH3NPN2R2NM0**	10	2.2µH	±30%	0.073±20%	1600	1250
36	**LQH3NPN3R3NM0**	10	3.3µH	±30%	0.092±20%	1450	1000
37	**LQH3NPN4R7NM0**	10	4.7µH	±30%	0.13±20%	1250	880
38	**LQH3NPN6R8NM0**	10	6.8µH	±30%	0.20±20%	1000	820
39	**LQH3NPN100NM0**	10	10µH	±30%	0.26±20%	870	550
40	**LQH3NPN220MM0**	10	22µH	±20%	0.51±20%	650	410
41	**LQH3NPN330MM0**	10	33µH	±20%	0.85±20%	500	370
42	**LQH3NPN470MM0**	10	47µH	±20%	1.25±20%	410	310
43	**LQH3NPN101MM0**	10	100µH	±20%	3.50±20%	240	200
44	**LQH32PNR47NN0**	10	0.47µH	±30%	0.03±20%	2550	3400
45	**LQH32PN1R0NN0**	10	1.0µH	±30%	0.045±20%	2050	2300
46	**LQH32PN1R5NN0**	10	1.5µH	±30%	0.057±20%	1750	1750
47	**LQH32PN2R2NN0**	10	2.2µH	±30%	0.076±20%	1600	1550
48	**LQH32PN3R3NN0**	10	3.3µH	±30%	0.12±20%	1200	1250
49	**LQH32PN4R7NN0**	10	4.7µH	±30%	0.18±20%	1000	1000
50	**LQH32PN6R8NN0**	10	6.8µH	±30%	0.24±20%	850	850
51	**LQH32PN100MN0**	10	10µH	±20%	0.38±20%	700	750
52	**LQH32PN220MN0**	10	22µH	±20%	0.81±20%	450	500

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