Inductors for High-frequency Circuits

Multilayer/Q-up

MLG series

Type: **MLG0402Q** **0402[01005 inch]***

*** Dimensions Code JIS[EIA]**

Issue date: August 2012

- All specifications are subject to change without notice.
- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.

TDK

Inductors for High-frequency Circuits Multilayer/Q-up

Conformity to RoHS Directive

MLG Series MLG0402Q

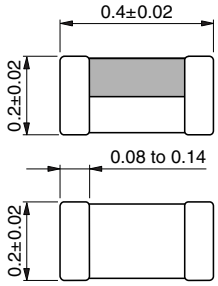
FEATURES

- Inductance values are supported from 0.2 to 33nH.
- Compared to our existing 0603 product, this series has a 30% smaller cubic ratio and 45% smaller effective area, making it the optimal product for fine-pitch circuits.
- Guaranteed operating temperature range: –55 to +125°C
- The products contain no lead and also support lead-free soldering.
- It is a product conforming to RoHS directive.

APPLICATIONS

For high-frequency applications including mobile phones, high frequency modules (PA, VCO, FEM etc.), Bluetooth, W-LAN, UWB and tuners.

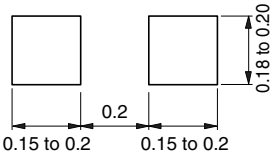
SHAPES AND DIMENSIONS



Weight: 0.07mg

Dimensions in mm

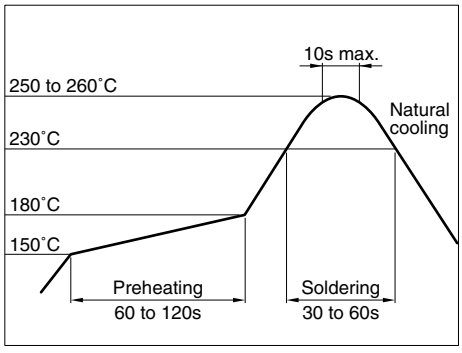
RECOMMENDED PC BOARD PATTERN



Dimensions in mm

RECOMMENDED SOLDERING CONDITION

REFLOW SOLDERING



PRODUCT IDENTIFICATION

MLG	0402	Q	2N2	S	T	□□□
(1)	(2)	(3)	(4)	(5)	(6)	(7)

(1) Series name

(2) Dimensions L×W

0402	0.4×0.2mm(L×W)

(3) Type name

(4) Inductance

2N2	2.2nH
12N	12nH

(5) Tolerance

S	±0.3nH
J	±5%

(6) Packaging style

T	Taping (reel)

(7) TDK internal code

SPECIFICATIONS

Operating temperature range	–55 to +125°C
Storage temperature range	–55 to +125°C(After mount)

PACKAGING STYLE AND QUANTITIES

Packaging style	Quantity
Taping	20000 pieces/reel

HANDLING AND PRECAUTIONS

- Before soldering, be sure to preheat components.
  The preheating temperature should be set so that the temperature difference between the solder temperature and product temperature does not exceed 150°C.
- After mounting components onto the printed circuit board, do not apply stress through board bending or mishandling.

- Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
- Please contact our Sales office when your application is considered the following:
  The device's failure or malfunction may directly endanger human life (e.g. application for automobile/aircraft/medical/nuclear power devices, etc.)

ELECTRICAL CHARACTERISTICS

Inductance (nH)	Inductance tolerance	Q min.	Test frequency L, Q (MHz)	Self-resonant frequency (GHz)		DC resistance (Ω)		Rated current (mA)max.	Part No.
				min.	typ.	max.	typ.		
0.2	±0.1, ±0.2nH	—	100	10.0	20.0	0.10	0.03	350	MLG0402Q0N2☐T
0.3	±0.1, ±0.2nH	—	100	10.0	18.5	0.20	0.07	350	MLG0402Q0N3☐T
0.4	±0.1, ±0.2nH	—	100	10.0	20.0	0.20	0.08	350	MLG0402Q0N4☐T
0.5	±0.1, ±0.2nH	—	100	10.0	20.0	0.20	0.11	350	MLG0402Q0N5☐T
0.6	±0.1, ±0.2nH	—	100	10.0	20.0	0.30	0.13	320	MLG0402Q0N6☐T
0.7	±0.1, ±0.2nH	—	100	10.0	20.0	0.40	0.19	320	MLG0402Q0N7☐T
0.8	±0.1, ±0.2nH	—	100	10.0	19.5	0.40	0.11	320	MLG0402Q0N8☐T
0.9	±0.1, ±0.2nH	—	100	10.0	20.0	0.40	0.15	320	MLG0402Q0N9☐T
1.0	±0.1,±0.2, ±0.3nH	2	100	10.0	16.8	0.40	0.20	250	MLG0402Q1N0☐T
1.1	±0.1,±0.2, ±0.3nH	2	100	10.0	16.6	0.50	0.22	250	MLG0402Q1N1☐T
1.2	±0.1,±0.2, ±0.3nH	2	100	10.0	16.2	0.50	0.25	250	MLG0402Q1N2☐T
1.3	±0.1,±0.2, ±0.3nH	2	100	10.0	16.0	0.60	0.28	250	MLG0402Q1N3☐T
1.4	±0.1,±0.2, ±0.3nH	2	100	10.0	15.8	0.60	0.30	250	MLG0402Q1N4☐T
1.5	±0.1,±0.2, ±0.3nH	2	100	10.0	15.6	0.60	0.37	220	MLG0402Q1N5☐T
1.6	±0.1,±0.2, ±0.3nH	2	100	10.0	14.4	0.60	0.25	220	MLG0402Q1N6☐T
1.7	±0.1,±0.2, ±0.3nH	2	100	10.0	13.4	0.60	0.25	200	MLG0402Q1N7☐T
1.8	±0.1,±0.2, ±0.3nH	2	100	10.0	13.9	0.60	0.28	200	MLG0402Q1N8☐T
1.9	±0.1,±0.2, ±0.3nH	2	100	9.0	12.2	0.60	0.27	200	MLG0402Q1N9☐T
2.0	±0.1,±0.2, ±0.3nH	2	100	9.0	12.5	0.60	0.30	200	MLG0402Q2N0☐T
2.1	±0.1,±0.2, ±0.3nH	2	100	8.0	11.8	0.70	0.36	200	MLG0402Q2N1☐T
2.2	±0.1,±0.2, ±0.3nH	2	100	8.0	11.7	0.80	0.43	200	MLG0402Q2N2☐T
2.3	±0.1,±0.2, ±0.3nH	2	100	7.0	11.0	0.80	0.46	200	MLG0402Q2N3☐T
2.4	±0.1,±0.2, ±0.3nH	2	100	7.0	10.9	0.80	0.43	200	MLG0402Q2N4☐T
2.5	±0.1,±0.2, ±0.3nH	2	100	7.0	10.5	0.80	0.54	200	MLG0402Q2N5☐T
2.6	±0.1,±0.2, ±0.3nH	2	100	7.0	10.7	0.80	0.54	200	MLG0402Q2N6☐T
2.7	±0.1,±0.2, ±0.3nH	2	100	7.0	10.7	0.80	0.54	200	MLG0402Q2N7☐T
2.8	±0.1,±0.2, ±0.3nH	2	100	7.0	10.4	0.80	0.56	200	MLG0402Q2N8☐T
2.9	±0.1,±0.2, ±0.3nH	2	100	7.0	10.0	0.80	0.52	200	MLG0402Q2N9☐T
3.0	±0.1,±0.2, ±0.3nH	2	100	7.0	10.0	0.80	0.45	200	MLG0402Q3N0☐T
3.1	±0.1,±0.2, ±0.3nH	2	100	7.0	9.7	0.90	0.58	200	MLG0402Q3N1☐T
3.2	±0.1,±0.2, ±0.3nH	2	100	7.0	9.4	1.00	0.66	200	MLG0402Q3N2☐T
3.3	±0.1,±0.2, ±0.3nH	2	100	7.0	10.0	1.10	0.73	180	MLG0402Q3N3☐T
3.4	±0.1,±0.2, ±0.3nH	2	100	6.5	9.1	1.10	0.73	180	MLG0402Q3N4☐T
3.5	±0.1,±0.2, ±0.3nH	2	100	6.0	9.0	1.10	0.74	180	MLG0402Q3N5☐T
3.6	±0.1,±0.2, ±0.3nH	2	100	6.0	9.0	1.10	0.75	180	MLG0402Q3N6☐T
3.7	±0.1,±0.2, ±0.3nH	2	100	6.0	8.9	1.10	0.73	180	MLG0402Q3N7☐T
3.8	±0.1,±0.2, ±0.3nH	2	100	6.0	8.4	1.10	0.70	180	MLG0402Q3N8☐T
3.9	±0.1,±0.2, ±0.3nH	2	100	6.0	8.8	1.20	0.77	180	MLG0402Q3N9☐T
4.0	±0.1,±0.2, ±0.3nH	2	100	6.0	8.4	1.20	0.71	180	MLG0402Q4N0☐T
4.3	±3%, ±0.3nH	2	100	6.0	8.6	1.20	0.77	180	MLG0402Q4N3☐T
4.7	±3%, ±0.3nH	2	100	6.0	8.1	1.30	0.88	160	MLG0402Q4N7☐T
5.1	±3%, ±0.3nH	2	100	6.0	7.8	1.40	0.90	160	MLG0402Q5N1☐T
5.6	±3%, ±0.3nH	2	100	6.0	7.8	1.50	1.02	140	MLG0402Q5N6☐T
6.2	±3%, ±0.3nH	2	100	5.5	7.2	1.50	1.04	140	MLG0402Q6N2☐T
6.8	±3%, ±5%	2	100	5.5	6.9	1.60	1.12	140	MLG0402Q6N8☐T
7.5	±3%, ±5%	2	100	5.0	6.7	1.70	1.13	140	MLG0402Q7N5☐T
8.2	±3%, ±5%	2	100	4.5	6.2	1.80	1.16	140	MLG0402Q8N2☐T
9.1	±3%, ±5%	2	100	4.0	5.7	1.80	1.20	140	MLG0402Q9N1☐T
10	±3%, ±5%	3	100	4.0	5.3	2.10	1.45	140	MLG0402Q10N☐T
12	±3%, ±5%	3	100	3.5	4.8	2.40	1.64	140	MLG0402Q12N☐T
15	±3%, ±5%	3	100	3.0	4.5	2.60	1.77	140	MLG0402Q15N☐T
18	±3%, ±5%	3	100	2.5	3.0	2.80	1.94	140	MLG0402Q18N☐T
22	±3%, ±5%	3	100	2.2	2.7	3.20	2.18	130	MLG0402Q22N☐T
27	±3%, ±5%	3	100	1.9	2.5	3.50	2.44	120	MLG0402Q27N☐T
33	±3%, ±5%	3	100	1.7	2.2	3.80	2.71	120	MLG0402Q33N☐T

* ☐: Please specify inductance tolerance, (B±0.1nH), (C±0.2nH), (S±0.3nH), (H±3%) or (J±5%).
Please contact us for information on inductance tolerance, G(±2%).

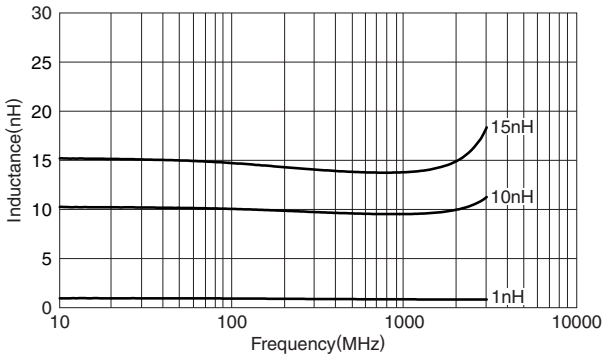
- Test equipment
Inductance Q : HP4291A+16196D, or equivalent
SRF: HP8720C, or equivalent
Rdc: HP4338A, or equivalent

L, Q vs. FREQUENCY CHARACTERISTICS

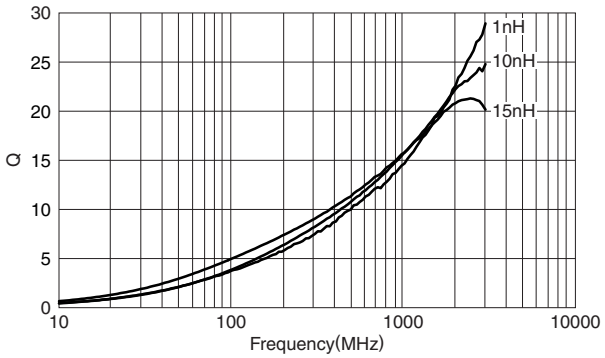
Part No.	Inductance(nH)typ.					Q typ.				
	500MHz	800MHz	1.8GHz	2.0GHz	2.4GHz	500MHz	800MHz	1.8GHz	2.0GHz	2.4GHz
MLG0402Q0N2	0.2	0.2	0.2	0.2	0.2	8	11	18	20	23
MLG0402Q0N3	0.3	0.3	0.3	0.3	0.3	7	9	15	16	19
MLG0402Q0N4	0.4	0.4	0.4	0.4	0.3	9	12	19	20	22
MLG0402Q0N5	0.5	0.5	0.4	0.4	0.4	9	12	19	21	23
MLG0402Q0N6	0.6	0.5	0.5	0.5	0.5	7	11	17	18	20
MLG0402Q0N7	0.7	0.7	0.6	0.6	0.6	8	11	18	19	22
MLG0402Q0N8	0.7	0.7	0.7	0.7	0.7	9	12	20	21	24
MLG0402Q0N9	0.8	0.8	0.8	0.8	0.8	10	13	21	23	26
MLG0402Q1N0	0.9	0.9	0.9	0.9	0.9	10	12	20	22	25
MLG0402Q1N1	1.0	1.0	1.0	1.0	1.0	9	12	20	22	25
MLG0402Q1N2	1.1	1.1	1.1	1.1	1.1	9	12	20	21	24
MLG0402Q1N3	1.2	1.2	1.2	1.2	1.2	9	12	20	22	25
MLG0402Q1N4	1.3	1.3	1.3	1.3	1.3	9	12	20	22	25
MLG0402Q1N5	1.4	1.4	1.4	1.4	1.4	9	12	19	21	23
MLG0402Q1N6	1.5	1.5	1.4	1.4	1.4	10	13	22	23	26
MLG0402Q1N7	1.6	1.5	1.5	1.5	1.5	10	13	21	23	25
MLG0402Q1N8	1.7	1.6	1.6	1.6	1.6	11	14	22	24	27
MLG0402Q1N9	1.8	1.8	1.7	1.7	1.7	10	14	22	24	27
MLG0402Q2N0	1.9	1.8	1.8	1.8	1.8	10	13	21	23	26
MLG0402Q2N1	2.0	2.0	1.9	1.9	1.9	10	14	22	24	27
MLG0402Q2N2	2.1	2.1	2.0	2.0	2.0	10	14	22	24	27
MLG0402Q2N3	2.2	2.2	2.1	2.1	2.2	10	13	21	23	25
MLG0402Q2N4	2.3	2.3	2.2	2.2	2.2	9	13	21	22	25
MLG0402Q2N5	2.4	2.4	2.3	2.3	2.4	10	13	21	22	25
MLG0402Q2N6	2.5	2.5	2.4	2.4	2.4	10	13	20	22	24
MLG0402Q2N7	2.5	2.5	2.5	2.5	2.5	10	13	21	23	25
MLG0402Q2N8	2.6	2.6	2.6	2.6	2.6	10	13	20	22	24
MLG0402Q2N9	2.7	2.7	2.7	2.7	2.7	10	13	20	21	23
MLG0402Q3N0	2.8	2.8	2.7	2.7	2.8	10	13	20	21	23
MLG0402Q3N1	2.9	2.9	2.9	2.9	2.9	9	12	19	21	23
MLG0402Q3N2	3.0	3.0	3.0	3.0	3.0	9	12	19	20	22
MLG0402Q3N3	3.2	3.1	3.1	3.1	3.1	9	12	19	21	23
MLG0402Q3N4	3.2	3.2	3.2	3.2	3.2	9	12	19	20	22
MLG0402Q3N5	3.3	3.3	3.3	3.3	3.3	9	12	19	20	22
MLG0402Q3N6	3.4	3.4	3.4	3.4	3.4	10	13	20	22	24
MLG0402Q3N7	3.5	3.5	3.4	3.5	3.5	9	12	19	21	23
MLG0402Q3N8	3.6	3.6	3.5	3.6	3.6	10	13	19	21	23
MLG0402Q3N9	3.7	3.7	3.7	3.7	3.7	9	12	19	20	22
MLG0402Q4N0	3.8	3.8	3.7	3.8	3.8	9	12	19	20	22
MLG0402Q4N3	4.1	4.0	4.0	4.0	4.1	10	13	21	23	25
MLG0402Q4N7	4.5	4.5	4.5	4.5	4.6	10	13	21	23	25
MLG0402Q5N1	4.8	4.8	4.8	4.8	4.9	10	13	20	22	24
MLG0402Q5N6	5.3	5.3	5.3	5.3	5.4	11	14	22	23	25
MLG0402Q6N2	5.9	5.8	5.9	5.9	6.0	11	14	21	23	25
MLG0402Q6N8	6.5	6.4	6.5	6.6	6.7	10	13	21	22	23
MLG0402Q7N5	7.1	7.0	7.1	7.2	7.4	11	14	22	23	25
MLG0402Q8N2	7.8	7.8	7.9	8.0	8.3	11	14	21	23	24
MLG0402Q9N1	8.6	8.5	8.7	8.8	9.1	11	14	21	23	24
MLG0402Q10N	9.5	9.5	9.8	9.9	10.3	11	14	21	22	23
MLG0402Q12N	11.4	11.4	11.9	12.2	12.8	11	13	20	21	21
MLG0402Q15N	14.1	14.0	14.8	15.2	16.2	11	14	20	21	21
MLG0402Q18N	17.0	17.2	21.3	23.3	29.2	11	13	16	16	13
MLG0402Q22N	20.7	21.1	28.1	32.0	45.2	10	12	13	12	9
MLG0402Q27N	25.3	25.7	34.1	38.9		10	12	12	11	
MLG0402Q33N	31.0	32.2	52.2			10	12	10		

TYPICAL ELECTRICAL CHARACTERISTICS

INDUCTANCE vs. FREQUENCY CHARACTERISTICS

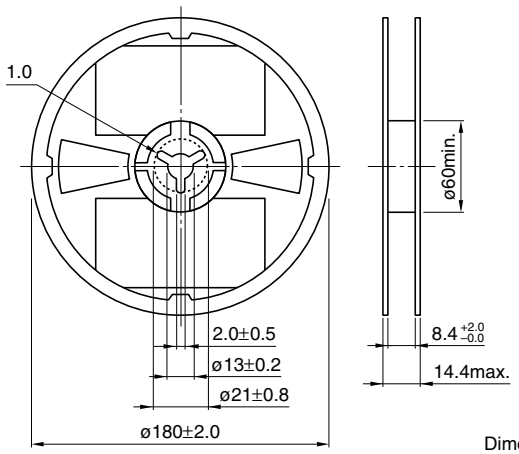


Q vs. FREQUENCY CHARACTERISTICS



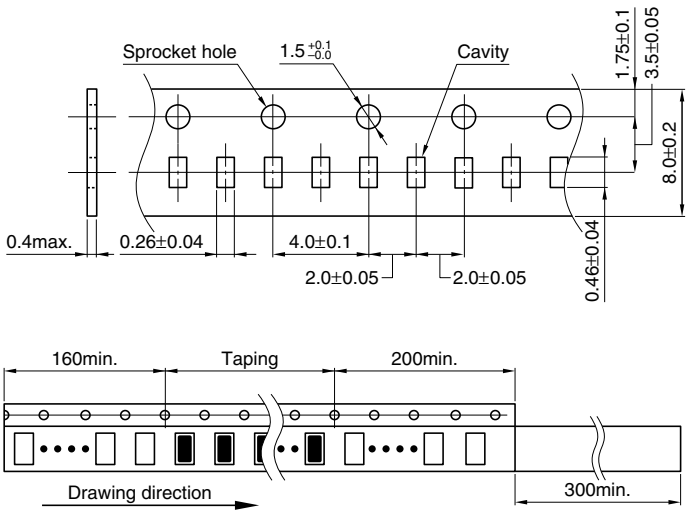
PACKAGING STYLES

REEL DIMENSIONS



Dimensions in mm

TAPE DIMENSIONS



Dimensions in mm