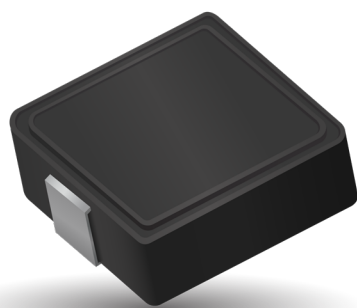




Chip Inductors



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CHIP INDUCTORS

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CHIP INDUCTORS

LCCM Series – Chip Common Mode Filter

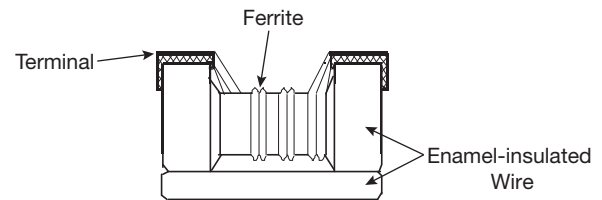
FEATURES

- Small wire wound chip inductor with ferrite core and 2 common mode lines.
- Highly effective in noise suppression
- High common-mode impedance at noise band and low differential mode impedance at signal band factor. There is almost no distortion in high-speed signals.
- Operating temperature -40°C ~ 85°C.

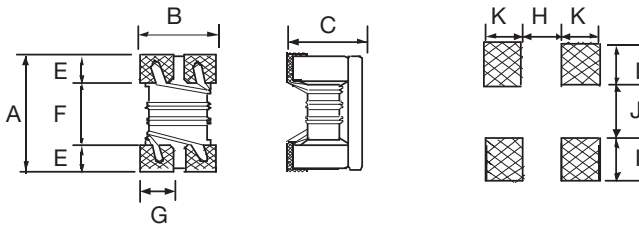
APPLICATIONS

- EMI suppression for electronic devices.
- USB line in personal computers and peripherals.
- IEEE 1394 line for personal computers, DVC, and STB
- LCD Panels.
- Low-Voltage Differential Signal (LVDS)

CONSTRUCTION



DIMENSIONS



mm (inches)

Type	Size (inch)	A	B	C	E	F	G	H	I	J	K	Weight (g) (1000pcs)
LCCM0805	0805	2.00 ± 0.20 (0.079 ± 0.008)	1.20 ± 0.20 (0.047 ± 0.008)	1.20 ± 0.20 (0.047 ± 0.008)	0.45 (0.018)	1.20 (0.047)	0.40 (0.016)	0.80 (0.031)	0.40 (0.016)	0.40 (0.016)	0.90 (0.035)	19
LCCM1206	1206	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	1.80 ± 0.20 (0.071 ± 0.008)	0.60 (0.024)	2.00 (0.079)	0.60 (0.024)	1.60 (0.063)	0.60 (0.024)	0.40 (0.016)	1.05 (0.041)	53.3

HOW TO ORDER

LC	CM	0805	M	101	G	T	A	R
Family	Series	Size	Tolerance	Impedance	Style	Termination	Special	Packaging
LC = Chip Inductor	CM = Common Mode	0805 1206	M = 20%	670 = 67 Ω 371 = 370 Ω 102 = 1000 Ω 222 = 2200 Ω	G = Standard	T = Sn Plating	A = Standard	R = 7" Reel

CHIP INDUCTORS

LCCM Series – Chip Common Mode Filter



ELECTRICAL CHARACTERISTICS

0805

Impedance (Ω)	Tolerance	Test Condition (MHz)	DCR (Ω) max.	IDC (mA) max.	Rated Voltage Vdc (V)	Withstanding Voltage Vdc (V)	Insulation Resistance (MΩ) min.
67	±20%	100	0.25	400	50	125	10
75	±20%	100	0.30	400	50	125	10
90	±20%	100	0.35	330	50	125	10
100	±20%	100	0.35	330	50	125	10
120	±20%	100	0.30	370	50	125	10
160	±20%	100	0.35	350	50	125	10
180	±20%	100	0.35	330	50	125	10
200	±20%	100	0.35	300	50	125	10
220	±20%	100	0.40	300	50	125	10
260	±20%	100	0.40	300	50	125	10
360	±20%	100	0.50	300	50	125	10
370	±20%	100	0.45	280	50	125	10
430	±20%	100	0.55	280	50	125	10
600	±20%	100	0.60	240	50	125	10
750	±20%	100	0.90	220	50	125	10

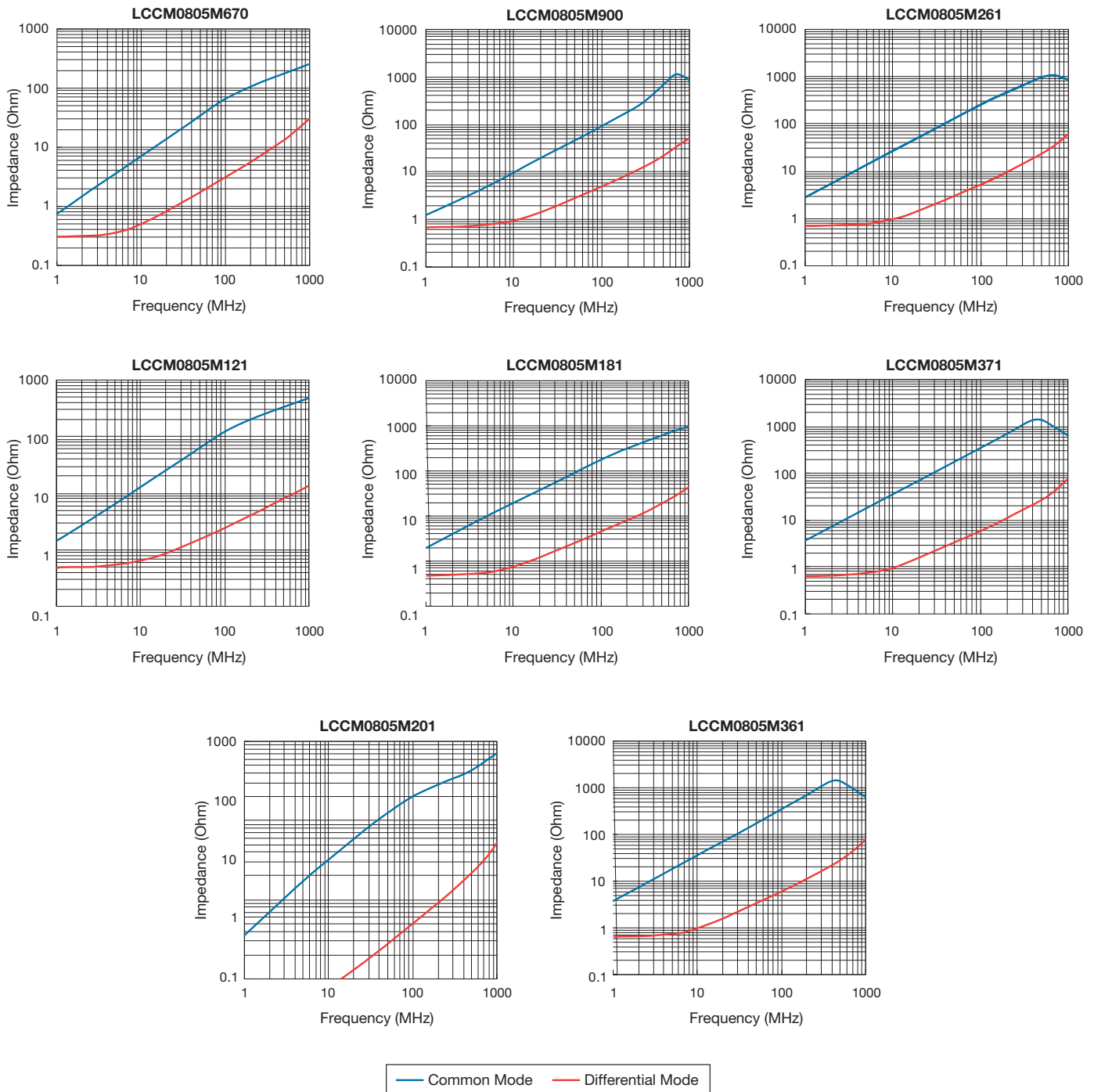
1206

Impedance (Ω)	Tolerance	Test Condition (MHz)	DCR (Ω) max.	IDC (mA) max.	Rated Voltage Vdc (V)	Withstanding Voltage Vdc (V)	Insulation Resistance (MΩ) min.
90	±20%	100	0.30	400	50	125	10
160	±20%	100	0.40	340	50	125	10
260	±20%	100	0.50	310	50	125	10
600	±20%	100	0.80	260	50	125	10
1000	±20%	100	1.00	230	50	125	10
2200	±20%	100	1.20	200	50	125	10

CHIP INDUCTORS

LCCM Series – Chip Common Mode Filter

LCCM0805 CHARACTERISTICS – IMPEDANCE VS. FREQUENCY

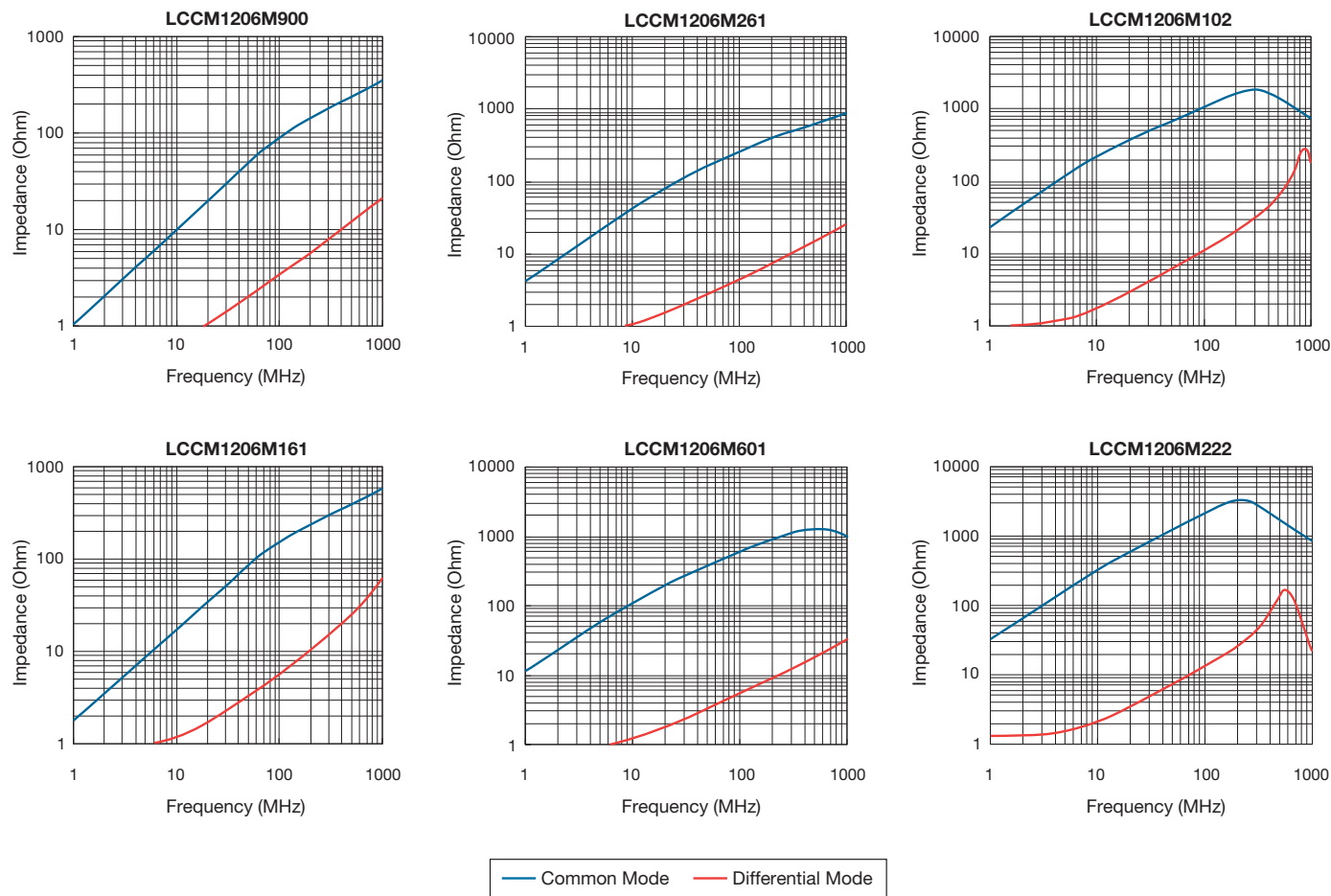


CHIP INDUCTORS

LCCM Series – Chip Common Mode Filter



LCCM1206 CHARACTERISTICS – IMPEDANCE VS. FREQUENCY



CHIP INDUCTORS

LCCM Series – Chip Common Mode Filter

ENVIRONMENTAL CHARACTERISTICS

ELECTRICAL PERFORMANCE TEST

Items	Requirement	Test Conditions I Test Methods
Impedance	Refer to standard electrical characteristic spec. Component should not be damaged	LCR Meter HP 4291B
DC Resistance DCR		Micro-Ohm meter (GOM-801G)
Withstand Voltage (VDC)		Test Voltage: 2.5 Times Rated Voltage Testing Time: 60 seconds Charge Current: 0.5mA
Rated Voltage (VDC)		Test Voltage: Rated Voltage Testing Time: 1 to 5 seconds Charge Current: 1mA
Insulation Resistance (I.R)		Charge Current: 1minute 10M ohm min.

MECHANICAL PERFORMANCE TEST

Items	Requirement	Test Conditions I Test Methods
Component Adhesion (Push Test)	Base: 0805 2 Lbs Cover: 0805 1 Lbs Base: 1206 4 Lbs Cover: 1206 2 Lbs	The component should be soldered ($232^{\circ}\text{C} \pm 5^{\circ}\text{C}$ for 10 sec.) to tinned copper substrate Applied force gauge to the side of component It must withstand force of 2 or 4 pounds without failure of the component.
Drop	Component should not be damaged	Dropping chip by each side and corner. Drop 10 times in total Drop height: 100 cm Drop weight: 125 g
Solderability	The terminal should at least be 90% covered with solder	The component shall be dipped in a melted solder bath at $245 \pm 5^{\circ}\text{C}$ for 3 seconds
Vibration Test (Low Frequency)	Component should not be damaged	1. Amplitude: 1.5 m/m 2. Frequency: 10-55-10Hz (1min.) 3. Direction: X, Y, Z 4. Duration: 2 Hrs/X, Y, Z

MECHANICAL PERFORMANCE TEST

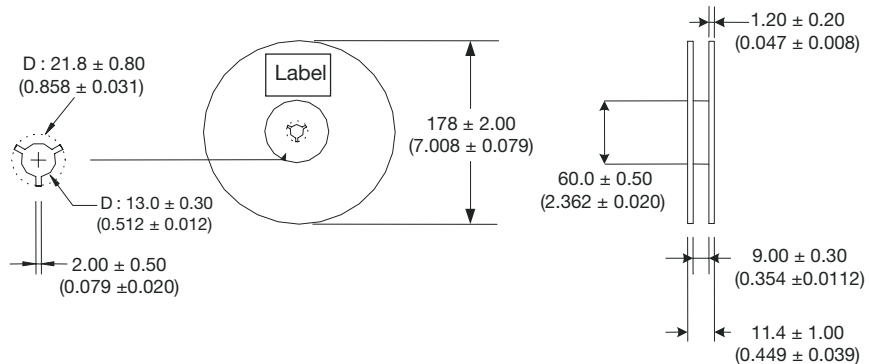
Items	Requirement	Test Conditions I Test Methods
Low Temperature Storage	Impedance change: Within $\pm 20\%$ Without distinct damage in appearance	1. Temp: $-40 \pm 2^{\circ}\text{C}$ 2. Time: 1000 ± 48 Hours 3. Component should be tested after 1 hour at room temperature
Thermal Shock		Total: 5 Cycles 
High Temperature Storage		1. Temp: $85 \pm 2^{\circ}\text{C}$ 2. Time: 1000 ± 48 Hours 3. Component should be tested after 1 hour at room temperature
Humidity		1. Temp: $40 \pm 2^{\circ}\text{C}$ 2. R.H. : 90 - 95% 3. Time: 48 ± 2 Hours
High Temperature Load Life	There should be no evidence of short or open circuit	1. Temp: $85 \pm 2^{\circ}\text{C}$ 2. Time: 96 ± 12 Hours 3. Load: Allowed DC Current
Low Temperature Load Life		1. Temp: $-40 \pm 2^{\circ}\text{C}$ 2. Time: 96 ± 12 Hours 3. Load: Allowed DC Current

CHIP INDUCTORS

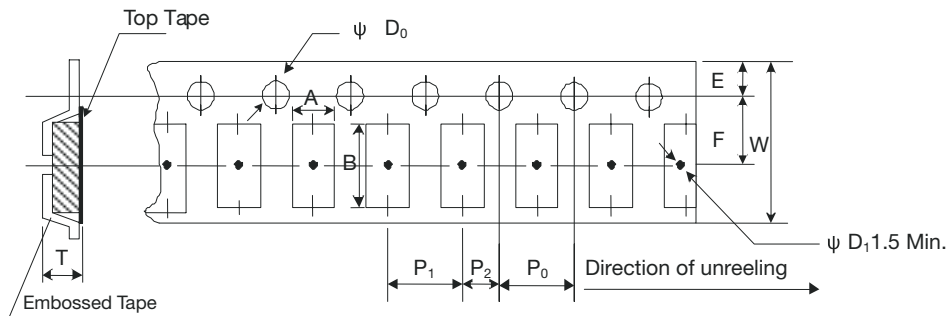
LCCM Series – Chip Common Mode Filter

PACKAGING QUANTITY REAL SPECIFICATIONS

Type	Embossed Plastic Tape (EA)
LCCM0805	2,000
LCCM1206	2,000



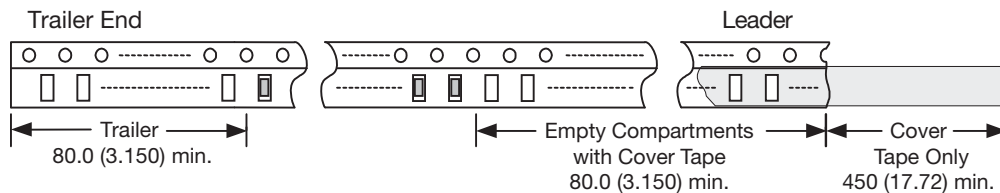
EMBOSSED PLASTIC TAPE SPECIFICATIONS



mm (inches)

Type	A	B	W	E	F	P ₀	P ₁	P ₂	ΦD ₀	T
LCCM0805	1.40 ± 0.10 (0.055 ± 0.004)	2.55 ± 0.05 (0.100 ± 0.002)	8.0 ± 0.20 (0.315 ± 0.008)	1.75 ± 0.10 (0.069 ± 0.004)	3.50 ± 0.10 (0.138 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	2.00 ± 0.10 (0.079 ± 0.004)	1.50 ± 0.10 (0.059 ± 0.004)	1.35 ± 0.10 (0.053 ± 0.004)
LCCM1206	1.90 ± 0.10 (0.075 ± 0.004)	3.50 ± 0.05 (0.138 ± 0.004)	8.0 ± 0.20 (0.315 ± 0.008)	1.75 ± 0.10 (0.069 ± 0.004)	3.5 ± 0.10 (0.138 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	4.00 ± 0.10 (0.157 ± 0.004)	2.00 ± 0.10 (0.079 ± 0.004)	1.50 ± 0.10 (0.059 ± 0.004)	2.10 ± 0.10 (0.083 ± 0.004)

LEADER/TAPE



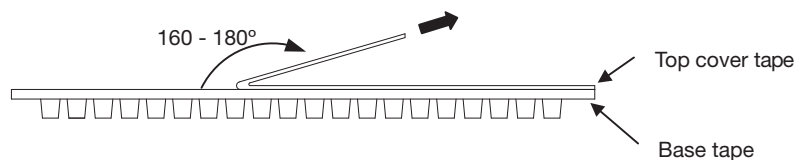
PEEL-OFF FORCE

The force for tearing off cover tape is 0.05 - 0.69 (N) in the arrow direction at the following conditions:

Temperature: 5 - 35°C

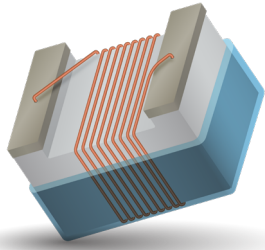
Humidity: 45 - 85%

Atmospheric pressure: 860 - 1060hpa



WIRE WOUND CHIP INDUCTOR

LCWC Series



APPLICATIONS

RF Products:

- Cellular Phone (CDMA/GSM/PHS)
- Cordless Phone (DECT/CT1CT2)
- Remote Control, Security System
- Wireless PDA
- Smart Phone
- WLL, Wireless LAN / Mouse / Keyboard / Earphone
- VCO, RF Module & Other Wireless Products
- Base Station, Repeater
- GPS Receiver

Broad Band Applications:

- CATV Filter, Tuner
- Cable Modem/ XDSL Tuner
- Set Top Box

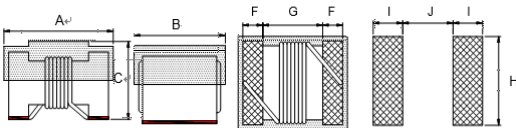
IT Applications:

- USB 2.0
- IEEE 1394

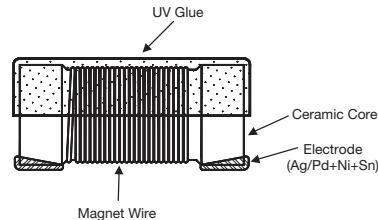
FEATURES

- Ceramic base provides high SRF
- Ultra-compact inductors provide high Q factors
- Miniature SMD chip inductor for fully automated assembly
- Outstanding endurance from Pull-up force, mechanical shock and pressure
- Tighter tolerance down to $\pm 2\%$
- -40°C to $+125^{\circ}\text{C}$

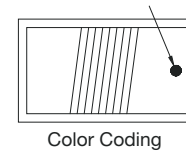
DIMENSIONS



CONSTRUCTION



COLOR CODING



Standard

mm

Type	Size	A Max.	B Max.	C Max.	F	G	H	I	J	Weight (g) (1000pcs)
LCWC 0402	0402	1.19	0.64	0.66	0.23	0.56	0.66	0.36	0.46	0.84
LCWC 0603	0603	1.80	1.12	1.02	0.33	0.86	1.02	0.64	0.64	3.13
LCWC 0805	0805	2.29	1.73	1.52	0.51	1.02	1.78	1.02	0.76	10.42
LCWC 1008	1008	2.92	2.79	2.10	0.51	1.52	2.54	1.27	1.27	33.40
LCWC 1210	1210	3.42	2.80	2.30	0.50	2.05	2.20	1.02	1.78	43.30
LCWC 1812	1812	4.95	3.81	3.43	0.64	3.25	3.05	1.14	3.00	137.50

HOW TO ORDER

LC	WC	0402	K	101	G	T	A	R
Family	Series	Size	Tolerance	Inductance	Style	Termination	Special	Packaging
LC = Chip Inductor	WC = Wire Wound Ceramic	0402 0603 0805 1008 1210 1812	G = 2% J = 5% K = 10% W = ± 0.5 U = ± 0.2 Z = ± 0.1	3N9 = 3.9nH 39N = 39nH R39 = 390nH 3R9 = 3900nH 153 = 15000nH	G = Standard	T = Sn Plating	A = Standard	R = 7" Reel

WIRE WOUND CHIP INDUCTOR

LCWC Series



STANDARD ELECTRICAL SPECIFICATIONS

0402

Inductance (nH)	Tolerance	L Freq. (MHz)	Quality Factor Min.	SRF (GHz)	DCR (Ω) max.	IDC (mA) max.	900MHz		1.7GHz	
							L	Q	L	Q
1	±0.5nH, ±0.2nH, ±0.1nH	250	16	12.7	0.045	1360	1.02	75	1.02	70
1.2	±0.5nH, ±0.2nH, ±0.1nH	250	16	12.9	0.09	740	1.17	30	1.17	40
1.8	±0.5nH, ±0.2nH, ±0.1nH	250	16	12	0.07	1040	2.08	59	1.94	74
1.9	±0.5nH, ±0.2nH, ±0.1nH	250	16	11.3	0.07	1040	1.72	65	1.74	80
2	±0.5nH, ±0.2nH, ±0.1nH	250	16	11.1	0.07	1040	1.93	54	1.93	75
2.2	±0.5nH, ±0.2nH, ±0.1nH	250	19	10.8	0.07	960	2.19	55	2.23	82
2.4	±0.5nH, ±0.2nH, ±0.1nH	250	15	10.5	0.068	790	2.24	51	2.27	70
2.5	±0.5nH, ±0.2nH, ±0.1nH	250	15	10.4	0.15	660	2.37	33	2.38	53
2.7	±0.5nH, ±0.2nH, ±0.1nH	250	16	10.4	0.12	640	2.58	42	2.6	61
3.3	±0.5nH, ±0.2nH, ±0.1nH	250	19	7	0.066	840	3.1	65	3.12	80
3.6	±0.5nH, ±0.2nH, ±0.1nH	250	19	6.8	0.066	840	3.56	45	3.62	71
3.9	±0.5nH, ±0.2nH, ±0.1nH	250	19	6	0.066	840	3.89	50	4.14	72
4.1	±0.5nH, ±0.2nH, ±0.1nH	250	18	6	0.066	700	3.89	50	4.14	72
4.3	±0.5nH, ±0.2nH, ±0.1nH	250	18	6	0.091	700	4.19	40	4.3	71
4.7	±0.5nH, ±0.2nH, ±0.1nH	250	15	4.7	0.13	640	4.78	47	4.59	62
5.1	±0.5nH, ±0.2nH, ±0.1nH	250	20	4.8	0.083	800	5.16	52	5.19	76
5.6	2%, 5%, 10%	250	20	4.8	0.083	760	5.2	48	5.28	75
5.8	2%, 5%, 10%	250	20	4.8	0.083	760	5.6	48	5.63	74
6.2	2%, 5%, 10%	250	20	4.8	0.083	760	6.15	50	6.2	73
6.8	2%, 5%, 10%	250	20	4.8	0.083	680	6.73	65	6.95	70
7.3	2%, 5%, 10%	250	20	4.8	0.1	680	7.51	60	7.89	80
7.5	2%, 5%, 10%	250	22	4.8	0.1	680	7.91	60	8.22	85
8.2	2%, 5%, 10%	250	22	4.4	0.1	680	8.53	64	8.81	88
8.7	2%, 5%, 10%	250	18	4.1	0.2	480	8.78	54	9.21	73
9	2%, 5%, 10%	250	22	4.16	0.1	680	9.07	65	9.53	83
9.1	2%, 5%, 10%	250	22	4.16	0.1	680	9.27	63	8.61	73
9.5	2%, 5%, 10%	250	18	4	0.2	480	9.64	62	9.93	56
10	2%, 5%, 10%	250	21	3.9	0.2	480	10.16	50	9.72	85
11	2%, 5%, 10%	250	24	3.68	0.12	640	10.89	53	11.46	77
12	2%, 5%, 10%	250	24	3.6	0.12	640	12.71	62	12.87	77
13	2%, 5%, 10%	250	24	3.45	0.21	440	13.4	51	14.63	57
15	2%, 5%, 10%	250	24	3.28	0.17	560	15.2	55	16.88	76
16	2%, 5%, 10%	250	24	3.1	0.22	560	16.43	45	18.79	49
18	2%, 5%, 10%	250	25	3.1	0.23	420	17.39	52	22.18	64
19	2%, 5%, 10%	250	24	3.04	0.2	480	19.51	60	21.85	72
20	2%, 5%, 10%	250	25	3	0.25	420	20.7	52	23.66	53
22	2%, 5%, 10%	250	25	2.8	0.3	400	22.33	57	26.54	53
23	2%, 5%, 10%	250	22	2.72	0.3	400	23.8	49	26.85	64
24	2%, 5%, 10%	250	25	2.7	0.3	400	25.59	59	31.06	56
27	2%, 5%, 10%	250	24	2.48	0.3	400	29.26	45	32.56	62
30	2%, 5%, 10%	250	25	2.35	0.3	400	31.9	45	40.38	41
33	2%, 5%, 10%	250	24	2.35	0.44	400	34.12	35	40.32	36
36	2%, 5%, 10%	250	24	2.32	0.44	320	39.5	45	48.4	53
39	2%, 5%, 10%	250	25	2.1	0.55	200	42.65	45	50.96	42
40	2%, 5%, 10%	250	24	2.24	0.44	320	39	44	47.41	35
43	2%, 5%, 10%	250	25	2.03	0.81	100	45.8	46	61.55	35
47	2%, 5%, 10%	250	20	2.1	0.83	150	52.85	42	-	-
51	2%, 5%, 10%	250	25	1.75	0.82	100	56.6	40	-	-
56	2%, 5%, 10%	250	22	1.76	0.97	100	58.59	40	-	-
57	2%, 5%, 10%	250	22	1.76	0.97	100	60.15	40	-	-
62	2%, 5%, 10%	250	22	1.76	1.62	100	64.95	40	-	-
68	2%, 5%, 10%	250	22	1.62	1.12	100	72.17	40	-	-
72	2%, 5%, 10%	250	20	1.26	2	30	-	-	-	-
75	2%, 5%, 10%	250	20	1.62	2	50	-	-	-	-
82	2%, 5%, 10%	250	20	1.26	1.55	50	-	-	-	-
91	2%, 5%, 10%	250	22	1.26	2	50	-	-	-	-
100	2%, 5%, 10%	250	20	1.16	2	30	-	-	-	-
120	2%, 5%, 10%	250	20	1.9	2.2	50	-	-	-	-

WIRE WOUND CHIP INDUCTOR

LCWC Series



0603

Inductance (nH)	Tolerance	L Freq. (MHz)	Quality Factor Min.	SRF (GHz)	DCR (Ω) max.	IDC (mA) max.	Color Code
1.6	5%, 10%	250	24	12500	0.03	700	Black
1.8	5%, 10%	250	16	12500	0.045	700	Brown
2.1	5%, 10%	250	20	5800	0.05	700	Red
2.2	5%, 10%	250	20	5800	0.1	700	Orange
3.3	5%, 10%	250	20	5500	0.07	700	Violet
3.6	5%, 10%	250	22	5900	0.063	700	Red
3.9	5%, 10%	250	22	6900	0.08	700	Orange
4.3	5%, 10%	250	22	5900	0.063	700	Yellow
4.7	5%, 10%	250	20	5800	0.116	700	Green
5.1	5%, 10%	250	20	5700	0.14	700	Blue
5.6	5%, 10%	250	15	5800	0.15	700	Gray
6.1	5%, 10%	250	25	5800	0.11	700	White
6.3	2%, 5%	250	25	5800	0.11	700	Gray
6.8	2%, 5%, 10%	250	27	5800	0.11	700	Violet
7.2	2%, 5%, 10%	250	28	4800	0.106	700	Black
7.5	2%, 5%, 10%	250	28	4800	0.106	700	Gray
8.2	2%, 5%, 10%	250	25	5800	0.12	700	Black
8.4	2%, 5%, 10%	250	28	4600	0.109	700	Red
8.5	2%, 5%, 10%	250	28	4600	0.109	700	Red
8.7	2%, 5%	250	28	4600	0.109	700	White
9.5	2%, 5%	250	28	5400	0.135	700	Black
10	2%, 5%	250	31	4800	0.13	700	Brown
11	2%, 5%	250	33	4000	0.086	700	Red
12	2%, 5%	250	35	4000	0.13	700	Orange
13	2%, 5%	250	35	4000	0.15	700	Yellow
14	2%, 5%	250	35	4000	0.17	700	Brown
15	2%, 5%	250	35	4000	0.17	700	Yellow
16	2%, 5%	250	34	3300	0.104	700	Green
18	2%, 5%	250	35	3100	0.17	700	Blue
20	2%, 5%	250	40	3000	0.19	700	Green
22	2%, 5%	250	38	3000	0.19	700	Violet
24	2%, 5%	250	37	2650	0.135	700	Gray
27	2%, 5%	250	40	2800	0.22	600	White
30	2%, 5%	250	37	2250	0.22	600	Black
33	2%, 5%	250	40	2300	0.22	600	Brown
36	2%, 5%	250	38	2080	0.25	600	Red
39	2%, 5%	250	40	2200	0.25	600	Orange
43	2%, 5%	250	39	2000	0.28	600	Yellow
47	2%, 5%	200	38	2000	0.28	600	Green
56	2%, 5%	200	38	1900	0.31	600	Blue
62	2%, 5%	200	37	1800	0.34	600	Gray
68	2%, 5%	200	37	1700	0.34	600	Violet
72	2%, 5%	150	34	1700	0.49	400	Gray
75	2%, 5%	150	34	1700	0.52	400	Blue
82	2%, 5%	150	34	1700	0.54	400	White
91	2%, 5%	150	30	1700	0.5	400	Blue
100	2%, 5%	150	34	1400	0.58	400	Black
110	2%, 5%	150	32	1350	0.61	300	Brown
120	2%, 5%	150	32	1300	0.65	300	Red
130	2%, 5%	150	30	1400	0.72	300	White
150	2%, 5%	100	28	990	0.92	280	Orange
180	2%, 5%	100	25	990	1.25	240	Yellow
200	2%, 5%	100	25	990	1.98	200	Red
220	2%, 5%	100	25	900	1.9	200	Green
260	2%, 5%	100	25	1000	2	200	Violet
270	2%, 5%	100	24	900	2.3	170	Blue
330	2%, 5%	100	24	900	3.9	185	Violet
390	2%, 5%	100	25	900	4.35	100	Gray
430	2%, 5%	100	25	800	4.5	100	Green
470	2%, 5%	100	25	600	3.6	80	White
680	5%	100	25	500	6.3	60	Black

WIRE WOUND CHIP INDUCTOR

LCWC Series



0805

Inductance (nH)	Tolerance	L Freq. (MHz)	Quality Factor Min.	SRF (GHz) min	DCR (Ω) max.	IDC (mA) max.	Color Code
2.2	5%, 10%	250	35	3000	0.08	600	White
2.7	5%, 10%	250	80	7900	0.03	600	Brown
2.8	5%, 10%	250	80	7900	0.06	800	Red
2.9	5%, 10%	250	50	4700	0.05	600	Blue
3	5%, 10%	250	65	7900	0.06	800	Violet
3.3	5%, 10%	250	35	7900	0.08	600	Black
5.6	5%, 10%	250	65	5500	0.08	600	Violet
6.8	5%, 10%	250	50	5500	0.11	600	Brown
7.5	5%, 10%	250	50	4500	0.1	600	Black
8.2	2%, 5%, 10%	250	50	4700	0.12	600	Red
8.7	2%, 5%, 10%	250	50	4700	0.1	400	White
10	2%, 5%, 10%	250	60	4200	0.1	600	Red
12	2%, 5%, 10%	250	50	4000	0.15	600	Orange
15	2%, 5%, 10%	250	50	3400	0.17	600	Yellow
18	2%, 5%, 10%	250	50	3300	0.2	600	Green
22	2%, 5%, 10%	250	55	2600	0.22	500	Blue
24	2%, 5%, 10%	250	50	2000	0.22	500	Red
27	2%, 5%, 10%	250	55	2500	0.25	500	Violet
33	2%, 5%, 10%	250	60	2050	0.27	500	Gray
36	2%, 5%, 10%	250	55	1700	0.27	500	Yellow
39	2%, 5%, 10%	250	60	2000	0.29	500	White
43	2%, 5%, 10%	200	60	1650	0.34	500	Yellow
47	2%, 5%, 10%	200	60	1650	0.31	500	Black
56	2%, 5%, 10%	200	60	1550	0.34	500	Brown
68	2%, 5%, 10%	200	60	1450	0.38	500	Red
82	2%, 5%, 10%	150	65	1300	0.42	400	Orange
91	2%, 5%, 10%	150	65	1200	0.48	400	Blue
100	2%, 5%, 10%	150	65	1200	0.46	400	Yellow
110	2%, 5%, 10%	150	50	1000	0.48	400	Violet
120	2%, 5%, 10%	150	50	1100	0.51	400	Green
150	2%, 5%, 10%	100	50	920	0.56	400	Blue
160	2%, 5%, 10%	100	50	900	0.6	400	Yellow
180	2%, 5%, 10%	100	50	870	0.64	400	Violet
200	2%, 5%, 10%	100	50	860	0.68	400	Red
220	2%, 5%, 10%	100	50	850	0.7	400	Gray
240	2%, 5%, 10%	100	44	690	1	350	Black
250	2%, 5%, 10%	100	50	680	1	350	Yellow
270	2%, 5%, 10%	100	48	650	1.15	350	White
300	2%, 5%, 10%	100	48	620	1.2	300	Gray
330	2%, 5%, 10%	100	48	600	1.4	300	Black
360	2%, 5%, 10%	100	35	400	0.9	300	Orange
390	2%, 5%, 10%	100	48	560	1.5	300	Brown
430	2%, 5%, 10%	100	33	430	1.7	190	White
470	5%, 10%	50	33	375	1.7	250	Violet
560	5%, 10%	25	23	340	1.9	230	Orange
620	5%, 10%	25	23	200	2	190	Orange
680	5%, 10%	25	23	188	2.2	190	Green
820	5%, 10%	25	23	215	2.5	190	Brown
910	5%, 10%	25	24	250	2.3	170	Red
1000	10%, 5%	25	23	100	2.7	170	Black
2200	2%, 5%	7.9	16	60	2.7	160	Red

WIRE WOUND CHIP INDUCTOR

LCWC Series



1008

Inductance (nH)	Tolerance	L Freq. (MHz)	Quality Factor Min.	SRF (GHz)	DCR (Ω) max.	IDC (mA) max.	Color Code		
							1st	2nd	Multiplier
8.2	5%	50	50	4100	0.08	1000	Gray	Red	Black
10	5%, 10%	50	50	4100	0.08	1000	Brown	Black	Black
12	5%, 10%	50	50	3300	0.09	1000	Brown	Red	Black
15	5%, 10%	50	50	2500	0.1	1000	Brown	Green	Black
18	2%, 5%, 10%	50	50	2500	0.11	1000	Brown	Gray	Black
22	2%, 5%, 10%	50	55	2400	0.12	1000	Red	Red	Black
24	2%, 5%, 10%	50	50	1900	0.13	1000	Red	Yellow	Black
27	2%, 5%, 10%	50	55	1600	0.13	1000	Red	Violet	Black
33	2%, 5%, 10%	50	60	1600	0.14	1000	Orange	Orange	Black
36	2%, 5%, 10%	50	60	1600	0.15	1000	Orange	Blue	Black
39	2%, 5%, 10%	50	60	1500	0.15	1000	Orange	White	Black
47	2%, 5%, 10%	50	65	1500	0.16	1000	Yellow	Violet	Black
56	2%, 5%, 10%	50	65	1300	0.18	1000	Green	Blue	Black
68	2%, 5%, 10%	50	65	1300	0.2	1000	Blue	Gray	Black
82	2%, 5%, 10%	50	60	1000	0.22	1000	Gray	Red	Black
100	2%, 5%, 10%	25	60	1000	0.56	650	Brown	Black	Brown
120	2%, 5%, 10%	25	60	950	0.63	650	Brown	Red	Brown
150	2%, 5%, 10%	25	45	850	0.7	580	Brown	Green	Brown
180	2%, 5%, 10%	25	45	750	0.77	620	Brown	Gray	Brown
200	2%, 5%, 10%	25	50	750	0.81	500	Red	Black	Brown
220	2%, 5%, 10%	25	45	700	0.84	500	Red	Red	Brown
240	2%, 5%, 10%	25	50	650	0.84	500	Red	Yellow	Brown
270	2%, 5%, 10%	25	45	600	0.91	500	Red	Violet	Brown
300	2%, 5%, 10%	25	45	585	1.05	660	Orange	Black	Brown
330	2%, 5%, 10%	25	45	570	1.05	450	Orange	Orange	Brown
360	2%, 5%, 10%	25	45	530	1.05	660	Orange	Blue	Brown
390	2%, 5%, 10%	25	45	500	1.12	470	Orange	White	Brown
430	2%, 5%, 10%	25	45	480	1.19	600	Yellow	Orange	Brown
470	2%, 5%, 10%	25	45	450	1.19	470	Yellow	Violet	Brown
560	2%, 5%, 10%	25	45	415	1.33	400	Green	Blue	Brown
620	2%, 5%, 10%	25	45	375	1.4	300	Blue	Red	Brown
680	2%, 5%, 10%	25	45	375	1.47	400	Blue	Gray	Brown
750	2%, 5%, 10%	25	45	360	1.54	360	Violet	Green	Brown
820	2%, 5%, 10%	25	45	350	1.61	400	Gray	Red	Brown
910	2%, 5%, 10%	25	35	320	1.68	380	White	Brown	Brown
1000	2%, 5%, 10%	25	35	290	1.75	370	Brown	Black	Red
1200	2%, 5%, 10%	7.9	35	250	2	310	Brown	Red	Red
1500	2%, 5%, 10%	7.9	28	200	2.3	330	Brown	Green	Red
1800	2%, 5%, 10%	7.9	28	160	2.6	300	Brown	Gray	Red
2000	2%, 5%, 10%	7.9	25	160	2.8	280	Red	Black	Red
2200	2%, 5%, 10%	7.9	28	160	2.8	280	Red	Red	Red
2700	2%, 5%, 10%	7.9	22	140	3.2	290	Red	Violet	Red
3300	2%, 5%, 10%	7.9	22	110	3.4	290	Orange	Orange	Red
3900	2%, 5%, 10%	7.9	20	100	3.6	260	Orange	White	Red
4700	2%, 5%, 10%	7.9	20	90	4	260	Yellow	Violet	Red
5600	5%, 10%	7.9	16	20	4.5	240	Green	Blue	Red
8200	2%, 5%, 10%	7.9	15	25	6	170	Gray	Red	Red
10000	5%, 10%	2.52	15	20	9	150	Brown	Black	Orange
12000	5%, 10%	2.52	15	18	10.5	130	Brown	Red	Orange
15000	5%, 10%	2.52	15	15	11.5	120	Brown	Green	Orange

WIRE WOUND CHIP INDUCTOR

LCWC Series



1210

Inductance (nH)	Test Freq. (MHz)	Inductance Tolerance	Q Min	Test Freq. (MHz)	SRF (MHz) Min	DCR (OHM) Max	Irms (mA)	COLOR CODE		
								1st	2nd	multiplier
4.7	100	5%, 10%	50	1000	6000	0.06	600	Yellow	Violet	Black
5.6	100	5%, 10%	50	1000	5500	0.08	600	Green	Blue	Black
10	100	2%, 5%, 10%	60	500	4000	0.06	600	Brown	Black	Brown
12	100	2%, 5%, 10%	60	500	3400	0.06	600	Brown	Red	Brown
15	100	2%, 5%, 10%	60	500	3200	0.06	600	Brown	Green	Brown
18	100	2%, 5%, 10%	60	300	2800	0.06	600	Brown	Gray	Brown
22	100	2%, 5%, 10%	60	300	2300	0.08	600	Red	Red	Brown
27	100	2%, 5%, 10%	60	300	2000	0.08	600	Red	Violet	Brown
33	100	2%, 5%, 10%	60	300	1800	0.08	600	Orange	Orange	Brown
39	100	2%, 5%, 10%	60	300	1800	0.08	600	Orange	White	Brown
47	100	2%, 5%, 10%	60	300	1600	0.08	600	Yellow	Violet	Brown
56	100	2%, 5%, 10%	60	300	1500	0.1	600	Green	Blue	Brown
68	100	2%, 5%, 10%	60	300	1300	0.1	600	Blue	Gray	Brown
82	100	2%, 5%, 10%	60	300	1200	0.1	600	Gray	Red	Brown
91	100	2%, 5%, 10%	60	300	1100	0.1	1000	White	Brown	Brown
100	100	2%, 5%, 10%	60	300	1100	0.1	1000	Brown	Black	Red
120	50	2%, 5%, 10%	60	300	900	0.12	500	Brown	Red	Red
150	50	2%, 5%, 10%	60	300	800	0.18	500	Brown	Green	Red
180	50	2%, 5%, 10%	60	300	760	0.21	500	Brown	Gray	Red
220	50	2%, 5%, 10%	60	300	760	0.27	500	Red	Red	Red
270	50	2%, 5%, 10%	50	300	660	0.33	500	Red	Violet	Red
330	50	2%, 5%, 10%	50	100	650	0.37	500	Orange	Orange	Red
360	50	2%, 5%, 10%	50	100	500	0.63	600	Orange	Blue	Red
390	50	2%, 5%, 10%	50	100	600	0.63	500	Orange	White	Red
470	50	2%, 5%, 10%	50	100	550	0.69	400	Yellow	Violet	Red
560	50	2%, 5%, 10%	50	100	470	0.9	400	Green	Blue	Red
680	25	2%, 5%, 10%	50	100	450	1.05	400	Blue	Gray	Red
820	25	2%, 5%, 10%	50	100	400	1.45	350	Gray	Red	Red
910	25	2%, 5%, 10%	50	100	400	1.45	350	White	Brown	Red
1000	25	2%, 5%, 10%	45	100	340	2.1	280	Brown	Black	Orange
1200	7.96	2%, 5%, 10%	45	50	320	2.4	250	Brown	Red	Orange
1500	7.96	2%, 5%, 10%	45	50	300	2.7	220	Brown	Green	Orange
1800	7.96	2%, 5%, 10%	45	50	280	3.5	180	Brown	Gray	Orange
2200	7.96	2%, 5%, 10%	45	50	260	3.8	150	Red	Red	Orange
3300	27	2%, 5%, 10%	25	27	140	10	150	Orange	Orange	Orange

1812

Inductance (nH)	Inductance Tolerance	Q Min	SRF (MHz) Min	DCR (OHM) Max	Irms (mA)	COLOR CODE		
						1st	2nd	multiplier
82	2%, 5%, 10%	70	800	60	1500	Gray	Red	Black
100	2%, 5%, 10%	70	850	110	1150	Brown	Black	Brown
120	2%, 5%	70	800	110	1150	Brown	Red	Brown
150	2%, 5%, 10%	75	860	110	1150	Brown	Green	Brown
180	2%, 5%, 10%	80	850	110	1150	Brown	Gray	Brown
220	2%, 5%, 10%	80	700	105	940	Red	Red	Brown
240	5%	80	700	110	940	Red	Yellow	Brown
270	2%, 5%, 10%	85	730	120	940	Red	Violet	Brown
330	2%, 5%, 10%	80	600	135	850	Orange	Orange	Brown
390	2%, 5%, 10%	80	600	140	850	Orange	White	Brown
1200	2%, 5%, 10%	62	230	1200	480	Brown	Red	Red
3300	5%	55	145	3350	280	Orange	Orange	Red

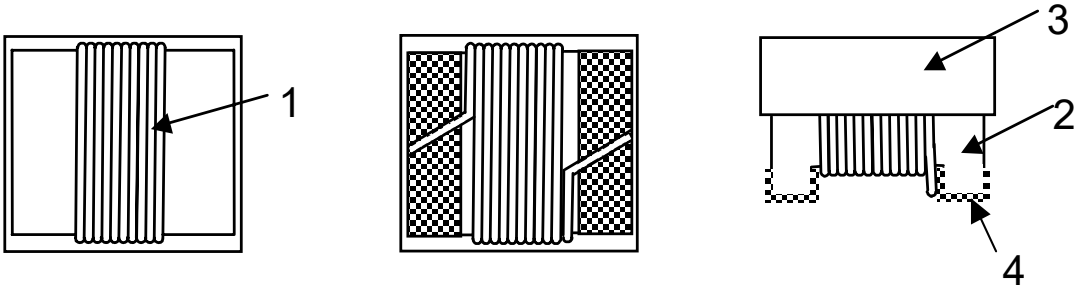
WIRE WOUND CHIP INDUCTOR

LCWC Series

- This is a RoHS and REACH compliant product whose related document are available on request.
- Graphic is only for dimensionally application.

1. RATING TEMPERATURE
OPERATING TEMPERATURE: -40°C ~ +125°C

2. STRUCTURE



3. MATERIAL LIST

Item	Material Category	Material Type	UL NO.
1	Wire	Polysol	E143312
2	Core	Ceramic Core	
3	UV	UV	
4	Terminal Plateing	AgPd+Au+Ni	

4. TEST INSTRUMENT

	L, Q	SRF	DCR
LCWC 0402	Agilent E4991B with 16197A or its equivalent	Agilent 5071C or its equivalent	Chroma 16502 or its equivalent
LCWC 0603	Hp4291b	Hp 8753e / 5071c	Zentech 502bc
LCWC 0805	Hp4291b	Hp 8753e	Zentech 502bc
LCWC 1008	Hp4291b	Hp 8753e	Zentech 502bc
LCWC 1210	Hp4291b	Hp 8753e	Zentech 502bc
LCWC 1812	Agilent 4291B with 16193A or its equivalent	HP 8753E or HP4291B with 16193A or its equivalent	Agilent 4338b or its equivalent

WIRE WOUND CHIP INDUCTOR

LCWC Series

RELIABILITY PERFORMANCE

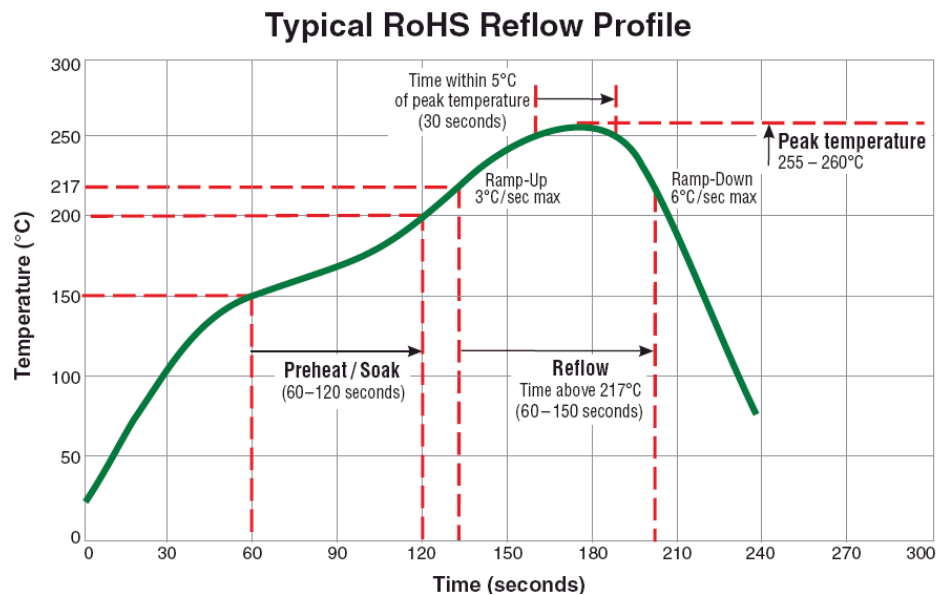
RELIABILITY EXPERIMENT FOR ELECTRICAL

Test Item	Test Condition	Standard Source
Humidity Test	+40°C ± 2°C, humidity of 90%±5% (total 96 hours).	MIL-STD-202G Method 103B Test Condition B
High Temperature Test	Temperature: +125°C ± 2°C. Test time: 48±2hrs.	IEC 68-2 Test Condition B
Low Temperature Test	Temperature: -40°C ± 2°C. Test time: 48±2hrs.	IEC 68-2 Test Condition A
Thermal Shock	+125°C ± 5° (30 minutes) ~ -40 ± 5°C (30 minutes), temperature switch time: 5 minutes (total 50 cycles) Wind speeds 10m/sec.	Reference MIL-STD-202G Method 107G Test Condition B-2
Life Test	+70°C ± 5°C (300Hours).	Reference MIL-STD-202G Method 108A Test Condition B

RELIABILITY EXPERIMENT FOR PHYSICAL

Test Item	Test Condition	Standard Source
Vibration Test	10-55-10HZ, amplitude: 1.5mm, direction: X, Y, Z axes, each axis 2 hours (total 6 hours).	MIL-STD-202G Method 201A
Solder Heat Resistance Test	IR/convection reflow: Peak Temp 255°C~260°C for 3~5 Sec. in air, Through 2 Cycle. Temperature Ramp:+1~4°C/sec.; Above 217°C, must keep 90 s - 120 s.	Reference MIL-STD-202G Method 210F Test Condition K (Reflow)
Solder Ability Test	Soak in 245°C solder pot of 3~5 Sec., PAD must have 95% above coverage.	Reference J-STD-002D

TYPICAL RoHS REFLOW PROFILE



WIRE WOUND CHIP INDUCTOR

LCWC Series



ENVIRONMENTAL CHARACTERISTICS

MECHANICAL PERFORMANCE TEST

Items	Requirement	Test Methods
Inductance	Refer to standard electrical characteristic spec.	HP4286
Q		HP4286
SRF		HP4287
DC Resistance RDC		Micro-Ohm meter (Gom-801G)
Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value
Over Load	Inductors shall have no evidence of electrical and mechanical damage	Applied 2 times of rated allowed DC current to inductor for a period of 5 minutes
Withstanding Voltage	Inductors shall be no evidence of electrical and mechanical damage.	AC voltage of 500 VAC applied between inductors terminal and case for 1 min.
Insulation Resistance	1000M ohm min.	100 VDC applied between inductor terminal and case and case

MECHANICAL PERFORMANCE TEST

Items	Requirement	Test Methods
Vibration	Appearance: No damage L change: within $\pm 5\%$ Q change: within $\pm 10\%$	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1 min. Amplitude: 1.5 mm Time: 2 hrs for each axis (X, Y & Z), total 6 hrs
Resistance to Soldering Heat		Solder Temperature: $260 \pm 50^\circ\text{C}$ Immersion Time: 10 ± 2 seconds
Component Adhesion (Push Test)	1 lbs. For 0402 2 lbs. For 0603 3 lbs. For the rest	The device should be soldered (260 ± 5 for 10 seconds) to a tinned copper subs rate. A dynamiter force gauge should be applied to the side of the component. The device must with stand a minimum force of 2 or 4 pounds without a failure of adhesion on termination
Drop	No damage	Dropping chip by each side and each corner. Drop 10 times in total Drop height: 100 cm Drop weight: 125 g
Solderability	90% covered with solder	Inductor shall be dipped in a melted solder bath at 245 ± 5 for 3 seconds
Resistance to Solvent	No damage on appearance and marking	MIL-STD202F, Method 215D

CLIMATIC TEST

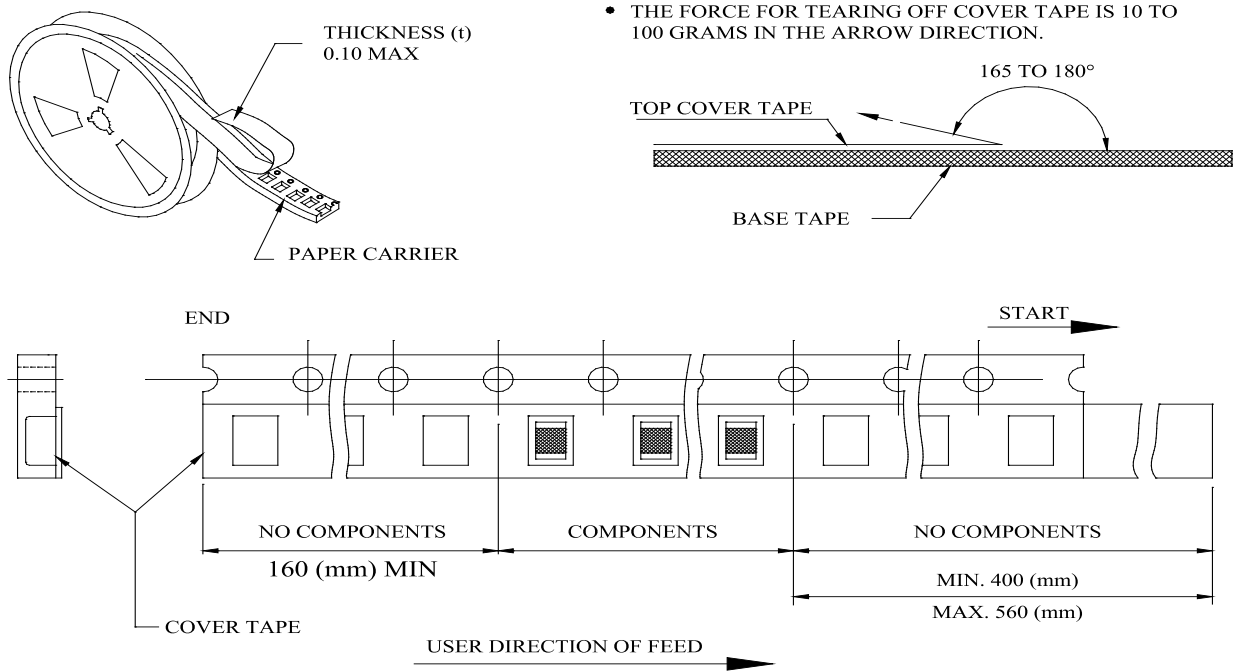
Items	Requirement	Test Methods														
Temperature Characteristic	Appearance: No damage L change: within ±10% Q change: within ±20%	-40 ~ +125°C														
Humidity		Temperature: 40±2°C Relative Humidity: 90 ~ 95% Time: 96±2 hrs Measured after exposure in the room condition for 2 hrs														
Low Temperature Storage		Temperature: -40±2°C Time: 96±2 hrs Inductors are tested after 1 hour at room temperature														
Thermal Shock		One cycle: <table><tr><th>Step</th><th>Temperature (°C)</th><th>Time (min.)</th></tr><tr><td>1</td><td>-25±3</td><td>30</td></tr><tr><td>2</td><td>25±2</td><td>15</td></tr><tr><td>3</td><td>125±3</td><td>30</td></tr><tr><td>4</td><td>25±2</td><td>15</td></tr></table> Total: 5 cycles	Step	Temperature (°C)	Time (min.)	1	-25±3	30	2	25±2	15	3	125±3	30	4	25±2
Step	Temperature (°C)	Time (min.)														
1	-25±3	30														
2	25±2	15														
3	125±3	30														
4	25±2	15														
High Temperature Storage		Temperature: 125±2°C Time: 96±2 hrs Measured after exposure in the room condition for 1 hour														
High Temperature Load Life	There should be no evidence of short or open circuit.	Temperature: 85±2°C Time: 1000±12 hrs Load: Allowed DC current														
Damp Heat with Load		Temperature: 40±2°C Relative Humidity: 90 ~ 95% Time: 1000±12 hrs Load: Allowed DC current														

WIRE WOUND CHIP INDUCTOR

LCWC Series



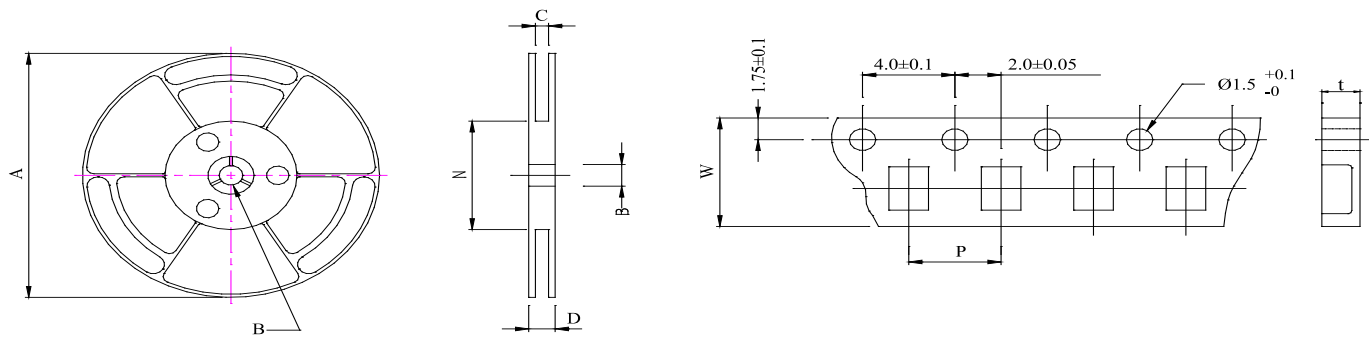
LCWC 0402 PAPER TAPE PACKAGING



CARRIER TAPE REELS (mm)

DIMENSIONS OF CARRIER TAPE (mm)

MATERIAL: PAPER



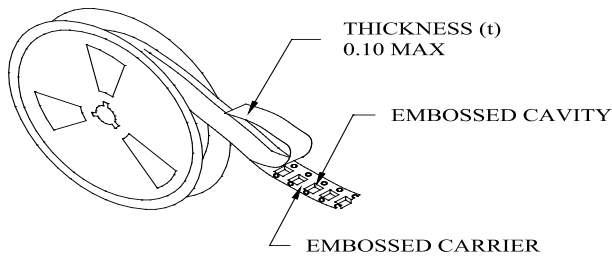
PAPER TAPE (mm)

Series	A	B	C	D	N	P	W	t	Reel(EA)
LCWC 0402	178Max	13.0+0.5-0.2	8.4+0.2-0	14.4Max	50Min	2.0 ±0.1	8.0 ±0.2	0.68 ±0.03	4,000

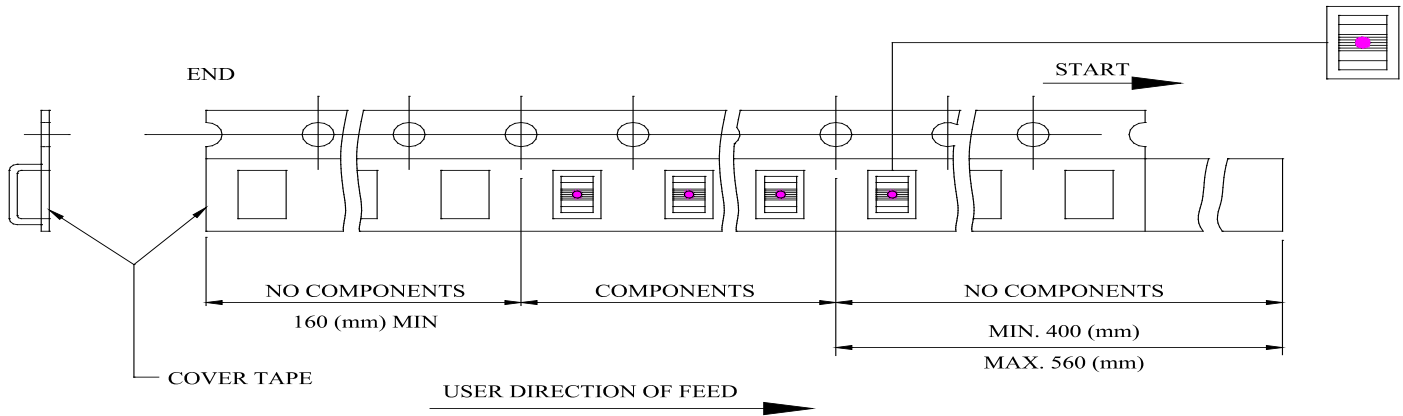
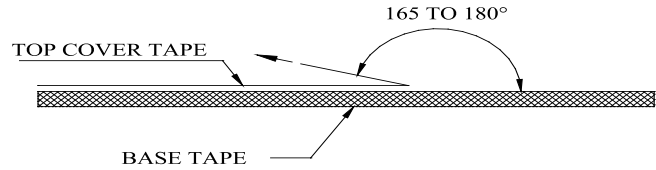
WIRE WOUND CHIP INDUCTOR

LCWC Series

LCWC 0603 EMBOSSED TAPE



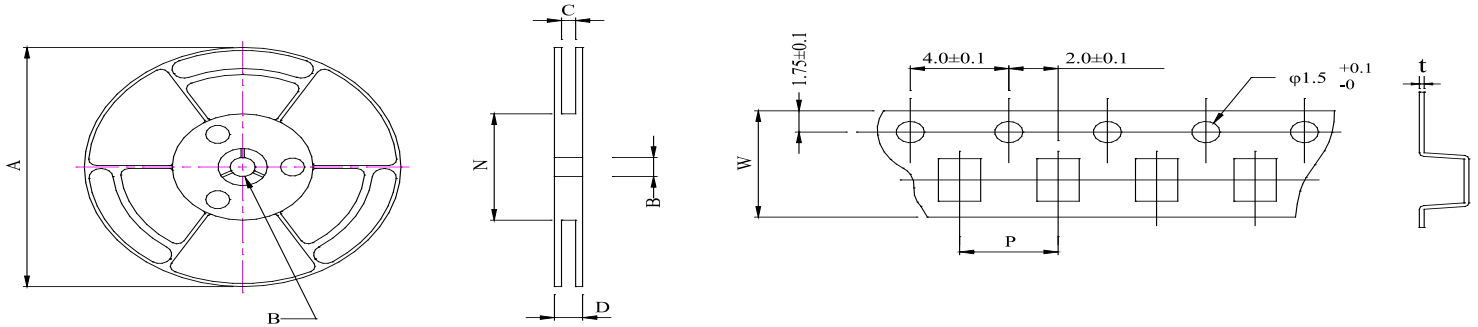
- THE FORCE FOR TEARING OFF COVER TAPE IS 10 TO 100 GRAMS IN THE ARROW DIRECTION.



CARRIER TAPE REELS (mm)

MATERIAL: PLASTIC

DIMENSIONS OF CARRIER TAPE (mm)



PLASTIC TAPE (mm)

Series	A	B	C	D	N	P	W	t	Reel(EA)
LCWC 0603	180Max	13.0 ±0.8	8.4+1.0-0	12.5Max	50Min	4.0 ±0.1	8.0 ±0.2	0.25 ±0.05	4,000
LCWC 0805	178±2.0	13.0 ±0.8	8.4+1.0-0	12.5Max	50Min	4.0 ±0.1	8.0 ±0.2	0.25 ±0.05	3,000
LCWC 1008	178±0.2	13.0 ±0.8	8.4+1.0-0	12.5Max	50Min	4.0 ±0.1	8.0 ±0.2	0.25 ±0.05	2,000
LCWC 1210	178±2.0	13.0 ±0.8	8.4+1.0-0	12.5Max	50Min	4.0 ±0.1	8.0 ±0.2	0.23 ±0.05	1,500
LCWC 1812	178Max	13.0+0.5-0.2	12.5+1.5-0	16.4+1.5-0	50Min	8.0 ±0.1	12.0 ±0.2	0.23 ±0.05	600

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series

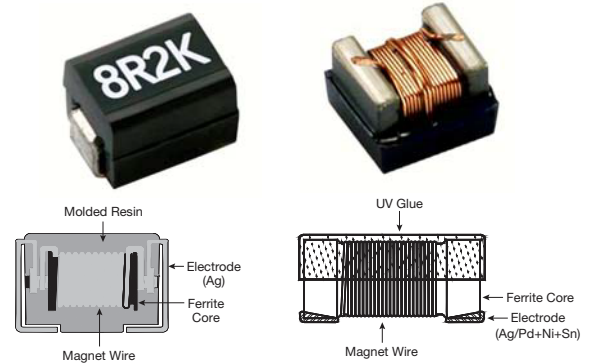
FEATURES

- Very strong solderability by reflow soldering, soldering iron or wavesoldering
- Highly accurate dimensions
- Automated mounting capable
- Terminals are highly resistant to pull forces
- Highly resistant to mechanical shocks and pressure
- Highly reliable in sudden temperature and humidity changes
- Superb Q characteristics

APPLICATIONS

- DC/DC Converters
- LCD Televisions
- Personal Computers
- Tablets
- Cell Phones
- Automotive Sound Systems
- Mobile Communications Devices

CONSTRUCTION



These revolutionary, high reliability wound chip inductors have been developed in response to the trend toward higher densities in electronic equipment.

With metal terminals and a body of heat resistant resin, these inductors offer many superior features.

DIMENSIONS

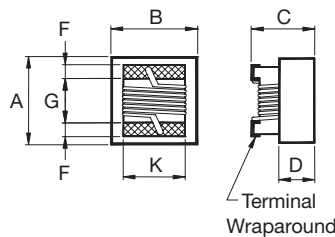


Figure 1

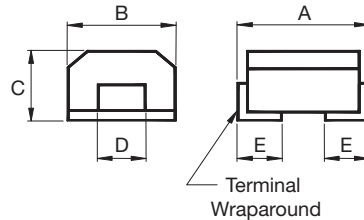


Figure 2

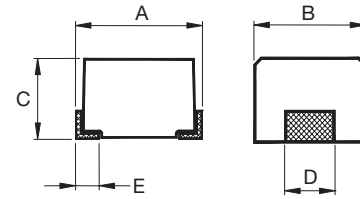


Figure 3

mm (inches)

Style	Size (inch)	Figure	A Max.	B Max.	C Max.	D Ref.	E	F	G	H	I	J	K	Weight (g) (1000pcs)
G	0603	1	1.80 (0.071)	1.20 (0.047)	1.00 (0.039)	0.45 (0.018)	—	0.33 (0.013)	0.95 (0.037)	1.02 (0.040)	1.64 (0.065)	0.64 (0.025)	1.05 (0.042)	9.6
G	0805	1	2.40 (0.094)	1.71 (0.067)	1.45 (0.057)	0.65 (0.026)	—	0.44 (0.017)	1.02 (0.040)	1.78 (0.070)	1.02 (0.040)	0.76 (0.030)	1.27 (0.050)	14
G	1008	1	2.92 (0.115)	2.79 (0.110)	2.10 (0.083)	1.20 (0.047)	—	0.45 (0.018)	1.52 (0.060)	2.54 (0.100)	1.02 (0.040)	1.27 (0.050)	2.03 (0.080)	30
G	1210	2	3.50 (0.138)	2.80 (0.110)	2.50 (0.098)	1.60 (0.063)	0.80 (0.031)	—	—	2.00 (0.079)	1.20 (0.047)	1.60 (0.063)	—	40
G	1812	2	4.80 (0.189)	3.50 (0.138)	3.50 (0.138)	1.80 (0.071)	1.10 (0.043)	—	—	2.80 (0.110)	1.50 (0.059)	3.00 (0.118)	—	160
G	2220	3	5.90 (0.232)	5.20 (0.205)	4.30 (0.169)	4.00±0.2 (0.157±0.008)	0.70±0.20 (0.028±0.008)	—	—	4.50 (0.177)	2.00 (0.079)	4.00 (0.157)	—	300
R	0805	1	2.29 (0.090)	1.73 (0.068)	1.00 (0.039)	0.51 (0.020)	—	0.44 (0.017)	1.02 (0.040)	1.78 (0.070)	1.02 (0.040)	0.76 (0.030)	1.27 (0.050)	14
H	0603	1	1.80 (0.071)	1.20 (0.047)	1.10 (0.043)	0.45 (0.018)	—	0.33 (0.013)	0.95 (0.037)	1.02 (0.040)	1.64 (0.065)	0.64 (0.025)	1.05 (0.041)	9.6
H	0805	1	2.40 (0.094)	1.71 (0.067)	1.45 (0.057)	0.65 (0.026)	—	0.44 (0.017)	1.02 (0.040)	1.78 (0.070)	1.02 (0.040)	0.76 (0.030)	1.27 (0.050)	14
H	1008	1	2.92 (0.115)	2.79 (0.110)	2.10 (0.083)	1.30 (0.051)	—	0.45 (0.018)	1.52 (0.060)	2.54 (0.100)	1.02 (0.040)	1.27 (0.050)	2.03 (0.080)	30
H	1812	2	4.80 (0.189)	3.50 (0.138)	3.50 (0.138)	1.40 (0.055)	1.10 (0.043)	—	—	2.80 (0.110)	1.50 (0.059)	3.00 (0.118)	—	160
H	2220	3	5.90 (0.232)	5.20 (0.205)	4.30 (0.169)	4.00±0.20 (0.157±0.008)	0.70±0.20 (0.028±0.008)	—	—	4.50 (0.177)	2.00 (0.079)	4.00 (0.157)	—	300

WIRE WOUND CHIP INDUCTOR (FERRITE)

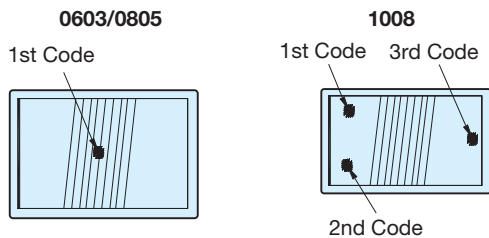
LCWF Series

COLOR CODING

0603 / 0805 / 1008 Type

Because of small sizes, these parts are marked with a single color dot.

The inductance value represented by the dot is shown on the data page for each type.



HOW TO ORDER

LC	WF	0603	M	101	G	T	A	R
Family	Series	Size	Tolerance	Inductance	Style	Termination	Special	Packaging
LC = Chip Inductor	WF = Wire Wound Ferrite	0603 0805 1008 1210 1812 2220	J = 5% K = 10% M = 20%	39N = 0.039μH R39 = 0.390μH 3R9 = 3.90μH 390 = 39μH 391 = 390μH 392 = 3900μH 103 = 10,000μH	G = Standard H = High Current/ High Q R = Low Profile	T = Sn Plating	A = Standard	R = 7" Reel

STANDARD ELECTRICAL SPECIFICATIONS

0603

Codes	Inductance (μH)	Tolerance	Test Freq. (MHz)	Q Typ.	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code
1R0	1.0	±10, ±20%	7.96	16	390	0.416	860	Black
1R5	1.5	±10, ±20%	7.96	16	160	0.520	720	Brown
1R8	1.8	±10, ±20%	7.96	16	121	0.559	640	Red
2R2	2.2	±10, ±20%	7.96	16	103	0.728	600	Orange
2R7	2.7	±10, ±20%	7.96	16	72	0.806	540	Yellow
3R3	3.3	±10, ±20%	7.96	16	66	0.910	500	Green
3R9	3.9	±10, ±20%	7.96	16	61	1.079	460	Blue
4R7	4.7	±10, ±20%	7.96	16	51	1.261	400	Violet
5R6	5.6	±10, ±20%	7.96	16	47	1.430	380	Gray
6R8	6.8	±10, ±20%	7.96	16	43	1.950	340	White
8R2	8.2	±10, ±20%	7.96	16	40	2.184	300	Black
100	10	±10, ±20%	2.52	14	36	2.405	280	Brown
120	12	±10, ±20%	2.52	14	32	2.964	260	Red
150	15	±10, ±20%	2.52	14	29	3.380	240	Orange
180	18	±10, ±20%	2.52	14	28	3.770	220	Yellow
220	22	±10, ±20%	2.52	14	24	4.693	200	Green
270	27	±10, ±20%	2.52	14	20	6.760	140	Blue
330	33	±10, ±20%	2.52	14	15	8.580	120	Violet

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



0805

Codes	Inductance (μH)	Tolerance	Test Freq. (MHz)	Q Typ.	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code
R11	0.11	±10%	25.2	25	1200	0.05	2000	White
R12	0.12	±5, ±10%	25.2	20	700	0.18	1100	Violet
R15	0.15	±5, ±10%	25.2	20	900	0.18	1100	Gray
R18	0.18	±5, ±10%	25.2	20	600	0.20	800	Black
R22	0.22	±5, ±10%	25.2	20	550	0.25	700	Brown
R27	0.27	±5, ±10%	25.2	20	550	0.38	700	Red
R33	0.33	±5, ±10%	25.2	20	550	0.35	650	Orange
R39	0.39	±5, ±10%	25.2	20	420	0.35	600	Yellow
R47	0.47	±5, ±10%	25.2	20	350	0.45	600	Green
R56	0.56	±5, ±10%	25.2	20	300	0.45	550	Blue
R62	0.62	±5, ±10%	25.2	30	640	0.45	980	Brown
R68	0.68	±5, ±10%	25.2	20	300	0.60	500	Violet
R82	0.82	±5, ±10%	25.2	20	300	0.55	500	Gray
R91	0.91	±5, ±10%	25.2	30	500	0.55	900	Yellow
1R0	1.0	±5, ±10%	7.96	15	280	0.80	450	White
1R2	1.2	±5, ±10%	7.96	15	280	0.90	400	Black
1R5	1.5	±5, ±10%	7.96	15	250	1.05	350	Brown
1R8	1.8	±5, ±10%	7.96	15	120	1.00	350	Red
2R2	2.2	±5, ±10%	7.96	15	110	1.10	320	Orange
2R7	2.7	±5, ±10%	7.96	15	70	1.20	320	Yellow
3R3	3.3	±5, ±10%	7.96	15	60	1.50	300	Green
3R9	3.9	±5, ±10%	7.96	15	55	1.75	300	Blue
4R7	4.7	±5, ±10%	7.96	15	45	2.10	200	Violet
5R6	5.6	±5, ±10%	7.96	15	40	2.30	250	Gray
6R8	6.8	±5, ±10%	7.96	15	36	2.70	200	White
8R2	8.2	±5, ±10%	7.96	15	33	3.30	180	Black
100	10	±5, ±10%	2.52	10	30	4.50	180	Brown
120	12	±5, ±10%	2.52	16	37	2.80	220	Red
150	15	±5, ±10%	2.52	16	30	3.80	200	Orange
180	18	±5, ±10%	2.52	16	23	4.48	180	Yellow
220	22	±5, ±10%	2.52	16	20	6.30	160	Green
270	27	±5, ±10%	2.52	16	19	6.85	140	Blue
330	33	±5, ±10%	2.52	16	18	7.60	120	Violet
390	39	±5, ±10%	2.52	15	16	8.20	100	Gray

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



1008

Codes	Inductance (μ H)	Tolerance	Test Freq. (MHz)	Q Typ.	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code		
R12	0.12	$\pm 5, \pm 10\%$	25.2	26	800	0.30	1000	Brown	Red	Brown
R18	0.18	$\pm 5, \pm 10\%$	25.2	30	600	0.30	960	Red	Gray	Brown
R20	0.20	$\pm 5, \pm 10\%$	25.2	30	735	0.30	960	Red	Black	Brown
R22	0.22	$\pm 5, \pm 10\%$	25.2	27	600	0.40	880	Red	Red	Brown
R27	0.27	$\pm 5, \pm 10\%$	25.2	29	425	0.42	900	Red	Violet	Brown
R33	0.33	$\pm 5, \pm 10\%$	25.2	30	400	0.42	900	Orange	Orange	Brown
R39	0.39	$\pm 5, \pm 10\%$	25.2	30	375	0.45	700	Orange	White	Brown
R47	0.47	$\pm 5, \pm 10\%$	25.2	30	350	0.50	900	Yellow	Violet	Brown
R56	0.56	$\pm 5, \pm 10\%$	25.2	30	325	0.55	850	Green	Blue	Brown
R62	0.62	$\pm 5, \pm 10\%$	25.2	30	460	0.55	900	Blue	Red	Brown
R68	0.68	$\pm 5, \pm 10\%$	25.2	30	300	0.55	800	Blue	Gray	Brown
R75	0.75	$\pm 5, \pm 10\%$	25.2	30	420	0.65	880	Violet	Green	Brown
R82	0.82	$\pm 5, \pm 10\%$	25.2	30	260	0.65	700	Gray	Red	Brown
R91	0.91	$\pm 5, \pm 10\%$	25.2	30	400	0.65	840	White	Brown	Brown
1R0	1.0	$\pm 5, \pm 10\%$	7.96	25	245	0.60	600	Brown	Black	Red
1R2	1.2	$\pm 5, \pm 10\%$	7.96	25	230	0.74	600	Brown	Red	Red
1R5	1.5	$\pm 5, \pm 10\%$	7.96	25	182	0.85	550	Brown	Green	Red
1R8	1.8	$\pm 5, \pm 10\%$	7.96	25	135	0.92	500	Brown	Gray	Red
2R2	2.2	$\pm 5, \pm 10\%$	7.96	25	105	1.10	500	Red	Red	Red
2R7	2.7	$\pm 5, \pm 10\%$	7.96	25	70	1.22	350	Red	Violet	Red
3R3	3.3	$\pm 5, \pm 10\%$	7.96	25	55	1.37	350	Orange	Orange	Red
3R9	3.9	$\pm 5, \pm 10\%$	7.96	25	48	1.66	310	Orange	White	Red
4R7	4.7	$\pm 5, \pm 10\%$	7.96	25	43	1.68	300	Yellow	Violet	Red
5R6	5.6	$\pm 5, \pm 10\%$	7.96	25	42	1.75	300	Green	Blue	Red
6R8	6.8	$\pm 5, \pm 10\%$	7.96	25	39	1.85	300	Blue	Gray	Red
8R2	8.2	$\pm 5, \pm 10\%$	7.96	25	36	2.00	250	Gray	Red	Red
100	10	$\pm 5, \pm 10\%$	2.52	20	33	2.32	250	Brown	Black	Orange
120	12	$\pm 5, \pm 10\%$	2.52	15	28	2.99	200	Brown	Red	Orange
150	15	$\pm 5, \pm 10\%$	2.52	15	24	3.42	200	Brown	Green	Orange
180	18	$\pm 5, \pm 10\%$	2.52	15	20	4.65	180	Brown	Gray	Orange
220	22	$\pm 5, \pm 10\%$	2.52	15	18	5.12	180	Red	Red	Orange
270	27	$\pm 5, \pm 10\%$	2.52	15	17	5.76	160	Red	Violet	Orange
330	33	$\pm 5, \pm 10\%$	2.52	15	16	6.44	120	Orange	Orange	Orange
390	39	$\pm 5, \pm 10\%$	2.52	15	15	6.85	120	Orange	White	Orange
470	47	$\pm 5, \pm 10\%$	2.52	14	13	9.94	110	Yellow	Violet	Orange
560	56	$\pm 5, \pm 10\%$	2.52	14	10	10.7	90	Green	Blue	Orange
680	68	$\pm 5, \pm 10\%$	2.52	14	8	12.8	90	Blue	Gray	Orange
820	82	$\pm 5, \pm 10\%$	2.52	14	8	18.3	80	Gray	Red	Orange
101	100	$\pm 5, \pm 10\%$	1	8	7	19.6	120	Brown	Black	Orange

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



1210

Codes	Inductance (μH)	Tolerance	Test Freq. (MHz)	Q Min.	SRF (MHz) Min.	DCR (Ω) max.	IDC (mA) max.
R18	0.18	±20%	25.2	30	400	0.28	450
R22	0.22	±20%	25.2	30	350	0.32	450
R27	0.27	±20%	25.2	30	320	0.36	450
R33	0.33	±20%	25.2	30	300	0.40	450
R39	0.39	±20%	25.2	30	250	0.45	450
R47	0.47	±20%	25.2	30	220	0.50	450
R56	0.56	±20%	25.2	30	180	0.55	450
R68	0.68	±20%	25.2	30	160	0.60	450
R82	0.82	±20%	25.2	30	140	0.65	450
1R0	1.0	±10%	7.96	30	120	0.70	400
1R2	1.2	±10%	7.96	30	100	0.75	390
1R5	1.5	±10%	7.96	30	85	0.85	370
1R8	1.8	±10%	7.96	30	80	0.90	350
2R2	2.2	±10%	7.96	30	75	1.00	320
2R7	2.7	±10%	7.96	30	70	1.10	290
3R3	3.3	±10%	7.96	30	60	1.20	260
3R9	3.9	±10%	7.96	30	55	1.30	250
4R7	4.7	±10%	7.96	30	50	1.50	220
5R6	5.6	±10%	7.96	30	45	1.60	200
6R8	6.8	±10%	7.96	30	40	1.80	180
8R2	8.2	±10%	7.96	30	35	2.00	170
100	10	±10%	2.52	30	30	2.10	150
120	12	±10%	2.52	30	20	2.50	140
150	15	±10%	2.52	30	20	2.80	130
180	18	±10%	2.52	30	20	3.30	120
220	22	±10%	2.52	30	20	3.70	110
270	27	±10%	2.52	30	20	5.00	80
330	33	±10%	2.52	30	17	5.60	70
390	39	±10%	2.52	30	16	6.40	65
470	47	±10%	2.52	30	15	7.00	60
560	56	±10%	2.52	30	13	8.00	55
680	68	±10%	2.52	30	12	9.00	50
820	82	±10%	2.52	30	11	10.00	45
101	100	±10%	0.796	20	10	10.00	40
121	120	±10%	0.796	20	10	11.00	70
151	150	±10%	0.796	20	8	15.00	65
181	180	±10%	0.796	20	7	17.00	60
221	220	±10%	0.796	20	7	21.00	50

Test Equipment: L, Q: HP4291 for 0.18μH~82μH; HP4284 for 100μH~220μH

SRF: HP4291

RDC: Agilent

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



1812

Codes	Inductance (μ H)	Tolerance	Test Freq. (MHz)	Q Min.	SRF (MHz) Min.	DCR (Ω) max.	IDC (mA) max.
R18	0.18	$\pm 20\%$	25.2	30	220	0.24	700
R22	0.22	$\pm 20\%$	25.2	30	200	0.25	665
R27	0.27	$\pm 20\%$	25.2	30	180	0.26	635
R33	0.33	$\pm 20\%$	25.2	30	165	0.28	605
R39	0.39	$\pm 20\%$	25.2	30	150	0.30	575
R47	0.47	$\pm 20\%$	25.2	30	145	0.32	545
R56	0.56	$\pm 20\%$	25.2	30	140	0.36	520
R68	0.68	$\pm 20\%$	25.2	30	135	0.40	500
R82	0.82	$\pm 20\%$	25.2	30	130	0.45	475
1R0	1.0	$\pm 10\%$	7.96	50	100	0.50	450
1R2	1.2	$\pm 10\%$	7.96	50	80	0.55	430
1R5	1.5	$\pm 10\%$	7.96	50	70	0.60	410
1R8	1.8	$\pm 10\%$	7.96	50	60	0.65	390
2R2	2.2	$\pm 10\%$	7.96	50	55	0.70	380
2R7	2.7	$\pm 10\%$	7.96	50	50	0.75	370
3R3	3.3	$\pm 10\%$	7.96	50	45	0.80	355
3R9	3.9	$\pm 10\%$	7.96	50	40	0.90	330
4R7	4.7	$\pm 10\%$	7.96	50	35	1.00	315
5R6	5.6	$\pm 10\%$	7.96	50	33	1.10	300
6R8	6.8	$\pm 10\%$	7.96	50	27	1.20	285
8R2	8.2	$\pm 10\%$	7.96	50	25	1.40	270
100	10	$\pm 10\%$	2.52	50	20	1.60	250
120	12	$\pm 10\%$	2.52	50	18	2.00	225
150	15	$\pm 10\%$	2.52	50	17	2.50	200
180	18	$\pm 10\%$	2.52	50	15	2.80	190
220	22	$\pm 10\%$	2.52	50	13	3.20	180
270	27	$\pm 10\%$	2.52	50	12	3.60	170
330	33	$\pm 10\%$	2.52	50	11	4.00	160
390	39	$\pm 10\%$	2.52	50	10	4.50	150
470	47	$\pm 10\%$	2.52	50	10	5.00	140
560	56	$\pm 10\%$	2.52	50	9	5.50	135
680	68	$\pm 10\%$	2.52	50	9	6.00	130
820	82	$\pm 10\%$	2.52	50	8	7.00	120
101	100	$\pm 10\%$	0.796	40	8	8.00	110
121	120	$\pm 10\%$	0.796	40	6	8.00	110
151	150	$\pm 10\%$	0.796	40	5	9.00	105
181	180	$\pm 10\%$	0.796	40	5	9.50	102
221	220	$\pm 10\%$	0.796	40	4	10.0	100
271	270	$\pm 10\%$	0.796	30	4	15.0	92
331	330	$\pm 10\%$	0.796	30	3.5	15.0	85
391	390	$\pm 10\%$	0.796	30	3	18.0	80
471	470	$\pm 10\%$	0.796	30	3	26.0	62
561	560	$\pm 10\%$	0.796	30	3	30.0	50
681	680	$\pm 10\%$	0.796	30	3	30.0	50
821	820	$\pm 10\%$	0.796	30	2.5	43.0	30

Test Equipment: L, Q: HP4291 for 0.18 μ H~82 μ H; HP4284 for 100 μ H~820 μ H
 SRF: HP4291
 RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



2220

Codes	Inductance (μH)	Tolerance	Test Freq. (MHz)	Q Min.	SRF (MHz) Min.	DCR (Ω) max.	IDC (mA) max.
122	1200	±5, ±10%	0.252	20	1.5	17	75
152	1500	±5, ±10%	0.252	20	1.4	20	70
182	1800	±5, ±10%	0.252	20	1.3	30	60
222	2200	±5, ±10%	0.252	20	1.2	35	55
272	2700	±5, ±10%	0.252	20	1.1	55	45
332	3300	±5, ±10%	0.252	20	1.0	60	40
392	3900	±5, ±10%	0.252	20	1.0	70	38
472	4700	±5, ±10%	0.252	20	0.9	78	36
562	5600	±5, ±10%	0.252	20	0.8	85	33
682	6800	±5, ±10%	0.252	20	0.7	110	30
822	8200	±5, ±10%	0.252	20	0.6	125	28
103	10,000	±5, ±10%	0.0796	15	0.5	150	25

Test Equipment: L, Q: HP4284

SRF: HP4291

RDC: Agilent 34401A

LOW PROFILE ELECTRICAL SPECIFICATIONS

0805

Codes	Inductance (μH)	Tolerance	Q. Min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	±5, ±10%	15	7.96	115	0.90	450
3R3	3.3	±5, ±10%	13	7.96	70	1.40	450
4R7	4.7	±5, ±10%	15	7.96	65	1.90	400
6R8	6.8	±5, ±10%	15	7.96	41	2.40	400
100	10	±5, ±10%	14	7.96	31	2.70	400
150	15	±5, ±10%	12	7.96	28	5.00	300
220	22	±5, ±10%	10	7.96	25	6.00	250

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



LARGE CURRENT ELECTRICAL SPECIFICATIONS

0603

Codes	Inductance (μH)	Tolerance	Q Typ.	Test Freq. (MHz)	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code
47N	0.047	±10%	12	7.96	2000	0.075	1800	White
51N	0.051	±10%	12	7.96	1500	0.075	1800	Violet
68N	0.068	±10%	12	7.96	1500	0.12	1800	Gray
72N	0.072	±10%	12	7.96	1500	0.12	1800	Brown
R10	0.10	±10%	12	7.96	1150	0.13	1700	Black
R12	0.12	±5, ±10%	12	7.96	1100	0.15	1700	Orange
R15	0.15	±5, ±10%	15	7.96	1050	0.15	1600	Brown
R18	0.18	±5, ±10%	15	7.96	950	0.15	1500	Green
R22	0.22	±5, ±10%	15	7.96	900	0.30	1200	Red
R24	0.24	±5, ±10%	15	7.96	850	0.16	1460	Green
R27	0.27	±5, ±10%	15	7.96	835	0.30	1460	Yellow
R33	0.33	±5, ±10%	15	7.96	725	0.40	1420	Orange
R39	0.39	±5, ±10%	15	7.96	680	0.41	1400	Blue
R47	0.47	±5, ±10%	15	7.96	640	0.43	1400	Black
R56	0.56	±5, ±10%	15	7.96	630	0.44	1400	Brown
R68	0.68	±5, ±10%	15	7.96	510	0.52	1340	Red
R78	0.78	±5, ±10%	15	7.96	465	0.63	1300	Orange
R82	0.82	±5, ±10%	15	7.96	460	0.69	1200	Yellow
1R0	1.0	±5, ±10%	15	7.96	320	0.81	1100	Green
1R2	1.2	±5, ±10%	15	7.96	270	0.87	1000	Blue
1R5	1.5	±5, ±10%	15	7.96	230	0.96	920	Violet
1R8	1.8	±5, ±10%	15	7.96	210	1.10	900	Gray
2R2	2.2	±5, ±10%	15	7.96	115	1.20	740	White
2R7	2.7	±5, ±10%	15	7.96	100	1.38	700	Black
3R3	3.3	±5, ±10%	15	7.96	84	1.50	680	Brown
3R9	3.9	±5, ±10%	15	7.96	75	1.50	600	Red
4R7	4.7	±5, ±10%	15	7.96	67	2.10	580	Orange
5R6	5.6	±5, ±10%	15	7.96	55	2.37	540	Yellow
6R8	6.8	±5, ±10%	15	7.96	48	3.10	500	Green
7R8	7.8	±5, ±10%	15	7.96	40	3.35	460	Blue
8R2	8.2	±5, ±10%	15	7.96	38	3.50	440	Violet
100	10	±5, ±10%	15	7.96	32	4.46	400	Gray

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



0805

Codes	Inductance (μH)	Tolerance	Test Freq. (MHz)	Q Typ.	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code
R47	0.47	±10, ±20%	25.2	14	850	0.156	1400	Blue
R68	0.68	±10, ±20%	25.2	14	765	0.195	1200	Gray
1R0	1.00	±10, ±20%	7.96	14	208	0.169	1100	Black
1R2	1.20	±10, ±20%	7.96	14	159	0.208	960	Red
1R5	1.50	±10, ±20%	7.96	14	159	0.221	920	Brown
1R8	1.80	±10, ±20%	7.96	14	112	0.260	860	Orange
2R2	2.20	±10, ±20%	7.96	13	87	0.286	740	Red
2R7	2.70	±10, ±20%	7.96	13	72	0.325	680	Yellow
3R3	3.30	±10, ±20%	7.96	12	70	0.364	620	Orange
3R9	3.90	±10, ±20%	7.96	14	61	0.494	580	Green
4R7	4.70	±10, ±20%	7.96	14	51	0.559	520	Yellow
5R6	5.60	±10, ±20%	7.96	12	47	0.650	480	Blue
6R8	6.80	±10, ±20%	7.96	14	46	0.884	420	Green
8R2	8.20	±10, ±20%	7.96	13	33	0.949	400	Violet
100	10	±5, ±10, ±20%	2.52	14	31	1.105	360	Blue
120	12	±5, ±10, ±20%	2.52	14	30	1.17	340	Gray
150	15	±5, ±10, ±20%	2.52	15	28	1.82	300	Violet
180	18	±5, ±10, ±20%	2.52	15	27	2.01	280	White
220	22	±5, ±10, ±20%	2.52	15	20	2.28	240	Gray
270	27	±5, ±10, ±20%	2.52	15	17	2.60	220	Black
330	33	±5, ±10, ±20%	2.52	15	17	3.05	200	White
470	47	±5, ±10, ±20%	2.52	14	15	4.42	160	Black
560	56	±5, ±10, ±20%	2.52	14	10	5.74	150	Yellow
680	68	±5, ±10, ±20%	2.52	14	10	5.78	140	Brown
820	82	±5, ±10, ±20%	2.52	14	10	9.75	100	Orange
101	100	±5, ±10, ±20%	1	10	9	9.75	100	Red

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

1008

Codes	Inductance (μH)	Tolerance	Q Typ.	Test Freq. (MHz)	SRF (MHz) Typ.	DCR (Ω) Max.	IDC (mA) Max.	Color Code		
R22	0.22	±5, ±10%	35	25.2	800	0.15	2600	Red	Red	Brown
R47	0.47	±5, ±10%	35	25.2	460	0.20	2400	Yellow	Violet	Brown
R68	0.68	±5, ±10%	35	25.2	400	0.30	2200	Blue	Gray	Brown
R82	0.82	±5, ±10%	35	25.2	360	0.35	1800	Gray	Red	Brown
1R0	1.0	±5, ±10%	22	7.96	245	0.35	800	Brown	Black	Red
1R2	1.2	±5, ±10%	25	7.96	230	0.40	550	Brown	Red	Red
1R5	1.5	±5, ±10%	25	7.96	182	0.45	550	Brown	Green	Red
1R8	1.8	±5, ±10%	25	7.96	135	0.55	550	Brown	Gray	Red
2R2	2.2	±5, ±10%	22	7.96	105	0.60	500	Red	Red	Red
2R7	2.7	±5, ±10%	25	7.96	70	0.70	500	Red	Violet	Red
3R3	3.3	±5, ±10%	22	7.96	55	0.75	450	Orange	Orange	Red
3R9	3.9	±5, ±10%	25	7.96	50	0.80	450	Orange	White	Red
4R7	4.7	±5, ±10%	22	7.96	45	0.90	400	Yellow	Violet	Red
5R6	5.6	±5, ±10%	22	7.96	42	1.05	400	Green	Blue	Red
6R8	6.8	±5, ±10%	22	7.96	40	1.05	400	Blue	Gray	Red
8R2	8.2	±5, ±10%	22	7.96	36	1.30	350	Gray	Red	Red
100	10	±5, ±10%	20	2.52	35	1.55	300	Brown	Black	Orange
120	12	±5, ±10%	20	2.52	30	2.10	280	Brown	Red	Orange
150	15	±5, ±10%	20	2.52	24	2.38	250	Brown	Green	Orange
180	18	±5, ±10%	20	2.52	20	2.60	200	Brown	Gray	Orange
220	22	±5, ±10%	20	2.52	18	2.92	200	Red	Red	Orange
330	33	±5, ±10%	20	2.52	16	4.10	180	Orange	Orange	Orange
470	47	±5, ±10%	23	2.52	17	7.80	350	Yellow	Violet	Orange
101	100	±5, ±10%	13	1	4	13.2	200	Brown	Black	Yellow
221	220	±5, ±10%	13	1	3	26.5	140	Red	Red	Yellow
331	330	±5, ±10%	13	1	2	32.5	110	Orange	Orange	Yellow

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



1812

Codes	Inductance (μ H)	Tolerance	Q. Min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	$\pm 10\%$	10	7.96	200	0.11	1050
1R2	1.2	$\pm 10\%$	10	7.96	160	0.12	1000
1R5	1.5	$\pm 10\%$	10	7.96	130	0.15	950
1R8	1.8	$\pm 10\%$	10	7.96	100	0.16	900
2R2	2.2	$\pm 10\%$	10	7.96	80	0.18	850
2R7	2.7	$\pm 10\%$	10	7.96	60	0.20	800
3R3	3.3	$\pm 10\%$	10	7.96	45	0.22	750
3R9	3.9	$\pm 10\%$	10	7.96	40	0.24	700
4R7	4.7	$\pm 10\%$	10	7.96	35	0.27	650
5R6	5.6	$\pm 10\%$	10	7.96	30	0.30	650
6R8	6.8	$\pm 10\%$	10	7.96	28	0.35	600
8R2	8.2	$\pm 10\%$	10	7.96	25	0.40	600
100	10	$\pm 10\%$	10	2.52	22	0.50	550
120	12	$\pm 10\%$	10	2.52	21	0.60	500
150	15	$\pm 10\%$	10	2.52	20	0.70	450
180	18	$\pm 10\%$	10	2.52	19	0.80	400
220	22	$\pm 10\%$	10	2.52	18	0.90	370
270	27	$\pm 10\%$	10	2.52	16	1.20	330
330	33	$\pm 10\%$	10	2.52	14	1.40	300
390	39	$\pm 10\%$	10	2.52	12	1.60	280
470	47	$\pm 10\%$	10	2.52	11.5	1.90	260
560	56	$\pm 10\%$	10	2.52	11	2.20	240
680	68	$\pm 10\%$	10	2.52	10	2.60	220
820	82	$\pm 10\%$	10	2.52	9	3.50	200
101	100	$\pm 10\%$	20	0.796	8	4.00	180
121	120	$\pm 10\%$	20	0.796	7.5	4.50	160
151	150	$\pm 10\%$	20	0.796	7	6.50	140
181	180	$\pm 10\%$	20	0.796	6.5	7.50	120
221	220	$\pm 10\%$	20	0.796	5.5	9.00	120
271	270	$\pm 10\%$	20	0.796	5	11.0	100
331	330	$\pm 10\%$	20	0.796	4	13.0	90
391	390	$\pm 10\%$	20	0.796	3.8	23.0	80
471	470	$\pm 10\%$	20	0.796	3.5	26	75
561	560	$\pm 10\%$	20	0.796	2.8	30	70
681	680	$\pm 10\%$	20	0.796	2.6	40	65
821	820	$\pm 10\%$	20	0.796	2.5	45	60

Test Equipment: L, Q: HP4291

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



220

Codes	Inductance (μH)	Tolerance	Q. Min.	Test Freq. (MHz)	SRF (MHz) min.	DCR (Ω) max.	IDC (mA) max.
1R0	1.0	±10, ±20%	10	7.96	95	0.03	1800
1R2	1.2	±10, ±20%	10	7.96	70	0.035	1700
1R5	1.5	±10, ±20%	10	7.96	55	0.04	1600
1R8	1.8	±10, ±20%	10	7.96	47	0.05	1400
2R2	2.2	±10, ±20%	10	7.96	42	0.06	1300
2R7	2.7	±10, ±20%	10	7.96	37	0.07	1200
3R3	3.3	±10, ±20%	10	7.96	34	0.08	1120
3R9	3.9	±10, ±20%	10	7.96	32	0.09	1050
4R7	4.7	±10, ±20%	10	7.96	29	0.11	950
5R6	5.6	±10, ±20%	10	7.96	26	0.13	880
6R8	6.8	±10, ±20%	10	7.96	24	0.15	810
8R2	8.2	±10, ±20%	10	7.96	22	0.18	750
100	10	±10, ±20%	10	2.52	19	0.21	690
120	12	±10, ±20%	10	2.52	17	0.25	630
150	15	±10, ±20%	10	2.52	16	0.30	580
180	18	±10, ±20%	10	2.52	14	0.36	530
220	22	±5, ±10%	10	2.52	13	0.43	480
270	27	±5, ±10%	10	2.52	11.5	0.52	440
330	33	±5, ±10%	10	2.52	10.5	0.62	400
390	39	±5, ±10%	10	2.52	9.5	0.72	370
470	47	±5, ±10%	10	2.52	8.5	0.85	340
560	56	±5, ±10%	10	2.52	7.8	1.00	310
680	68	±5, ±10%	10	2.52	7.0	1.2	290
820	82	±5, ±10%	10	2.52	6.4	1.4	270
101	100	±5, ±10%	20	0.796	6.0	1.6	250
121	120	±5, ±10%	20	0.796	5.4	1.9	230
151	150	±5, ±10%	20	0.796	4.8	2.2	210
181	180	±5, ±10%	20	0.796	4.4	2.8	190
221	220	±5, ±10%	20	0.796	3.9	3.4	170
271	270	±5, ±10%	20	0.796	3.6	4.2	155
331	330	±5, ±10%	20	0.796	3.2	4.9	140
391	390	±5, ±10%	20	0.796	2.9	5.8	130
471	470	±5, ±10%	20	0.796	2.6	7.0	120
561	560	±5, ±10%	20	0.796	2.4	8.5	110
681	680	±5, ±10%	20	0.796	2.2	10	100
821	820	±5, ±10%	20	0.796	2.0	13	90
102	1000	±5, ±10%	20	0.252	1.8	15	85

Test Equipment: L, Q: HP4291 for 1.0pH ~ 82pH; HP4284 for 100pH ~ 1000pH

SRF: HP4291

RDC: Agilent 34401A

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series



ENVIRONMENTAL CHARACTERISTICS

ELECTRICAL PERFORMANCE TEST

Items	Requirement	Test Methods
Inductance	Refer to standard electrical characteristic spec.	HP4291 or HP4284
Q		HP4291 or HP4284
SRF		HP4291
DC Resistance RDC		Agilent 34401A
Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value

MECHANICAL PERFORMANCE TEST

Items	Requirement	Test Methods
Solderability	The electrodes shall be at least 90% covered with new solder coating	Lead-free inductor: after fluxing(alpha 100 or equiv), inductor shall be dipped in a melted solder bath at 245 5 C, 5 0.5 seconds
Resistance to Soldering Heat	Appearance: No damage	Pre-heating: 150°C, 1min. Solder Temperature: 260±5°C Immersion Time: 10±1 seconds
Vibration	Appearance: No damage L change: within±10% Q change: within±30% DCR: within specification	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1 min. Amplitude: 1.5 mm Time: 2 hrs for each axis (X, Y&Z), total 6 hrs

CLIMATIC TEST

Items	Requirement	Test Methods			
Temperature Cycle	Appearance: No damage L change: within±10% Q change: within±30% DCR: within specification	One cycle:	Step	Temperature (°C)	Time (min.)
			1	-25±3	30
			2	25±2	15
			3	125±3	30
			4	25±2	15
		Total: 100 cycles			
		Measured after exposure in the room condition for 24 hrs			
Damp Heat with Load		Temperature: 40±2°C Relative Humidity: 90 ~ 95% Time: 1000 hrs Measured after exposure in the room condition for 24 hrs			
High Temperature Storage		Temperature: 85±3°C Relative Humidity: 20% Applied Current: Rated Current Time: 1000 hrs Measured after exposure in the room condition for 24 hrs			
Low Temperature Storage		Temperature: -25±3°C Relative Humidity: 0% Time: 1000 hrs Measured after exposure in the room condition for 24 hrs			

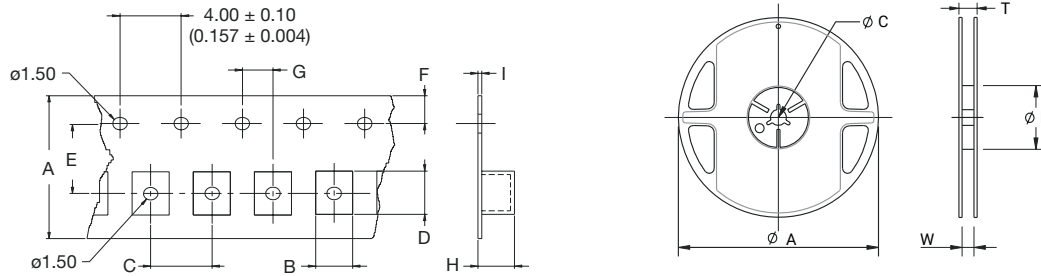
Storage Temperature: 25±3°; Humidity < 80% RH

Operating Temperature Range: -40~+85°C

WIRE WOUND CHIP INDUCTOR (FERRITE)

LCWF Series

DIMENSIONS



TAPE DIMENSIONS

mm (inches)

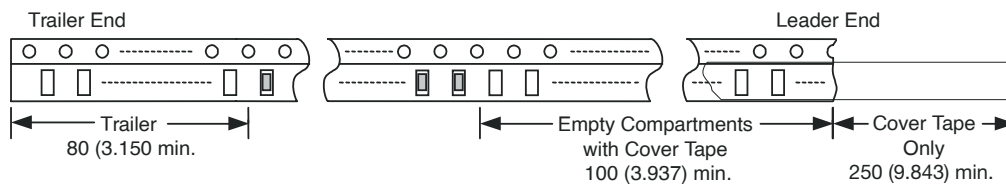
Type	A	B	C	D	E	F	G	H	I	Qty/Reel
0603	8.00 $\pm$ 0.20 (0.315 $\pm$ 0.008)	1.25 $\pm$ 0.10 (0.049 $\pm$ 0.004)	4.00 $\pm$ 0.10 (0.157 $\pm$ 0.004)	1.90 $\pm$ 0.10 (0.075 $\pm$ 0.004)	3.50 $\pm$ 0.05 (0.138 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	1.00 $\pm$ 0.05 (0.039 $\pm$ 0.002)	0.23 $\pm$ 0.05 (0.009 $\pm$ 0.002)	4000
0805	8.00 $\pm$ 0.20 (0.315 $\pm$ 0.008)	1.85 $\pm$ 0.10 (0.073 $\pm$ 0.004)	4.00 $\pm$ 0.10 (0.157 $\pm$ 0.004)	2.55 $\pm$ 0.10 (0.100 $\pm$ 0.004)	3.50 $\pm$ 0.05 (0.138 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	1.45 $\pm$ 0.05 (0.057 $\pm$ 0.002)	0.23 $\pm$ 0.05 (0.009 $\pm$ 0.002)	2000
1008	8.00 $\pm$ 0.20 (0.315 $\pm$ 0.008)	2.80 $\pm$ 0.10 (0.110 $\pm$ 0.004)	4.00 $\pm$ 0.10 (0.157 $\pm$ 0.004)	2.95 $\pm$ 0.10 (0.116 $\pm$ 0.004)	3.50 $\pm$ 0.05 (0.138 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	2.22 $\pm$ 0.05 (0.087 $\pm$ 0.002)	0.23 $\pm$ 0.05 (0.009 $\pm$ 0.002)	2000
1210	8.00 $\pm$ 0.20 (0.315 $\pm$ 0.008)	2.96 $\pm$ 0.10 (0.117 $\pm$ 0.004)	4.00 $\pm$ 0.10 (0.157 $\pm$ 0.004)	3.60 $\pm$ 0.10 (0.142 $\pm$ 0.004)	3.50 $\pm$ 0.05 (0.138 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	2.40 $\pm$ 0.05 (0.094 $\pm$ 0.002)	0.23 $\pm$ 0.05 (0.009 $\pm$ 0.002)	2000
1812	12.0 $\pm$ 0.20 (0.472 $\pm$ 0.008)	3.30 $\pm$ 0.10 (0.130 $\pm$ 0.004)	8.00 $\pm$ 0.10 (0.315 $\pm$ 0.004)	5.00 $\pm$ 0.10 (0.197 $\pm$ 0.004)	5.50 $\pm$ 0.05 (0.217 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	3.50 $\pm$ 0.05 (0.138 $\pm$ 0.002)	0.30 $\pm$ 0.05 (0.009 $\pm$ 0.002)	500
2200	16.0 $\pm$ 0.20 (0.630 $\pm$ 0.008)	5.35 $\pm$ 0.10 (0.211 $\pm$ 0.004)	12.0 $\pm$ 0.10 (0.472 $\pm$ 0.004)	6.10 $\pm$ 0.10 (0.240 $\pm$ 0.004)	7.50 $\pm$ 0.05 (0.295 $\pm$ 0.002)	1.75 $\pm$ 0.10 (0.069 $\pm$ 0.004)	2.00 $\pm$ 0.05 (0.079 $\pm$ 0.002)	5.50 $\pm$ 0.05 (0.217 $\pm$ 0.002)	0.35 $\pm$ 0.05 (0.009 $\pm$ 0.002)	1000

TAPE DIMENSIONS

mm (inches)

Type	ϕA	ϕB	ϕC	W	T
0603	178 $\pm$ 2.00 (7.008 $\pm$ 0.079)	60.0 $\pm$ 0.50 (2.362 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	9.00 $\pm$ 0.30 (0.354 $\pm$ 0.012)	12.0 $\pm$ 1.00 (0.472 $\pm$ 0.039)
0805	178 $\pm$ 2.00 (7.008 $\pm$ 0.079)	60.0 $\pm$ 0.50 (2.362 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	9.00 $\pm$ 0.30 (0.354 $\pm$ 0.012)	12.0 $\pm$ 1.00 (0.472 $\pm$ 0.039)
1008	178 $\pm$ 2.00 (7.008 $\pm$ 0.079)	60.0 $\pm$ 0.50 (2.362 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	9.00 $\pm$ 0.30 (0.354 $\pm$ 0.012)	12.0 $\pm$ 1.00 (0.472 $\pm$ 0.039)
1210	178 $\pm$ 2.00 (7.008 $\pm$ 0.079)	60.0 $\pm$ 0.50 (2.362 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	9.00 $\pm$ 0.30 (0.354 $\pm$ 0.012)	12.0 $\pm$ 1.00 (0.472 $\pm$ 0.039)
1812	178 $\pm$ 2.00 (7.008 $\pm$ 0.079)	80.0 $\pm$ 0.50 (3.150 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	13.2 $\pm$ 0.30 (0.520 $\pm$ 0.012)	16.0 $\pm$ 1.00 (0.630 $\pm$ 0.039)
2200	330 $\pm$ 2.00 (12.99 $\pm$ 0.079)	100 $\pm$ 0.50 (3.937 $\pm$ 0.020)	13.0 $\pm$ 0.30 (0.512 $\pm$ 0.012)	17.4 $\pm$ 0.3 (0.685 $\pm$ 0.012)	22.0 $\pm$ 1.00 (0.866 $\pm$ 0.039)

LEADER / TRAILER TAPE



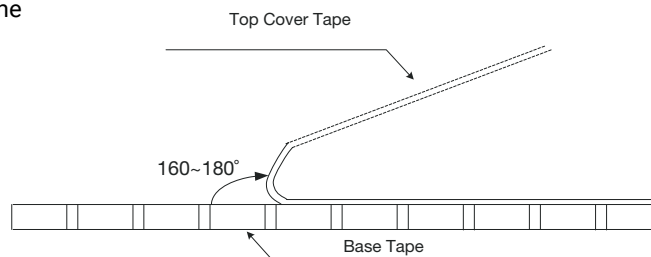
COVER TAPE PEEL STRENGTH

The force for tearing off cover tape is 0.1~0.6 (N) in the arrow direction at the following conditions:

Temperature: 5~35°C

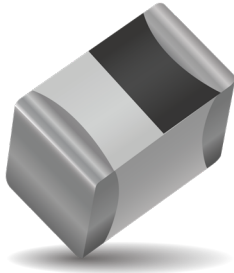
Humidity: 45~85%

Atmospheric Pressure: 860~1060 hpa



MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



APPLICATIONS

High Frequency Applications:

- Mobile Communications
- WLAN
- PHS
- EMI Counter measure in High Frequency Circuits
- Computer Communication

FEATURES

For high frequency applications

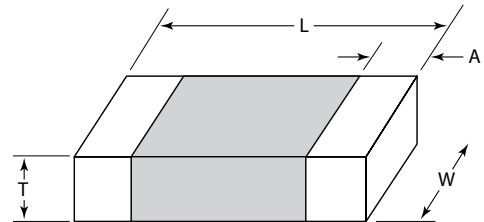
- Standard EIA sizes 0201 (0603), 0402 (1005), 0603 (1608)
- Lead-free RoHS compliant parts
- Tight tolerance in physical dimensions
- Surface mounting applicability (Supports reflow soldering condition)
- Tight Inductance Tolerance, Excellent Q and Guaranteed SRF range
- High product quality and outstanding reliability. (Ceramic integrated structure)
- Operating temperature -40°C to +85°C

HOW TO ORDER

LC	CI	0402	K	101	G	T	A	R
Family	Series	Size	Tolerance	Inductance	Style	Termination	Special	Packaging
LC = Chip Inductor		0201 0402 0603	G = 2% H = 3% J = 5% K = 10% B = 0.1nH C = 0.2nH S = 0.3nH	3N9 = 3.9nH 39N = 39nH R39 = 390nH	G = Standard	T = Sn Plating	A = Standard	R = 7" Reel

DIMENSIONS

Size	L	W	T	mm (inches)	
				Min	Max
0201	0.60 ± 0.03 (0.024 ± 0.001)	0.30 ± 0.03 (0.012 ± 0.001)	0.30 ± 0.03 (0.012 ± 0.001)	0.10 (0.004)	0.20 (0.008)
0402	1.00 ± 0.10 (0.040 ± 0.004)	0.50 ± 0.10 (0.020 ± 0.004)	0.50 ± 0.10 (0.020 ± 0.004)	0.10 (0.004)	0.30 (0.012)
0603	1.60 ± 0.15 (0.063 ± 0.006)	0.80 ± 0.15 (0.031 ± 0.006)	0.80 ± 0.15 (0.031 ± 0.006)	0.20 (0.008)	0.60 (0.024)



AVAILABLE INDUCTANCE VALUE AND TOLERANCE

Size Code	Available Inductance	Inductance Ranges	Standard Tolerance
LCCI0201	0.3nH - 39nH	0.3nH-0.9nH	B=±0.1nH
		1.0nH-6.2nH	B=±0.1nH, C=±0.2nH, S= ±0.3 nH
		6.8nH - 27nH	H=±3%, J=±5%
		33nH-39nH	J=±5%
LCCI0402	0.3nH - 150nH	0.3nH-0.8nH	B=±0.1nH
		1.0nH-6.2nH	B=±0.1nH, C=±0.2nH, S= ±0.3 nH
		6.8nH-68nH	G=±2%, H=±3%, J=±5%
		82nH-150nH	J=±5%
LCCI0603	1.0 nH - 270 nH	1.0nH-5.6nH	S= ± 0.3nH
		6.8nH-270nH	J=±5%

MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



ELECTRICAL CHARACTERISTICS

Case Size 0201

Ordering Code	L (nH)	L Tolerance	Q Min.	L,Q TEST FREQ. (MHz)	SRF (MHz) MIN.	DC Resistance (Ω) MAX.	Irms (mA) MAX.
0N3	0.3	B=±0.1nH	4	100	10,000	0.07	850
0N4	0.4	B=±0.1nH	4	100	10,000	0.07	850
0N5	0.5	B=±0.1nH	4	100	10,000	0.08	800
0N6	0.6	B=±0.1nH	4	100	10,000	0.08	800
0N7	0.7	B=±0.1nH	4	100	10,000	0.09	750
0N8	0.8	B=±0.1nH	4	100	10,000	0.1	750
0N9	0.9	B=±0.1nH	4	100	10,000	0.1	750
1N0	1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.14	600
1N1	1.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.14	600
1N2	1.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.14	600
1N3	1.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.14	600
1N4	1.4	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.18	550
1N5	1.5	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.18	550
1N6	1.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.18	500
1N7	1.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.19	500
1N8	1.8	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.19	500
1N9	1.9	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.2	450
2N0	2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.2	450
2N1	2.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.2	450
2N2	2.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.22	450
2N3	2.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.22	450
2N4	2.4	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.24	450
2N5	2.5	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.24	450
2N6	2.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	4	100	10,000	0.25	450
2N7	2.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	10,000	0.25	450
2N9	2.9	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	9,500	0.28	450
3N0	3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	9,500	0.28	450
3N1	3.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	9,500	0.28	450
3N2	3.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	9,500	0.3	450
3N3	3.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	9,500	0.3	450
3N4	3.4	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	8,000	0.3	400
3N5	3.5	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	8,000	0.3	400
3N6	3.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	8,000	0.3	400
3N7	3.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	8,000	0.3	400
3N8	3.8	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,500	0.3	400
3N9	3.9	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,500	0.3	400
4N3	4.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,500	0.4	350
4N7	4.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,500	0.4	350
5N1	5.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,500	0.4	350
5N6	5.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,000	0.4	350
6N2	6.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	5	100	6,000	0.44	300
6N8	6.8	H=±3%, J=±5%	5	100	5,400	0.5	300
7N5	7.5	H=±3%, J=±5%	5	100	4,800	0.53	300
8N2	8.2	H=±3%, J=±5%	5	100	4,800	0.55	250
9N1	9.1	H=±3%, J=±5%	5	100	4,500	0.62	250
10N	10	H=±3%, J=±5%	5	100	4,500	0.65	250
12N	12	H=±3%, J=±5%	5	100	3,700	0.7	250
15N	15	H=±3%, J=±5%	5	100	2,200	0.8	250
18N	18	H=±3%, J=±5%	5	100	2,200	0.9	200

MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



ELECTRICAL CHARACTERISTICS (CONTINUED)

Case Size 0201

Ordering Code	L (nH)	L Tolerance	Q Min.	L,Q TEST FREQ. (MHz)	SRF (MHz) MIN.	DC Resistance (Ω) MAX.	Irms (mA) MAX.
22N	22	H=±3%, J=±5%	5	100	2,000	1.2	150
27N	27	H=±3%, J=±5%	4	100	1,800	1.8	140
33N	33	J=±5%	4	100	1,700	2.1	120
39N	39	J=±5%	4	100	1,500	2.4	120

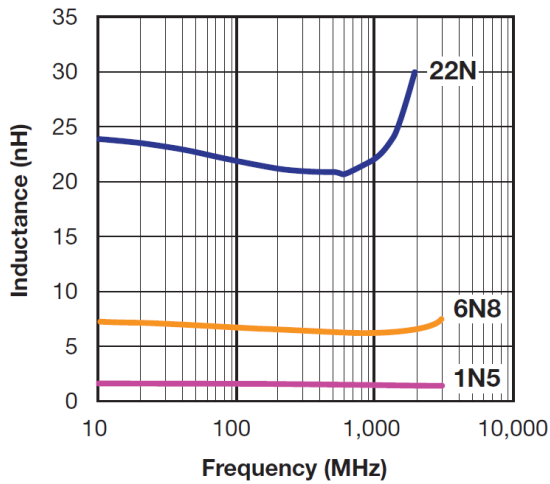
Tolerance: B = ±0.1nH, C = ±0.2nH, S = ±0.3nH, G = ±2%, H = ±3%, J = ±5%, K = ±10%

Measuring Equipment: HP4287+16196C

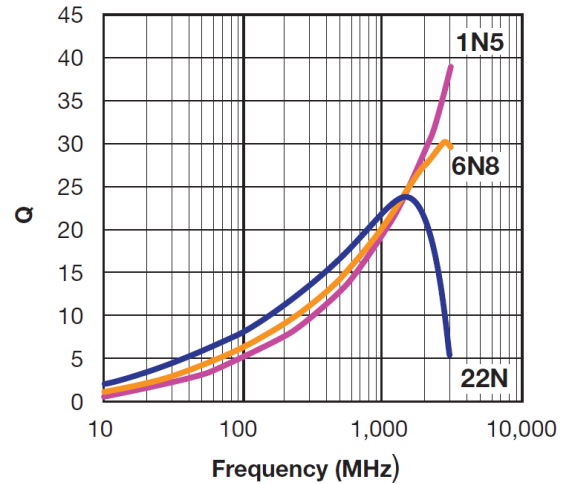
Measuring Temperature: 25 ± 3°C

Operating Temperature: -40°C to +85°C

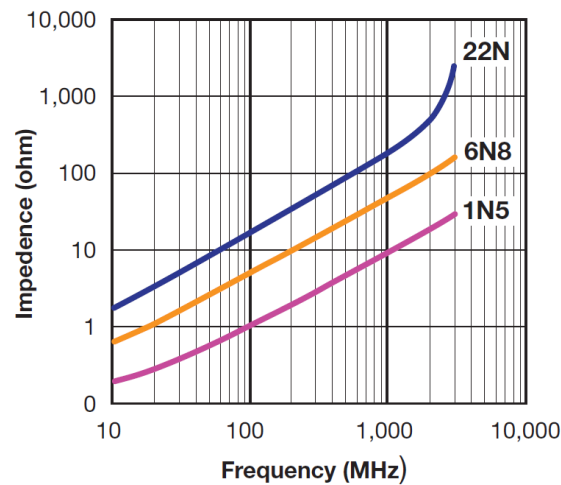
0201 L VS Frequency



0201 Q VS Frequency



0201 Z VS Frequency



MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



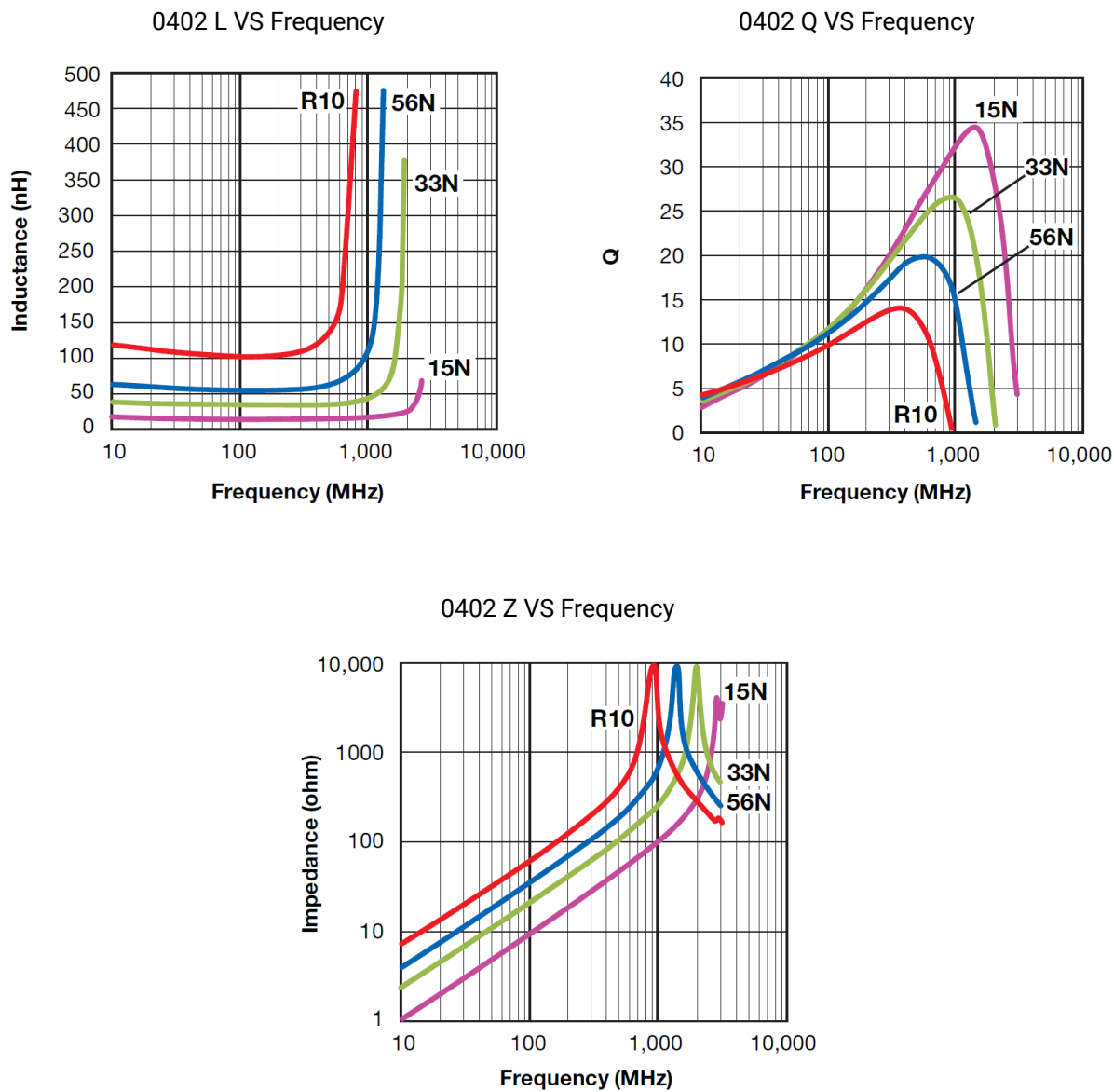
ELECTRICAL CHARACTERISTICS

Case Size 0402

Ordering Code	L (nH)	L Tolerance	Q Min.	L,Q TEST FREQ. (MHz)	SRF (MHz) MIN.	DC Resistance (Ω) MAX.	Irms (mA) MAX.
0N3	0.3	B=±0.1nH	8	100	10,000	0.08	1000
0N4	0.4	B=±0.1nH	8	100	10,000	0.08	1000
0N5	0.5	B=±0.1nH	8	100	10,000	0.08	1000
0N6	0.6	B=±0.1nH	8	100	10,000	0.08	1000
0N7	0.7	B=±0.1nH	8	100	10,000	0.08	1000
0N8	0.8	B=±0.1nH	8	100	10,000	0.08	1000
1N0	1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.08	1000
1N1	1.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.08	1000
1N2	1.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.09	1000
1N3	1.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.09	1000
1N5	1.5	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.1	1000
1N6	1.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.1	1000
1N8	1.8	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.12	900
2N0	2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.12	900
2N2	2.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.13	900
2N4	2.4	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	10,000	0.13	800
2N7	2.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.16	800
3N0	3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.16	800
3N3	3.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.16	800
3N6	3.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.2	700
3N9	3.9	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.2	700
4N3	4.3	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.2	700
4N7	4.7	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	6,000	0.2	700
5N1	5.1	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	5,300	0.23	600
5N6	5.6	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	4,500	0.23	600
6N2	6.2	B=±0.1nH, C=±0.2nH, S= ±0.3 Nh	8	100	4,500	0.25	600
6N8	6.8	G=±2%, H=±3%, J=±5%	8	100	4,500	0.25	600
7N5	7.5	G=±2%, H=±3%, J=±5%	8	100	4,200	0.28	500
8N2	8.2	G=±2%, H=±3%, J=±5%	8	100	3,700	0.28	500
9N1	9.1	G=±2%, H=±3%, J=±5%	8	100	3,400	0.3	500
10N	10	G=±2%, H=±3%, J=±5%	8	100	3,400	0.3	500
12N	12	G=±2%, H=±3%, J=±5%	8	100	3,000	0.45	400
15N	15	G=±2%, H=±3%, J=±5%	8	100	2,500	0.55	400
18N	18	G=±2%, H=±3%, J=±5%	8	100	2,200	0.65	300
22N	22	G=±2%, H=±3%, J=±5%	8	100	1,900	0.7	300
27N	27	G=±2%, H=±3%, J=±5%	8	100	1,700	0.8	300
33N	33	G=±2%, H=±3%, J=±5%	8	100	1,600	0.9	200
39N	39	G=±2%, H=±3%, J=±5%	8	100	1,200	1	200
47N	47	G=±2%, H=±3%, J=±5%	8	100	1,100	1.1	200
56N	56	G=±2%, H=±3%, J=±5%	8	100	1,000	1.1	200
68N	68	G=±2%, H=±3%, J=±5%	8	100	800	1.2	200
82N	82	J=±5%	8	100	600	1.3	200
R10	100	J=±5%	8	100	600	1.6	200
R12	120	J=±5%	8	100	600	1.6	150
R15	150	J=±5%	8	100	550	3.2	140

MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series



ELECTRICAL CHARACTERISTICS

Case Size 0603

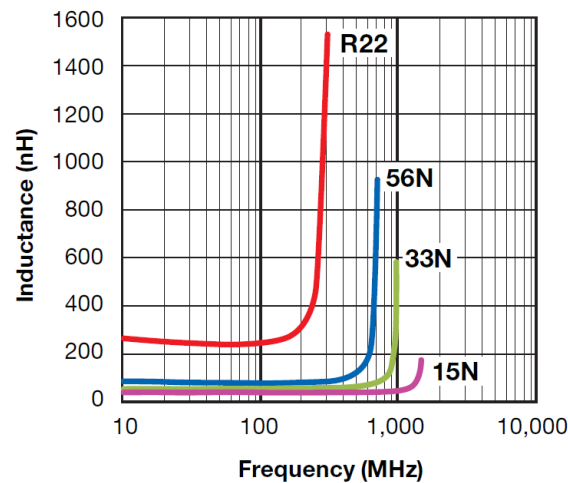
Ordering Code	L (nH)	L Tolerance	Q Min.	L,Q TEST FREQ. (MHz)	SRF (MHz) MIN.	DC Resistance (Ω) MAX.	Irms (mA) MAX.
1N0	1	S= ± 0.3nH	8	100	10000	0.05	1000
1N2	1.2	S= ± 0.3nH	8	100	10000	0.05	1000
1N5	1.5	S= ± 0.3nH	8	100	10000	0.1	1000
1N8	1.8	S= ± 0.3nH	8	100	10000	0.1	1000
2N2	2.2	S= ± 0.3nH	8	100	8000	0.1	1000
2N7	2.7	S= ± 0.3nH	10	100	7000	0.13	1000
3N3	3.3	S= ± 0.3nH	10	100	6000	0.13	1000
3N9	3.9	S= ± 0.3nH	10	100	6000	0.15	1000
4N7	4.7	S= ± 0.3nH	10	100	5000	0.2	1000
5N6	5.6	S= ± 0.3nH	10	100	4000	0.23	600
6N8	6.8	J=±5%	10	100	4000	0.25	600
8N2	8.2	J=±5%	10	100	3500	0.28	600
10N	10	J=±5%	12	100	3400	0.3	600
12N	12	J=±5%	12	100	2600	0.35	600
15N	15	J=±5%	12	100	2300	0.4	600
18N	18	J=±5%	12	100	2000	0.45	600
22N	22	J=±5%	12	100	1600	0.5	600
27N	27	J=±5%	12	100	1400	0.55	600
33N	33	J=±5%	12	100	1200	0.6	600
39N	39	J=±5%	12	100	1100	0.65	500
47N	47	J=±5%	12	100	900	0.7	500
56N	56	J=±5%	12	100	900	0.75	500
68N	68	J=±5%	12	100	700	0.85	400
82N	82	J=±5%	12	100	600	0.95	300
R10	100	J=±5%	12	100	600	1	300
R12	120	J=±5%	8	50	500	1.2	300
R15	150	J=±5%	8	50	500	1.2	300
R18	180	J=±5%	8	50	400	1.3	300
R22	220	J=±5%	8	50	400	1.5	300
R27	270	J=±5%	8	50	400	1.9	200

MULTI-LAYER CERAMIC CHIP INDUCTORS

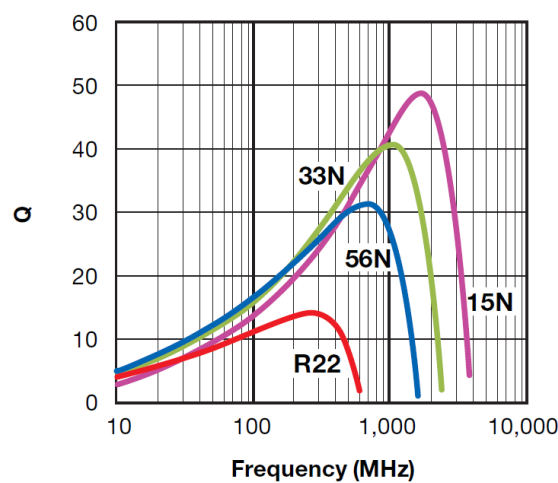
LCCI Series



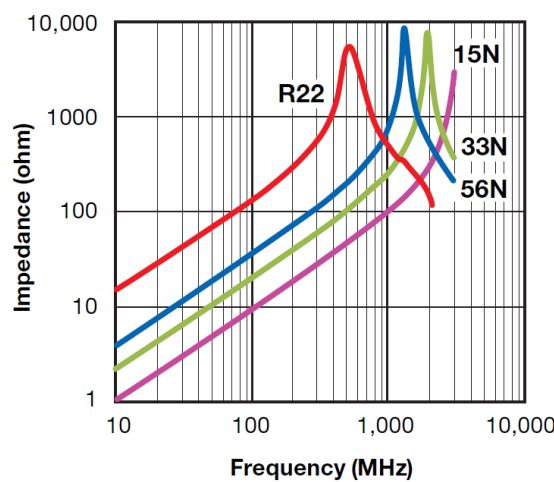
0603 L VS Frequency



0603 Q VS Frequency



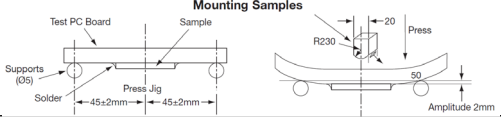
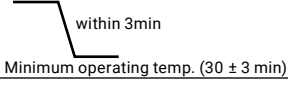
0603 Z VS Frequency



MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series

TEST CONDITION AND REQUIREMENTS

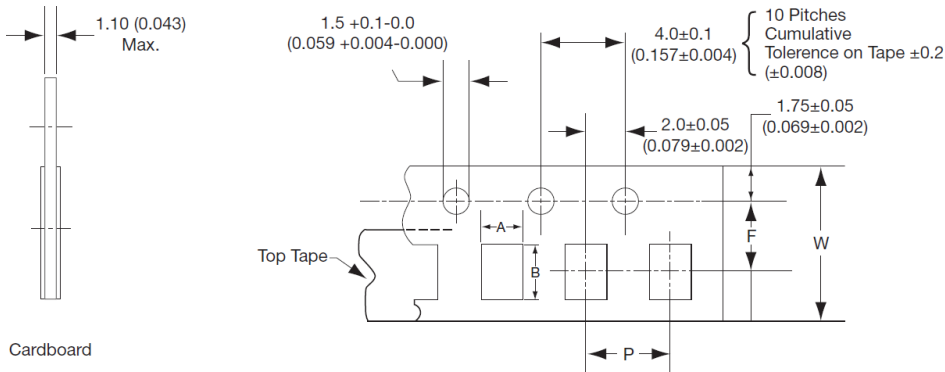
No.	Item	Test Condition	Requirements
1	Inductance	- Temperature: $25 \pm 3^{\circ}\text{C}$ - Relative Humidity: 45 to 75%RH - Measuring equipment and fixture: (0603) HP 4291+16192A (0402) HP 4287+16193A (0201) HP 4287+16196C	Within specified tolerance.
2	Q Value	- Temperature: $25 \pm 3^{\circ}\text{C}$ - Relative Humidity: 45 to 75%RH - Measuring equipment and fixture: (0603) HP 4291+16192A (0402) HP 4287+16193A (0201) HP 4287+16196C	In accordance with electrical specification.
3	DC Resistance	- Temperature: $25 \pm 3^{\circ}\text{C}$ - Relative Humidity: 45 to 75%RH - Measuring equipment: HP 4338.	In accordance with electrical specification.
4	Appearance	Inductors shall be visually inspected for visible evidence of defect.	In accordance with specification.
5	Dimension	Dimension shall be measured with caliper or micrometer	In accordance with dimension specification.
6	Solderability	Immerse a test sample into a methanol solution containing resin and immerse into molten solder of $230 \pm 5^{\circ}\text{C}$ for 5 ± 1 second.	More than 75% of the terminal electrode part shall be covered with fresh solder.
7	Bending Strength	Solder the chip to test jig then apply a force in the direction shown in below. The soldering shall be done with the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock. 	- No mechanical damage shall be observed. - Rdc-value: to meet the initial Spec.
8	Resistance to Soldering Heat	Immerse a test sample into a methanol solution containing resin, preheat it at 120 to 150°C for 1 minute and immerse into molten solder of $270 \pm 5^{\circ}\text{C}$ for 10 ± 1 second so that both terminal electrodes are completely submerged.	No visible damage. Inductance variation within 10%. Q variation within 20%.
9	Thermal Shock	Solder a test sample to printed circuit board, and conduct 5 cycles of test under the conditions shown as below. 0201 & 0402 operating temp. range: $-55 \sim 125^{\circ}\text{C}$ 0603 operating temp. range: $-40 \sim 85^{\circ}\text{C}$ Cycle: Maximum operating temp. (30 ± 3min) 	No visible damage. Inductance variation within 10%. Q variation within 20%.
10	High Humidity State Life Test	Keep a test sample in an atmosphere with a temperature of $40 \pm 2^{\circ}\text{C}$, 90~95%RH for 500 ± 12 hours. After the removal from test chamber, 2 to 3 hours of recovery under standard condition, and measurement shall be made after 24 ± 2 hrs. of recovery under standard condition.	No visible damage. Inductance variation within 10%. Q variation within 20%.
11	High Humidity Load Life Test	Solder a test sample to printed circuit board then keep the test sample in an atmosphere with a temperature of $40 \pm 2^{\circ}\text{C}$, 90~95%RH for 500 ± 12 hours while supplying the rated current. After the removal from test chamber, 2 to 3 hours of recovery under standard condition, and measurement shall be made after 24 ± 2 hrs. of recovery under standard condition.	No visible damage. Inductance variation within 10%. Q variation within 20%.
12	High Temperature State Life Test	Keep a test sample in an atmosphere with a temperature of $85 \pm 2^{\circ}\text{C}$ for 500 ± 12 hours. After the removal from test chamber, 2 to 3 hours of recovery under standard condition, and measurement shall be made after 24 ± 2 hrs. of recovery under standard condition.	No visible damage. Inductance variation within 10%. Q variation within 20%.
13	High Temperature Load	Solder a test sample to printed circuit board then keep the test sample in an atmosphere with a temperature of $85 \pm 2^{\circ}\text{C}$ for 500 ± 12 hours while supplying the rated current. After the removal from test chamber, 2 to 3 hours of recovery under standard condition, and measurement shall be made after 24 ± 2 hrs. of recovery under standard condition.	No visible damage. Inductance variation within 10%. Q variation within 20%.

MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series

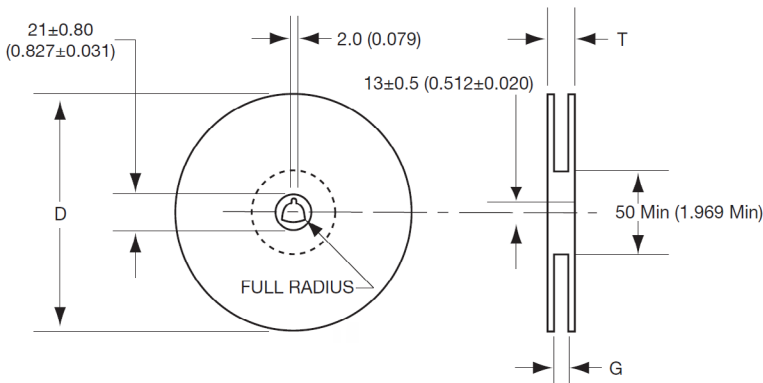
PACKAGING SPECIFICATIONS

Paper tape specification (0201/0402/0603)



Symbol	Product Size					
	0201		0402		0603	
	Size	Tolerance	Size	Tolerance	Size	Tolerance
A	0.36 (0.015)	± 0.02 (0.001)	0.60 (0.024)	± 0.03 (0.001)	0.98 (0.038)	± 0.03 (0.002)
B	0.66 (0.027)	± 0.02 (0.001)	1.12 (0.044)	± 0.03 (0.001)	1.80 (0.071)	± 0.05 (0.002)
F	3.50 (0.138)	± 0.05 (0.002)	3.50 (0.138)	± 0.05 (0.002)	3.50 (0.138)	± 0.05 (0.002)
P	2.00 (0.079)	± 0.10 (0.004)	2.00 (0.079)	± 0.10 (0.004)	4.00 (0.157)	± 0.10 (0.004)
W	8.00 (0.315)	± 0.20 (0.008)	8.00 (0.315)	± 0.20 (0.008)	8.00 (0.315)	± 0.10 (0.008)

Reel Specifications

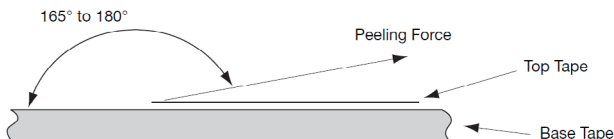


Tape Width	G	T max.	D
8.00 (0.315)	10.0 ± 1.5 (0.394 ± 0.059)	14.5 (0.571)	180 (7.087)

Peel strength of top cover tape

The peel speed shall be about 300 mm/min.

The peel strength of top cover tape shall be between 0.1 to 1.0N.



MULTI-LAYER CERAMIC CHIP INDUCTORS

LCCI Series

Quantity per reel:

0201: 15,000 pieces / reel

0402: 10,000 pieces / reel

0603: 4,000 pieces / reel

The contents of a box:

0201: 5 reels / box

0402: 5 reels / box

0603: 5 reels / box

CAUTIONS

Storage

The chip inductor shall be packaged in carrier tapes.

To keep storage place temperature from +5 to 35°C, humidity from 45 to 70% RH.

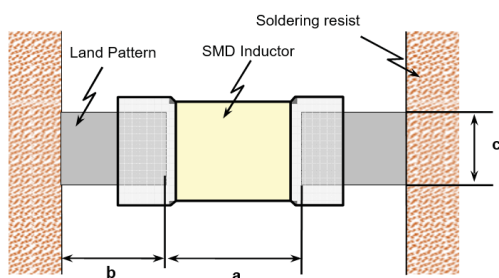
The storage atmosphere must be free of gas containing sulfur and chlorine. Also, avoid exposing the product to saline moisture. If the product is exposed to such atmospheres, the terminals will oxidize and solderability will be affected.

The solderability is assured for 12 months from our final inspection date if the above storage condition is followed.

Handling

Chip inductor should be handled with care to avoid contamination or damage. The use of vacuum pick-up or plastic tweezers is recommended for manual placement. Tape and reeled packages are suitable for automatic pick and placement machine.

Recommended Pad Dimensions



mm (inches)

Size (EIA)	L X W	a	b	c
0201	0.60 x 0.30 (0.024 x 0.012)	0.15 to 0.35 (0.006 to 0.014)	0.20 to 0.30 (0.008 to 0.012)	0.25 to 0.30 (0.010 to 0.012)
0402	1.00 x 0.50 (0.039 x 0.020)	0.30 to 0.50 (0.012 to 0.020)	0.35 to 0.45 (0.014 to 0.018)	0.40 to 0.50 (0.016 to 0.020)
0603	1.60 x 0.80 (0.063 x 0.031)	0.70 to 1.00 (0.028 to 0.039)	0.60 to 0.80 (0.024 to 0.031)	0.70 to 0.80 (0.028 to 0.031)

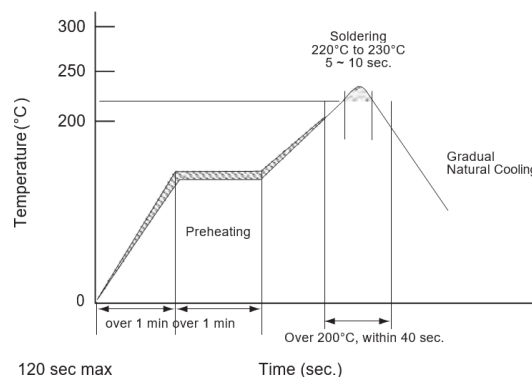
Marking

The following item shall be marked on the reel.

1. Manufactures parts number.
2. Manufacturing date code.
3. Manufacturer name.
4. Manufactures lot number.
5. Quantity.

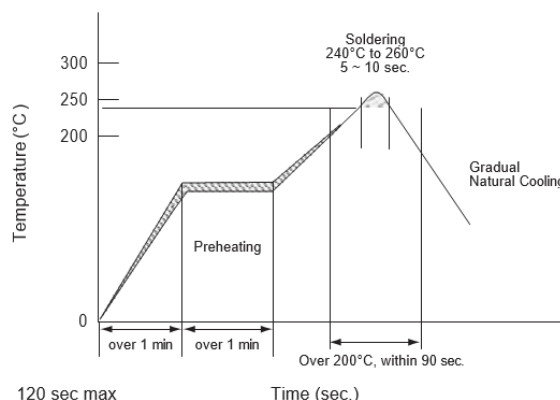
Soldering Profile for SMT Process with SnPb Solder Paste

The rate of preheat should not exceed 4°C/sec. and a target of 2°C/sec. is preferred. Ceramic chip components should be preheated to within 100 to 130°C of the soldering.



Soldering Profile for SMT Process with Lead Free Solder Paste

The rate of preheat should not exceed 4°C/sec. and a target of 2°C/sec. is preferred. Ceramic chip components should be preheated to within 100 to 130°C of the soldering.



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VISIT US AT WWW.KYOCERA-AVX.COM 

North America

Tel: +1 864-967-2150

Europe

Tel: +44 1276-697000

Asia

Tel: +65 6286-7555

Central America

Tel: +55 11-46881960

Japan

Tel: +81 740-321250