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SPECIFICATIONS

SMD Wire Wound Chip Inductor

WL High Q-Serie

Version July 2014

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Scope

– Ceramic body and wire wound construction provide highest SRFs available

Features

- Ceramic base provide high SRF
- Ultra-compact inductors provide high Q factors
- Low profile, high current are available
- Miniature SMD chip inductor for fully automated assembly
- Outstanding endurance from Pull-up force, mechanical shock and pressure
- Tighter tolerance down to $\pm 2\%$
- Smaller size of 0402 (1005)



Applications

RF Products:

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

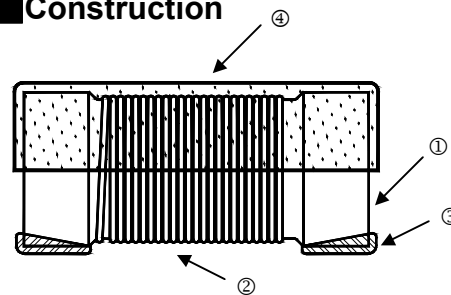
Broad Band Applications:

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

IT Applications:

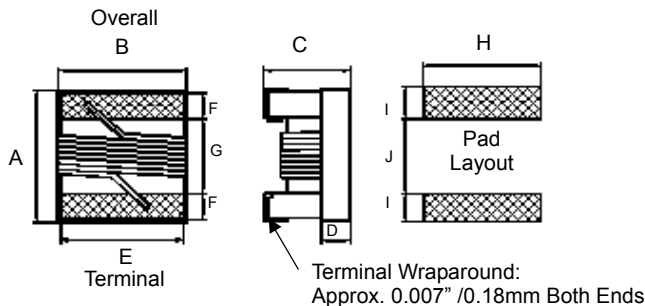
- USB 2.0
- IEEE 1394

Construction



① Ceramic Core	③ Electrode (Ag/Pd+Ni+Sn)
② Magnet Wire	④ UV Glue

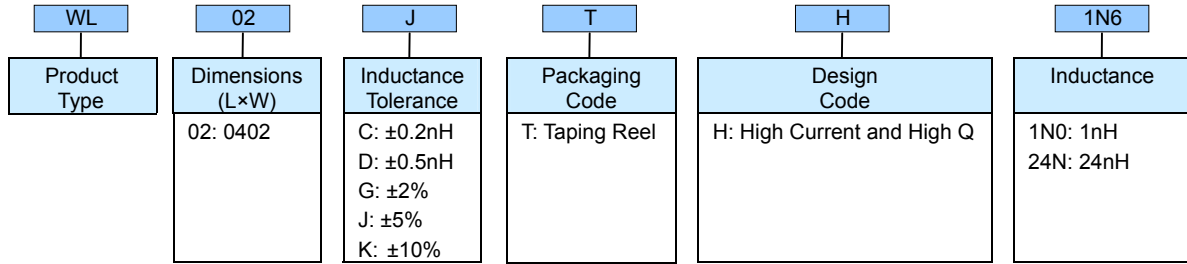
Dimensions



Unit: mm

Type	Size (Inch)	A max.	B max.	C max.	D Ref.	E	F	G	H	I	J
WL02	0402	1.27	0.76	0.61	0.15	0.51	0.23	0.56	0.66	0.50	0.46

Part Numbering



Electrical Specifications

WL02 Wire Wound Chip Inductors /High Q Type

Inductance (nH)	Tolerance	L Freq. (MHz)	Quality Factor		SRF (GHz) min.	DCR (Ω) max.	IDC (mA) max.
			900MHz	1.7GHz			
1.0	±0.2nH, ±0.5nH, ±5%, ±10%	250	46	75	16.0	0.030	2300
2.0	±0.2nH, ±0.5nH, ±5%, ±10%	250	58	85	15.2	0.038	2100
2.2	±0.2nH, ±0.5nH, ±5%, ±10%	250	60	86	15.1	0.038	2100
2.4	±0.2nH, ±0.5nH, ±5%, ±10%	250	60	83	14.0	0.042	2000
2.7	±0.2nH, ±0.5nH, ±5%, ±10%	250	62	85	13.0	0.075	1500
3.3	±0.2nH, ±0.5nH, ±5%, ±10%	250	66	95	12.8	0.045	1700
3.6	±0.2nH, ±0.5nH, ±5%, ±10%	250	65	94	11.7	0.045	1700
3.9	±0.2nH, ±0.5nH, ±5%, ±10%	250	64	98	9.50	0.045	1700
4.3	±0.5nH, ±5%, ±10%	250	63	90	7.15	0.050	1600
4.7	±0.5nH, ±5%, ±10%	250	58	83	6.85	0.070	1500
5.1	±2%, ±5%, ±10%	250	54	76	6.80	0.115	1200
5.6	±2%, ±5%, ±10%	250	73	105	6.50	0.050	1600
6.2	±2%, ±5%, ±10%	250	73	100	5.80	0.055	1600
6.8	±2%, ±5%, ±10%	250	68	94	5.80	0.065	1500
7.5	±2%, ±5%, ±10%	250	60	82	5.40	0.090	1400
8.2	±2%, ±5%, ±10%	250	68	95	5.40	0.065	1500
8.7	±2%, ±5%, ±10%	250	68	95	5.00	0.065	1500
9.0	±2%, ±5%, ±10%	250	67	92	5.00	0.080	1400
9.5	±2%, ±5%, ±10%	250	64	90	4.70	0.090	1400
10	±2%, ±5%, ±10%	250	62	90	4.70	0.100	1300
11	±2%, ±5%, ±10%	250	68	98	4.70	0.065	1400
12	±2%, ±5%, ±10%	250	66	100	4.40	0.100	1200
13	±2%, ±5%, ±10%	250	62	82	4.20	0.150	870
15	±2%, ±5%, ±10%	250	62	85	3.90	0.110	1100
16	±2%, ±5%, ±10%	250	57	77	3.70	0.140	850
18	±2%, ±5%, ±10%	250	58	74	3.55	0.120	900
19	±2%, ±5%, ±10%	250	61	88	3.50	0.145	850
20	±2%, ±5%, ±10%	250	58	76	3.50	0.185	780
21	±2%, ±5%, ±10%	250	48	62	1.70	0.460	450
22	±2%, ±5%, ±10%	250	60	74	3.30	0.160	800
23	±2%, ±5%, ±10%	250	60	77	3.30	0.160	800
24	±2%, ±5%, ±10%	250	55	71	3.15	0.200	700
25	±2%, ±5%, ±10%	250	57	73	3.15	0.250	600
26	±2%, ±5%, ±10%	250	56	74	3.15	0.285	450
27	±2%, ±5%, ±10%	250	62	86	3.20	0.320	450
30	±2%, ±5%, ±10%	250	61	87	2.90	0.330	450
33	±2%, ±5%, ±10%	250	61	80	2.80	0.330	490
36	±2%, ±5%, ±10%	250	59	76	2.80	0.380	480
37	±2%, ±5%, ±10%	250	57	72	2.70	0.460	470
39	±2%, ±5%, ±10%	250	56	84	2.60	0.430	450
40	±2%, ±5%, ±10%	250	56	75	2.60	0.430	450
43	±2%, ±5%, ±10%	250	52	68	2.50	0.520	450
47	±2%, ±5%, ±10%	250	48	62	2.40	0.580	420
51	±2%, ±5%, ±10%	250	52	59	2.30	0.700	360

Environmental Characteristics

Electrical Performance Test

Item	Requirement	Test Method
Inductance	Refer to standard electrical characteristic spec.	E4982A
Q		E4982A
SRF		E4982A
DC Resistance RDC		E4982A
Rated Current IDC		Applied the current to coils, the temperature of coil increases $\Delta T15^{\circ}C$ ($T_a=25^{\circ}C$).
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 V _{DC} applied between inductor terminal and case

Mechanical Performance Test

Item	Requirement	Test Method
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: $260\pm 5^{\circ}C$ 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 sub 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-STD-202F, Method 215D

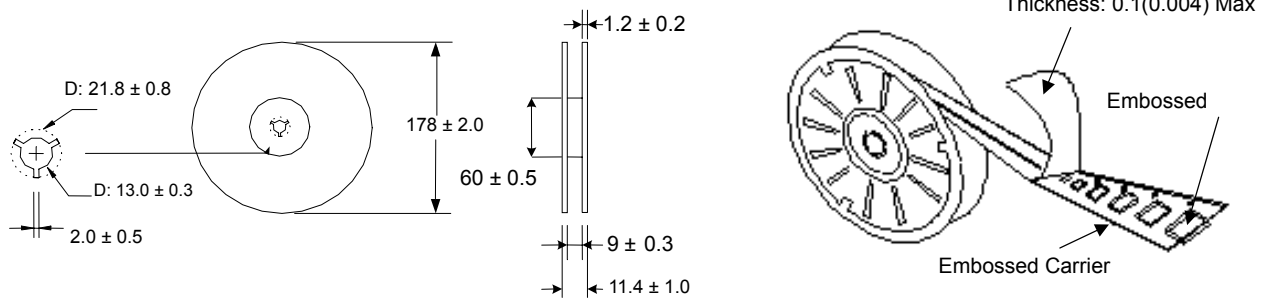
Climatic Test

Item	Requirement	Item															
Temperature Characteristic	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 20\%$	-40~+125 $^{\circ}C$															
Humidity		Temperature: $40\pm 2^{\circ}C$ Relative Humidity: 90~95% Time: 96 ± 2 hrs Measured after exposure in the room condition for 2 hrs															
Low Temperature Storage		Temperature: $-40\pm 2^{\circ}C$ Time: 96 ± 2 hrs Inductors are tested after 1 hour at room temperature															
Thermal Shock		One cycle: <table border="1" style="width: 100%;"> <thead> <tr> <th>Step</th> <th>Temperature ($^{\circ}C$)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <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> </tbody> </table> Total: 5 cycles	Step	Temperature ($^{\circ}C$)	Time (min.)	1	-25 ± 3	30	2	25 ± 2	15	3	125 ± 3	30	4	25 ± 2	15
Step		Temperature ($^{\circ}C$)	Time (min.)														
1		-25 ± 3	30														
2		25 ± 2	15														
3	125 ± 3	30															
4	25 ± 2	15															
High Temperature Storage	Temperature: $125\pm 2^{\circ}C$ Time: 96 ± 2 hrs Measured after exposure in the room condition for 1hour																
High Temperature Load Life	Temperature: $85\pm 2^{\circ}C$ Time: 1000 ± 12 hrs Load: Allowed DC current																
Damp Heat with Load	Temperature: $40\pm 2^{\circ}C$ Relative Humidity: 90~95% Time: 1000 ± 12 hrs Load: Allowed DC current																

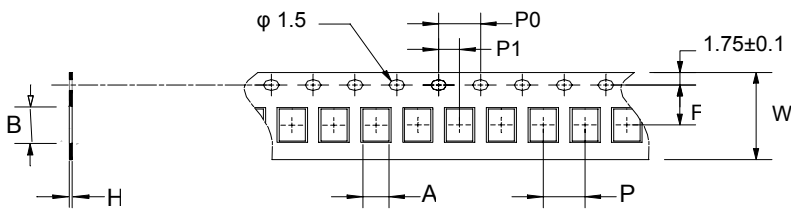
Storage Temperature: $25\pm 3^{\circ}C$; Humidity < 80%RH

■ Packaging

Reel Dimensions & Packaging Quantity



Paper Tape specification and Packaging Quantity



Unit : mm

Type	A	B	H	F	P	P ₀	P ₁	W	Reel (EA)
WL02	0.72	1.19	0.60	3.50	2.00	4.00	2.00	8.00	4,000