

繞線貼片電感

HWC103/05/08 Series  
Wire Wound Chip Inductor (High Q)

**Feature**

Wire wound Ceramic Construction Provide High SRFs  
Ultra-compact Inductors Provide Exceptional Q Values  
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 of  $\pm 2\%$   
Smaller Size of 0402 (1005)

**Application**

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

Figure:



**IT Applications:**

USB 2.0  
IEEE 1394

**Broad Band Applications:**

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

**ORDERING INFORMATION**

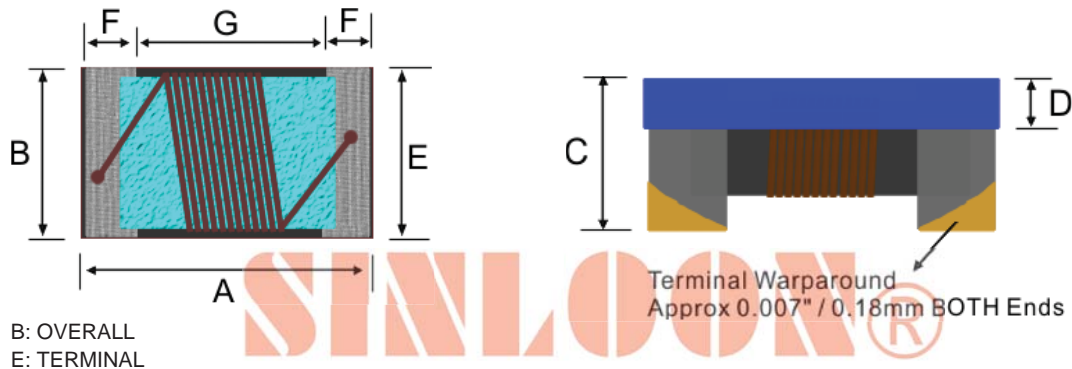
Example: HWC103G10NT

Size	Design	Type	Tolerance	Inductance	Packing	Quantity
0402	S	WCI02	G= $\pm 2\%$	1N0=1 nH	T=Taping	4K/Reel
0603	L	WCI03	H= $\pm 3\%$	10N= 10 nH	B=Bulk	4K/Reel
0805	H	WCI05	J= $\pm 5\%$	101=100nH		2K/Reel
1008		WCI08	K= $\pm 10\%$	102=1000nH		2K/Reel
1206		WCI06	M= $\pm 20\%$	103=10000nH		2K/Reel

**DIMENSION**

Unit: mm

Type	A (Max)	B (Max.)	C (Max.)	D (Ref.)	E	F	G
SWCI02	1.27	0.76	0.61	0.15	0.15	0.23	0.56
SWCI03	1.80	1.12	1.02	0.38	0.76	0.33	0.86
SWCI05	2.29	1.73	1.52	0.51	1.27	0.44	1.02
SWCI08	2.92	2.79	2.03	0.65	2.03	0.51	1.52
SWCI06	3.56	2.16	1.52	0.50	1.20	0.50	2.20
LWCI05	2.29	1.73	1.03	0.51	1.27	0.44	1.02
LWCI08	2.92	2.79	2.03	0.65	2.03	0.51	1.52
HWC103	1.80	1.12	1.02	0.38	0.76	0.33	0.86
HWC105	2.29	1.73	1.52	0.51	1.27	0.44	1.02
HWC108	2.92	2.79	2.03	0.65	2.03	0.51	1.52



**Remark Design:**

S = Standard.  
L = Low Profile Inductor.  
H = High Current and High Q

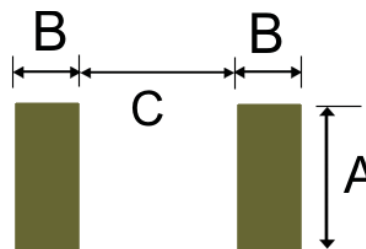
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HWCI03/05/08 Series

Wire Wound Chip Inductor (High Q)

PAD LAYOUT

Type	A	B	C
SWCI02	0.66	0.50	0.46
SWCI03	1.02	0.64	0.64
SWCI05	1.78	1.02	0.76
SWCI08	2.54	1.02	1.27
SWCI06	1.93	1.02	1.78
LWCI05	1.78	1.02	0.76
LWCI08	2.54	1.02	1.27
HWCI03	1.02	0.64	0.64
HWCI05	1.78	1.02	0.76
HWCI08	2.54	1.02	1.27



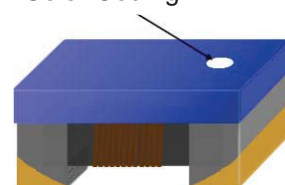
Color Coding

0603 / 0805/1206/1008 Series (0402 Series is No Color Coding)

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 series.

Color Coding



Environmental Characteristics

Mechanical Performance

Item	Specification	Test Method
1 Vibration Test	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 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
2 Resistance to		Solder Temperature: $260 \pm 5^\circ\text{C}$ Immersion Time: $10 \pm 2\text{sec}$
3 Component Adhesion	1 lbs. For 0402 2 lbs. For 0603 3 lbs. For the rest	The device should be soldered ( $260 \pm 5^\circ\text{C}$ 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
4 Drop Test	No damage	pounds without a failure of adhesion on termination Dropping chip by each side and each corner. Drop 10 times in total Drop height :100cm Drop weight:125g
5 Solderability Test	90% covered with solder.	Inductor shall be dipped in a melted solder bath at $235 \pm 5^\circ\text{C}$ for 5 second
6 Resistance to Solvent Test	No damage on appearance and marking.	MIL-STD202F, Method 215D

Electrical Performance Test

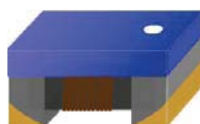
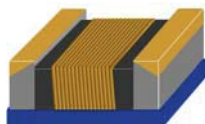
Item	Specification	Test Method
1. Inductance	Refer to standard electrical characteristic spec.	HP4291B
2. Q		HP4291B
3. SRF		HP8753D
4. DC Resistance RDC		Micro-Ohm meter (Gom-801G)
5. Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value
6. Over Load Test	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 minute
7 Withstanding Voltage Test	Inductors shall be no evidence of electrical and mechanical damage.	AC voltage of 500 VAC applied between inductors terminal and case for 1 minute.
8 Insulation Resistance Test	1000M ohm min	100 VDC applied between inductor terminal and case

**Environmental Characteristics**

Climatic Test

Item	Specification	Test Method															
1 Temperature Characteristic	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 20\%$	-40°C ~ +125°C Temperature: 40 $\pm 2$ °C Relative Humidity: 90~95% Time: 96hrs $\pm 2$ hrs Measured after exposure in the room condition for 2hrs															
2 Humidity Resistance		Temperature: -40 $\pm 2$ °C Time: 96 $\pm 2$ hrs Inductors are tested after 1 hour at room temperature															
3 Low Temperature Storage Test		One cycle: Total: 5 cycles															
4 Thermal Shock Test		<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25<math>\pm 3</math></td> <td>30</td> </tr> <tr> <td>2</td> <td>25<math>\pm 2</math></td> <td>15</td> </tr> <tr> <td>3</td> <td>125<math>\pm 3</math></td> <td>30</td> </tr> <tr> <td>4</td> <td>25<math>\pm 2</math></td> <td>15</td> </tr> </tbody> </table>	Step	Temperature (°C)	Time (min)	1	-25 $\pm 3$	30	2	25 $\pm 2$	15	3	125 $\pm 3$	30	4	25 $\pm 2$	15
Step		Temperature (°C)	Time (min)														
1		-25 $\pm 3$	30														
2		25 $\pm 2$	15														
3	125 $\pm 3$	30															
4	25 $\pm 2$	15															
5 High Temperature Storage Test	Temperature: 125 $\pm 2$ °C Time: 96 $\pm 2$ hrs Measured after exposure in the room condition for 1hr																
6 High Temperature Load Life Test	Temperature: 85 $\pm 2$ °C Time: 1000 $\pm 12$ hrs Load: Allowed DC current																
7 Humidity Load Life	Temperature: 40 $\pm 2$ °C Relative Humidity: 90~95% Time: 1000 $\pm 12$ hrs Load: Allowed DC current																

※Storage Temperature :25 $\pm 3$ °C; Humidity:<80%RH



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HWCI03/05/08 Series

Standard Electrical Specifications

Wire Wound Chip Inductor (High Q)

HWCI03 Wire Wound Chip Inductors (High Current)

Part Number	Inductance nH	Tolerance (%)	Quality Factor /min.	Self Resonant Frequency /min. (GHz)	Resistance DC/Max (Ohm)	Current DC/Max (mA)	Color Code
HWCI03 □1N6T	1.6 @ 250MHz	10,5	24	12.50	0.030	2400	Black
HWCI03 □3N6T	3.6 @ 250MHz	10,5	24	5.90	0.048	2300	Brown
HWCI03 □3N9T	3.9 @ 250MHz	10,5	25	5.90	0.054	2200	Red
HWCI03 □6N8T	6.8 @ 250MHz	10,5	35	5.80	0.054	2100	Orange
HWCI03 □7N5T	7.5 @ 250MHz	10,5	35	3.70	0.059	2100	Yellow
HWCI03 □8N2T	8.2 @ 250MHz	10,5	38	3.70	0.060	2000	White
HWCI03 □10NT	10.0 @ 250MHz	10,5,2	38	3.70	0.071	2000	Green
HWCI03 □12NT	12.0 @ 250MHz	10,5,2	38	3.00	0.075	2000	Blue
HWCI03 □15NT	15.0 @ 250MHz	10,5,2	38	2.80	0.080	1900	Violet
HWCI03 □18NT	18.0 @ 250MHz	10,5,2	40	2.80	0.099	1900	Gray
HWCI03 □22NT	22.0 @ 250MHz	10,5,2	42	2.40	0.099	1800	White
HWCI03 □24NT	24.0 @ 250MHz	10,5,2	42	2.40	0.105	1800	Black

HWCI05 Wire Wound Chip Inductor (High Q)

Part Number	Inductance nH	Tolerance (%)	Quality Factor /min.	Self Resonant Frequency /min. (GHz)	Resistance DC/Max (Ohm)	Current DC/Max (mA)	Color Code
HWCI05 □2N5T	2.5 @ 250MHz	10,5	80 @ 1500MHz	6.00	0.020	1600	Black
HWCI05 □5N6T	5.6 @ 250MHz	10,5	98 @ 1500MHz	6.00	0.035	1600	Brown
HWCI05 □6N2T	6.2 @ 250MHz	10,5	88 @ 1000MHz	4.75	0.035	1600	Red
HWCI05 □6N8T	6.8 @ 250MHz	10,5	80 @ 1000MHz	4.40	0.035	1600	White
HWCI05 □8N2T	8.2 @ 250MHz	10,5	75 @ 1000MHz	3.00	0.075	1000	Gray
HWCI05 □10NT	10 @ 250MHz	10,5	80 @ 1000MHz	3.00	0.060	1600	Black
HWCI05 □12NT	12 @ 250MHz	10,5	80 @ 1000MHz	3.00	0.045	1600	Orange
HWCI05 □15NT	15 @ 250MHz	10,5,2	80 @ 1000MHz	2.80	0.100	1200	Black
HWCI05 □16NT	16 @ 250MHz	10,5,2	72 @ 500MHz	2.95	0.060	1500	Yellow
HWCI05 □18NT	18 @ 250MHz	10,5,2	75 @ 500MHz	2.55	0.060	1400	Green
HWCI05 □20NT	20 @ 250MHz	10,5,2	70 @ 500MHz	2.05	0.055	1400	Blue
HWCI05 □22NT	22 @ 250MHz	10,5,2	80 @ 500MHz	2.00	0.100	1200	Black
HWCI05 □27NT	27 @ 250MHz	10,5,2	75 @ 500MHz	2.00	0.070	1300	Violet
HWCI05 □30NT	30 @ 250MHz	10,5,2	65 @ 500MHz	1.95	0.095	1200	Gray
HWCI05 □39NT	39 @ 250MHz	10,5,2	65 @ 500MHz	1.60	0.110	1100	White
HWCI05 □48NT	48 @ 200MHz	10,5,2	65 @ 500MHz	1.40	0.095	1200	Black
HWCI05 □51NT	51 @ 200MHz	10,5,2	65 @ 500MHz	1.40	0.120	1000	Brown

HWCI08 Wire Wound Chip Inductor (High Q)

Part Number	Inductance nH	Tolerance (%)	Quality Factor /min.	Self Resonant Frequency /min. (GHz)	Resistance DC/Max (Ohm)	Current DC/Max (mA)	Color Code
*HWCI08 □3N0T	3.0 @ 50MHz	10,5	70 @ 1500MHz	6.00	0.04	1600	Black
HWCI08 □4N1T	4.1 @ 50MHz	10,5	75 @ 1500MHz	6.00	0.05	1600	Brown
*HWCI08 □7N8T	7.8 @ 50MHz	10,5	75 @ 500MHz	3.80	0.05	1600	Red
HWCI08 □10NT	10 @ 50MHz	10,5,2	60 @ 500MHz	3.60	0.06	1600	Orange
HWCI08 □12NT	12 @ 50MHz	10,5,2	70 @ 500MHz	2.80	0.06	1500	Yellow
HWCI08 □18NT	18 @ 50MHz	10,5,2	62 @ 350MHz	2.70	0.07	1400	Green
HWCI08 □22NT	22 @ 50MHz	10,5,2	62 @ 350MHz	2.05	0.07	1400	Blue
HWCI08 □33NT	33 @ 50MHz	10,5,2	75 @ 350MHz	1.70	0.09	1300	Violet
HWCI08 □39NT	39 @ 50MHz	10,5,2	75 @ 350MHz	1.30	0.09	1300	Gray
HWCI08 □47NT	47 @ 50MHz	10,5,2	75 @ 350MHz	1.45	0.12	1200	White
HWCI08 □56NT	56 @ 50MHz	10,5,2	75 @ 350MHz	1.23	0.12	1200	Black
HWCI08 □68NT	68 @ 50MHz	10,5,2	80 @ 350MHz	1.15	0.13	1100	Brown
HWCI08 □82NT	82 @ 50MHz	10,5,2	80 @ 350MHz	1.06	0.16	1100	Red
HWCI08 □101NT	100 @ 50MHz	10,5,2	52 @ 350MHz	0.82	0.16	1000	Orange

\* Parts (3.0nH, 7.8nH) are wound on a low profile bobbin.