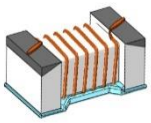
Mini Size and Ultra High Q Wire Wound Chip Ceramic Inductor-MWSD0603C/0804C Series



Background

With the development of 5G technology, high-speed, low-latency and wide-coverage networks has brought new opportunities and challenges to wireless communication devices. Especially in RF front-end, with more frequency bands used in 5G smart phone, it requires lower loss of RF devices to improve the receiving sensitivity and anti-interference capability in each frequency band. On the other hand, smart phones are becoming thinner and thinner, leaving less space for components. So small size RF inductor with higher Q value are needed.

At present, the mainstream size of the winding inductor used in smart phone is 1005 (1.0*1.0*0.5 mm). If 0603 (0.53*0.4*0.4 mm) winding inductor with the same performance as 1005 is developed, it will further help reuduce the size of high-end smartphone. Therefore, Sunlord developed mini size and ultra high Q wire wound chip ceramic inductor-MWSD0603C/0804C series to achieve this goal.

Features

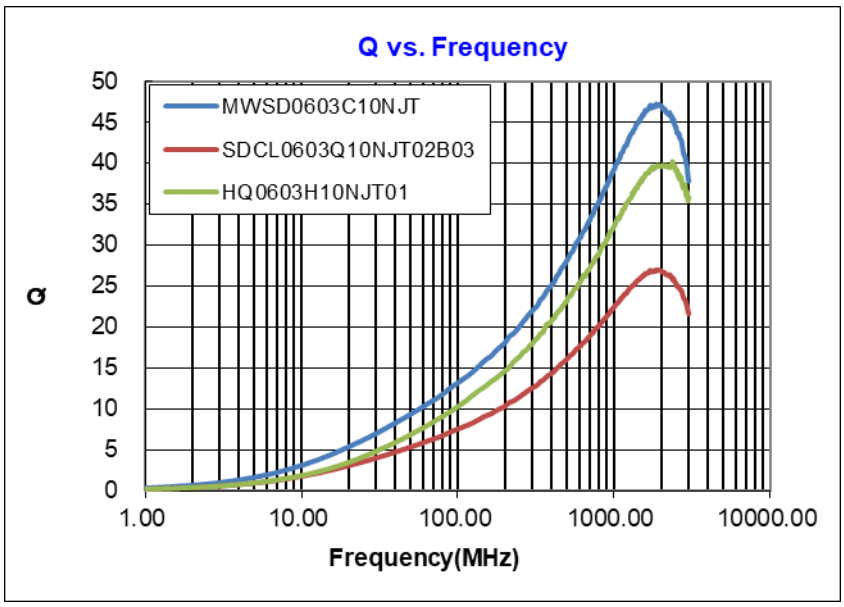
- High Q value
- Winding structure, super small size
- High self-resonant frequency
- Low DCR, high current

Applications

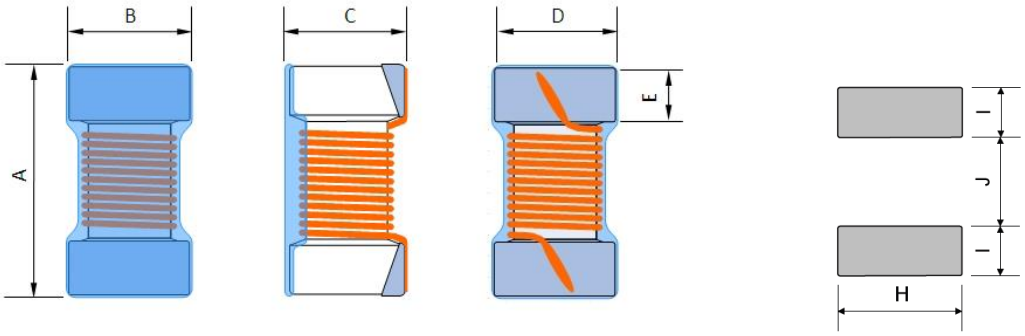
- RF circuits for smart phones, smart wearable devices, etc.
- Various wireless communication modules such as Wi-Fi/Bluetooth.

Q Value Comparison

Wire wound chip ceramic inductor MWSD0603C series has a higher Q value compared with multilayer chip ceramic inductor SDCL0603Q and HQ0603H series.



Shape and Dimensions



Unit: mm

Series	A	B	C	D	E	H Ref.	I Ref.	J Ref.
MWSD0603C	0.53±0.05	0.40±0.05	0.40±0.05	0.40±0.0	0.12±0.05	1.15	0.64	0.64
MWSD0804C	0.80±0.05	0.40±0.05	0.40±0.05	0.40±0.0	0.15±0.05	0.50	0.25	0.43

Part Number

MWSD 0603 C 10N □ T

① ② ③ ④ ⑤ ⑥

①

Type	
MWSD	Wire Wound Chip Inductor

②

(L×W) (mm) External Dimensions (L×W) (mm)	
0603 [0201]	0.53×0.4
0804 [03015]	0.8×0.4

③

Material Code	
C	Ceramic

④

Nominal Inductance	
Example	Nominal Value
4N7	4.7nH
10N	10nH
R10	100nH

⑤

Inductance Tolerance	
C	±0.2nH
D	±0.5nH
H	±3%
J	±5%
K	±10%

⑥

Packing	
B	Bulk Package
T	Tape & Reel

Specifications

MWSD0603C Series

Part Number	Inductance	Tolerance	Min. Quality Factor	L/Q Test Freq.	Min. Self-resonant Frequency	Max. DC Resistance	Max. Rated Current
Units	nH	-	-	MHz	GHz	Ω	mA
Symbol	L	-	Q	Freq.	S.R.F	DCR	Ir
MWSD0603C1N0□T	1.0	C,D	48	250/900	19.0	0.03	900
MWSD0603C1N1□T	1.1	C,D	41	250/900	19.0	0.06	660
MWSD0603C1N7□T	1.7	C,D	41	250/900	19.0	0.07	600
MWSD0603C1N8□T	1.8	C,D	37	250/900	19.0	0.10	520
MWSD0603C1N9□T	1.9	C,D	41	250/900	19.0	0.08	620
MWSD0603C2N0□T	2.0	C,D	42	250/900	19.0	0.10	490
MWSD0603C2N1□T	2.1	C,D	35	250/900	19.0	0.16	400
MWSD0603C2N2□T	2.2	C,D	33	250/900	19.0	0.16	400
MWSD0603C2N7□T	2.7	C,D	46	250/900	15.0	0.06	720
MWSD0603C2N8□T	2.8	C,D	44	250/900	14.0	0.08	600
MWSD0603C2N9□T	2.9	C,D	41	250/900	13.0	0.10	540
MWSD0603C3N0□T	3.0	C,D	34	250/900	14.0	0.22	350
MWSD0603C3N1□T	3.1	C,D	48	250/900	12.0	0.07	720
MWSD0603C3N2□T	3.2	C,D	48	250/900	10.0	0.08	580
MWSD0603C3N3□T	3.3	C,D	47	250/900	11.0	0.11	520
MWSD0603C3N4□T	3.4	C,D	43	250/900	11.0	0.15	440
MWSD0603C3N5□T	3.5	C,D	43	250/900	12.0	0.15	440
MWSD0603C3N6□T	3.6	C,D	36	250/900	11.0	0.23	340
MWSD0603C3N7□T	3.7	C,D	38	250/900	11.0	0.23	340
MWSD0603C3N9□T	3.9	C,D	38	250/900	11.0	0.25	500
MWSD0603C4N1□T	4.1	C,D	48	100/900	11.0	0.07	650
MWSD0603C4N3□T	4.3	D,J	45	100/900	11.0	0.12	480
MWSD0603C4N7□T	4.7	D,J	45	100/900	9.5	0.09	620
MWSD0603C5N1□T	5.1	D,J	45	100/900	9.5	0.14	480

MWSD0603C5N4□T	5.4	D,J	46	100/900	9.5	0.21	420
MWSD0603C5N6□T	5.6	D,J	37	100/900	8.3	0.33	330
MWSD0603C6N0□T	6.0	D,J	47	100/900	8.8	0.16	460
MWSD0603C6N2□T	6.2	D,J	39	100/900	9.9	0.22	360
MWSD0603C6N8□T	6.8	D,J	42	100/900	7.7	0.18	460
MWSD0603C7N5□T	7.5	D,J	41	100/900	7.5	0.24	400
MWSD0603C8N2□T	8.2	D,J	40	100/900	8.5	0.26	290
MWSD0603C8N7□T	8.7	D,J	39	100/900	7.5	0.42	290
MWSD0603C9N1□T	9.1	D,J	46	100/900	6.4	0.22	460
MWSD0603C10N□T	10.0	J	37	100/900	7.2	0.46	250
MWSD0603C11N□T	11.0	J	37	100/900	7.0	0.47	260
MWSD0603C12N□T	12.0	J	39	100/900	6.0	0.54	280
MWSD0603C13N□T	13.0	J	39	100/900	5.9	0.54	280
MWSD0603C14N□T	14.0	J	37	100/900	6.0	0.53	240
MWSD0603C15N□T	15.0	J	38	100/900	5.7	0.60	230

MWSD0804C Series

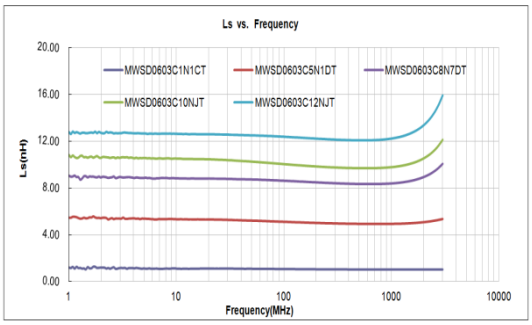
Part Number	Inductance	Tolerance	Min. Quality Factor	L/Q Test Freq.	Min. Self-resonant Frequency	Max. DC Resistance	Max.Rated Current
Units	nH	-	-	MHz	GHz	Ω	mA
Symbol	L	-	Q	Freq.	S.R.F	DCR	Ir
MWSD0804C0N8□T	0.8	C,D	23	100/250	20	0.02	1800
MWSD0804C1N1□T	1.1	C,D	15	100/250	20	0.03	990
MWSD0804C1N3□T	1.3	C,D	15	100/250	20	0.03	1500
MWSD0804C1N6□T	1.6	C,D	15	100/250	17	0.06	700
MWSD0804C1N7□T	1.7	C,D	15	100/250	17	0.06	700
MWSD0804C1N8□T	1.8	C,D	15	100/250	17	0.06	700
MWSD0804C1N9□T	1.9	C,D	10	100/250	15	0.12	490
MWSD0804C2N3□T	2.3	C,D	18	100/250	20	0.07	780
MWSD0804C2N4□T	2.4	C,D	15	100/250	15	0.07	570
MWSD0804C2N5□T	2.5	C,D	10	100/250	10	0.12	490
MWSD0804C2N6□T	2.6	C,D	15	100/250	15	0.07	620
MWSD0804C2N7□T	2.7	C,D	15	100/250	15	0.07	570
MWSD0804C2N8□T	2.8	C,D	15	100/250	15	0.07	620
MWSD0804C3N0□T	3.0	C,D	15	100/250	13	0.07	620
MWSD0804C3N3□T	3.3	C,D	10	100/250	10.0	0.14	440
MWSD0804C3N4□T	3.4	C,D	10	100/250	8.0	0.27	310
MWSD0804C3N6□T	3.6	C,D	15	100/250	13.0	0.10	530
MWSD0804C3N7□T	3.7	C,D	20	100/250	10.0	0.14	440
MWSD0804C3N8□T	3.8	C,D	15	100/250	11.0	0.10	530
MWSD0804C3N9□T	3.9	C,D	15	100/250	12.0	0.10	530
MWSD0804C4N3□T	4.3	C,D	15	100/250	11.0	0.10	530
MWSD0804C4N5□T	4.5	C,D	20	100/250	10.0	0.14	440
MWSD0804C5N0□T	5.0	C,D	15	100/250	9.0	0.23	350
MWSD0804C5N1□T	5.1	C,D	20	100/250	10.0	0.12	470
MWSD0804C5N6□T	5.6	C,D	20	100/250	9.0	0.12	470
MWSD0804C6N2□T	6.2	C,D	20	100/250	9.0	0.19	390
MWSD0804C6N5□T	6.5	C,D	20	100/250	9.0	0.19	390
MWSD0804C6N8□T	6.8	C,D	20	100/250	9.0	0.14	440
MWSD0804C7N5□T	7.5	C,D	20	100/250	8.0	0.14	440
MWSD0804C8N2□T	8.2	C,D	20	100/250	8.0	0.23	350
MWSD0804C9N0□T	9.0	C,D	20	100/250	7.0	0.26	330
MWSD0804C9N5□T	9.5	C,D	20	100/250	7.0	0.26	330
MWSD0804C9N9□T	9.9	C,D	20	100/250	7.0	0.26	330
MWSD0804C10N□T	10	H,J	20	100/250	7.0	0.26	330

MWSD0804C12N□T	12	H,J	15	100/250	6.0	0.28	310
MWSD0804C18N□T	18	H,J	15	100/250	5.0	0.54	220
MWSD0804C24N□T	24	H,J	15	100/250	4.0	0.95	160
MWSD0804C33N□T	33	H,J	15	100/250	4.0	1.11	140
MWSD0804C43N□T	43	J	15	100/250	1.6	1.20	180
MWSD0804C56N□T	56	J	13	100/250	1.2	1.60	130

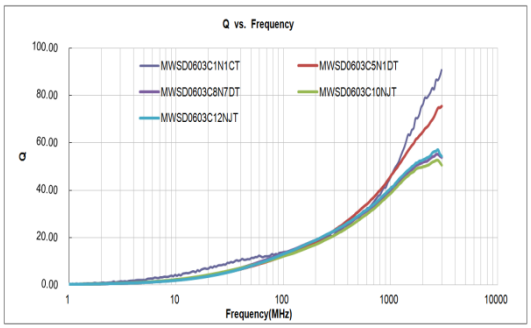
Frequency Spectrum

MWSD0603C TYPE

Inductance vs. Frequency Characteristics

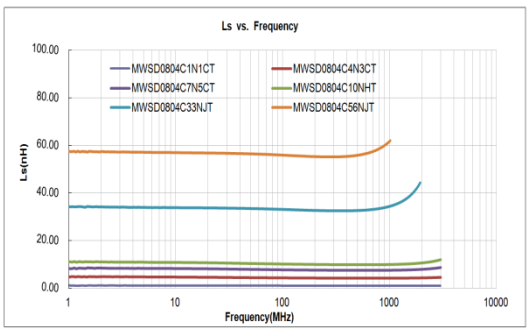


Q vs. Frequency Characteristics

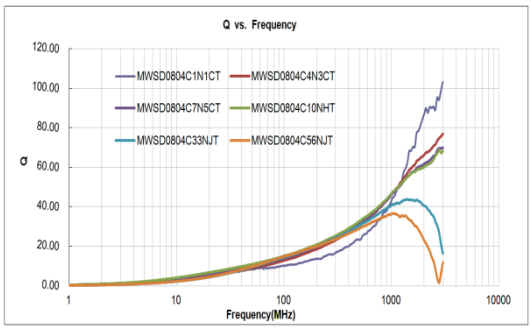


MWSD0804C TYPE

Inductance vs. Frequency Characteristics



Q vs. Frequency Characteristics



Production

Mass production.

All the pictures in this article are from Sunlord