

# SMT Power Inductors

# SCD Series



## Features

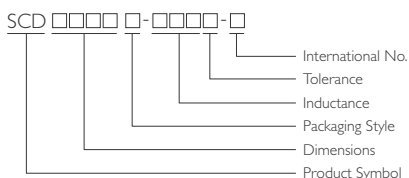
- High saturation for surface mounting

Various high power surface mountable type inductors are superior to high saturation. These are also magnetic shielding type for consideration against radiation.

## Application

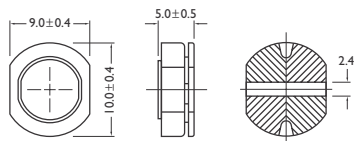
- VRT, OA equipment, LCD television set, notebook computer, portable communications equipment, DC/DC converters, etc.

## PRODUCT IDENTIFICATION



- Packing : T : Tape and Reel
- Tolerance : K±10%;M±20%
- Note : YAGEO will start to release SCD Series inductor with lead-free terminals that meet SONY SS-00259's criterial for lead-free product in Q2 of 2004, and YAGEO Internal No will changed to "N" as identification. Ex. SCD0403T-1R0N

SCDR1005B  
(10μH ~ 470μH)



## SHAPES AND DIMENSIONS

Dimensions : mm

TYPE	DIMENSION				
SCD0403 (1μH ~ 68μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.
SCD0504 (10μH ~ 220μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.
SCD0703 (10μH ~ 330μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.
SCD0705 (10μH ~ 470μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.
SCD1004 (10μH ~ 560μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.
SCD1005 (10μH ~ 820μH)					
Dimensions in mm	2.2μH~1500μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH	1.0μH~1000μH
Dim.	SCD 03015	SCD 03021	SCD 0501	SCD 0502	SCD 03015
A	3.3±0.3	3.3±0.3	5.8±0.3	5.8±0.3	5.8±0.3
B	3.0±0.3	3.0±0.3	5.2±0.3	5.2±0.3	5.2±0.3
C	1.5±0.3	2.1±0.3	2.2Max.	2.5±0.3	3±0.3
D	1.0±TYP.	1.0±TYP.	2.0±TYP.	2.0±TYP.	2.0±TYP.



## SCD STANDARD SPECIFICATIONS

### Electrical Characteristics

#### Standard Specifications

Stamp	Inductance ( $\mu\text{H}$ )	Rated D.C. Current (A) Max.											
		SCD 03015	SCD 03021	SCD 0403	SCD 0501	SCD 0502	SCD 0503	SCD 0504	SCD 0703	SCD 0705	SCD 1004	SCD 1005	SCDR 1005B
1R0	1.0		2.080	3.80	4.00	4.50	4.50			3.70			
1R2	1.2					4.20							
1R4	1.4		1.860	3.30	3.60	4.00				3.70			
1R5	1.5					4.10							
1R8	1.8		1.800	2.91	3.00	3.30	3.70			3.70			
2R2	2.2	0.79	1.390	2.60	2.65	2.94	3.50						
2R7	2.7		1.320	2.43	2.20	2.50	3.20			3.70			
3R3	3.3		1.250	2.15	2.11	2.35	2.80						
3R9	3.9		1.200	1.98	2.00	2.20	2.60			3.70			
4R7	4.7	0.65	1.130	1.70	1.80	2.00	2.50			3.50		2.60	
5R6	5.6		0.910	1.60	1.60	1.80	2.40			3.30			
6R8	6.8		0.850	1.41	1.50	1.70	2.20			3.10		4.33	
8R2	8.2		0.820	1.26	1.30	1.40	2.00			2.70			
100	10	0.45	0.740	1.15	1.10	1.20	1.80	1.44	1.44	2.30	2.38	2.60	2.06
120	12		0.640	1.05	1.05	1.18	1.75	1.40	1.39	2.00	2.13	2.45	1.94
150	15	0.30	0.600	0.92	1.00	1.15	1.70	1.30	1.24	1.80	1.87	2.27	1.72
180	18		0.540	0.84	0.95	1.10	1.60	1.23	1.12	1.60	1.73	2.15	1.58
220	22	0.25	0.500	0.76	0.90	1.00	1.50	1.11	1.07	1.50	1.60	1.95	1.42
270	27		0.430	0.71	0.77	0.86	1.40	0.97	0.94	1.30	1.44	1.76	1.32
330	33	0.20	0.400	0.64	0.68	0.76	1.10	0.88	0.85	1.20	1.26	1.50	1.16
390	39		0.370	0.59	0.67	0.75	1.00	0.80	0.74	1.10	1.20	1.37	1.10
470	47	0.17	0.360	0.54	0.66	0.73	0.90	0.72	0.68	1.10	1.10	1.28	1.00
500	50		0.330		0.61								
560	56		0.310	0.50	0.50	0.55	0.85	0.68	0.64	0.94	1.01	1.17	0.93
680	68	0.13	0.300	0.467	0.47	0.52	0.80	0.61	0.59	0.85	0.91	1.11	0.85
750	75		0.290		0.46								
820	82		0.280		0.45	0.50	0.65	0.58	0.54	0.78	0.85	1.00	0.79
101	100	0.10	0.250	0.40	0.36	0.40	0.60	0.52	0.51	0.72	0.74	0.97	0.72
121	120		0.200		0.32	0.36	0.58	0.48	0.49	0.66	0.69	0.89	0.63
151	150		0.190		0.270	0.30	0.43	0.40	0.40	0.58	0.61	0.78	0.55
181	180		0.170		0.230	0.26	0.41	0.38	0.36	0.51	0.56	0.72	0.50
221	220		0.160		0.220	0.25	0.38	0.35	0.31	0.49	0.53	0.66	0.47
271	270		0.140		0.190	0.21	0.35	0.29	0.29	0.42	0.45	0.57	0.41
301	300		0.135		0.180								
331	330		0.130		0.160	0.18	0.28	0.28	0.28	0.40	0.42	0.52	0.37
391	390		0.120		0.150	0.16	0.26	0.26		0.36	0.38	0.48	0.35
471	470		0.084		0.135	0.15	0.20	0.12		0.34	0.35	0.42	0.33
561	560		0.080		0.130	0.14	0.19	0.10			0.32	0.33	
681	680		0.080		0.120	0.13	0.18	0.08				0.28	
821	820		0.070		0.063	0.07	0.15	0.05				0.24	
102	1000		0.060		0.045	0.05	0.13	0.03					
122	1200	0.05											
152	1500	0.03											

#### Tolerance Of Inductors

- SCD03015 1.0 ~ 100 $\mu\text{H}$   $\pm 20\%$ (M)
- SCD03021 1.0 ~ 1000 $\mu\text{H}$   $\pm 20\%$ (M)
- SCD0403 1.0 ~ 27 $\mu\text{H}$   $\pm 20\%$ (M) 33 ~ 68 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD0501 1.0 ~ 27 $\mu\text{H}$   $\pm 20\%$ (M) 33 ~ 1000 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD0502 1.0 ~ 27 $\mu\text{H}$   $\pm 20\%$ (M) 33 ~ 1000 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD0504 1.0 ~ 27 $\mu\text{H}$   $\pm 20\%$ (M) 33 ~ 47 $\mu\text{H}$   $\pm 15\%$ (K) 56 ~ 220 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD0703 10 ~ 47 $\mu\text{H}$   $\pm 20\%$ (M) 56 ~ 330 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD0705 10 ~ 470 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD1004 10 ~ 47 $\mu\text{H}$   $\pm 20\%$ (M) 56 ~ 560 $\mu\text{H}$   $\pm 10\%$ (K)
- SCD1005 10 ~ 39 $\mu\text{H}$   $\pm 20\%$ (M) 47 ~ 820 $\mu\text{H}$   $\pm 10\%$ (K)
- SCDR1005B 10 ~ 27 $\mu\text{H}$   $\pm 20\%$ (M) 33 ~ 82 $\mu\text{H}$   $\pm 15\%$

※ This indicates the value of current when the inductance is 10% lower than its initial value at D.C superposition or D.C current when at  $\Delta t = 40^\circ$  whichever is lower



## SCD STANDARD SPECIFICATIONS

### Electrical Characteristics

#### Standard Specifications

Stamp	Inductance ( $\mu$ H)	D.C.R ( $\Omega$ ) Max.											
		SCD 03015	SCD 03021	SCD 0403	SCD 0501	SCD 0502	SCD 0503	SCD 0504	SCD 0703	SCD 0705	SCD 1004	SCD 1005	SCDR 1005B
1R0	1.0		0.07	0.033	0.034	0.03	0.03			0.02			
1R2	1.2						0.03						
1R4	1.4		0.09	0.038	0.048	0.04				0.02			
1R5	1.5						0.03						
1R8	1.8		0.11	0.042	0.062	0.05	0.03			0.02			
2R2	2.2	0.10 $\pm$ 30%	0.13	0.047	0.064	0.06	0.03						
2R7	2.7		0.14	0.052	0.078	0.07	0.04			0.02			
3R3	3.3		0.17	0.058	0.097	0.08	0.05						
3R9	3.9		0.19	0.076	0.105	0.09	0.06			0.03			
4R7	4.7	0.15 $\pm$ 30%	0.21	0.094	0.134	0.14	0.07			0.04		0.040	
5R6	5.6		0.22	0.101	0.170	0.15	0.08			0.04			
6R8	6.8		0.25	0.117	0.187	0.16	0.09			0.04		0.037	
8R2	8.2		0.28	0.132	0.225	0.17	0.10			0.05			
100	10	0.30 $\pm$ 30%	0.32	0.182	0.255	0.18	0.12	0.10	0.08	0.07	0.05	0.060	0.06
120	12		0.35	0.210	0.292	0.20	0.13	0.12	0.09	0.08	0.06	0.070	0.07
150	15	0.58 $\pm$ 30%	0.40	0.235	0.360	0.22	0.15	0.14	0.10	0.09	0.07	0.080	0.07
180	18		0.48	0.338	0.430	0.25	0.18	0.15	0.11	0.10	0.08	0.090	0.08
220	22	0.71 $\pm$ 30%	0.58	0.378	0.492	0.35	0.22	0.18	0.13	0.11	0.09	0.100	0.08
270	27		0.65	0.522	0.603	0.45	0.26	0.20	0.15	0.12	0.10	0.110	0.10
330	33	1.10 $\pm$ 30%	0.80	0.540	0.796	0.56	0.33	0.23	0.17	0.13	0.12	0.120	0.11
390	39		0.90	0.587	0.897	0.69	0.42	0.32	0.22	0.16	0.15	0.140	0.12
470	47	1.30 $\pm$ 30%	1.19	0.844	1.020	0.72	0.50	0.37	0.25	0.18	0.17	0.170	0.14
500	50		1.22		1.040								
560	56		1.27	0.937	1.164	0.84	0.55	0.42	0.28	0.24	0.20	0.190	0.19
680	68	2.20 $\pm$ 30%	1.73	1.117	1.220	0.90	0.65	0.46	0.33	0.28	0.22	0.220	0.21
750	75		1.90		1.340								
820	82		1.99		1.570	1.20	0.80	0.60	0.41	0.37	0.25	0.25	0.28
101	100	3.50 $\pm$ 30%	2.52	2.000	1.800	1.30	0.90	0.70	0.48	0.43	0.34	0.35	0.34
121	120		2.90		2.000	1.38	1.00	0.93	0.54	0.47	0.40	0.40	0.37
151	150		3.36		2.80	1.81	1.30	1.10	0.75	0.64	0.54	0.47	0.51
181	180		5.10		3.15	1.95	1.50	1.38	1.02	0.71	0.62	0.63	0.57
221	220		5.80		4.40	3.00	2.00	1.57	1.20	0.96	0.72	0.73	0.78
271	270		7.80		6.40	3.20	2.50	1.85	1.31	1.11	0.95	0.97	0.87
301	300		8.10		6.75								
331	330		9.24		7.20	3.82	3.20	2.00	1.50	1.26	1.10	1.15	1.20
391	390		10.14		8.40	4.68	3.50	2.60		1.77	1.24	1.30	1.34
461	460		11.15		12.0								
471	470		11.48		12.4	5.10	4.20	3.00		1.96	1.53	1.48	1.50
61	560		19.49		13.0	8.50	4.50	4.19			1.90	1.90	
681	680		22.00		17.0	10.0	6.50	4.44				2.25	
821	820		23.98		19.5	12.0	7.50	5.12				2.55	
102	1000		28.80		24.0	18.0	8.00	10.00					
122	1200	38 $\pm$ 30%											
152	1500	55 $\pm$ 30%											

■ Test Freq.(L): SCD03015: (1MHz/1V)

SCD03021/0403/0501/0502/0503 : 1.0 ~ 8.2H(7.96MHz/1V), 10 ~ 82H (2.52MHz/1V), 100 ~1000H (1kHz/1V) .

SCD0504/0703/0705/1004 :1.0 ~ 8.2H(7.96M Hz/1V), 10 ~ 82H (2.52MHz/1V), 100 ~ 1000H (1kHz/1V) .

SCD1005 :1.0 ~ 8.2H(7.96M Hz/1V), 10 ~ 82H (2.52MHz/1V), 100 ~ 1000H (1kHz/1V) .

SCDR105B :1.0 ~ 8.2H(2.52M Hz/0.25V), 10 ~ 82H (1KHz/0.25V)

■ Test Instrument: L: HP 4192A

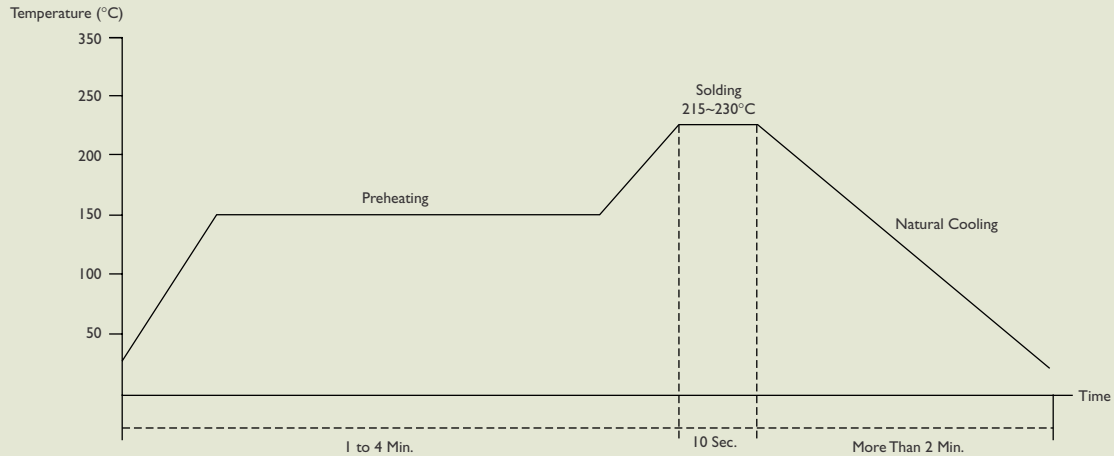
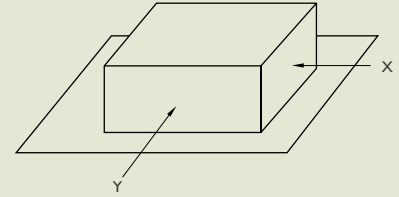
DCR : CHEN HWA 502BC

Rated D.C. Current : HP4284+42 841A or CH1061 +CH301A



## GENERAL CHARACTERISTICS

Operating Temperature	-30 ~ +100°C (Contain Heading Coil)			
Appearance Inspection	No External Defects by Visual Inspection			
Terminal Strength	After soldering , between copper plate and terminals of coil , push in tow directions of X,Y with standing as blow conditions. Terminal should not peel off. (Refer to figure at right)			
	10.0N	10 Sec.	SCD0403	SCD0504
	15.0N	10 Sec.	SCD0703	SCD0705
	20.0N	10 Sec.	SCD1004	SCD1005
Heat Endurance of Reflow Soldering	Refer to Below Figure			
Insulating Resistance	Over 100MΩ at 100V D.C. between wire and core.			
Dielectric Strength	No dielectric breakdown at 100V D.C. for 1 minute between wire and core.			
Temperature Characteristics	Inductance coefficient (0 ~ 2,000) × 10 <sup>-6</sup> /°C (-25 ~ +80°C )			
Humidity Characteristics	Inductance deviation within ±5.0% , after 96 hours in 90 ~ 95% relative humidity at 40 ± 2°C and 1 hour drying under normal condition.			
Vibration Resistance	Inductance deviation within ±5.0% , after vibration for 1 hour. In each of three orientations at sweep vibration (10 ~ 55 ~ 10Hz) with 1.5 mm p-p amplitude.			

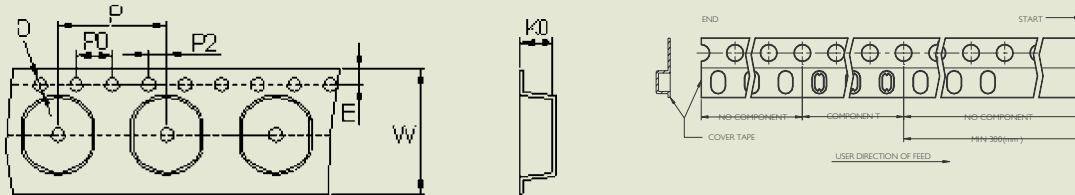




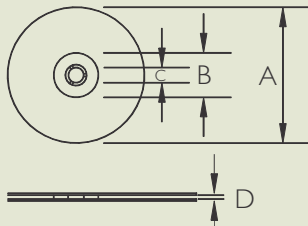
## SMD Unshielded Power Inductors - SCD Series

### Packaging Specifications

#### Tape Material



#### Reel Dimensions



#### Dimensions in mm

Dimensions : mm

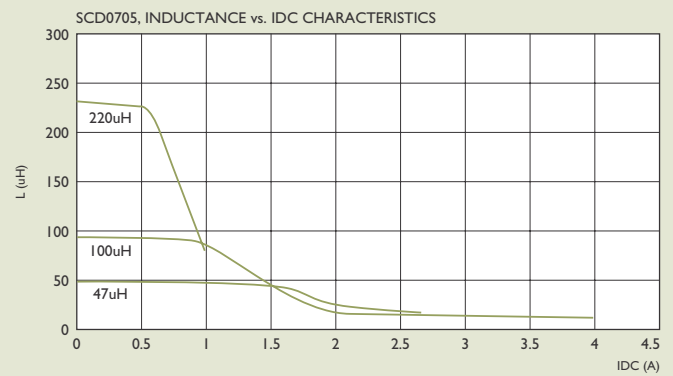
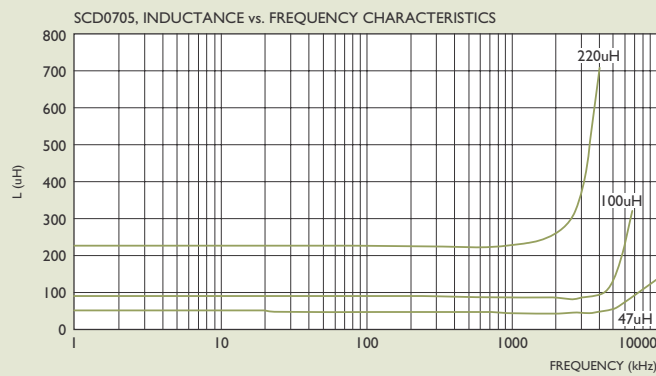
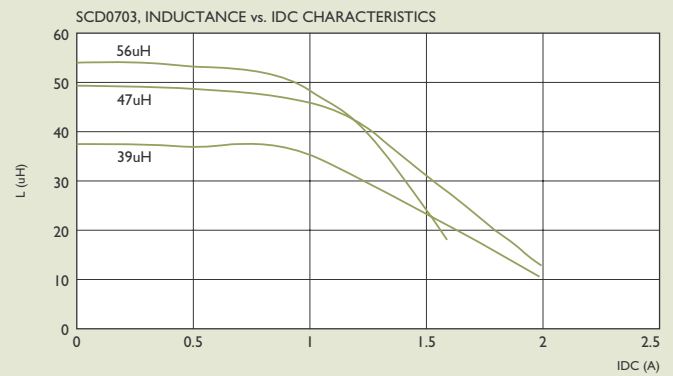
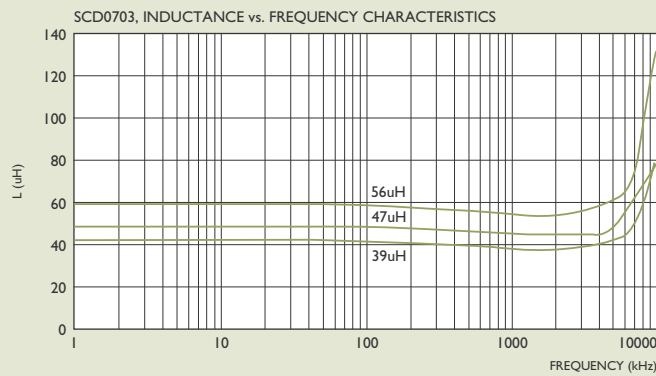
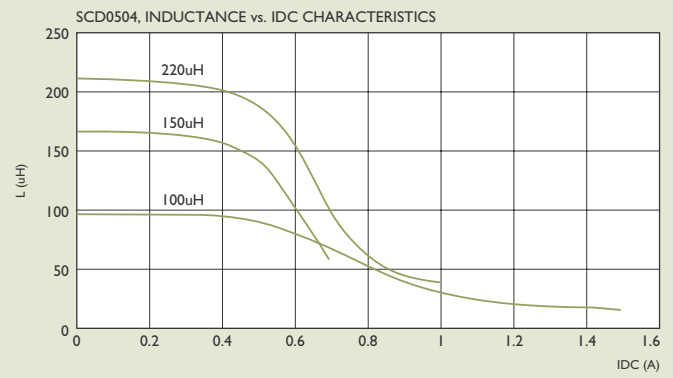
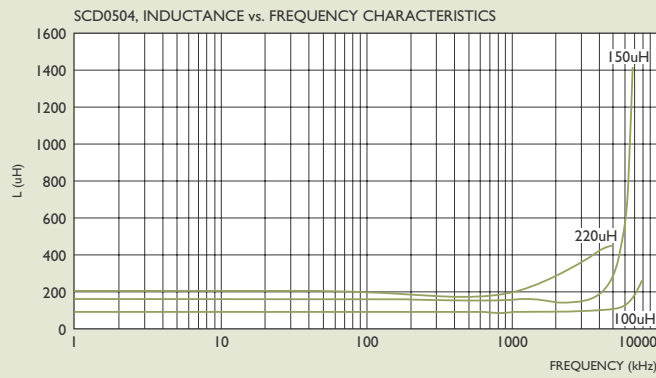
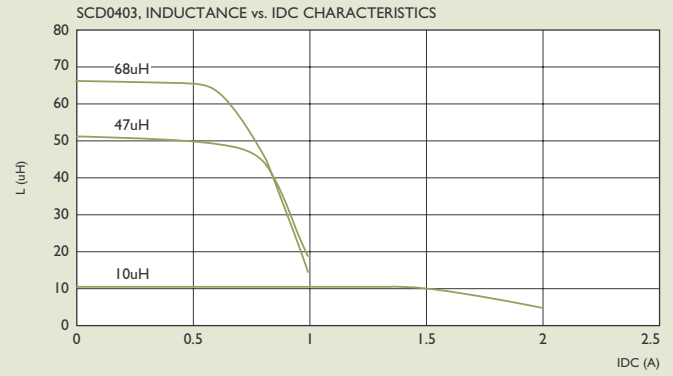
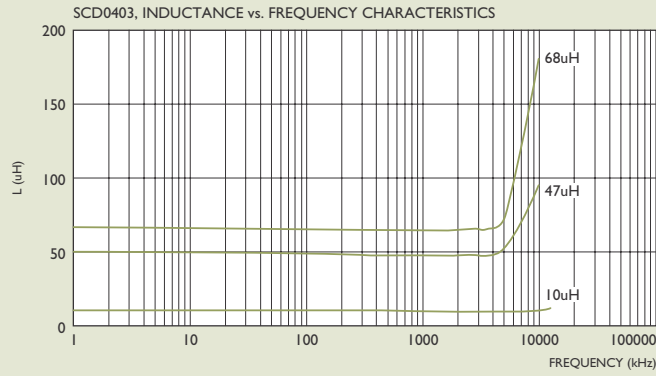
TYPE	TAPE DIMENSIONS							RECOMMENDED PATTERN		REEL DIMENSIONS				QUANTITY PCS/REEL
	K0	D	E	W	P	P0	P2	A	B	A	B	C	D	
SCD0301	1.2	1.50	1.75	12	8	4	2			330	100	13	13.4	5000
SCD03015	1.80	1.55	1.75	12	8	4	2	4.5	1.0	330	100	13	13.4	3000
SCD03021	2.50	1.55	1.75	12	8	4	2	4.5	1.0	330	100	13	13.4	3000
SCD0403	3.1	1.55	1.75	12	8	4	2	5.5	1.2	330	100	13	13.4	2000
SCD0501	2.35	1.55	1.75	12	8	4	2	6.8	2.0	330	100	13	13.4	2000
SCD0502	3.00	1.55	1.75	12	8	4	2	6.8	2.0	330	100	13	13.4	2000
SCD0503	3.30	1.55	1.75	12	8	4	2	6.8	2.0	330	100	13	13.4	2000
SCD0504	4.8	1.55	1.75	16	8	4	2	6.8	1.3	330	100	13	17.4	1500
SCD0703	3.8	1.55	1.75	16	12	4	2	8.8	2.1	330	100	13	17.4	1000
SCD0705	5.2	1.55	1.75	16	12	4	2	8.8	2.1	330	100	13	17.4	700
SCD1004	5.8	1.55	1.75	24	12	4	2	11	2.1	330	100	13	24.4	700
SCD1005	5.8	1.55	1.75	24	12	4	2	11	2.1	330	100	13	24.4	700
SCDR105B	5.8	1.55	1.75	24	12	4	2	10	2.5	330	100	13	24.4	500



## TYPICAL ELECTRICAL CHARACTERISTICS

Curves of SCD Series

Test Instruments : HP4291A Impedance / Material Analyzer

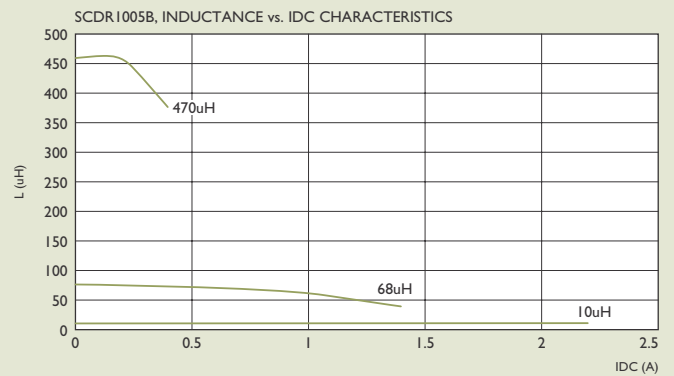
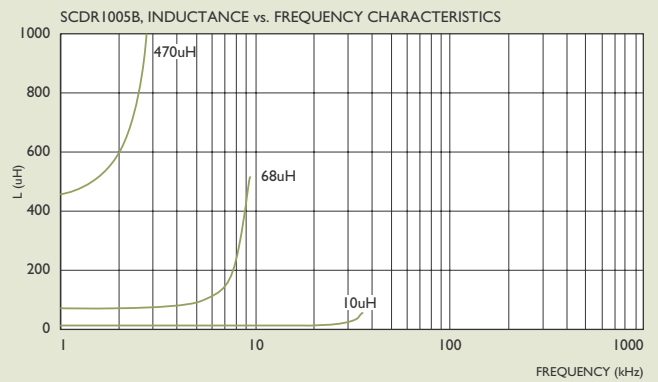
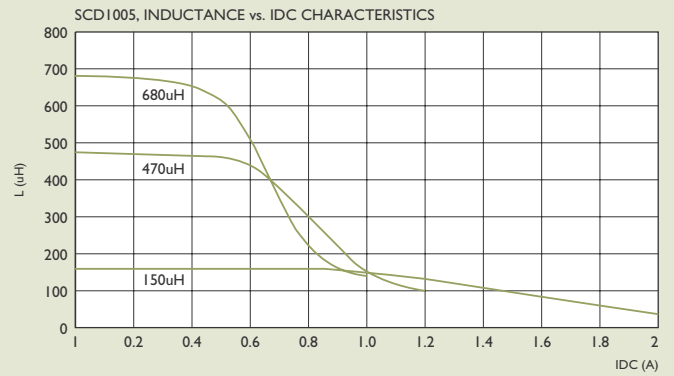
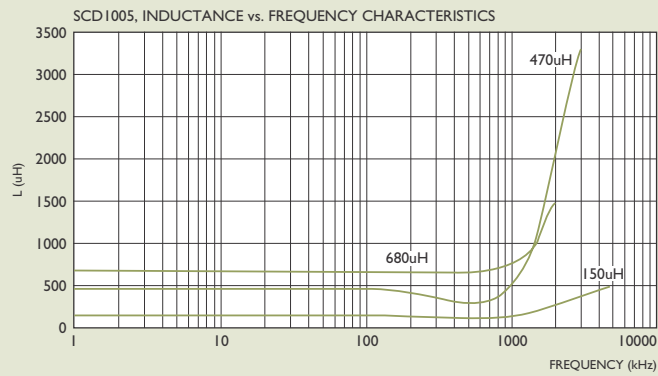
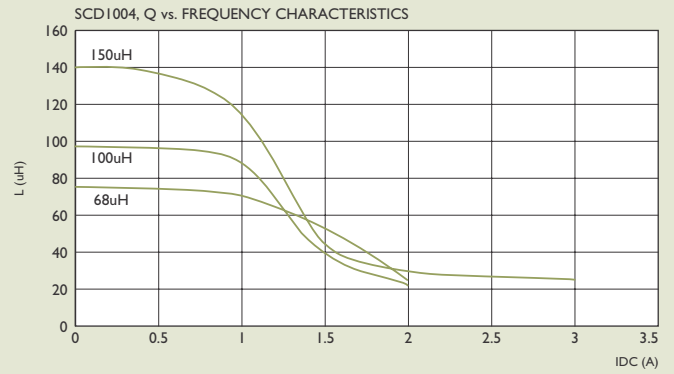
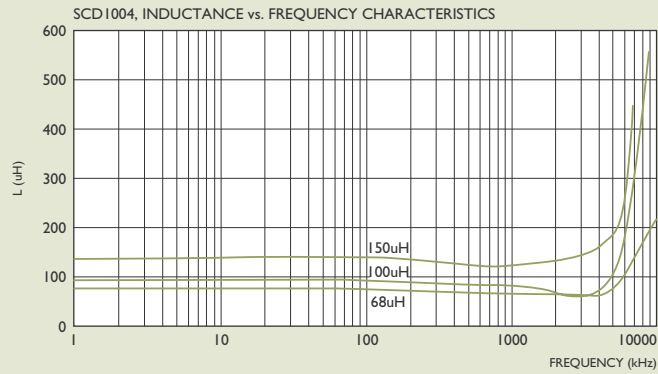




## TYPICAL ELECTRICAL CHARACTERISTICS

Curves of SCD Series

Test Instruments : HP4291A Impedance / Material Analyzer





## SCD SERIES RELIABILITY TEST

### I-1 MECHANICAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS
I-1-1	Vibration	Appearance : No Damage L Change : within $\pm 10\%$ Q Change : within $\pm 30\%$ RDC : within Specification	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.
I-1-2	Resistance to Soldering Heat	Appearance : No Damage	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 260 $\pm$ 5°C Immersion Time : 10 $\pm$ 1Sec.
I-1-3	Solderability	The electrodes shall be at least 90% covered with new solder coating.	Pre-heating : 150°C, 1Min. Solder Composition : Sn/Pb = 63/37 Solder Temperature : 230 $\pm$ 5°C Immersion Time : 4 $\pm$ 1Sec.

### I-2 ENVIRONMENTAL PERFORMANCE

NO.	ITEM	SPECIFICATION	TEST CONDITIONS															
I-2-1	Temperature Shock	Appearance : No Damage L Change : within $\pm 10\%$ L Change : within $\pm 30\%$ RDC : within Specification	10 Cycles (Air to Air)   Cycles shall Consist of : 30Min. Exposure to -55°C 30Min. Exposure to -125°C 15Sec. Max. Transition between Temperatures Measured after Exposure in the Room Condition for 24Hrs.															
I-2-2	Temperature Cycle		One Cycle <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</math> 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25 <math>\pm</math> 2</td> <td>3</td> </tr> <tr> <td>3</td> <td>85 <math>\pm</math> 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25 <math>\pm</math> 2</td> <td>3</td> </tr> </tbody> </table> Total : 100 Cycles Measured after Exposure in the Room Condition for 24Hrs.	Step	Temperature (°C)	Time (Min.)	1	-25 $\pm$ 3	30	2	25 $\pm$ 2	3	3	85 $\pm$ 3	30	4	25 $\pm$ 2	3
Step	Temperature (°C)	Time (Min.)																
1	-25 $\pm$ 3	30																
2	25 $\pm$ 2	3																
3	85 $\pm$ 3	30																
4	25 $\pm$ 2	3																
I-2-3	Humidity Resistance		Temperature : 40 $\pm$ 2°C Relative Humidity : 90 ~ 95% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-4	High Temperature Resistance		Temperature : 85 $\pm$ 3°C Relative Humidity : 20% Applied Current : Rated Current Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															
I-2-5	Low Temperature Resistance		Temperature : -25 $\pm$ 3°C Relative Humidity : 0% Time : 1000Hrs. Measured after Exposure in the Room Condition for 24Hrs.															