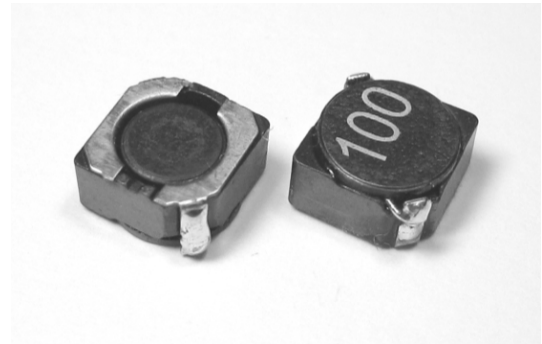


## 1. SPH Series (Shielded Type)

### Applications

- Portable telephones.
- Personal computers.
- DC/DC converters, etc.
- Other various electronic appliances.



### Features

- Small size with the electrode attached to the ferrite core directly.
- Available in magnetically shielded.
- Low DC resistance.
- Ideal inductor for DC-DC conversion in notebook computer, Step-up or Step-down converters, etc.

### Inductance and Rated Current ranges

Part Series	Inductances range	Rated Current range
* SPH3018	1.5~100 $\mu$ H	1.75~0.25A (I <sub>rms</sub> ) ; 1.55~0.18A (I <sub>sat</sub> )
* SPH3027	4.7~220 $\mu$ H	2.00~0.38A (I <sub>rms</sub> ) ; 0.75~0.10A (I <sub>sat</sub> )
* SPH3028	3.3~100 $\mu$ H	1.95~0.48A (I <sub>rms</sub> ) ; 1.70~0.30A (I <sub>sat</sub> )
* SPH4011	0.47~150 $\mu$ H	3.20~0.25A (I <sub>rms</sub> ) ; 3.80~0.22A (I <sub>sat</sub> )
* SPH4018	1.0~100 $\mu$ H	2.70~0.40A (I <sub>rms</sub> ) ; 2.60~0.30A (I <sub>sat</sub> )
* SPH4022	1.5~150 $\mu$ H	3.50~0.45A (I <sub>rms</sub> ) ; 1.80~0.18A (I <sub>sat</sub> )
* SPH4028	1.2~560 $\mu$ H	3.10~0.22A (I <sub>rms</sub> ) ; 2.56~0.15A (I <sub>sat</sub> )
* SPH5018	1.2~220 $\mu$ H	3.00~0.23A (I <sub>rms</sub> ) ; 3.50~0.30A (I <sub>sat</sub> )
* SPH5028	2.6~680 $\mu$ H	3.00~0.13A (I <sub>rms</sub> ) ; 2.70~0.14A (I <sub>sat</sub> )
* SPH6022	0.9~1000 $\mu$ H	4.80~0.16A (I <sub>rms</sub> ) ; 4.40~0.13A (I <sub>sat</sub> )
* SPH6028	2.5~1000 $\mu$ H	2.80~0.15A (I <sub>rms</sub> ) ; 3.00~0.17A (I <sub>sat</sub> )

(Dimension data (Refer to Fig. 1))

Part Series	Inductances range	Rated Current range
* SPH3D18	1.0~220 $\mu$ H	2.40~0.13A
* SPH4D18	1.0~220 $\mu$ H	1.72~0.13A
* SPH4D22	1.5~150 $\mu$ H	2.00~0.21A
* SPH4D28	1.0~220 $\mu$ H	2.65~0.21A
* SPH5D18	2.2~470 $\mu$ H	2.30~0.18A
* SPH5D28	2.2~680 $\mu$ H	2.60~0.18A
* SPH6D28	1.0~330 $\mu$ H	6.15~0.35A
* SPH6D38	1.0~560 $\mu$ H	5.60~0.29A

(Dimension data (Refer to Fig. 2))

1. SPH Series (Shielded Type)

**Inductance and Rated Current ranges (Cont'd)**

Part Series	Inductances range	Rated Current range
* SPH6915	1.00~820μH	3.28~0.10A
* SPH6919	0.36~1500μH	8.00~0.095A
* SPH7040	0.36~1000μH	9.24~0.18A

(Dimension data (Refer to Fig. 3))

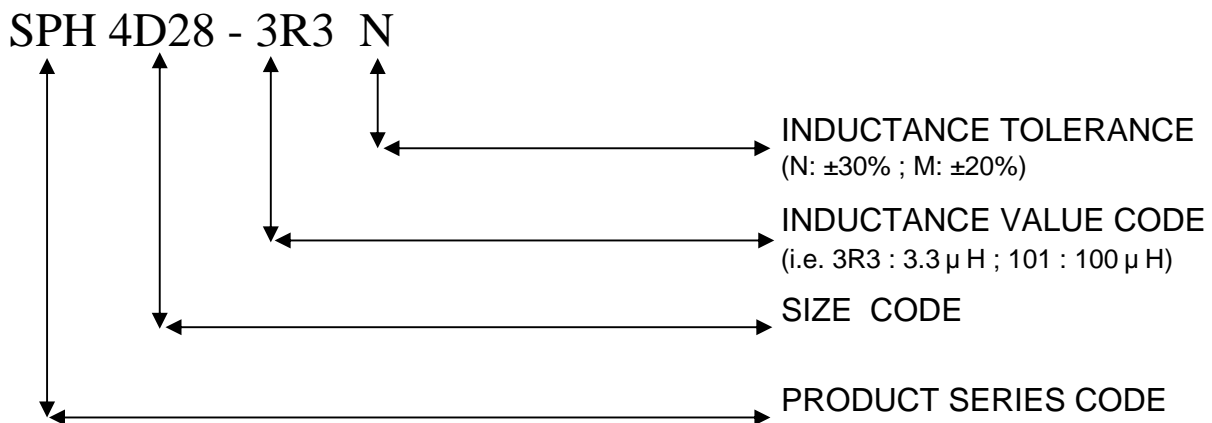
**Characteristics**

Test Frequency : 100KHz 0.1V  
 SPH5D18, SPH5D28, SPH6D28, SPH6D38 : @10KHz 0.1V  
 SPH6915, SPH6919, SPH7040 :  
 0.36μH~8.2μH @100KHz 0.25V. 10μH~1500μH @1KHz 0.25V.

Test equipment:  
 L: HP4284A LCR meter  
 DCR Resistance: Milli-ohm meter or equivalent.  
 Electrical Specifications at 25 .

Operating temperature range:  
 -40 ~+125 :

**Part Numbering System**



1. SPH Series (Shielded Type)

**Dimensions (mm)**

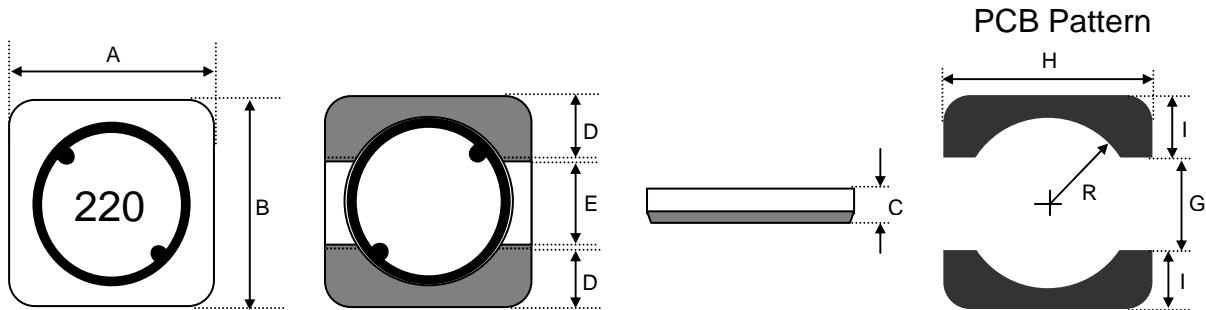


Fig. 1

Series	A	B	C	D (typ.)	E (typ.)	G (ref.)	H (ref.)	I (ref.)	R (ref.)
SPH3018	3.80±0.30	3.80±0.30	1.65±0.15	1.30	1.20	1.10	4.30	1.60	1.30
SPH3027	3.80±0.30	3.80±0.30	2.80±0.20	1.30	1.20	1.10	4.30	1.60	1.40
SPH3028	3.80±0.30	3.80±0.30	2.80±0.20	1.30	1.20	1.10	4.30	1.60	1.40
SPH4011	4.80±0.30	4.80±0.30	1.15±0.15	1.60	1.60	1.50	5.30	2.00	1.80
SPH4018	4.80±0.20	4.80±0.20	1.80±0.20	1.60	1.60	1.50	5.30	2.00	1.80
SPH4022	4.80±0.30	4.80±0.30	2.20±0.20	1.60	1.60	1.50	5.30	2.00	1.80
SPH4028	4.80±0.20	4.80±0.20	2.80±0.20	1.60	1.60	1.50	5.30	2.00	1.80
SPH5018	5.80±0.30	5.80±0.30	1.80±0.20	1.90	2.00	1.90	6.30	2.20	2.20
SPH5028	5.80±0.30	5.80±0.30	2.80±0.20	1.90	2.00	1.90	6.30	2.20	2.20
SPH6022	6.80±0.20	6.80±0.20	2.30±0.20	2.30	2.20	2.10	7.30	2.60	2.70
SPH6028	6.80±0.20	6.80±0.20	2.80±0.20	2.30	2.20	2.10	7.30	2.60	2.70

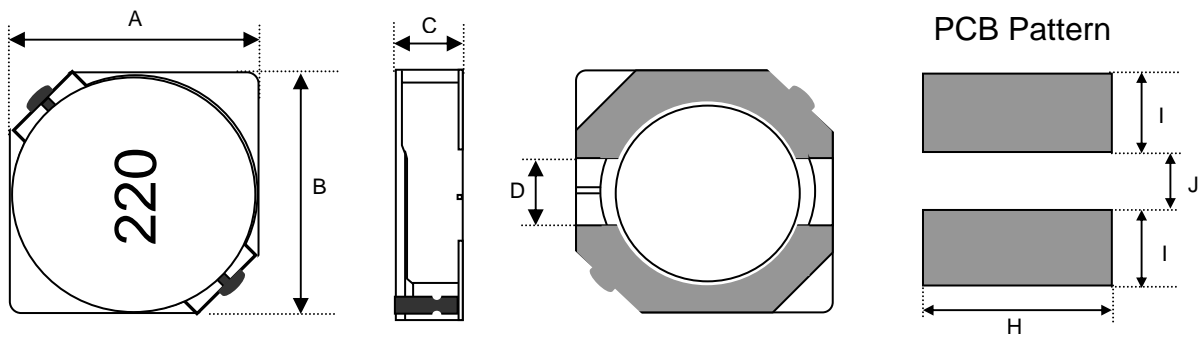


Fig. 2

Series	A	B	C	D	H	I	J
SPH3D18	3.8±0.3	3.8±0.3	2.0Max	1.10	4.6	1.65	1.0
SPH4D18	4.7±0.3	4.7±0.3	2.0Max	1.50	5.3	1.90	1.5
SPH4D22	4.7±0.3	4.7±0.3	2.4Max	1.50	5.3	1.90	1.5
SPH4D28	4.7±0.3	4.7±0.3	3.0Max	1.50	5.3	1.90	1.5
SPH5D18	5.7±0.3	5.7±0.3	2.0Max	2.00	6.3	2.15	2.0
SPH5D28	5.7±0.3	5.7±0.3	3.0Max	2.00	6.3	2.15	2.0
SPH6D28	6.7±0.3	6.7±0.3	3.0Max	2.00	7.3	2.65	2.0
SPH6D38	6.7±0.3	6.7±0.3	4.0Max	2.00	7.3	2.65	2.0

1. SPH Series (Shielded Type)

**Dimensions (mm) (Cont'd)**

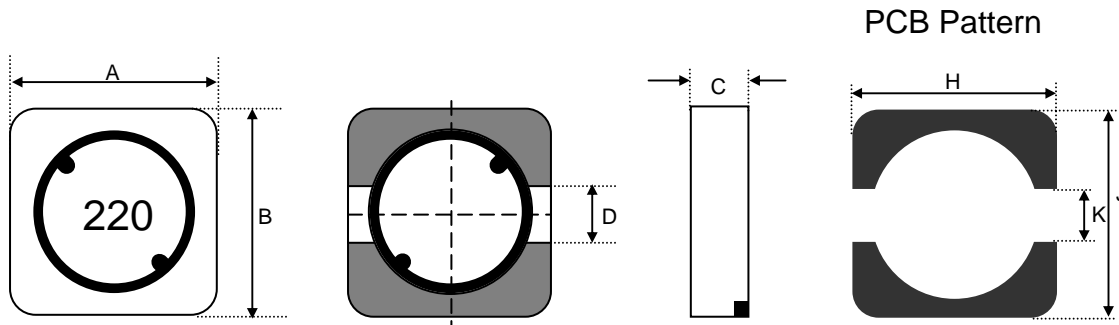


Fig. 3

Series	A	B	C (Max)	D	H	J	K
SPH6915	6.9±0.3	6.9±0.3	1.50	2.5	7.3	7.3	2.0
SPH6919	6.9±0.3	6.9±0.3	1.90	2.5	7.3	7.3	2.0
SPH7040	7.0±0.4	7.0±0.3	4.30	1.8	8.0	8.0	1.6

## 1. SPH Series (Shielded Type)

### Electrical Characteristics

#### SPH 3D18 / 4D18 / 4D22 / 4D28 TYPE

Inductance value code	L (μH)	Tol. (%)	DC Resistance (mΩ) Max.				Rated DC Current (A) Max.			
			3D18	4D18	4D22	4D28	3D18	4D18	4D22	4D28
1R0	1.0	N	50	45	-	20	2.40	1.72	-	2.65
1R2	1.2	N	-	48	-	24	-	1.65	-	2.56
1R5	1.5	N	56	50	18	-	1.55	1.60	2.00	-
1R8	1.8	N	-	58	21	28	-	1.35	1.90	2.20
2R2	2.2	N	72	75	25	31	1.20	1.32	1.80	2.04
2R7	2.7	N	-	105	-	43	-	1.28	-	1.60
3R3	3.3	N	85	110	35	49	1.10	1.04	1.40	1.57
3R9	3.9	N	-	155	40	65	-	0.88	1.30	1.44
4R7	4.7	N	105	162	56	72	0.90	0.84	1.10	1.32
5R6	5.6	N	-	170	62	101	-	0.80	1.05	1.17
6R8	6.8	N	170	200	88	109	0.73	0.76	1.00	1.12
8R2	8.2	N	-	245	97	118	-	0.68	0.90	1.04
100	10	M,N	210	200	102	128	0.55	0.61	0.80	1.00
120	12	M,N	275	210	110	132	0.50	0.56	0.75	0.84
150	15	M,N	295	240	127	149	0.45	0.50	0.68	0.76
180	18	M,N	-	338	169	166	-	0.48	0.60	0.72
220	22	M,N	430	397	200	235	0.40	0.41	0.54	0.70
270	27	M,N	557	441	283	261	0.38	0.35	0.51	0.58
330	33	M,N	675	694	326	378	0.32	0.32	0.48	0.56
390	39	M,N	-	709	451	384	-	0.30	0.43	0.50
470	47	M,N	964	922	500	587	0.27	0.28	0.38	0.48
560	56	M,N	330	1080	555	625	0.22	0.26	0.36	0.41
680	68	M,N	-	1300	634	699	-	0.24	0.33	0.35
820	82	M,N	-	1560	794	915	-	0.22	0.30	0.32
101	100	M,N	2600	1730	880	1020	0.16	0.20	0.25	0.29
121	120	M,N	-	2390	1140	1270	-	0.18	0.23	0.27
151	150	M,N	-	2670	1350	1360	-	0.15	0.21	0.24
181	180	M,N	-	4000	-	1540	-	0.14	-	0.22
221	220	M,N	4770	4300	-	2000	0.13	0.13	-	0.21

**Notes:**

1. Test Frequency: 100KHz 0.1V
2. Rated DC Current: The current when the inductance decrease to 65% of its initial value. (Ta=25 °C)
3. Operating temperature range: -40~+125