

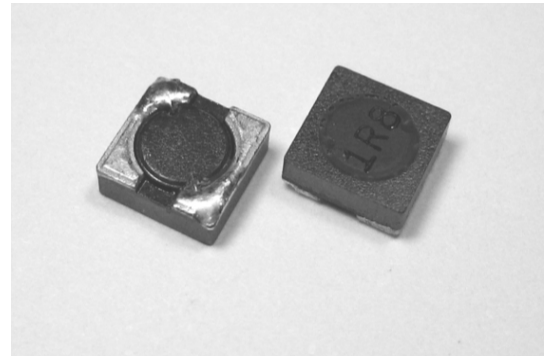
## 1. SPH Series (Shielded Type)

### 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))

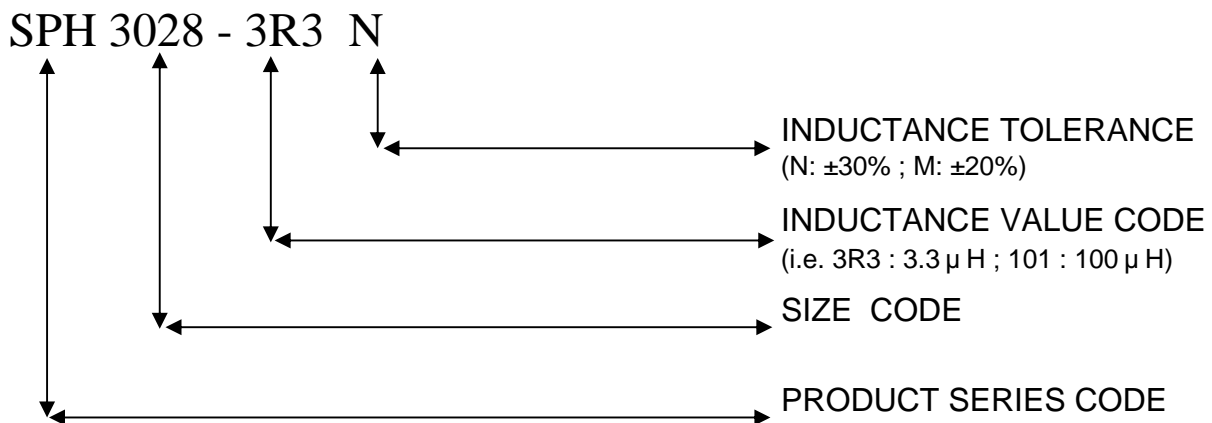
**Characteristics**

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)**

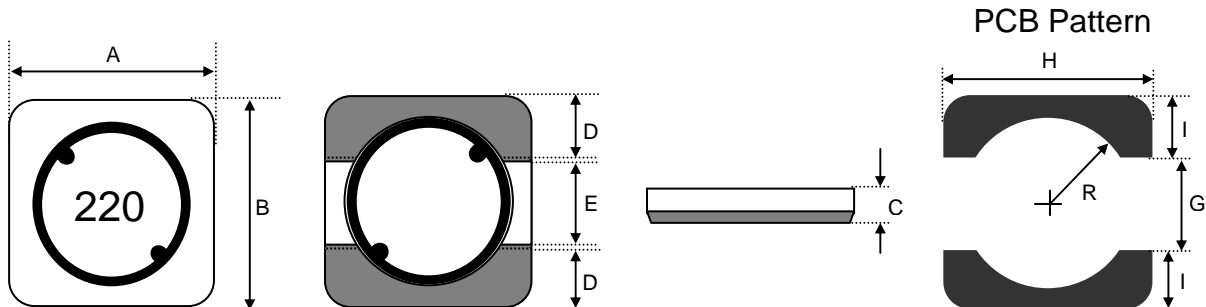


Fig. 1

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

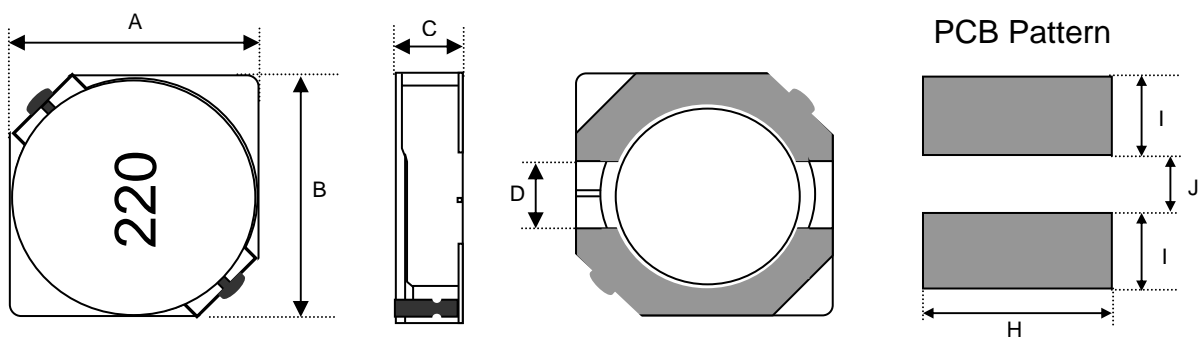


Fig. 2

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)**

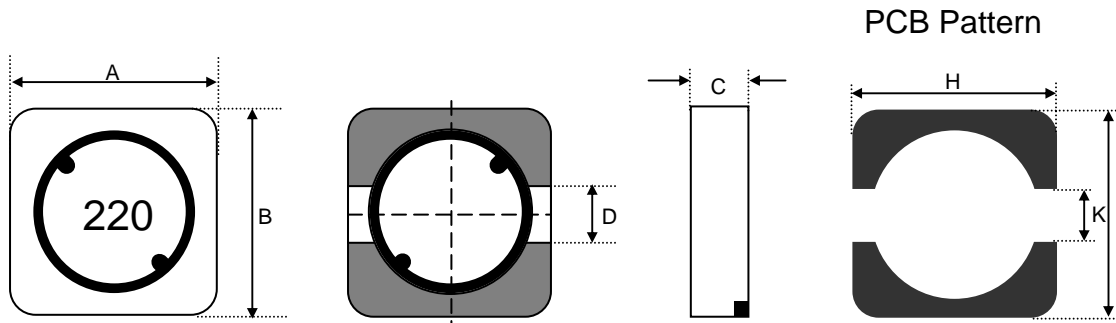


Fig. 3

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

**Electrical Characteristics**

**SPH 3018 / 3027 / 3028 TYPE**

Inductance value code	L (μH)	Tol. (%)	DC Resistance (m Ω) Max.			Rated DC current (mA) Max.					
						I rms			I sat		
			3018	3027	3028	3018	3027	3028	3018	3027	3028
1R5	1.5	N	47	-	-	1750	-	-	1550	-	-
2R5	2.5	N	58	-	-	1450	-	-	1250	-	-
3R3	3.3	N	-	-	52	-	-	1950	-	-	1700
3R6	3.6	N	85	-	-	1380	-	-	1100	-	-
4R7	4.7	N	105	40	56	1200	2000	1900	900	750	1400
6R8	6.8	N	156	-	108	850	-	1300	750	-	1150
100	10	N	205	78	125	740	1600	1100	560	530	900
150	15	N	285	115	200	620	1300	920	450	400	700
220	22	N	450	156	320	510	1100	820	360	320	600
330	33	N	660	215	440	420	920	660	320	270	500
470	47	N	1000	280	535	390	820	600	250	230	450
680	68	N	1450	420	780	320	660	520	220	190	360
101	100	N	2400	580	1150	250	600	480	180	160	300
121	120	N	-	750	-	-	520	-	-	140	-
151	150	N	-	860	-	-	480	-	-	125	-
221	220	N	-	1320	-	-	380	-	-	100	-

**Notes:**

1. Test Frequency: 100KHz 0.1V
- 2a). Irms: base on temp. rise 30 <Max.> (SPH3018); 20 <Typ.> (SPH3027, SPH3028)
- 2b). Isat: base on L/L0A = 35% <Typ.>
3. Operating temperature range: -40~+125