

Wire Wound SMD Power Inductors – SPH Series

Operating Temp. : -40℃~+125℃ (Including self-heating)



FEATURES

- Magnetic-resin shielded construction reduces buzz noise to ultra-low levels
- Metallization on ferrite core results in excellent shock resistance and damage-free durability
- Closed magnetic circuit design reduces leakage flux and Electro Magnetic Interference (EMI)
- Takes up less PCB real estate and save more power
- 30% lower DCR than SWPA series and larger current

APPLICATIONS

- Smart phone
- Blue -ray disc recorders, set top box
- Notebooks, desktop computers, servers
- Portable gaming devices, personal navigation systems, personal multimedia devices

PRODUCT IDENTIFICATION

SPH

①

252012

②

H

③

2R2

④

M

⑤

T

⑥

① Type	
SPH	Wire Wound SMD Power Inductor

③ Material Code	
U	U Type Material
H	H Type Material

④ Nominal Inductance	
Example	Nominal Value
2R2	2.2μH

⑤ Inductance Tolerance	
M	±20%
N	±30%

② External Dimensions (L×W×H) [mm]	
201610	2.0×1.6×1.0
202012	2.0×2.0×1.2
252010	2.5×2.0×1.0
252012	2.5×2.0×1.2
3012	3.0×3.0×1.2
3015	3.0×3.0×1.5
4012	4.0×4.0×1.2
4018	4.0×4.0×1.8
8030	8.0×8.0×3.0

⑥ Packing	
T	Tape & Reel

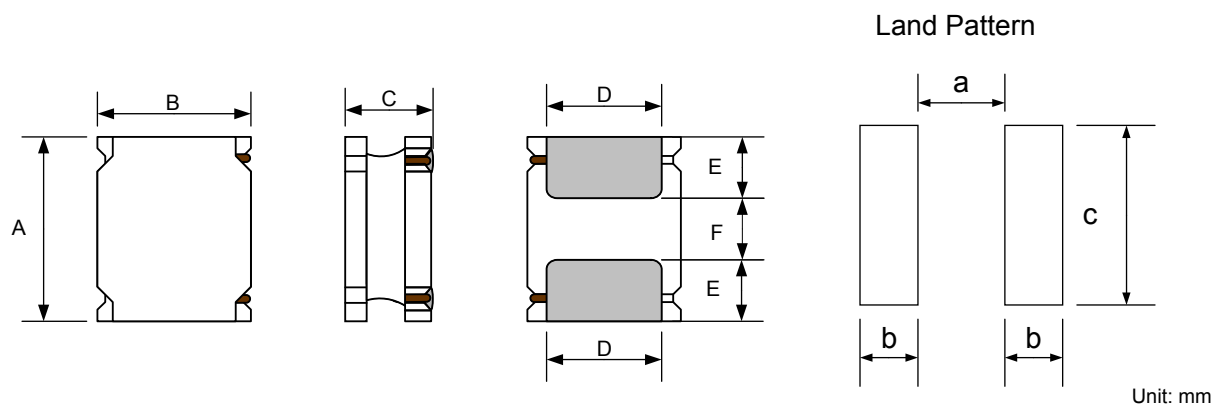
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SHAPE AND DIMENSIONS



Series	A	B	C	D	E	F	a Typ.	b Typ.	c Typ.
SPH201610	2.0±0.2	1.6±0.2	1.0Max.	1.2±0.2	0.60±0.2	0.80±0.2	0.70	0.70	1.7
SPH202012	2.0±0.1	2.0±0.1	1.2Max.	1.5±0.2	0.60±0.2	0.80±0.2	0.65	0.70	2.0
SPH252010	2.5±0.2	2.0±0.2	1.0Max.	1.5±0.2	0.80±0.2	0.80±0.2	0.80	0.85	2.0
SPH252012	2.5±0.2	2.0±0.2	1.2Max.	1.5±0.2	0.80±0.2	0.80±0.2	0.80	0.85	2.0
SPH3012	3.0±0.2	3.0±0.2	1.2Max.	2.5±0.2	0.75±0.2	1.5±0.2	1.5	0.8	2.7
SPH3015	3.0±0.2	3.0±0.2	1.5Max.	2.5±0.2	0.75±0.2	1.5±0.2	1.5	0.8	2.7
SPH4012	4.0±0.2	4.0±0.2	1.2Max.	3.3±0.2	0.95±0.2	2.1±0.2	1.9	1.1	3.7
SPH4018	4.0±0.2	4.0±0.2	1.8Max.	3.3±0.2	0.95±0.2	2.1±0.2	1.9	1.1	3.7
SPH8030	8.0±0.3	8.0±0.3	3.0Max.	6.3±0.3	2.00±0.3	4.0±0.3	3.8	2.2	7.5

SPECIFICATIONS

SPH201610H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH201610HR16MT	0.16±20%	0.031	0.026	4.30	4.80	3.20	3.50
SPH201610HR24MT	0.24±20%	0.040	0.033	3.70	4.10	2.90	3.20
SPH201610HR33MT	0.33±20%	0.040	0.033	2.50	3.10	2.90	3.20
SPH201610HR47MT	0.47±20%	0.059	0.049	2.30	2.85	2.35	2.60
SPH201610HR68MT	0.68±20%	0.076	0.063	1.95	2.45	2.05	2.25
SPH201610H1R0MT	1.0±20%	0.114	0.095	1.65	1.85	1.45	1.60
SPH201610H1R5MT	1.5±20%	0.174	0.145	1.35	1.65	1.25	1.40
SPH201610H2R2MT	2.2±20%	0.264	0.220	1.20	1.45	1.10	1.20
SPH201610H3R3MT	3.3±20%	0.335	0.279	0.90	1.05	0.88	0.98
SPH201610H4R7MT	4.7±20%	0.479	0.399	0.70	0.85	0.74	0.82
SPH201610H6R8MT	6.8±20%	0.816	0.680	0.60	0.70	0.52	0.58
SPH201610H100MT	10±20%	1.020	0.850	0.50	0.55	0.45	0.50

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SPECIFICATIONS

SPH201610U TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH201610U50NMT	0.05±20%	0.022	0.018	7.50	8.00	3.65	4.25
SPH201610UR10MT	0.10±20%	0.022	0.018	4.80	5.70	3.65	4.25
SPH201610UR16MT	0.16±20%	0.031	0.026	4.70	5.40	3.20	3.50
SPH201610UR24MT	0.24±20%	0.040	0.033	4.50	5.00	2.90	3.20
SPH201610UR33MT	0.33±20%	0.040	0.033	3.00	3.60	2.90	3.20
SPH201610UR47MT	0.47±20%	0.052	0.043	2.90	3.40	2.35	2.60
SPH201610UR68MT	0.68±20%	0.072	0.060	2.50	2.70	2.05	2.25
SPH201610U1R0MT	1.0±20%	0.072	0.060	1.30	1.50	2.05	2.25
SPH201610U2R2MT	2.2±20%	0.171	0.143	1.10	1.20	1.23	1.40

SPH202012H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH202012HR16MT	0.16±20%	0.031	0.026	5.20	5.80	2.50	2.75
SPH202012HR24MT	0.24±20%	0.042	0.035	4.70	5.20	2.20	2.40
SPH202012HR33MT	0.33±20%	0.042	0.035	3.50	4.00	2.20	2.40
SPH202012HR47MT	0.47±20%	0.050	0.042	3.55	3.75	2.00	2.20
SPH202012HR68MT	0.68±20%	0.060	0.050	2.95	3.10	1.80	2.00
SPH202012H1R0MT	1.0±20%	0.088	0.073	2.70	2.85	1.50	1.65
SPH202012H1R5MT	1.5±20%	0.112	0.093	2.00	2.20	1.30	1.45
SPH202012H2R2MT	2.2±20%	0.127	0.106	1.40	1.65	1.20	1.35
SPH202012H3R3MT	3.3±20%	0.276	0.230	1.20	1.35	0.85	0.95
SPH202012H4R7MT	4.7±20%	0.294	0.245	0.97	1.10	0.82	0.90
SPH202012H6R8MT	6.8±20%	0.479	0.399	0.82	0.92	0.64	0.70
SPH202012H100MT	10±20%	0.785	0.654	0.72	0.82	0.49	0.54
SPH202012H150MT	15±20%	1.368	1.140	0.55	0.65	0.38	0.42
SPH202012H180MT	18±20%	1.680	1.400	0.60	0.68	0.35	0.38
SPH202012H220MT	22±20%	1.680	1.400	0.40	0.50	0.35	0.38
SPH202012H330MT	33±20%	2.160	1.800	0.35	0.40	0.30	0.33

SPH252010H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH252010HR24MT	0.24±20%	0.034	0.028	3.60	4.40	2.75	3.00
SPH252010HR33MT	0.33±20%	0.043	0.036	3.80	4.60	2.40	2.65
SPH252010HR47MT	0.47±20%	0.044	0.037	2.40	2.80	2.40	2.65
SPH252010HR68MT	0.68±20%	0.061	0.051	2.75	3.10	2.10	2.35
SPH252010HR68MTY02	0.68±20%	0.065	0.055	3.20	3.50	2.10	2.30
SPH252010H1R0MT	1.0±20%	0.080	0.067	2.05	2.45	1.80	2.00
SPH252010H1R5MT	1.5±20%	0.108	0.090	1.70	2.05	1.55	1.70
SPH252010H2R2MT	2.2±20%	0.137	0.114	1.55	1.80	1.40	1.55
SPH252010H3R3MT	3.3±20%	0.228	0.170	1.10	1.40	1.10	1.20
SPH252010H4R7MT	4.7±20%	0.323	0.269	1.00	1.15	0.91	1.00
SPH252010H6R8MT	6.8±20%	0.451	0.376	0.82	0.95	0.75	0.84
SPH252010H100MT	10±20%	0.584	0.487	0.65	0.75	0.55	0.65
SPH252010H150MT	15±20%	0.954	0.795	0.55	0.65	0.45	0.55
SPH252010H220MT	22±20%	1.548	1.29	0.45	0.55	0.40	0.45

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SPECIFICATIONS

SPH252012H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH252012HR16MT	0.16±20%	0.022	0.018	6.50	7.20	4.05	4.50
SPH252012HR24MT	0.24±20%	0.022	0.018	4.00	4.75	4.05	4.50
SPH252012HR33MT	0.33±20%	0.029	0.024	4.00	4.70	3.35	3.70
SPH252012HR47MT	0.47±20%	0.036	0.030	3.70	4.10	3.00	3.30
SPH252012HR68MT	0.68±20%	0.061	0.051	3.00	3.30	2.10	2.30
SPH252012HR68MTY01	0.68±20%	0.042	0.035	3.20	3.50	2.50	2.70
SPH252012HR68MTY02	0.68±20%	0.060	0.051	3.80	4.20	2.10	2.30
SPH252012H1R0MTY03	1.0±20%	0.043	0.037	2.40	2.60	2.40	2.60
SPH252012H1R0MT	1.0±20%	0.044	0.037	1.70	1.90	2.20	2.40
SPH252012H1R2MT	1.2±20%	0.078	0.065	2.20	2.50	1.95	2.10
SPH252012H1R5MT	1.5±20%	0.078	0.065	2.00	2.35	1.95	2.10
SPH252012H2R2MT	2.2±20%	0.096	0.080	1.80	1.95	1.80	1.95
SPH252012H3R3MT	3.3±20%	0.144	0.120	1.15	1.25	1.40	1.50
SPH252012H4R7MT	4.7±20%	0.210	0.175	1.10	1.20	1.12	1.25
SPH252012H6R8MT	6.8±20%	0.360	0.300	0.80	1.00	0.95	1.05
SPH252012H100MT	10±20%	0.522	0.435	0.70	0.85	0.79	0.87
SPH252012H150MT	15±20%	1.000	0.830	0.65	0.75	0.57	0.63
SPH252012H180MT	18±20%	1.000	0.830	0.50	0.65	0.57	0.63
SPH252012H220MT	22±20%	1.090	0.910	0.45	0.55	0.54	0.60
SPH252012H330MT	33±20%	1.840	1.530	0.35	0.40	0.42	0.46

SPH3012H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH3012H2R2MT	2.2±20%	0.090	0.075	1.50	1.80	1.40	1.60
SPH3012H100MT	10±20%	0.372	0.310	0.75	0.90	0.75	0.80
SPH3012H220MT	22±20%	0.840	0.700	0.50	0.60	0.50	0.55

SPH3015H TYPE

Part Number	Inductance @100kHz, 1V	DC Resistance (±30%)	Min. Self-resonant Frequency	Saturation Current	Heat Rating Current
Units	μH	Ω	MHz	A	A
Symbol	L	DCR	S.R.F	Isat	Irms
SPH3015H4R7NT	4.7±30%	0.096	32	0.90	1.25

SPH4012H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH4012HR47NT	0.47±30%	0.032	0.027	3.5	4.2	2.9	3.2
SPH4012HR82NT	0.82±30%	0.042	0.035	3.0	3.5	2.5	2.9
SPH4012H1R0NT	1.0±30%	0.050	0.042	2.8	3.3	2.2	2.5
SPH4012H1R5NT	1.5±30%	0.050	0.042	2.1	2.2	2.2	2.3
SPH4012H1R8NT	1.8±30%	0.066	0.055	2.1	2.4	2.2	2.3

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SPH4012H TYPE

Part Number	Inductance	DC Resistance		Saturation Current		Heat Rating Current	
	@1MHz	Max.	Typ.	Max.	Typ.	Max.	Typ.
Units	μH	Ω	Ω	A	A	A	A
Symbol	L	DCR		Isat		Irms	
SPH4012H2R2MT	2.2±20%	0.066	0.055	1.7	1.8	2.0	2.3
SPH4012H2R7MT	2.7±20%	0.084	0.070	1.9	2.2	1.7	2.0
SPH4012H3R3MT	3.3±20%	0.084	0.070	1.4	1.7	1.7	2.0
SPH4012H3R6MT	3.6±20%	0.090	0.075	1.2	1.6	1.7	2.0
SPH4012H4R3MT	4.3±20%	0.108	0.090	1.2	1.5	1.5	1.8
SPH4012H4R7MT	4.7±20%	0.108	0.090	1.2	1.3	1.5	1.8
SPH4012H5R1MT	5.1±20%	0.132	0.110	1.2	1.4	1.4	1.6
SPH4012H5R6MT	5.6±20%	0.132	0.110	1.1	1.4	1.4	1.6
SPH4012H6R8MT	6.8±20%	0.150	0.125	0.90	1.1	1.3	1.6
SPH4012H100MT	10±20%	0.204	0.170	0.80	0.90	1.1	1.3
SPH4012H100MTY01	10±20%	0.240	0.200	0.90	1.1	1.0	1.1
SPH4012H120MT	12±20%	0.312	0.260	0.85	1.0	0.90	1.0
SPH4012H150MT	15±20%	0.312	0.260	0.65	0.80	0.90	1.0
SPH4012H180MT	18±20%	0.432	0.360	0.65	0.80	0.78	0.90
SPH4012H220MT	22±20%	0.460	0.380	0.50	0.65	0.78	0.90
SPH4012H270MT	27±20%	0.672	0.560	0.50	0.60	0.63	0.73
SPH4012H330MT	33±20%	0.756	0.630	0.45	0.55	0.57	0.68
SPH4012H360MT	36±20%	0.756	0.630	0.40	0.50	0.57	0.68
SPH4012H390MT	39±20%	1.188	0.990	0.55	0.62	0.47	0.54
SPH4012H470MT	47±20%	1.188	0.990	0.40	0.50	0.47	0.54
SPH4012H560MT	56±20%	1.320	1.100	0.35	0.45	0.45	0.52
SPH4012H680MT	68±20%	1.800	1.500	0.38	0.45	0.38	0.44
SPH4012H820MT	82±20%	2.040	1.700	0.30	0.38	0.36	0.42
SPH4012H101MT	100±20%	2.040	1.700	0.25	0.31	0.36	0.42

SPH4018H TYPE

Part Number	Inductance @100kHz, 1V	DC Resistance (±20%)	Min. Self-resonant Frequency	Saturation Current	Heat Rating Current
Units	μH	Ω	MHz	A	A
Symbol	L	DCR	S.R.F	Isat	Irms
SPH4018H1R0NT	1.0±30%	0.027	90	4.00	3.20
SPH4018H1R5NT	1.5±30%	0.031	70	3.60	2.95
SPH4018H2R2MT	2.2±20%	0.042	60	3.00	2.20
SPH4018H3R3MT	3.3±20%	0.055	45	2.30	2.00
SPH4018H4R7MT	4.7±20%	0.070	35	2.00	1.70
SPH4018H6R8MT	6.8±20%	0.098	30	1.60	1.45
SPH4018H100MT	10±20%	0.150	25	1.30	1.20
SPH4018H150MT	15±20%	0.210	18	1.10	0.85
SPH4018H220MT	22±20%	0.290	15	0.90	0.70
SPH4018H330MT	33±20%	0.460	12	0.70	0.55
SPH4018H470MT	47±20%	0.620	11	0.57	0.65
SPH4018H680MT	68±20%	0.810	7.1	0.53	0.55
SPH4018H101MT	100±20%	1.300	5.2	0.49	0.45
SPH4018H151MT	150±20%	2.600	5.1	0.41	0.33
SPH4018H221MT	220±20%	3.200	4.2	0.33	0.30
SPH4018H331MT	330±20%	4.900	3.2	0.26	0.22

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SPECIFICATIONS

SPH8030H TYPE

Part Number	Inductance @100kHz, 1V	DC Resistance (±20%)	Min. Self-resonant Frequency	Saturation Current	Heat Rating Current
Units	μH	Ω	MHz	A	A
Symbol	L	DCR	S.R.F	Isat	Irms
SPH8030H1R0NT	1.0±30%	0.009	120	7.80	6.20
SPH8030H1R5NT	1.5±30%	0.012	80	6.20	5.30
SPH8030H2R2MT	2.2±20%	0.015	60	4.90	4.80
SPH8030H3R3MT	3.3±20%	0.019	50	4.20	4.30
SPH8030H4R7MT	4.7±20%	0.022	40	3.60	4.00
SPH8030H6R8MT	6.8±20%	0.029	32	3.00	3.40
SPH8030H100MT	10±20%	0.033	27	2.40	3.00
SPH8030H150MT	15±20%	0.060	20	2.00	2.20
SPH8030H220MT	22±20%	0.070	16	1.75	1.90
SPH8030H330MT	33±20%	0.120	13	1.30	1.50
SPH8030H470MT	47±20%	0.170	11	1.10	1.30

※1 : All test data is referenced to 20°C ambient;

※2 : Rated current: Isat or Irms, whichever is smaller;

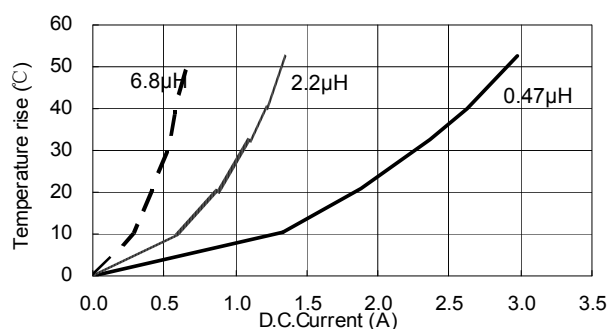
※Isat: DC current at which the inductance drops approximate 30% from its value without current;

※Irms: DC current that causes the temperature rise ($\Delta T = 40^{\circ}\text{C}$) from 20°C ambient.

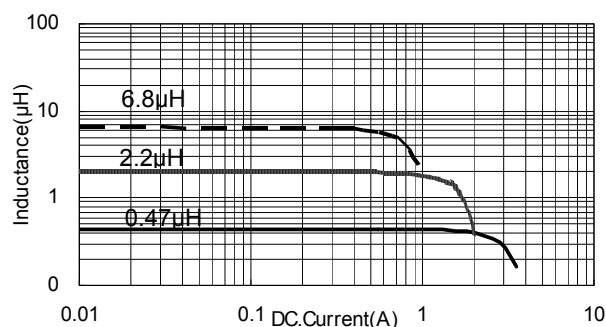
TYPICAL ELECTRICAL CHARACTERISTICS

SPH201610H Series

Temperature vs. DC Current Characteristics

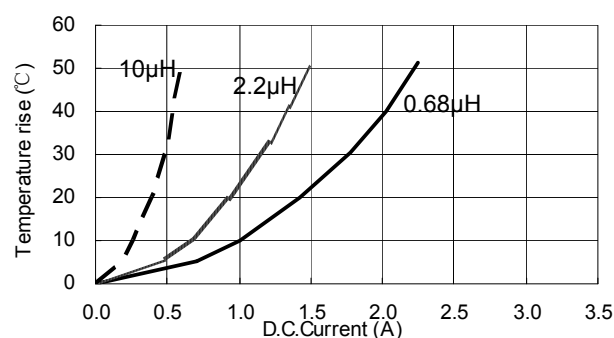


Inductance vs. DC Current Characteristics

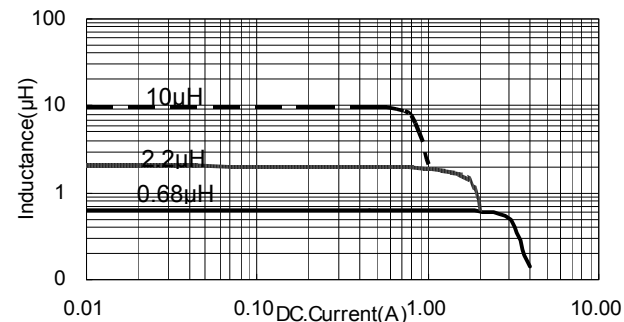


SPH202012H Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics



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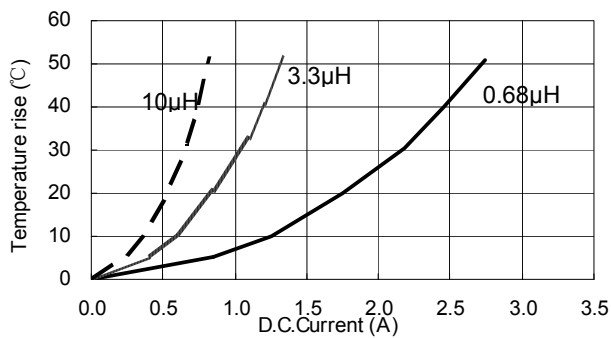
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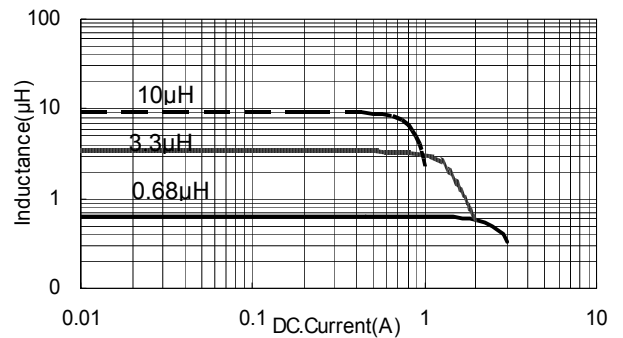
TYPICAL ELECTRICAL CHARACTERISTICS

SPH252010H Series

Temperature vs. DC Current Characteristics

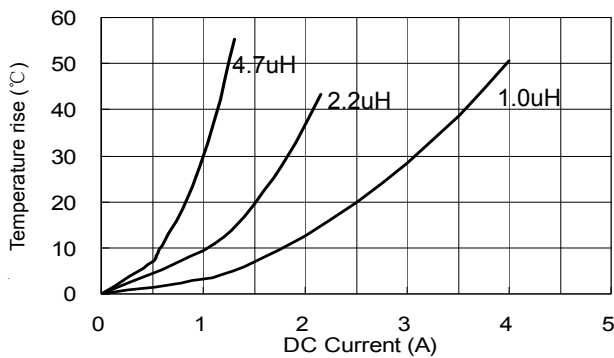


Inductance vs. DC Current Characteristics

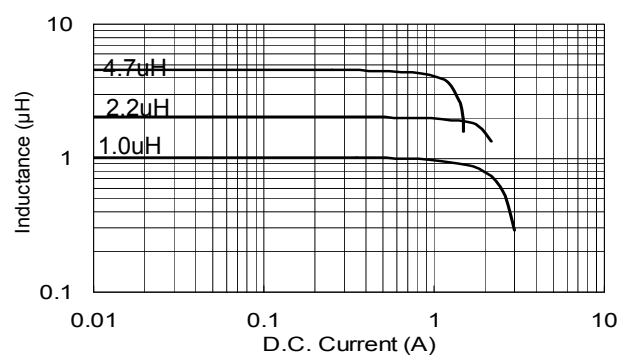


SPH252012H Series

Temperature vs. DC Current Characteristics

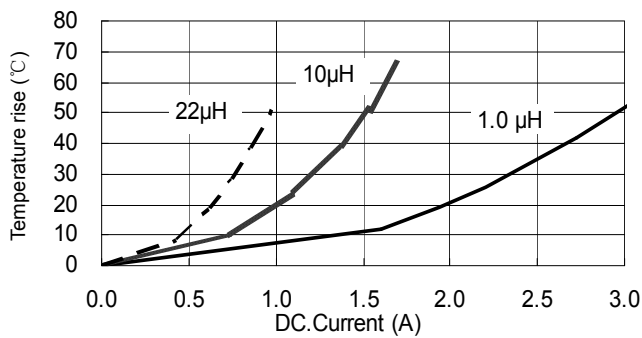


Inductance vs. DC Current Characteristics

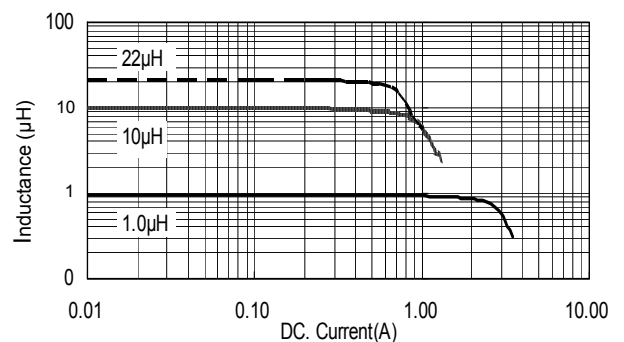


SPH4012H Series

Temperature vs. DC Current Characteristics

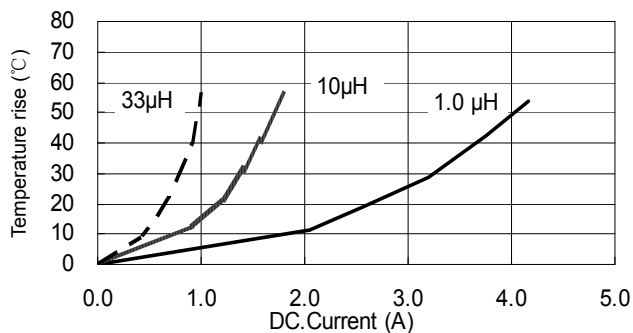


Inductance vs. DC Current Characteristics

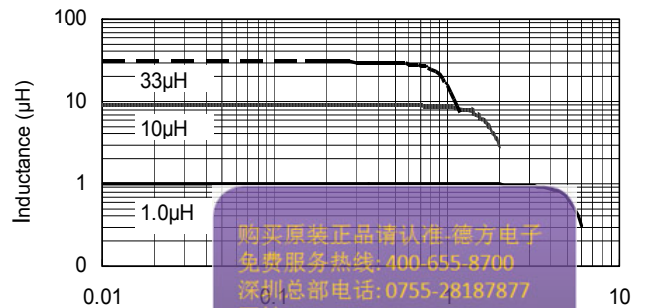


SPH4018H Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics



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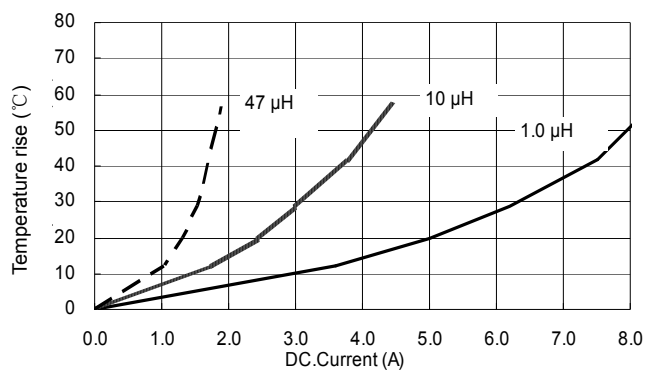
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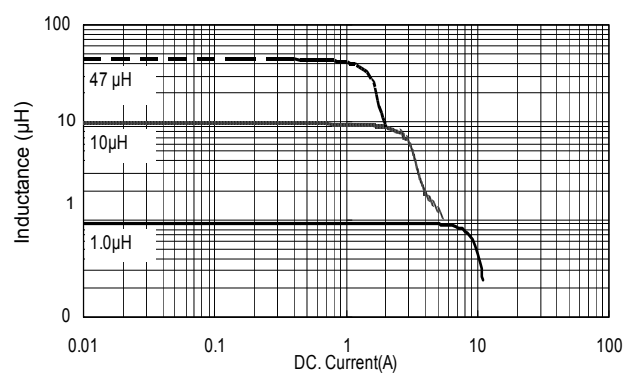
TYPICAL ELECTRICAL CHARACTERISTICS

SPH8030H Series

Temperature vs. DC Current Characteristics



Inductance vs. DC Current Characteristics



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