

SDCH1V60

Semi-shielded power inductors



Product features

- High current carrying capacity
- High power density, low core losses
- Magnetically semi-shielded
- 6.2 mm x 6.2 mm surface mount package in 3.0 mm and 4.5 mm heights
- NiZn ferrite magnetic material
- Moisture sensitivity level (MSL): 1

Applications

- DC-DC converters
- Switching controllers
- Industrial IoT equipment
- Game consoles
- Portable electronics
- Laptops, notebooks, and netbooks
- Desktops and workstations
- Battery backup
- LED lighting
- HD televisions and displays

Environmental compliance and general specifications

- Storage temperature range (component): -40 °C to +125 °C
- Operating temperature range: -40 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant



Product specifications

Part number ⁵	OCL ¹ (µH)	FLL ² (µH) minimum	I _{FRMS} ³ (A)	I _{PKT} ⁴ (A)	DCR (mΩ) @ +20 °C nominal	DCR (mΩ) @ +20 °C maximum
SDCH1V6028						
SDCH1V6028-1R0N-R	1.0±30%	0.46	5.7	8.5	16	20
SDCH1V6028-1R5N-R	1.5±30%	0.68	5.3	7.0	18	21
SDCH1V6028-2R2M-R	2.2±20%	1.14	4.5	6.0	22	25
SDCH1V6028-3R3M-R	3.3±20%	1.72	3.5	4.5	29	33
SDCH1V6028-4R7M-R	4.7±20%	2.44	3.1	4.0	43	49
SDCH1V6028-6R8M-R	6.8±20%	3.54	2.4	3.5	57	66
SDCH1V6028-100M-R	10±20%	5.2	2.0	2.8	72	83
SDCH1V6028-150M-R	15±20%	7.8	1.8	2.5	102	117
SDCH1V6028-220M-R	22±20%	11.44	1.4	1.9	150	173
SDCH1V6028-330M-R	33±20%	17.16	1.3	1.5	210	242
SDCH1V6028-470M-R	47±20%	24.44	1.1	1.4	360	410
SDCH1V6028-680M-R	68±20%	35.36	0.85	1.0	400	460
SDCH1V6028-101M-R	100±20%	52.0	0.75	0.85	620	713
SDCH1V6028-221M-R	220±20%	114.4	0.5	0.55	1300	1495
SDCH1V6028-331M-R	330±20%	171.6	0.45	0.5	1900	2185
SDCH1V6028-471M-R	470±20%	244.4	0.34	0.35	2400	2760
SDCH1V6028-681M-R	680±20%	353.6	0.3	0.32	4300	4945
SDCH1V6028-821M-R	820±20%	426.4	0.25	0.26	4500	5175
SDCH1V6028-102M-R	1000±20%	520.0	0.24	0.25	6000	6900
SDCH1V6045						
SDCH1V6045-1R0N-R	1.0±30%	0.46	6.0	12.8	12	15
SDCH1V6045-1R5N-R	1.5±30%	0.68	4.9	11.5	16	19
SDCH1V6045-2R2M-R	2.2±20%	1.14	4.5	9.0	19	22
SDCH1V6045-3R3M-R	3.3±20%	1.72	4.0	8.5	23	26
SDCH1V6045-4R7M-R	4.7±20%	2.44	3.6	6.7	31	36
SDCH1V6045-6R8M-R	6.8±20%	3.54	2.8	5.3	45	52
SDCH1V6045-100M-R	10±20%	5.2	2.4	4.5	58	67
SDCH1V6045-150M-R	15±20%	7.8	2.1	3.6	80	92
SDCH1V6045-220M-R	22±20%	11.44	1.6	3.0	125	144
SDCH1V6045-330M-R	33±20%	17.16	1.4	2.3	175	201
SDCH1V6045-470M-R	47±20%	24.44	1.1	2.1	260	299
SDCH1V6045-680M-R	68±20%	35.36	0.95	1.8	355	408
SDCH1V6045-101M-R	100±20%	52.0	0.8	1.45	550	633
SDCH1V6045-221M-R	220±20%	114.4	0.46	0.9	1500	1725
SDCH1V6045-331M-R	330±20%	171.6	0.4	0.8	2000	2300
SDCH1V6045-471M-R	470±20%	244.4	0.35	0.7	2500	2875
SDCH1V6045-681M-R	680±20%	353.6	0.28	0.58	4000	4600
SDCH1V6045-821M-R	820±20%	426.4	0.25	0.5	5200	5980
SDCH1V6045-102M-R	1000±20%	520.0	0.23	0.45	6000	6900

1. Open circuit inductance (OCL) test parameters: 100 kHz, 0.25 Vrms, 0.0 Adc, +25 °C

2. Full load inductance (FLL) test parameters: 100 kHz, 0.25 Vrms, I_{FRMS}, +25 °C

3. I_{FRMS}: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +125 °C under worst case operating conditions verified in the end application.

4. I_{PKT}: Peak current for approximately 35% maximum rolloff @ +25 °C

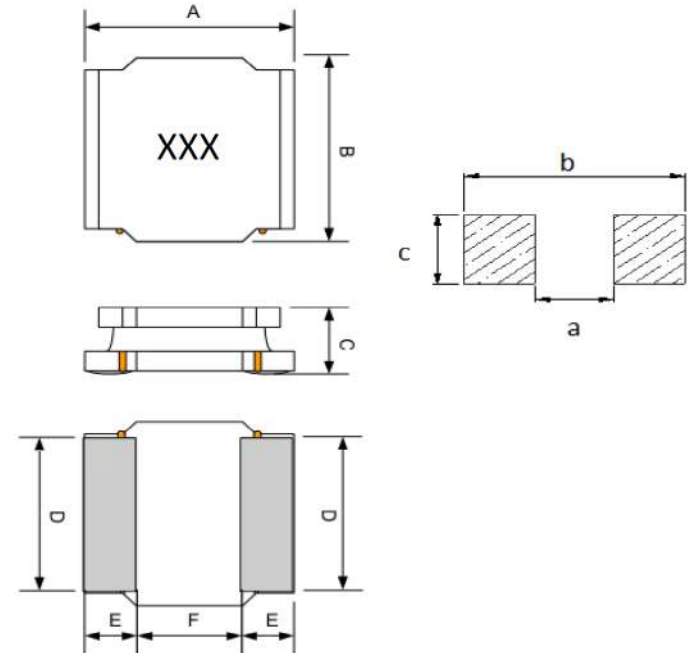
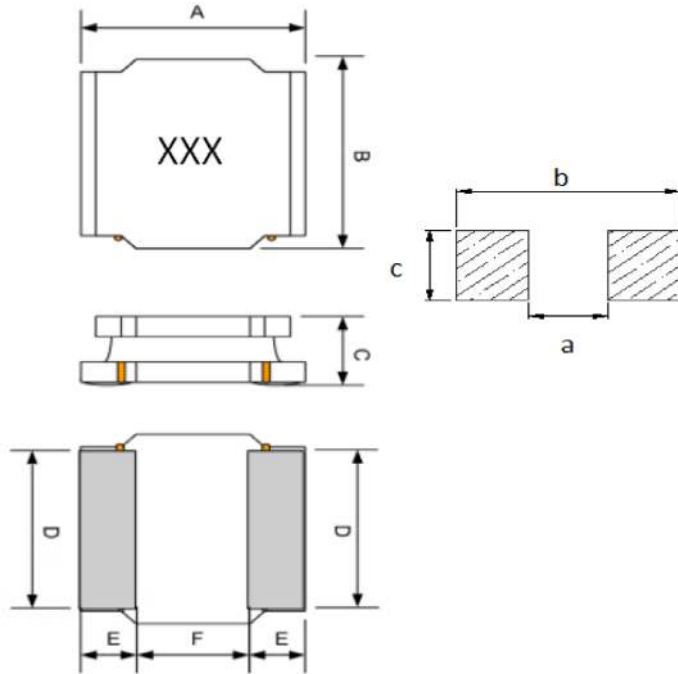
5. Part number definition: SDCH1Vxxxx-yyyz-R

SDCH1V = Product code
xxxx= size code
yyy= Inductance value in µH, R=decimal point
z= Inductance tolerance
-R suffix = RoHS compliant

Dimensions-mm

SDCH1V6028

SDCH1V6045



Dimension	Value
A	6.0 ± 0.2
B	6.0 ± 0.2
C	3.0 MAX
D	5.0 ± 0.2
E	1.85 ± 0.3
F	2.3 ± 0.3
a	2.0 TYP
b	6.3 TYP
c	5.3 TYP

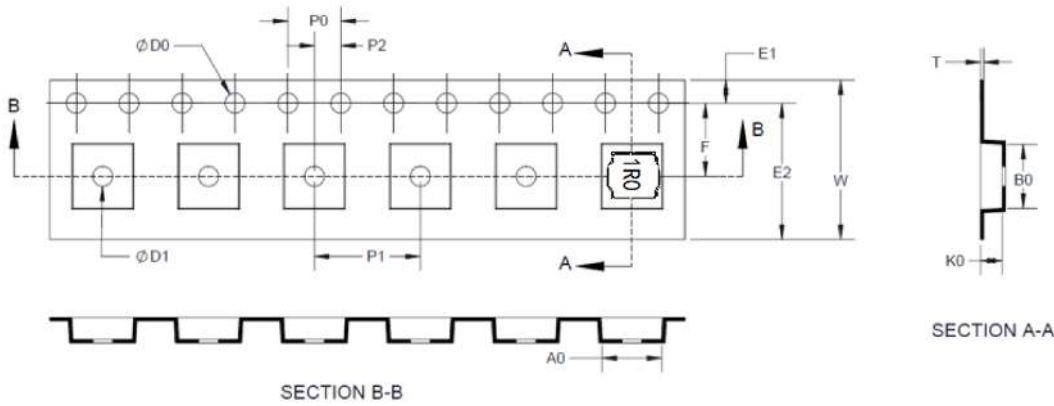
Dimension	Value
A	6.0 ± 0.2
B	6.0 ± 0.2
C	4.5 MAX
D	4.9 ± 0.2
E	1.55 ± 0.3
F	2.7 ± 0.3
a	2.4 TYP
b	6.3 TYP
c	5.2 TYP

Part marking: xxx= inductance value in uH, R= decimal point. If no R is present then last character equals number of zeros.
Tolerances are ±0.3 millimeters unless stated otherwise
All soldering surfaces to be coplanar within 0.1 millimeters
Pad layout tolerances are ±0.1 millimeters unless stated otherwise
Traces or vias underneath the inductor is not recommended

Packaging information- mm

SDCH1V6028

Supplied in tape and reel packaging, 2000 parts per 13" diameter reel (EIA-481 compliant)

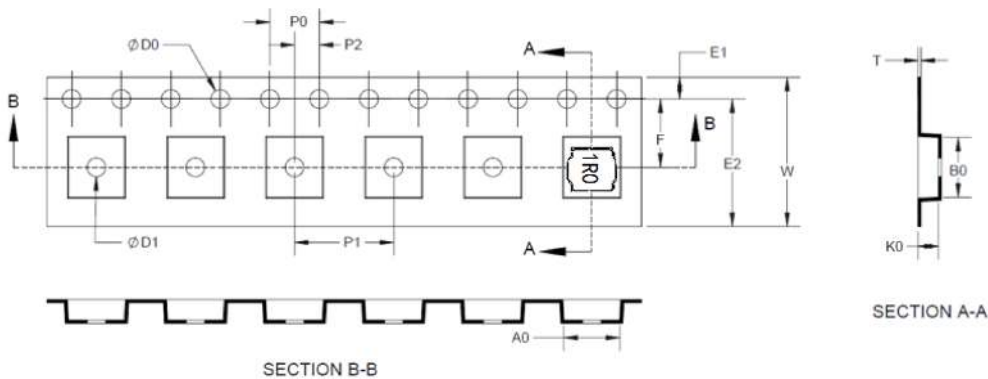


Dimension	Value
W	16.00 ± 0.30
F	7.50 ± 0.10
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	8.00 ± 0.10
P2	2.00 ± 0.10
$\phi D0$	1.50 + 0.1/-0
$\phi D1$	1.50 + 0.1/-0
A0	6.45 ± 0.10
B0	6.40 ± 0.10
K0	3.15 ± 0.10
T	0.35 ± 0.05

Packaging information- mm

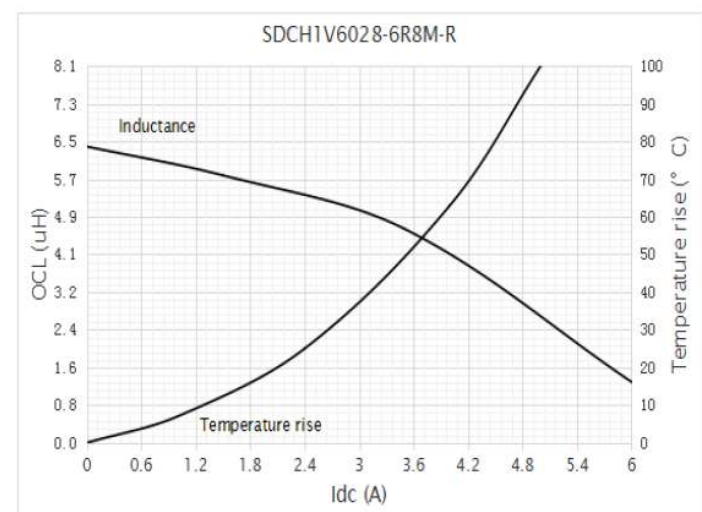
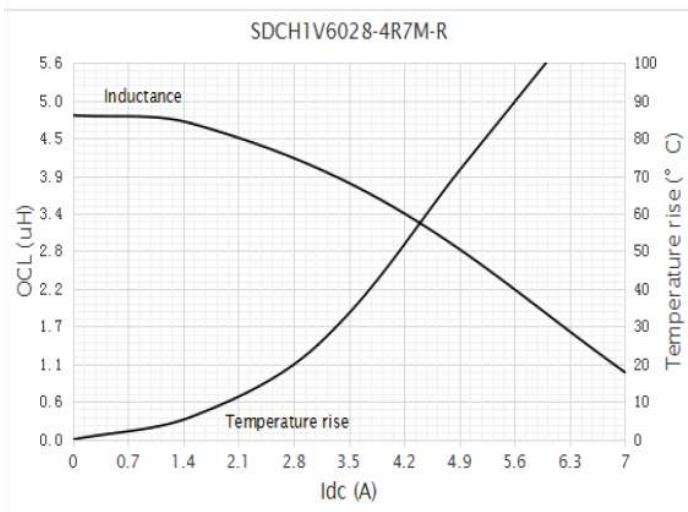
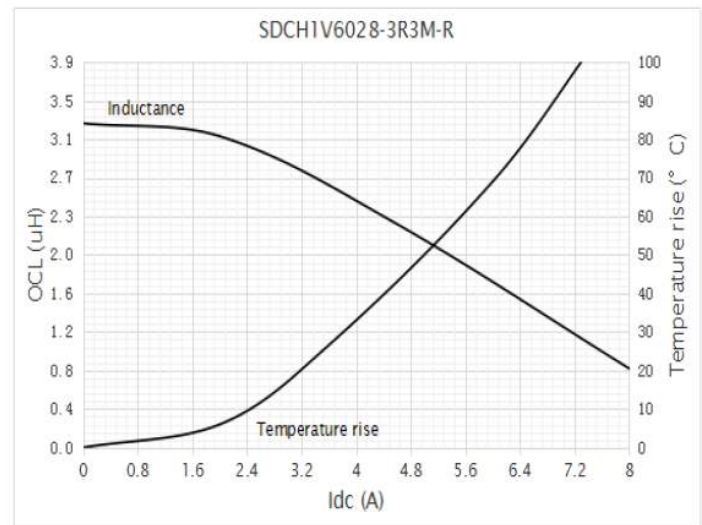
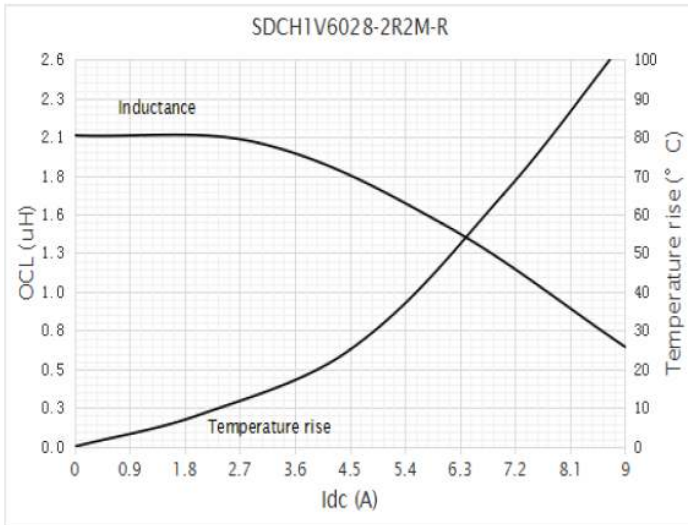
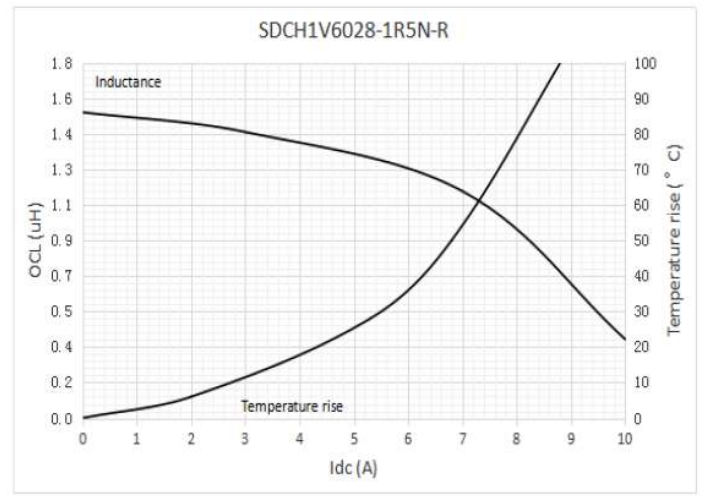
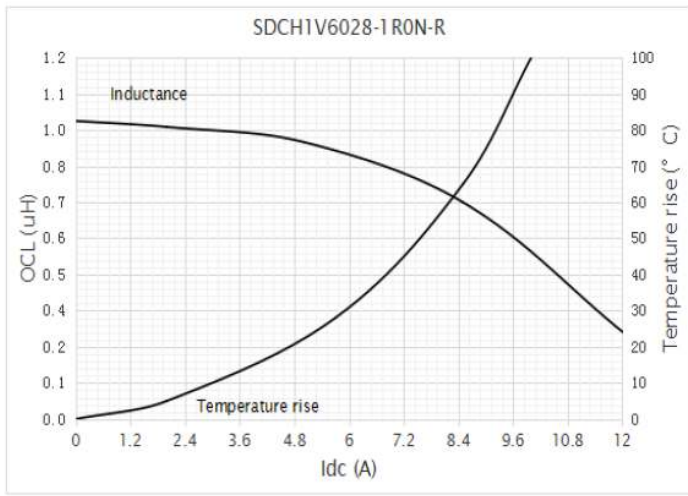
SDCH1V6045

Supplied in tape and reel packaging, 1500 parts per 13" diameter reel (EIA-481 compliant)

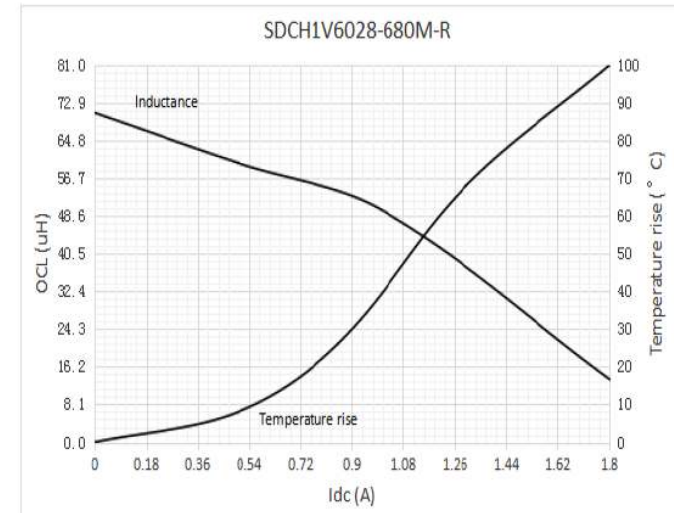
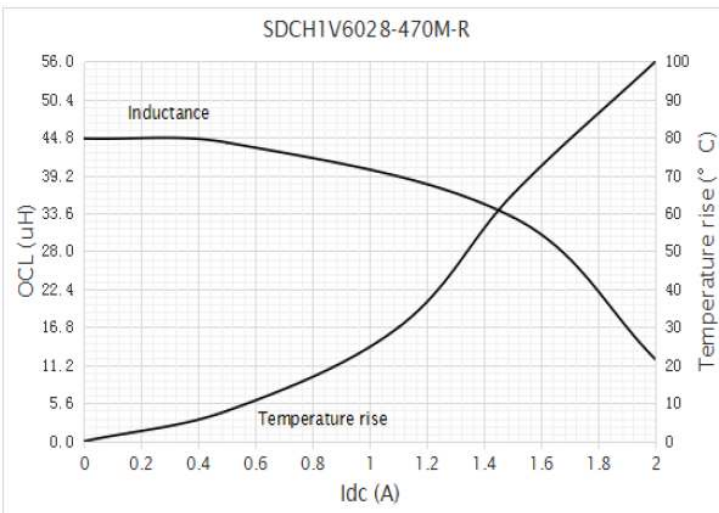
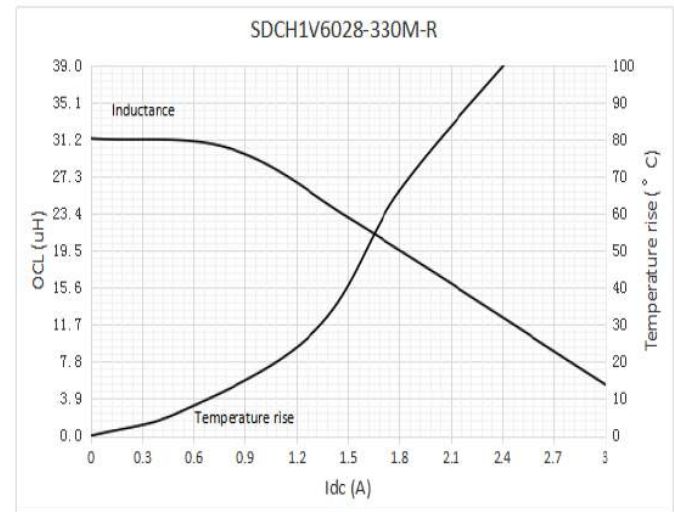
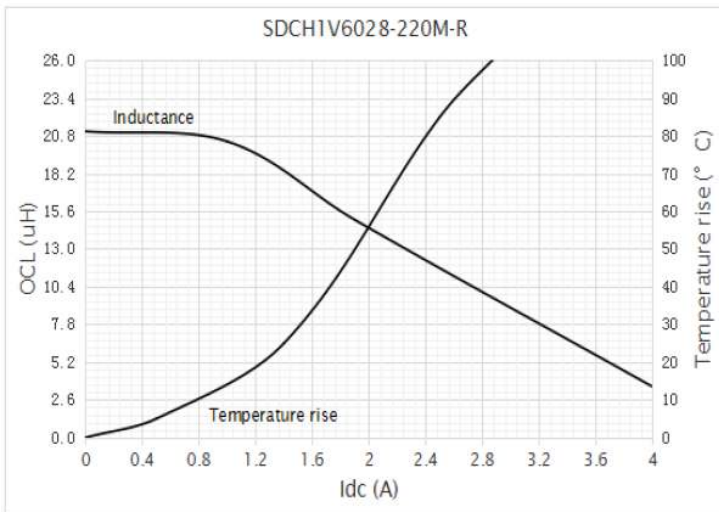
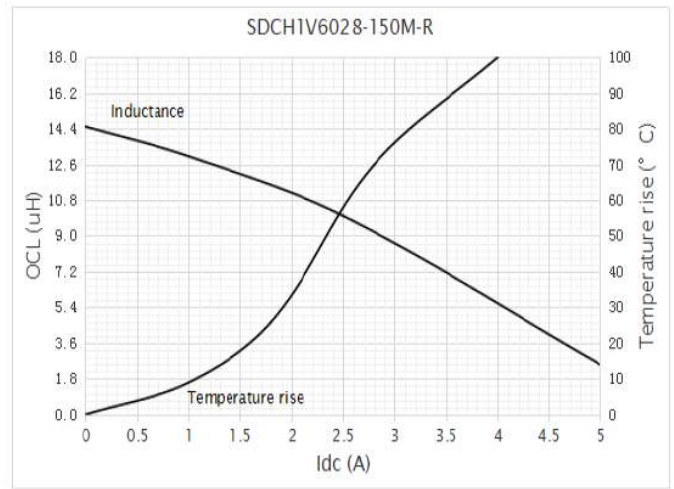
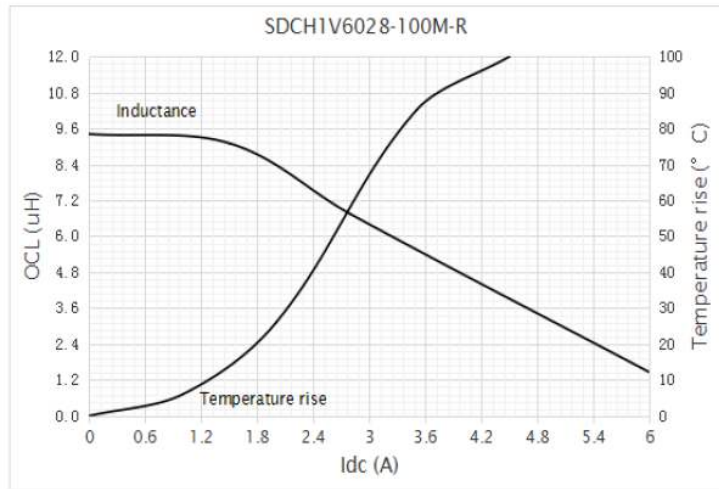


Dimension	Value
W	16.00 + 0.2/-0.3
F	7.50 ± 0.10
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	8.00 ± 0.10
P2	2.00 ± 0.10
$\phi D0$	1.50 + 0.1/-0
$\phi D1$	N/A
A0	6.40 ± 0.10
B0	6.40 ± 0.10
K0	4.75 ± 0.10
T	0.40 ± 0.05

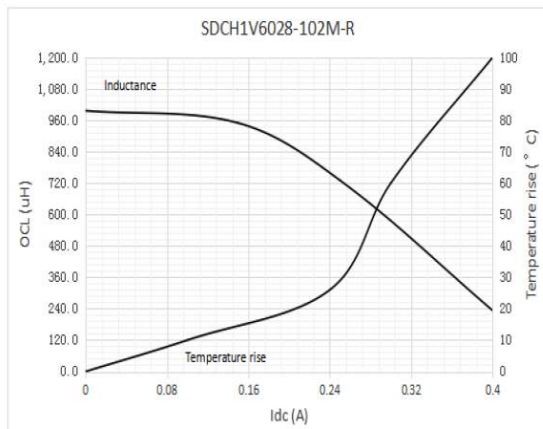
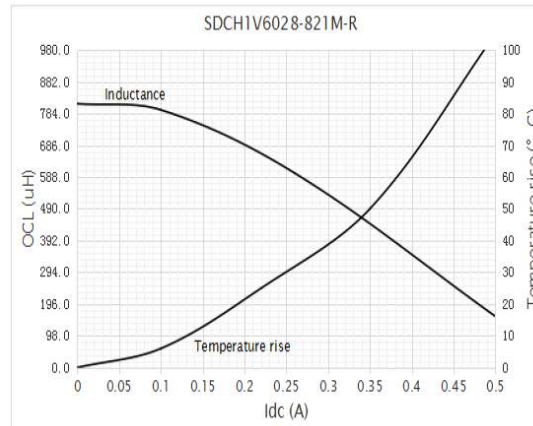
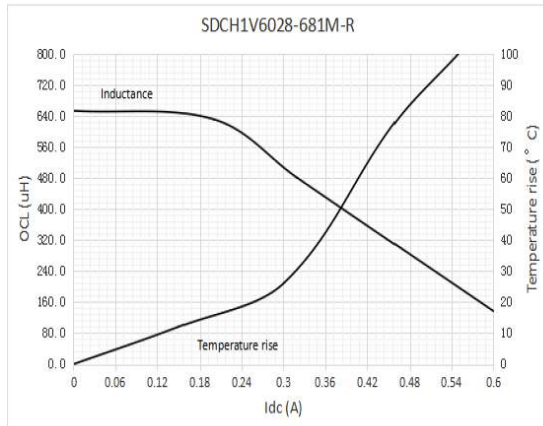
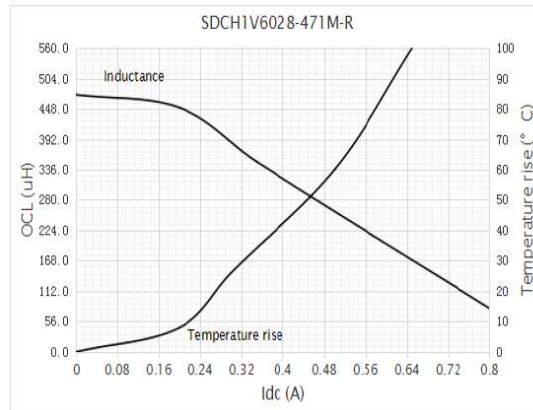
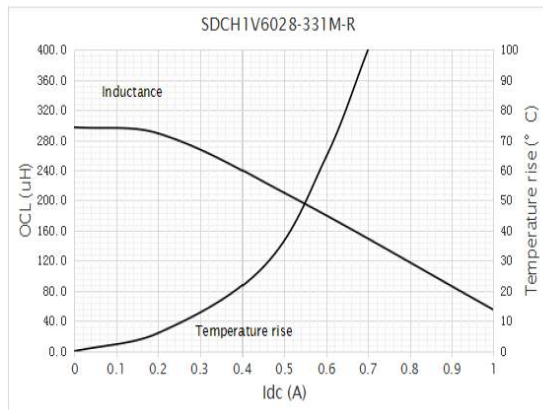
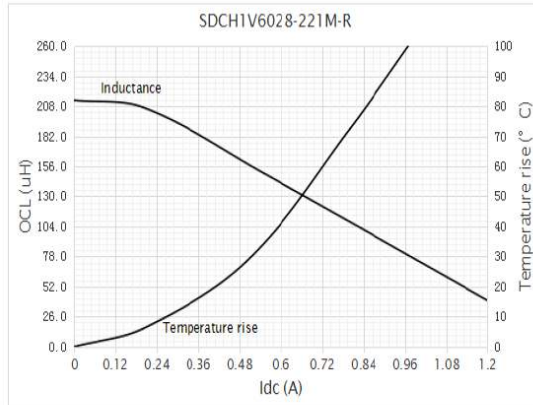
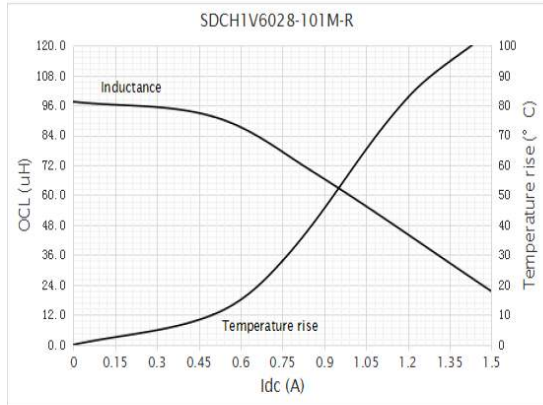
Inductance and temperature rise vs current
SDCH1V6028



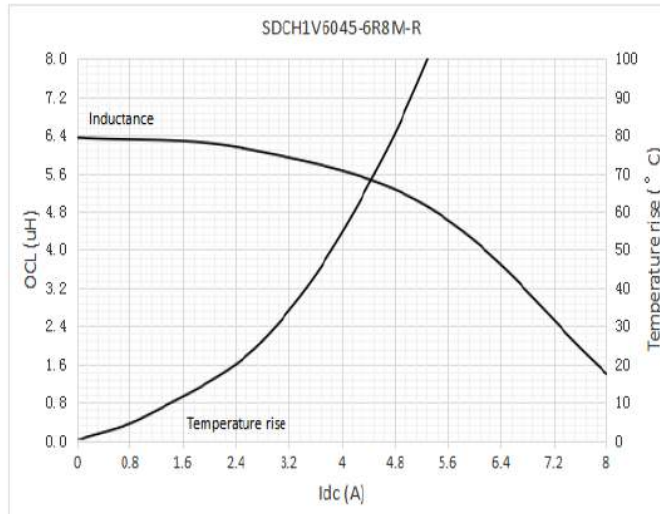
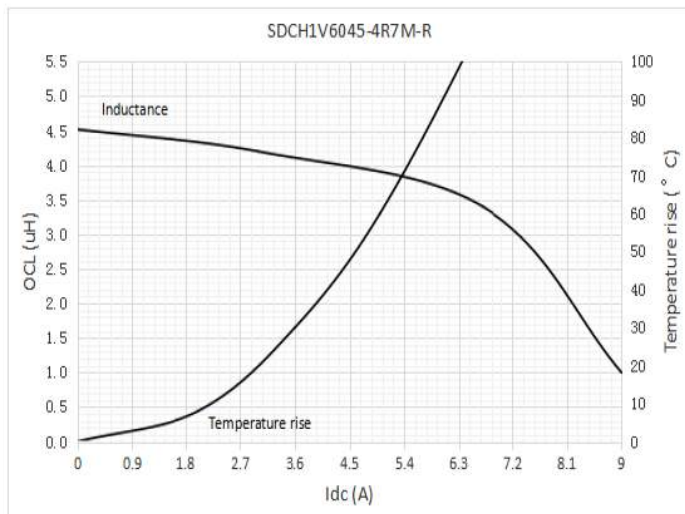
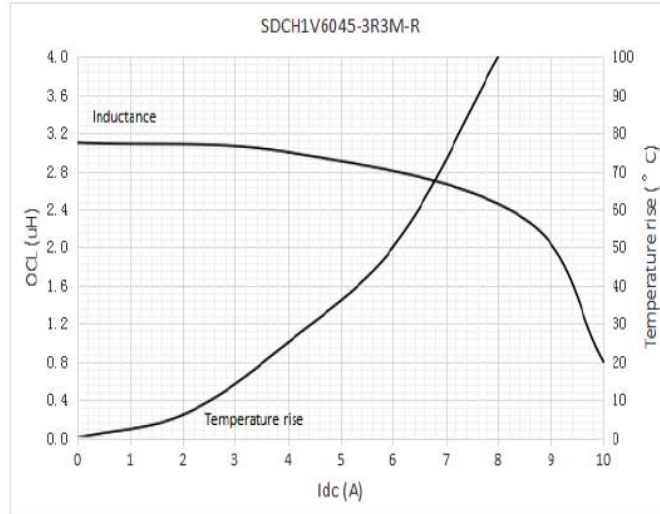
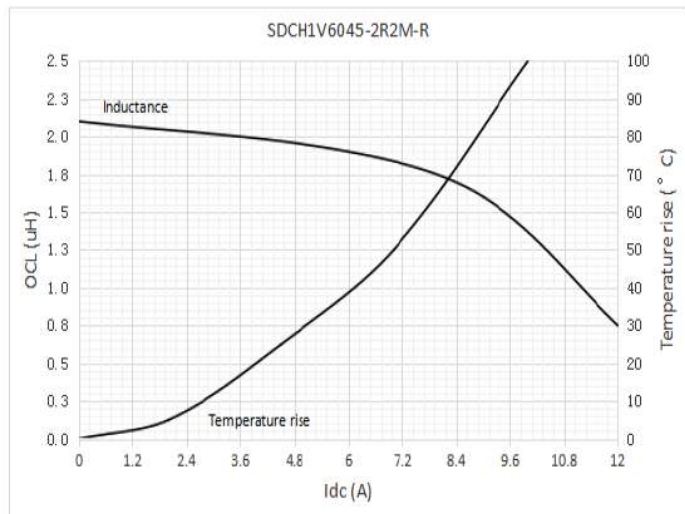
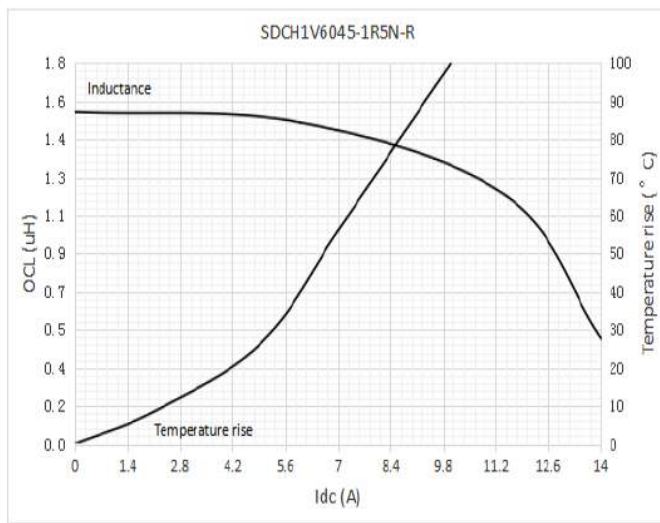
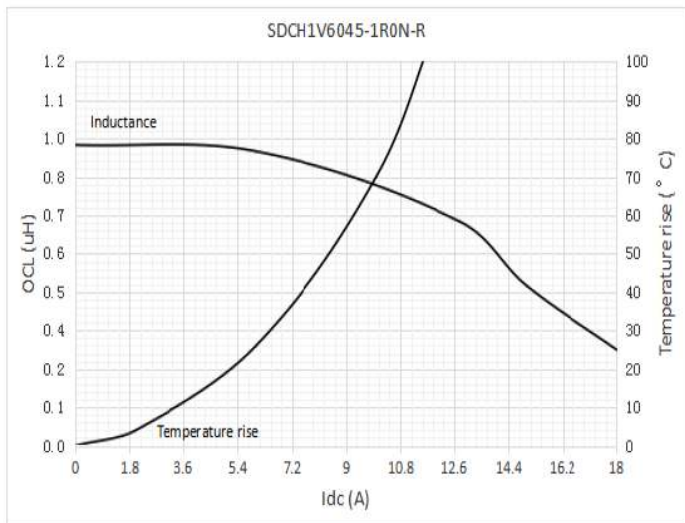
Inductance and temperature rise vs current
SDCH1V6028



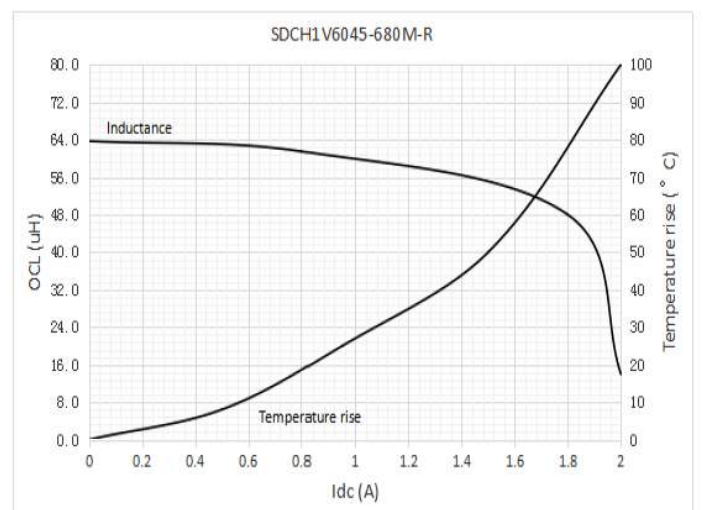
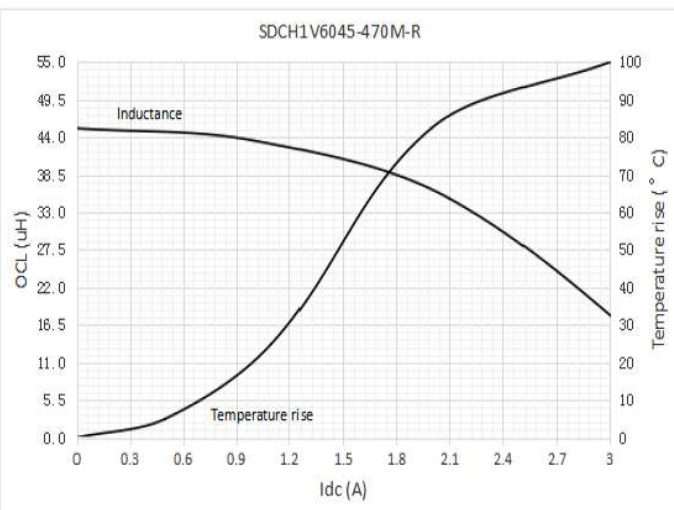
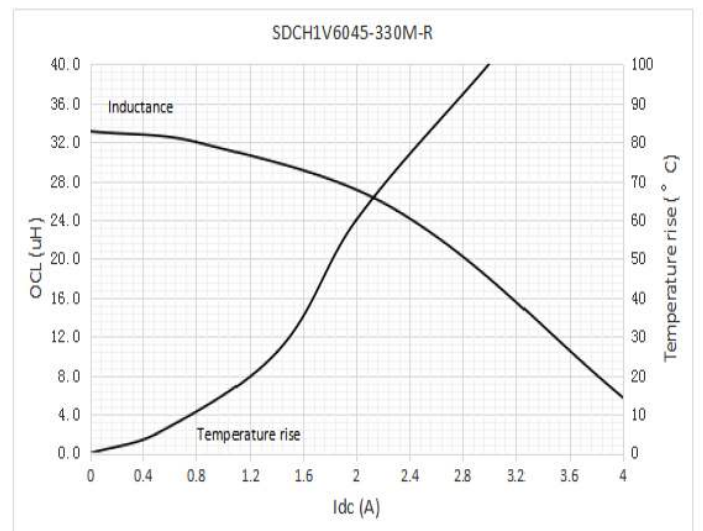
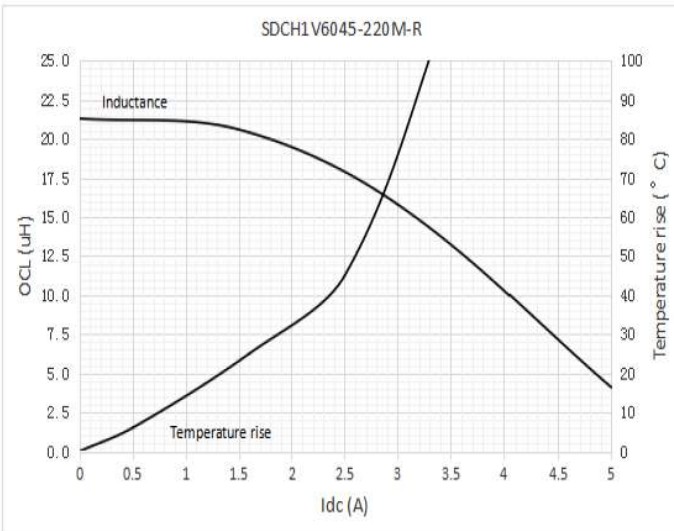
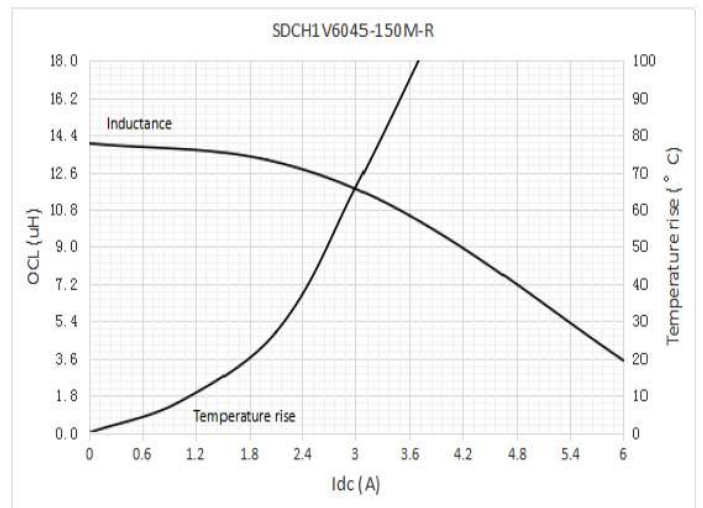
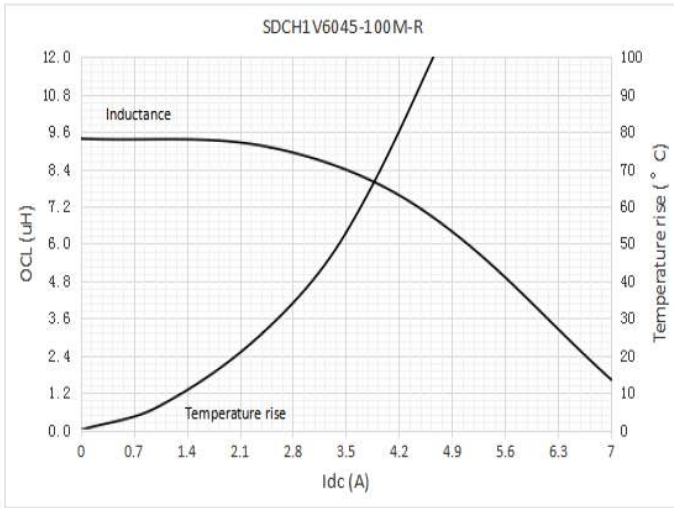
**Inductance and temperature rise vs current
SDCH1V6028**



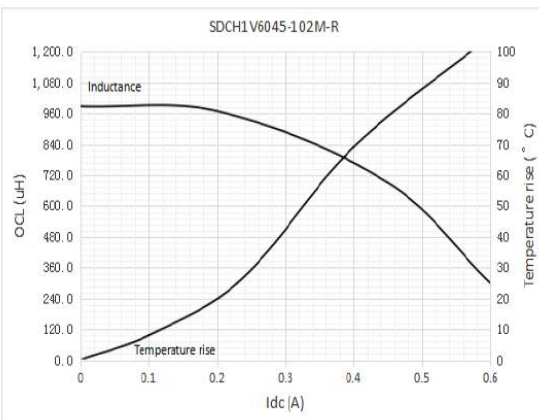
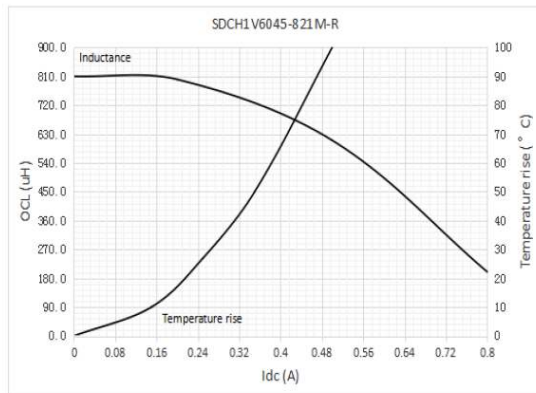
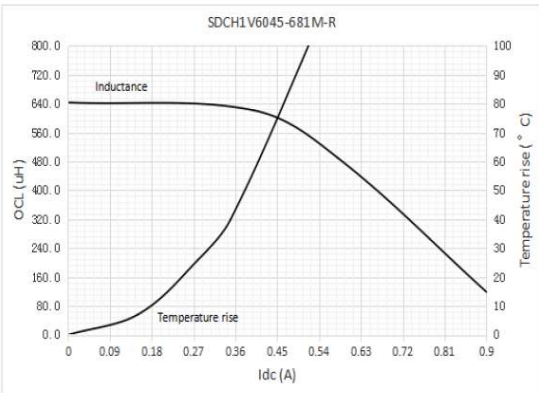
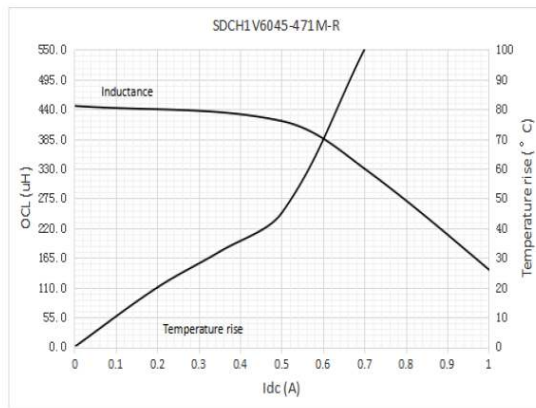
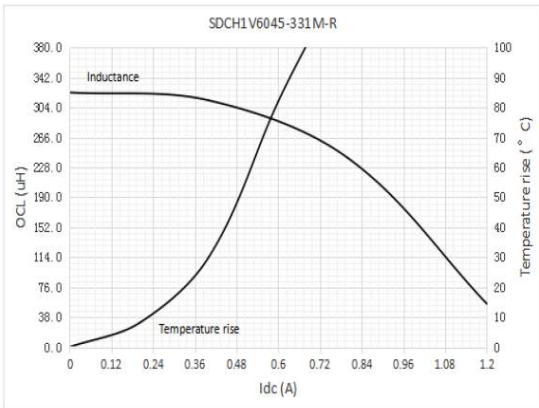
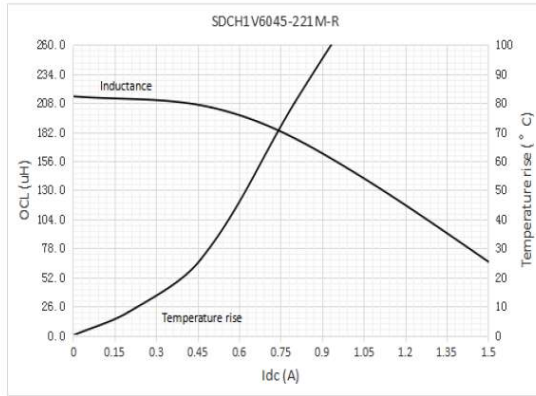
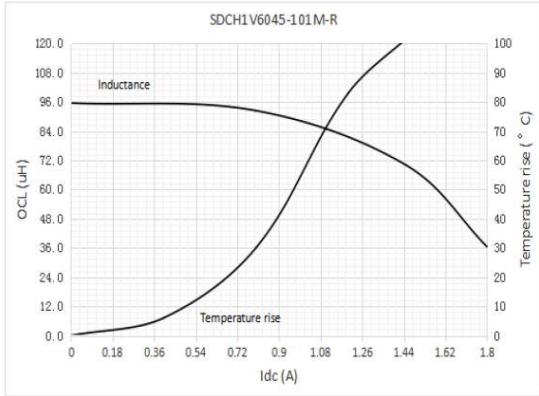
Inductance and temperature rise vs current
SDCH1V6045



Inductance and temperature rise vs current
SDCH1V6045



Inductance and temperature rise vs current
SDCH1V6045



Solder reflow profile

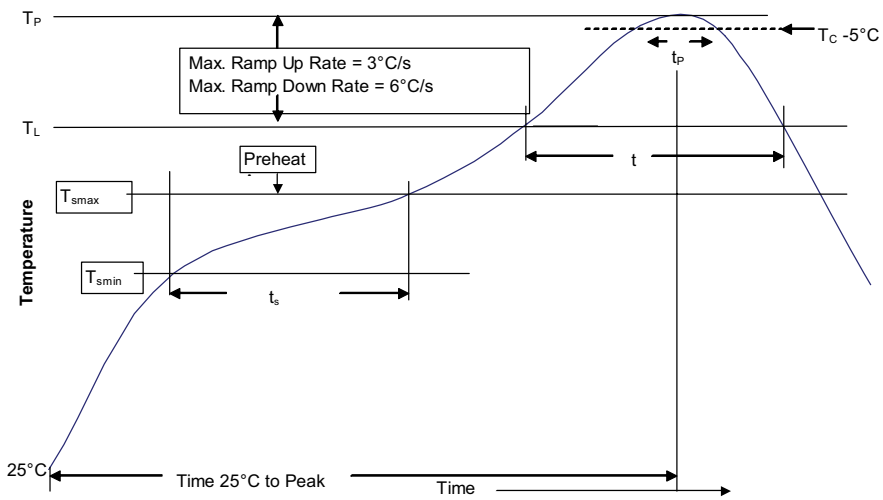


Table 1 - Standard SnPb solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5 mm	235 °C	220 °C
≥2.5 mm	220 °C	220 °C

Table 2 - Lead (Pb) free solder (T_C)

Package thickness	Volume mm ³ <350	Volume mm ³ 350 - 2000	Volume mm ³ >2000
<1.6 mm	260 °C	260 °C	260 °C
1.6 – 2.5 mm	260 °C	250 °C	245 °C
>2.5 mm	250 °C	245 °C	245 °C

Reference J-STD-020

Profile feature	Standard SnPb solder	Lead (Pb) free solder
Preheat and soak		
• Temperature min. (T_{smin})	100 °C	150 °C
• Temperature max. (T_{smax})	150 °C	200 °C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 seconds	60-120 seconds
Ramp up rate T_L to T_p	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T_L)	183 °C	217 °C
Time (t_L) maintained above T_L	60-150 seconds	60-150 seconds
Peak package body temperature (T_p)*	Table 1	Table 2
Time (t_p)* within 5 °C of the specified classification temperature (T_C)	20 seconds*	30 seconds*
Ramp-down rate (T_p to T_L)	6 °C/ second max.	6 °C/ second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.

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