

# SDCH1V80

## Semi-shielded power inductors



### Product features

- High current carrying capacity
- High power density, low core losses
- Magnetically semi-shielded
- 8.3 mm x 8.3 mm surface mount package in 4.2 mm height
- 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 <sup>5</sup>	OCL <sup>1</sup> ( $\mu$ H)	FLL <sup>2</sup> ( $\mu$ H) minimum	I <sub>rms</sub> <sup>3</sup> (A)	I <sub>sat</sub> <sup>4</sup> (A)	DCR (m $\Omega$ ) @ +20 °C nominal	DCR (m $\Omega$ ) @ +20 °C maximum
SDCH1V8040-1R0N-R	1.0±30%	0.46	8.0	12.0	6.5	9
SDCH1V8040-1R5N-R	1.5±30%	0.68	7.3	9.6	7.5	11
SDCH1V8040-2R2M-R	2.2±20%	1.14	6.9	9.3	10	13
SDCH1V8040-3R3M-R	3.3±20%	1.72	5.0	8.6	15	19
SDCH1V8040-4R7M-R	4.7±20%	2.44	4.7	6.3	18	21
SDCH1V8040-6R8M-R	6.8±20%	3.54	3.8	5.1	26	30
SDCH1V8040-100M-R	10±20%	5.2	3.0	4.6	40	46
SDCH1V8040-150M-R	15±20%	7.8	2.8	3.2	50	58
SDCH1V8040-220M-R	22±20%	11.44	2.5	2.8	70	81
SDCH1V8040-330M-R	33±20%	17.16	1.9	2.2	110	127
SDCH1V8040-470M-R	47±20%	24.44	1.8	2.0	140	161
SDCH1V8040-680M-R	68±20%	35.36	1.3	1.6	215	247
SDCH1V8040-101M-R	100±20%	52.0	1.1	1.22	300	345
SDCH1V8040-221M-R	220±20%	114.4	0.75	0.9	680	782
SDCH1V8040-331M-R	330±20%	171.6	0.6	0.7	1000	1150
SDCH1V8040-471M-R	470±20%	244.4	0.5	0.65	1500	1725
SDCH1V8040-681M-R	680±20%	353.6	0.42	0.53	2200	2530
SDCH1V8040-821M-R	820±20%	426.4	0.4	0.45	2500	2875
SDCH1V8040-102M-R	1000±20%	520.0	0.37	0.42	2900	3335

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<sub>sat</sub>, +25 °C

3. I<sub>rms</sub>: 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.

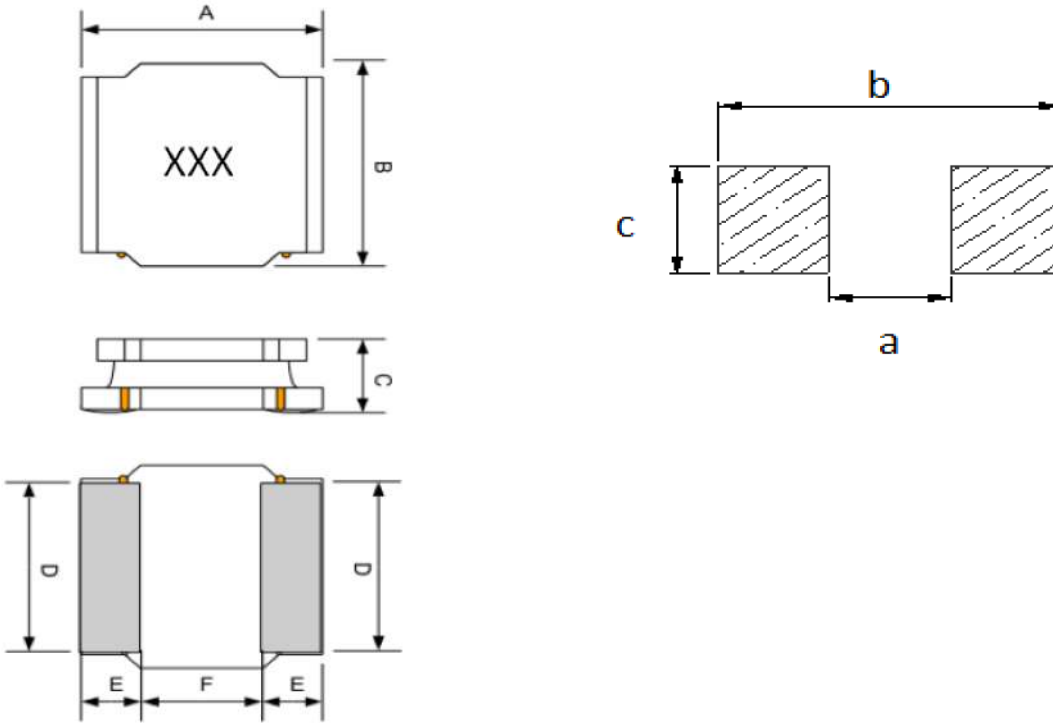
4. I<sub>sat</sub>: Peak current for approximately 35% maximum rolloff @ +25 °C

5. Part number definition: SDCH1Vxxx-yyyz-R

SDCH1V = Product code  
xxx= size code  
yyy= Inductance value in  $\mu$ H, R=decimal point  
z= Inductance tolerance  
-R suffix = RoHS compliant

Dimensions-mm

SDCH1V8040



Dimension	Value
A	8.0 ± 0.3
B	8.0 ± 0.3
C	4.2 MAX
D	6.3 ± 0.2
E	2.45 ± 0.3
F	3.1 ± 0.3
a	2.8 TYP
b	8.3 TYP
c	6.6 TYP

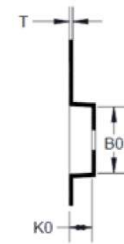
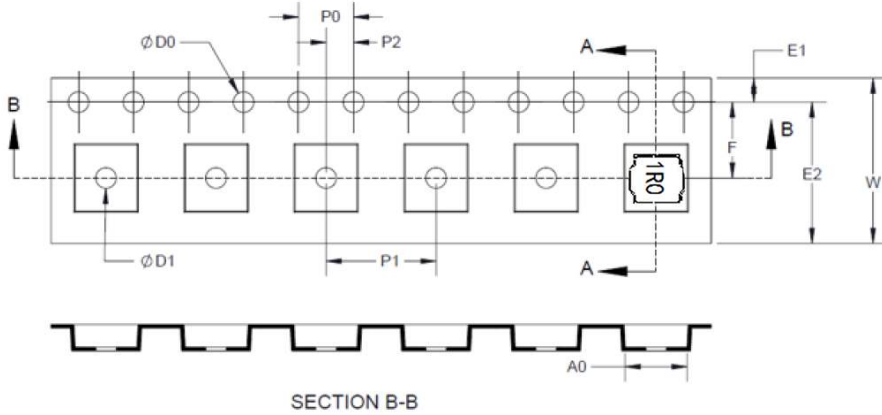
Part marking: xxx= inductance value in  $\mu\text{H}$ , R= decimal point. If no R is present then last character equals number of zeros.  
Tolerances are  $\pm 0.3$  millimeters unless stated otherwise  
All soldering surfaces to be coplanar within 0.1 millimeters  
Pad layout tolerances are  $\pm 0.1$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

**Packaging information- mm**

**SDCH1V8040**

Supplied in tape and reel packaging, 1000 parts per 13" diameter reel (EIA-481 compliant)

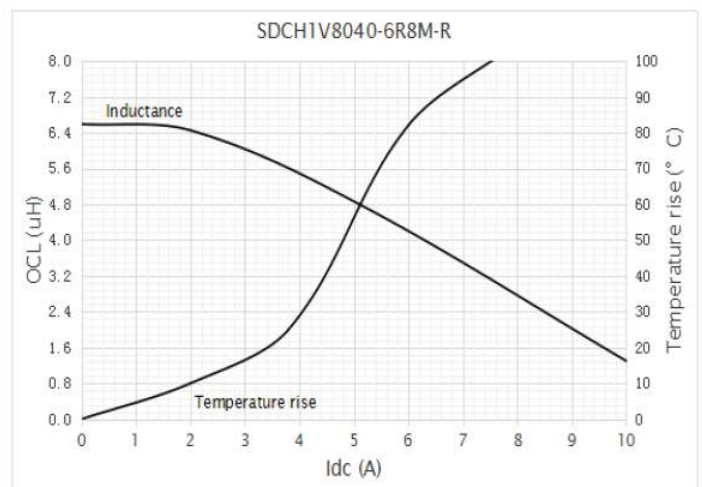
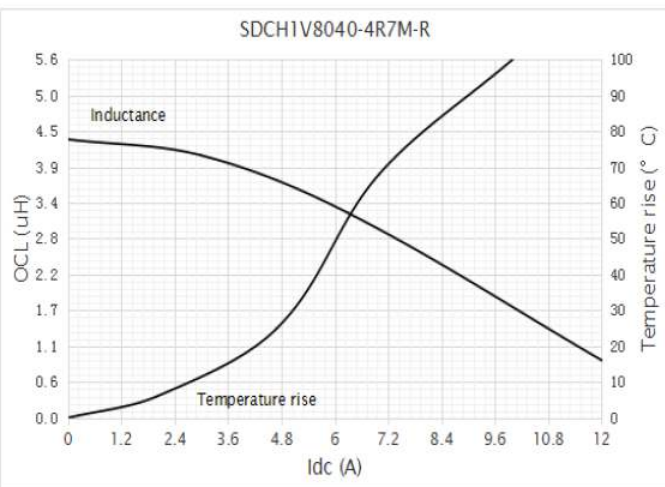
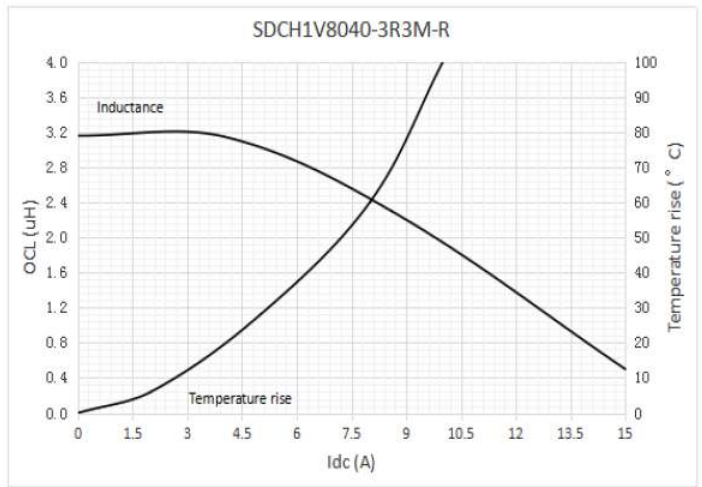
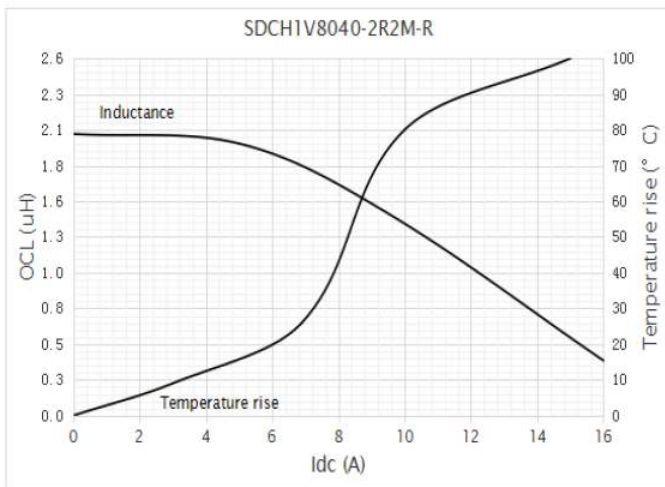
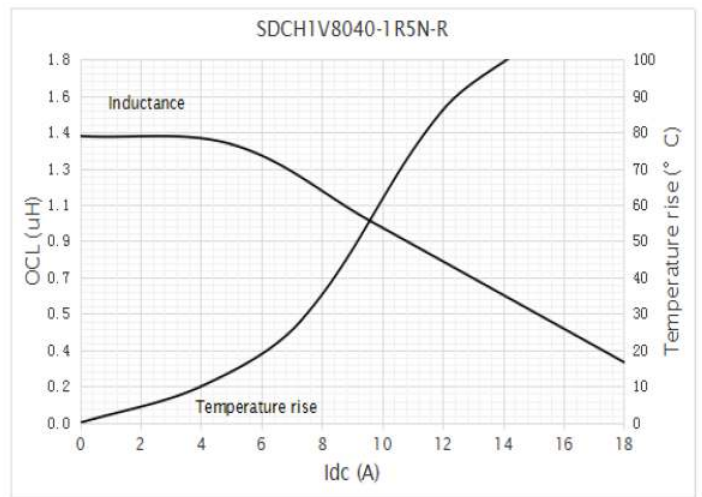
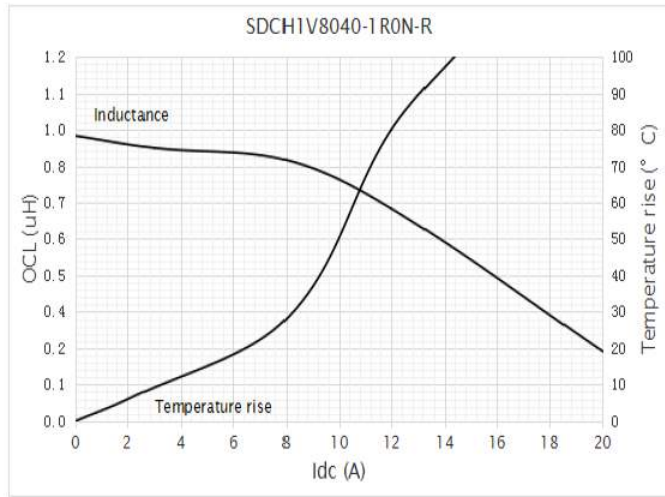
Drawing not to scale



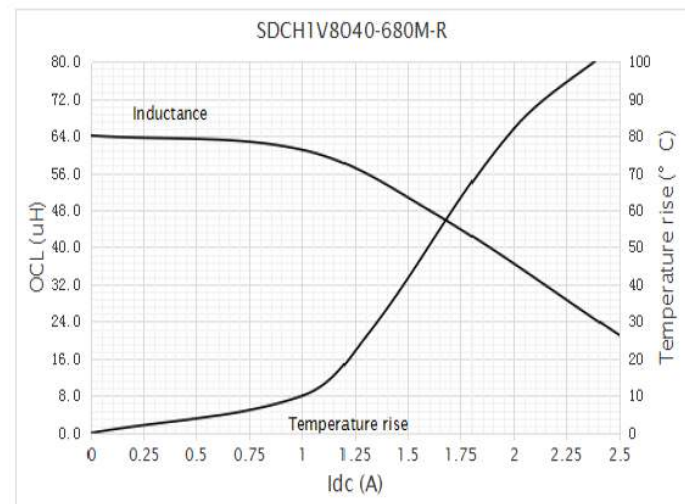
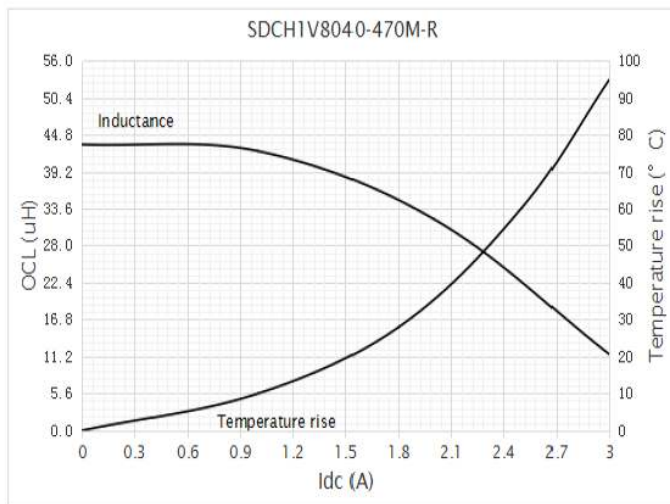
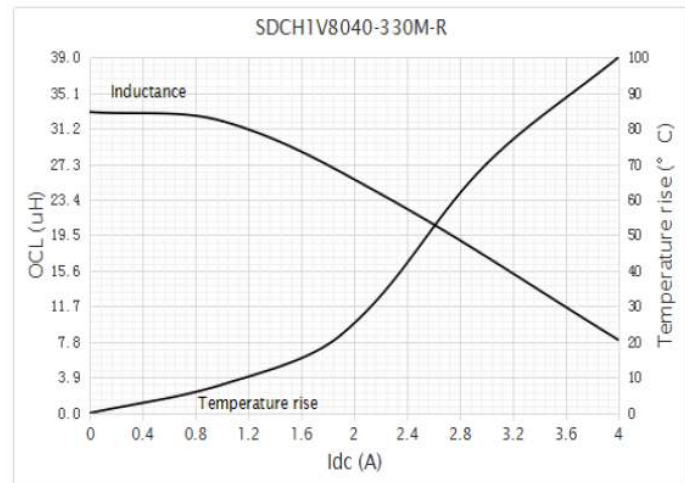
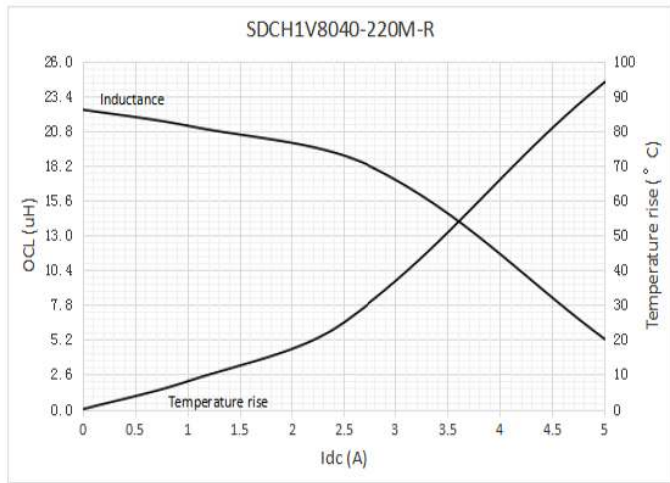
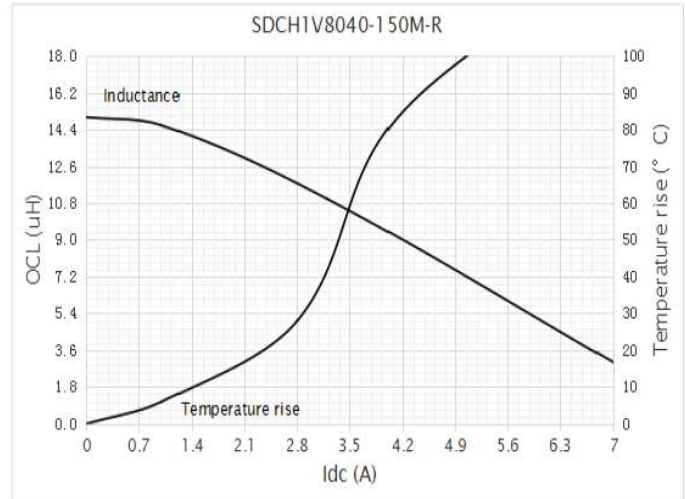
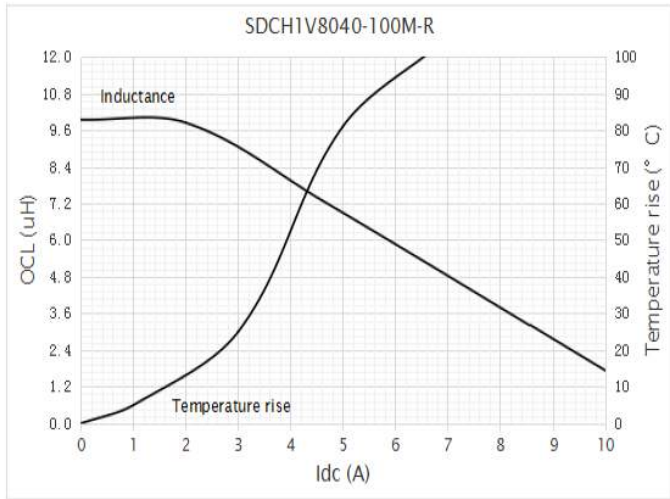
SECTION A-A

Dimension	Value
W	16.00 + 0.20/-0.30
F	7.50 ± 0.10
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	12.00 ± 0.10
P2	2.00 ± 0.10
ØD0	1.55 ± 0.05
ØD1	1.55 ± 0.05
A0	8.55 ± 0.10
B0	8.55 ± 0.10
K0	4.40 ± 0.10
T	0.40 ± 0.05

Inductance and temperature rise vs current

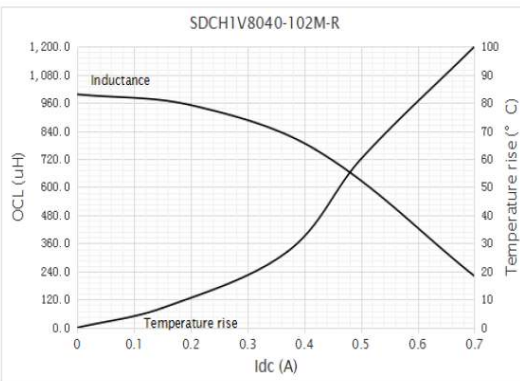
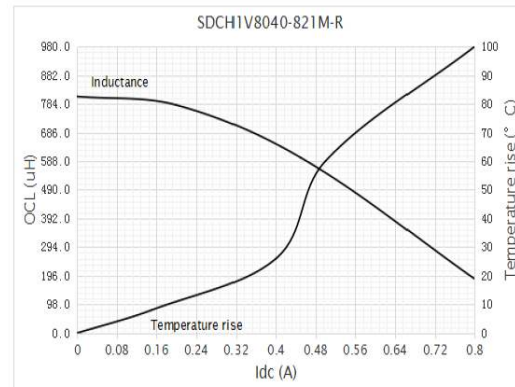
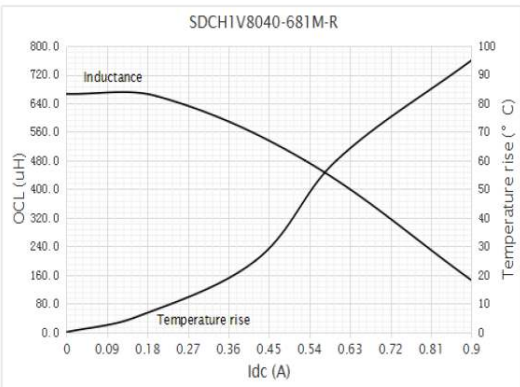
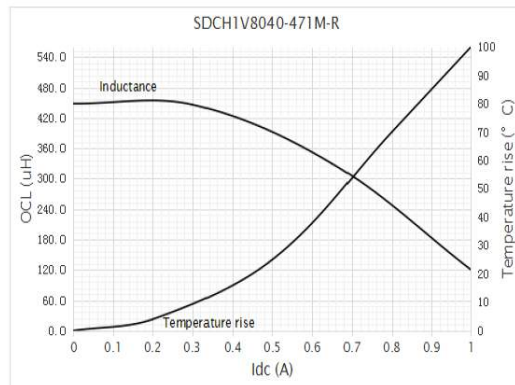
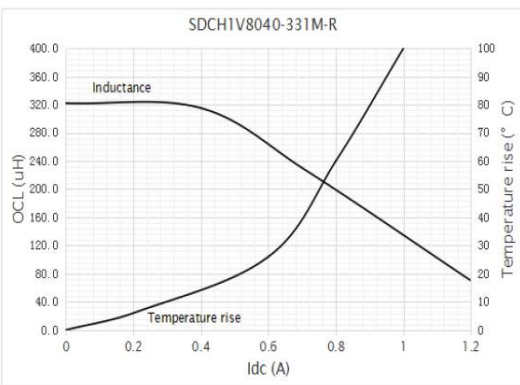
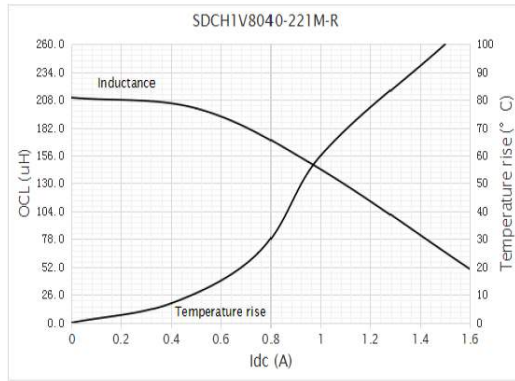
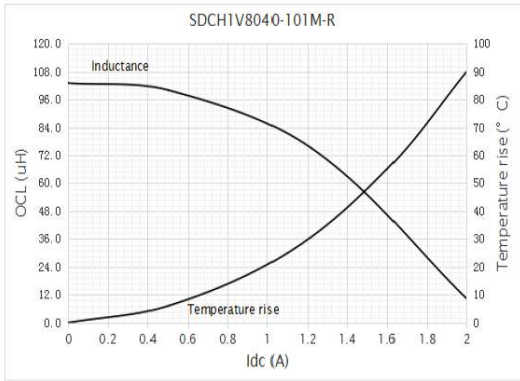


Inductance and temperature rise vs current

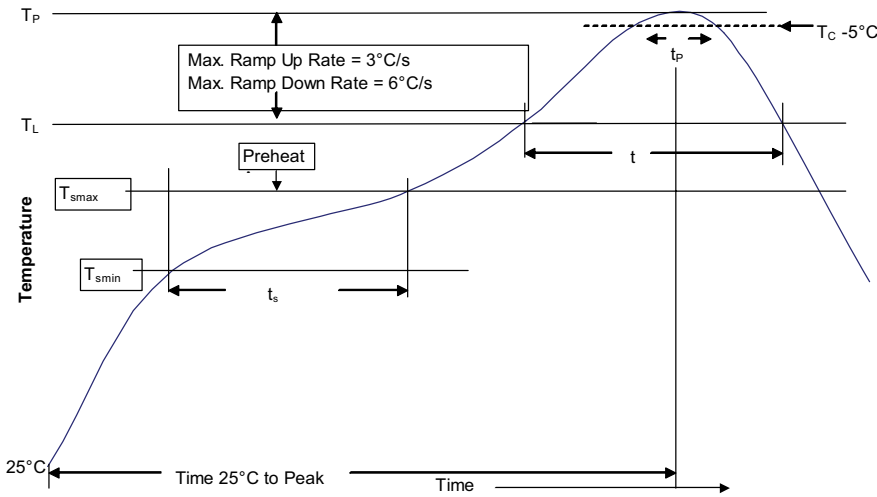




Inductance and temperature rise vs current



**Solder reflow profile**



**Table 1 - Standard SnPb solder ( $T_C$ )**

Package thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq$ 350
<2.5 mm)	235 °C	220 °C
$\geq$ 2.5 mm	220 °C	220 °C

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

Package thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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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