

# SDCL1V25

## Semi-shielded power inductors



### Product features

- High current carrying capacity
- High power density, low core losses
- Magnetically semi-shielded
- 2.8 mm x 2.35 mm surface mount package in 1.05 mm and 1.2 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 <sup>5</sup>	OCL <sup>1</sup> ( $\mu$ H)	FLL <sup>2</sup> ( $\mu$ H) minimum	$I_{DC}$ <sup>3</sup> (A)	$I_{SAT}$ <sup>4</sup> (A)	DCR (m $\Omega$ ) @ +20 °C nominal	DCR (m $\Omega$ ) @ +20 °C maximum
<b>SDCL1V2510</b>						
SDCL1V2510-R47N-R	0.47 $\pm$ 30%	0.21	2.4	2.57	34	40
SDCL1V2510-R68N-R	0.68 $\pm$ 30%	0.30	2.3	2.45	43	50
SDCL1V2510-1R0N-R	1.0 $\pm$ 30%	0.46	1.9	2.4	61	70
SDCL1V2510-1R5N-R	1.5 $\pm$ 30%	0.68	1.6	1.9	95	108
SDCL1V2510-2R2M-R	2.2 $\pm$ 20%	1.14	1.4	1.6	130	150
SDCL1V2510-3R3M-R	3.3 $\pm$ 20%	1.72	1.0	1.1	160	184
SDCL1V2510-4R7M-R	4.7 $\pm$ 20%	2.44	0.9	1	220	253
SDCL1V2510-6R8M-R	6.8 $\pm$ 20%	3.54	0.8	0.9	380	415
SDCL1V2510-100M-R	10 $\pm$ 20%	5.2	0.6	0.7	495	575
SDCL1V2510-150M-R	15 $\pm$ 20%	7.8	0.45	0.55	650	750
<b>SDCL1V2512</b>						
SDCL1V2512-R33N-R	0.33 $\pm$ 30%	0.15	3.0	4.3	31	36
SDCL1V2512-R47N-R	0.47 $\pm$ 30%	0.21	2.9	4.0	31	36
SDCL1V2512-R68N-R	0.68 $\pm$ 30%	0.30	2.7	3.3	36	43
SDCL1V2512-1R0N-R	1.0 $\pm$ 30%	0.46	2.4	2.8	49	55
SDCL1V2512-1R5N-R	1.5 $\pm$ 30%	0.68	1.9	2.2	72	84
SDCL1V2512-2R2M-R	2.2 $\pm$ 20%	1.14	1.7	1.9	92	106
SDCL1V2512-3R3M-R	3.3 $\pm$ 20%	1.72	1.4	1.5	130	150
SDCL1V2512-4R7M-R	4.7 $\pm$ 20%	2.44	1.1	1.35	205	236
SDCL1V2512-6R8M-R	6.8 $\pm$ 20%	3.54	0.9	1.0	265	305
SDCL1V2512-100M-R	10 $\pm$ 20%	5.2	0.7	0.8	400	460
SDCL1V2512-150M-R	15 $\pm$ 20%	7.8	0.5	0.65	520	598
SDCL1V2512-220M-R	22 $\pm$ 20%	11.44	0.4	0.55	860	990

1. Open circuit inductance (OCL) test parameters: 1.0 MHz, 0.1 Vrms, 0.0 Adc, +25 °C

2. Full load inductance (FLL) test parameters: 100 kHz, 0.1 Vrms,  $I_{SAT}$ , +25 °C

3.  $I_{DC}$ : 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.  $I_{SAT}$ : Peak current for approximately 35% maximum rolloff @ +25 °C

5. Part number definition: SDCL1Vxxxx-yyyz-R

SDCL1V = Product code

xxxx= size code

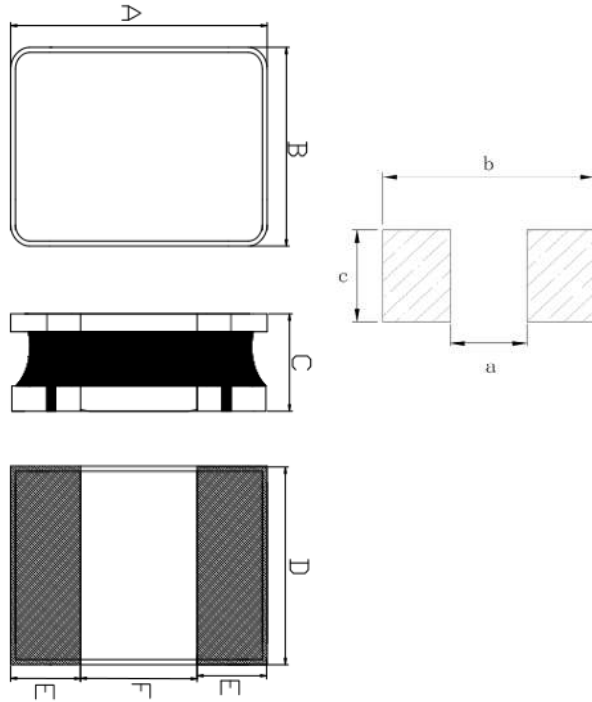
yyy= Inductance value in  $\mu$ H, R=decimal point

z= Inductance tolerance

-R suffix = RoHS compliant

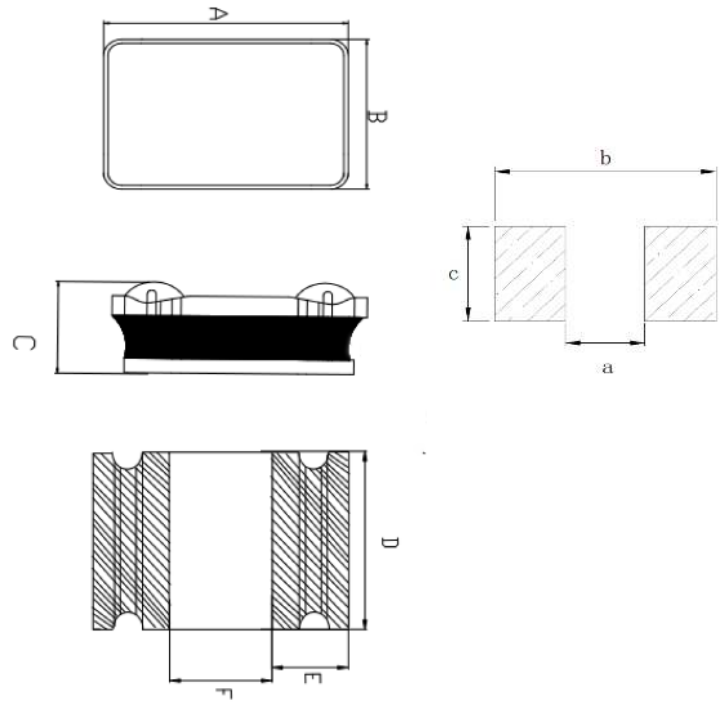
Dimensions-mm

SDCL1V2510



Dimension	Value
A	2.5 + 0.3/-0.1
B	2.0 + 0.35/-0.05
C	1.05 maximum
D	2.1 ± 0.2
E	0.825 ± 0.3
F	0.95 ± 0.3
a	0.65 TYP
b	2.8 TYP
c	2.4 TYP

SDCL1V2512



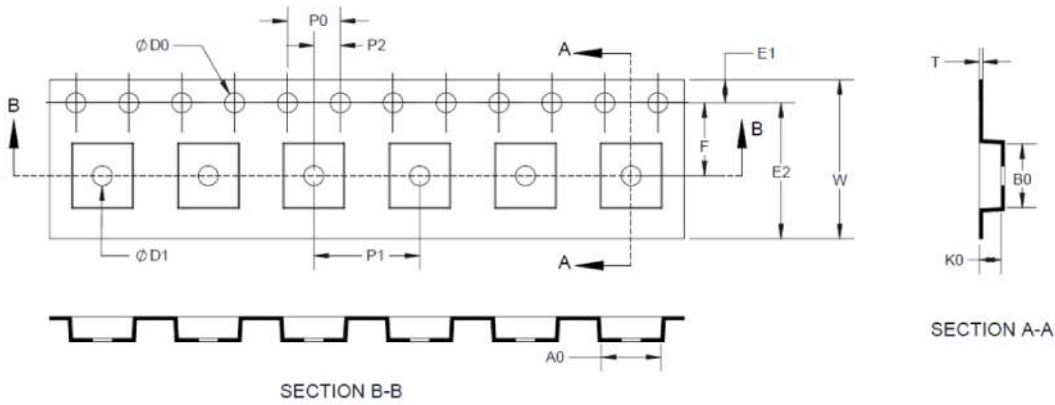
Dimension	Value
A	2.5 + 0.3/-0.1
B	2.0 + 0.35/-0.05
C	1.2 maximum
D	2.15 ± 0.2
E	0.8 ± 0.3
F	1.0 ± 0.3
a	0.7 TYP
b	2.8 TYP
c	2.45 TYP

Part marking: none  
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**

**SDCL1V2510**

Supplied in tape and reel packaging, 2000 parts per 7" diameter reel (EIA-481 compliant)

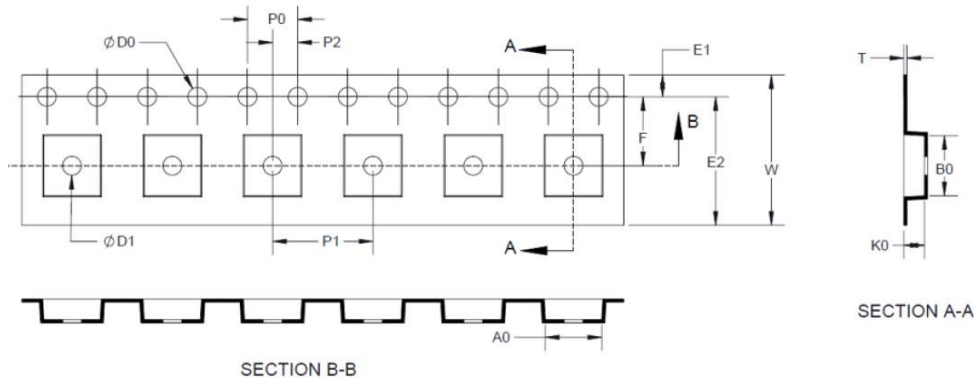


Dimension	Value
W	8.00 ± 0.10
F	3.50 ± 0.05
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10
ØD0	1.55 ± 0.05
ØD1	1.00 ± 0.05
A0	2.40 ± 0.1/-0.05
B0	3.00 ± 0.1/-0.05
K0	1.40 ± 0.1/-0.05
T	0.20 ± 0.05

**Packaging information- mm**

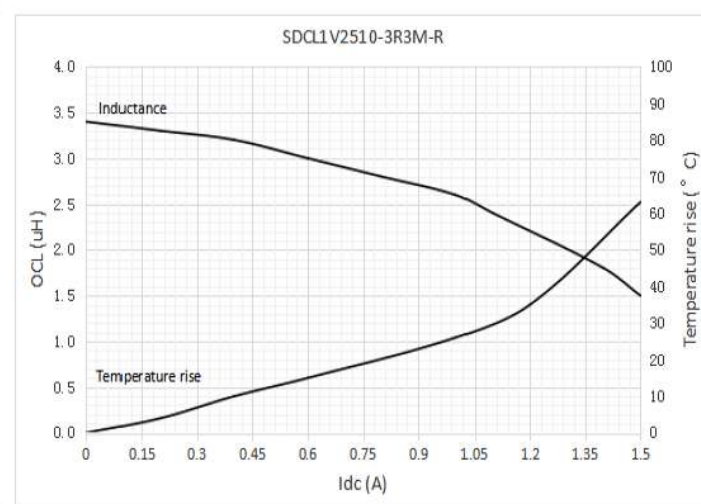
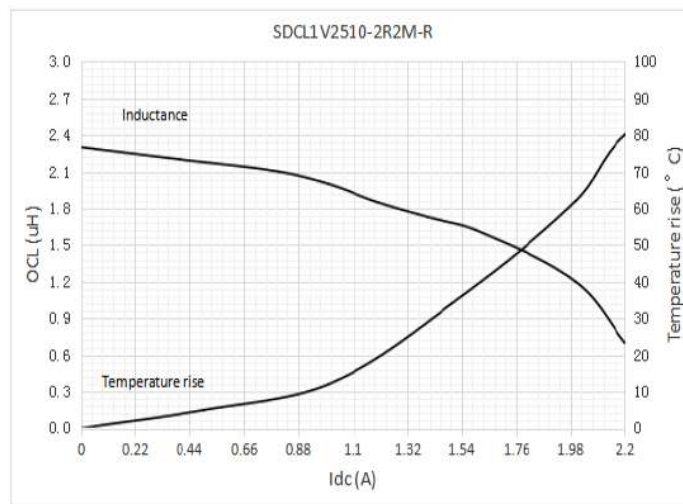
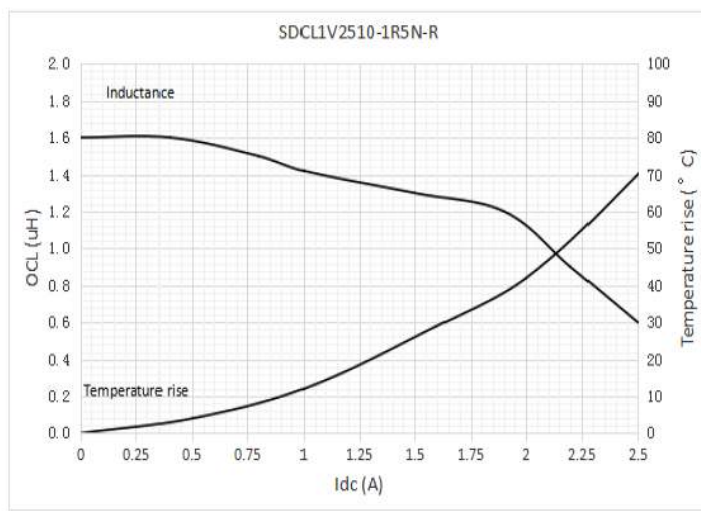
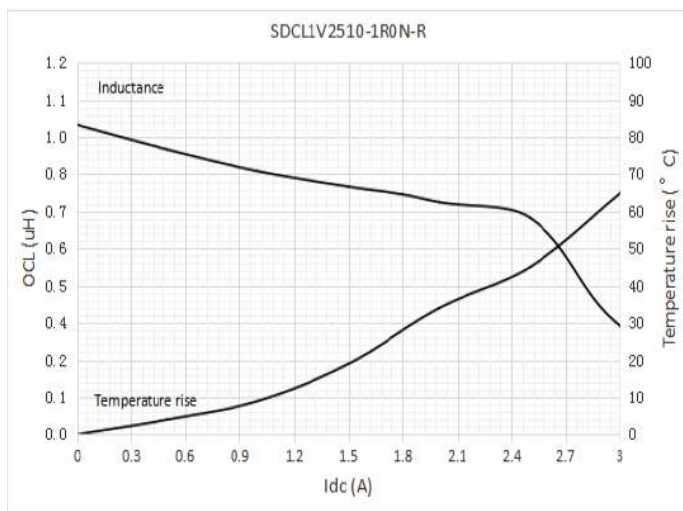
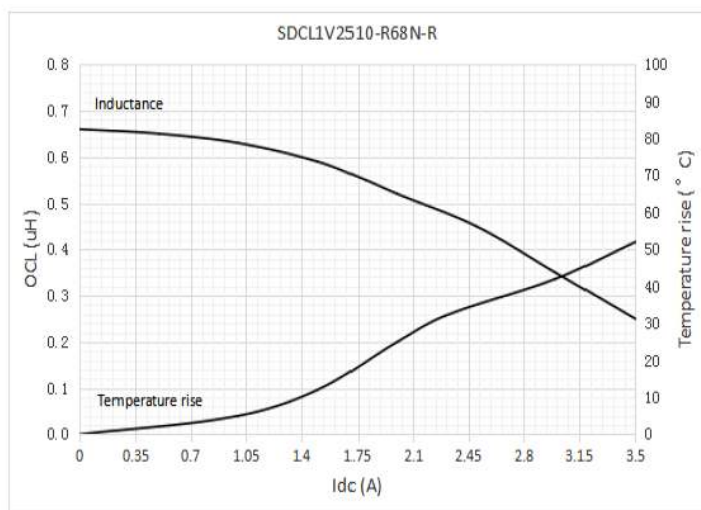
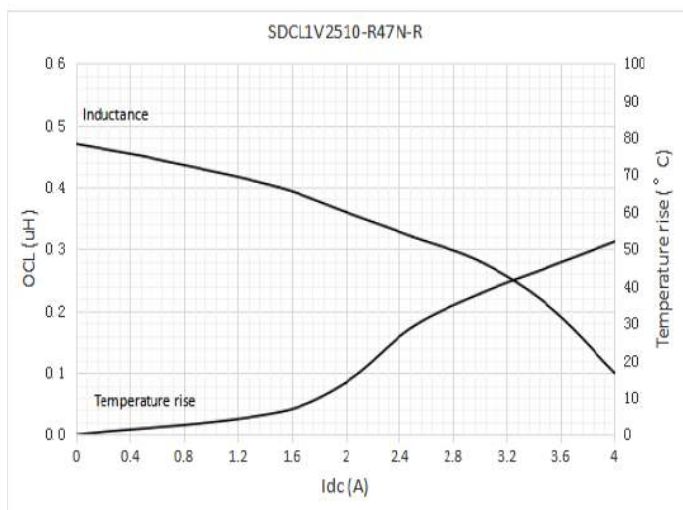
**SDCL1V2512**

Supplied in tape and reel packaging, 2000 parts per 7" diameter reel (EIA-481 compliant)

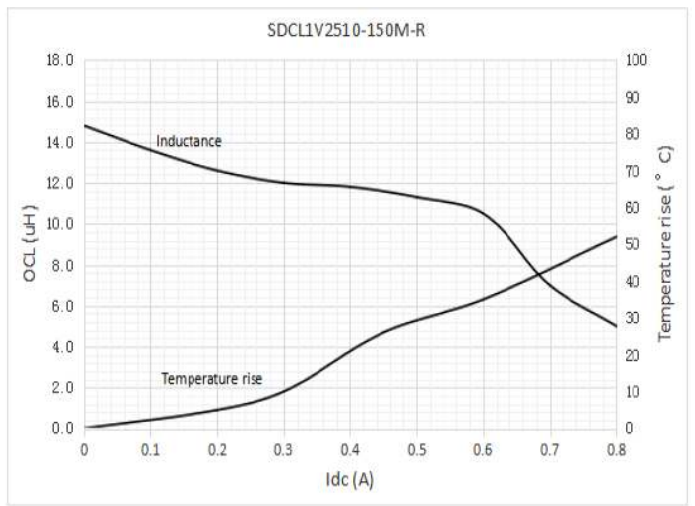
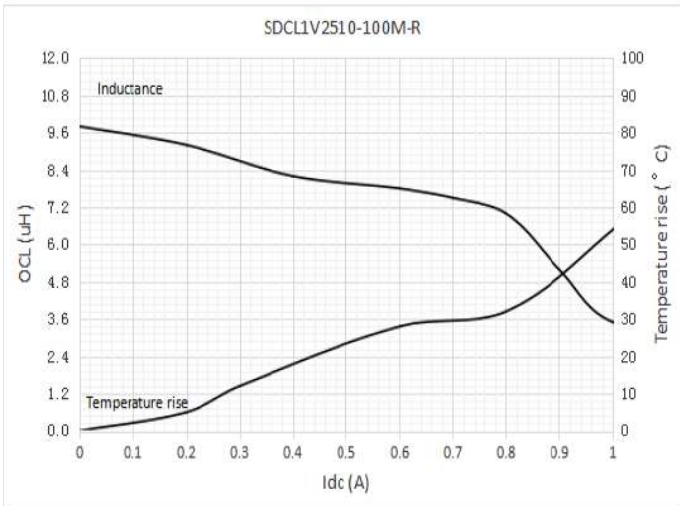
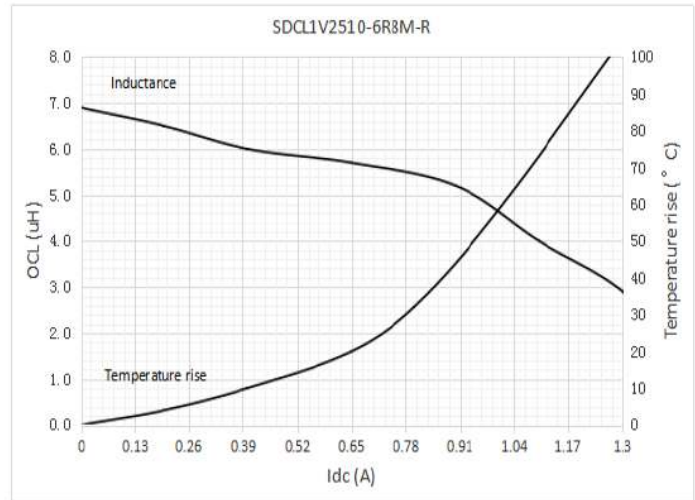
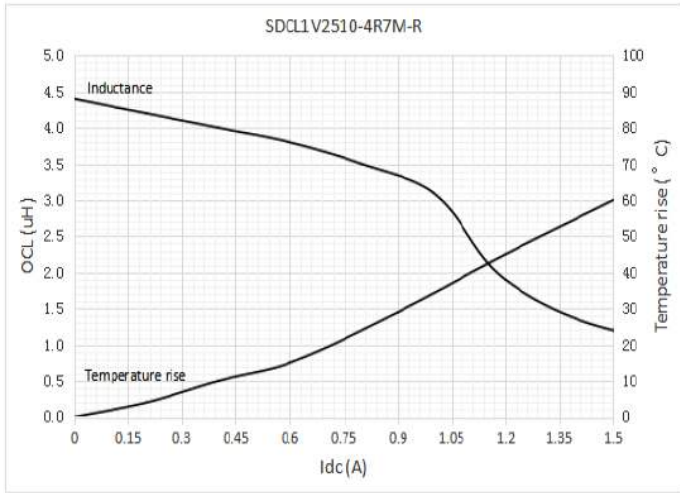


Dimension	Value
W	8.00 ± 0.10
F	3.50 ± 0.05
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	4.00 ± 0.10
P2	2.00 ± 0.10
ØD0	1.55 ± 0.05
ØD1	1.00 ± 0.05
A0	2.40 ± 0.1/-0.05
B0	3.00 ± 0.1/-0.05
K0	1.40 ± 0.1/-0.05
T	0.20 ± 0.05

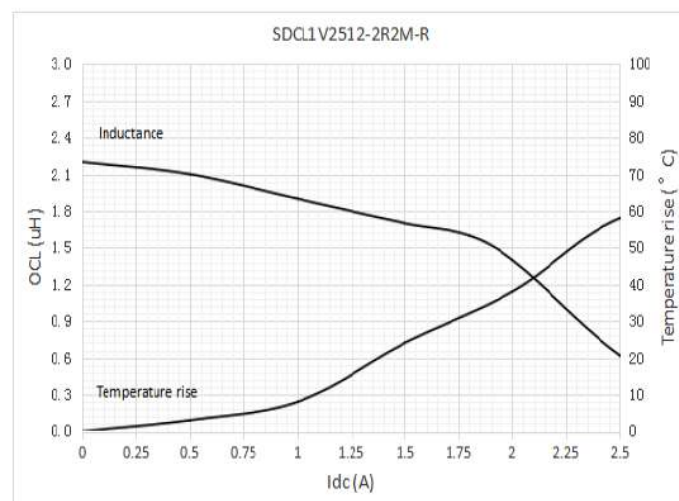
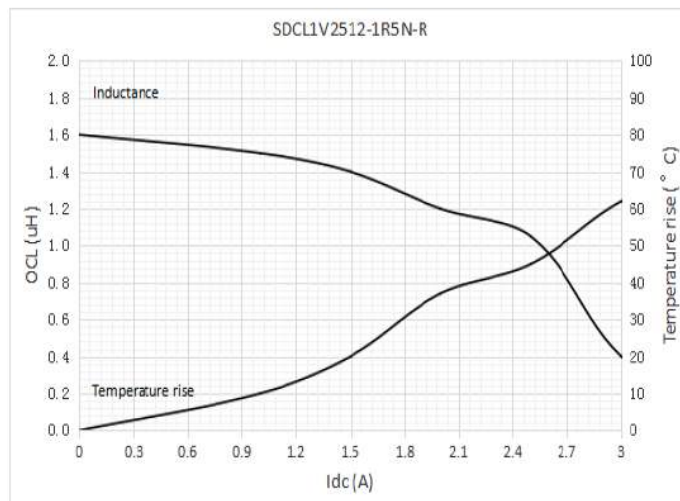
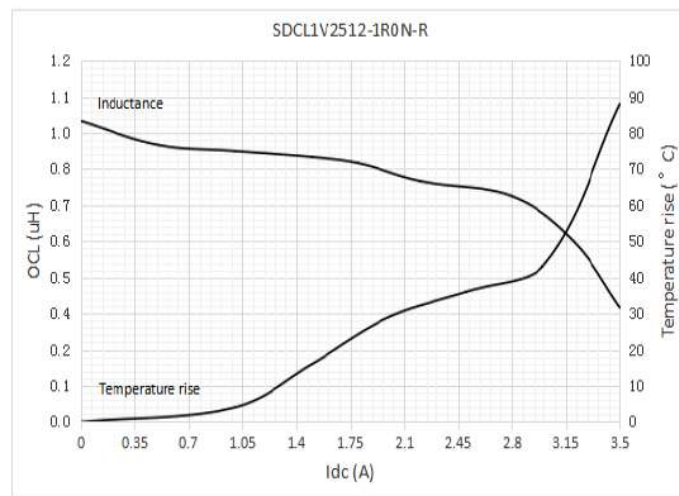
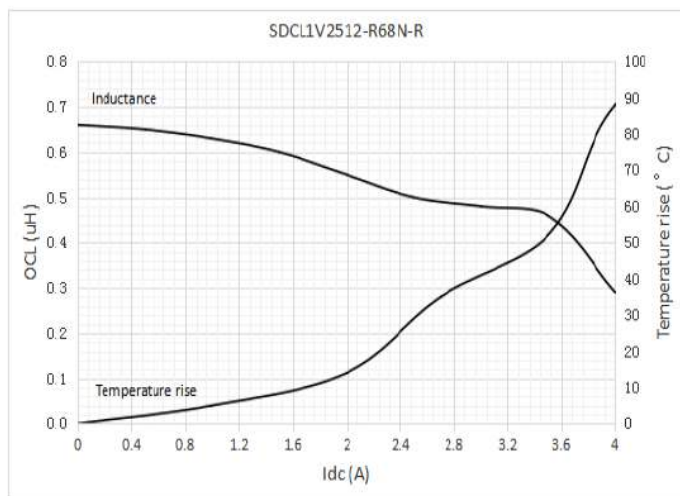
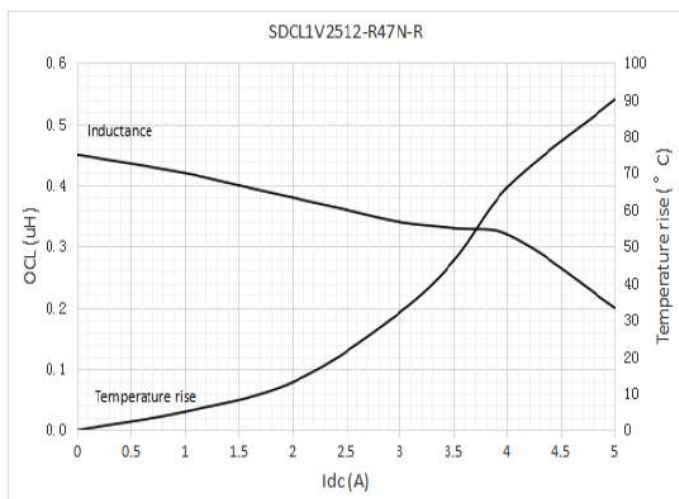
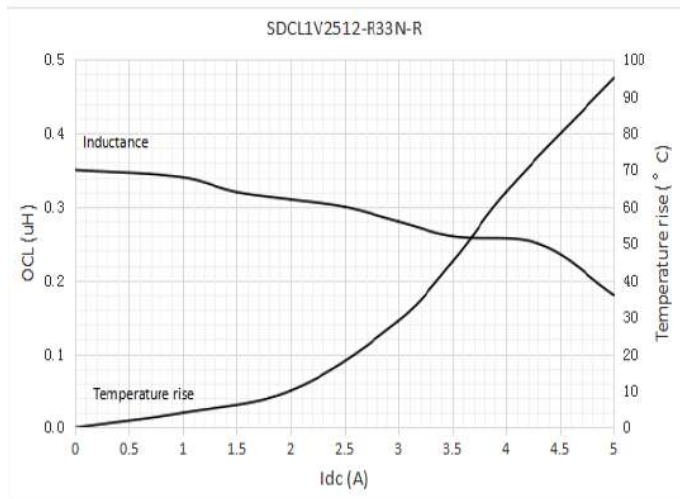
**Inductance and temperature rise vs current**  
**SDCL1V2510**



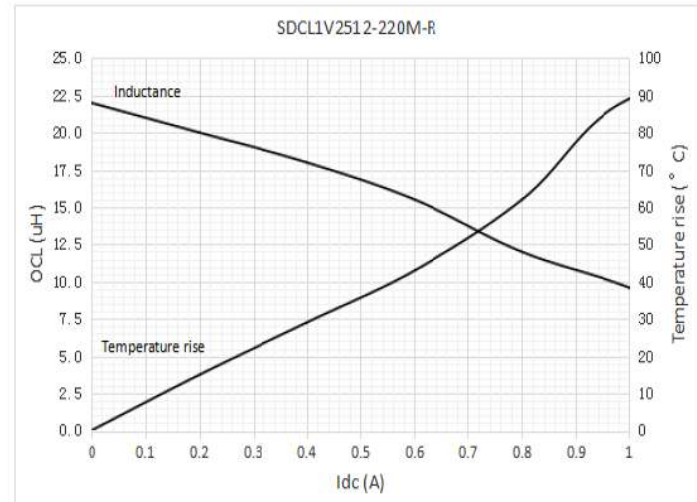
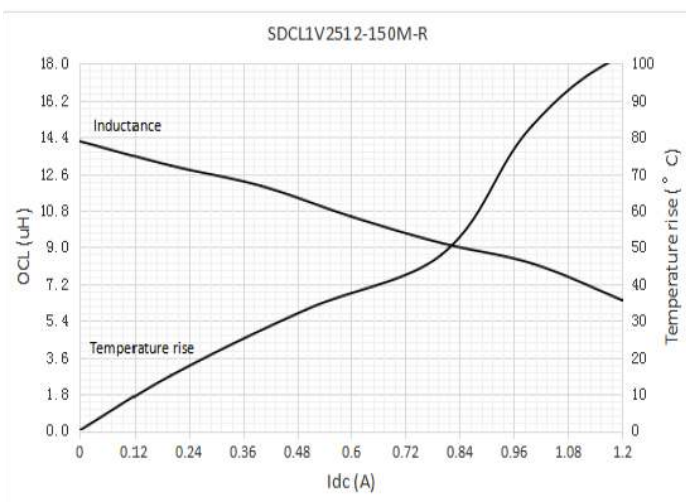
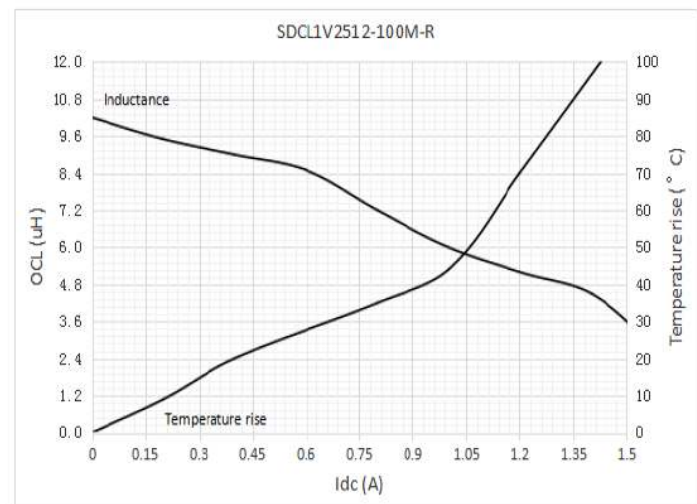
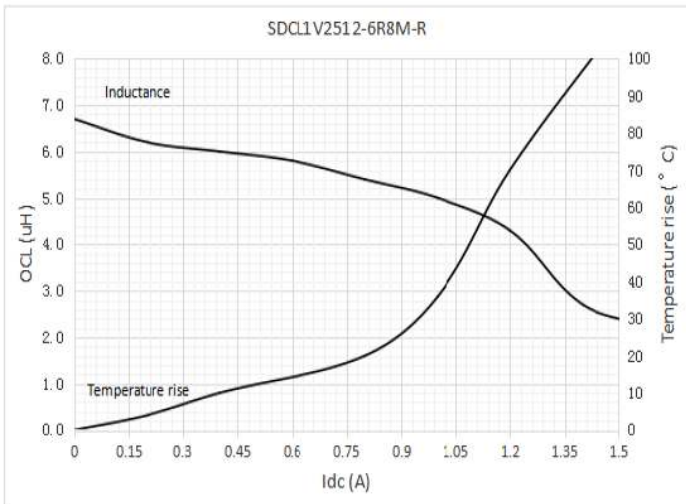
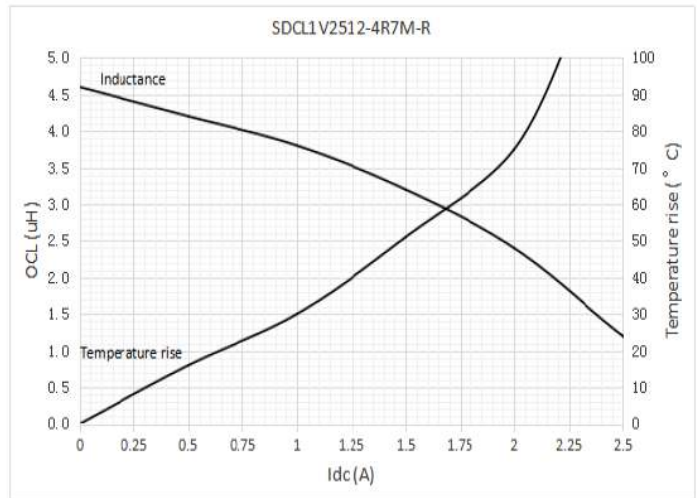
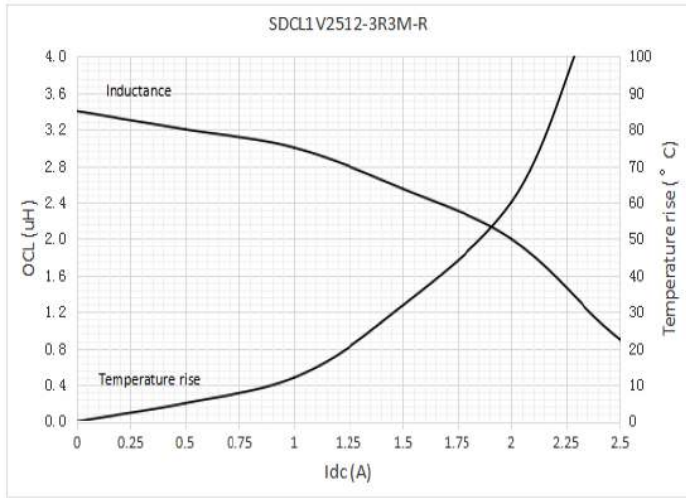
**Inductance and temperature rise vs current**  
**SDCL1V2510**



**Inductance and temperature rise vs current**  
**SDCL1V2512**

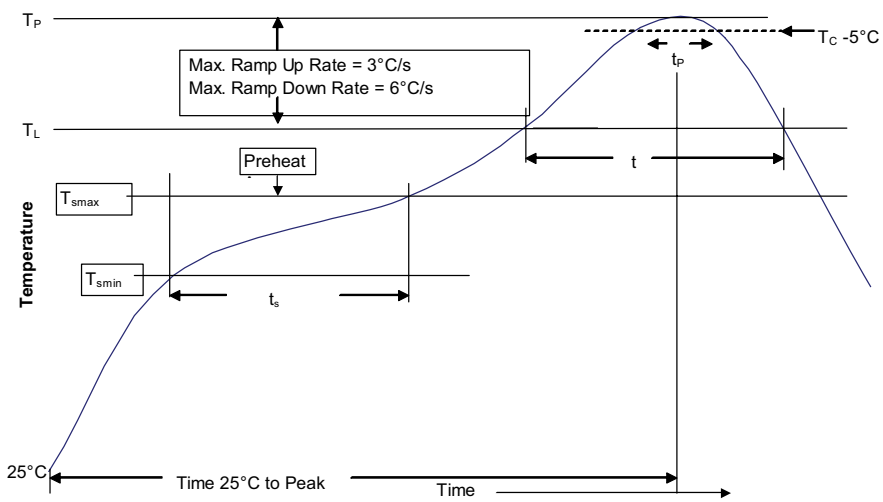


**Inductance and temperature rise vs current**  
**SDCL1V2512**





**Solder reflow profile**



**Table 1 - Standard SnPb solder (T<sub>C</sub>)**

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

**Table 2 - Lead (Pb) free solder (T<sub>C</sub>)**

Package thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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 <sub>smin</sub> )	100 °C	150 °C
• Temperature max. (T <sub>smax</sub> )	150 °C	200 °C
• Time (T <sub>smin</sub> to T <sub>smax</sub> ) (t <sub>s</sub> )	60-120 seconds	60-120 seconds
Ramp up rate T <sub>L</sub> to T <sub>p</sub>	3 °C/ second max.	3 °C/ second max.
Liquidous temperature (T <sub>L</sub> )	183 °C	217 °C
Time (t <sub>L</sub> ) maintained above T <sub>L</sub>	60-150 seconds	60-150 seconds
Peak package body temperature (T <sub>p</sub> )*	Table 1	Table 2
Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>C</sub> )	20 seconds*	30 seconds*
Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )	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<sub>p</sub>) is defined as a supplier minimum and a user maximum.

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