

LD2-HV

High-voltage metalized drum core inductor



Product features

- Metalized drum core design utilizes less board space
- Isolation voltage up to 1000 V
- High I_{sat} rating
- 8.1 mm x 7.3 mm footprint surface mount package in a 5.3 mm height
- Current range from 0.25 A to 6.0 A
- Inductance range from 1.0 μ H to 2200 μ H
- Ferrite core material
- Moisture sensitivity level (MSL): 1

Applications

- AC/DC direct buck converters
- Smart water heaters
- Smart home/kitchen appliances
- Smart heating systems/pumps
- IoT devices power converters
- LED lighting
- Consumer electronics

Environmental compliance and general specifications

- Storage temperature range (component): -25 °C to +125 °C
- Operating temperature range: -25 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant



Product specifications

Part number ¹	OCL ¹ (μH)	FLL ² (μH) minimum	I _{avg} ³ (A) typical	I _{rms} ⁵ (A) typical	DCR (mΩ) @ +20 °C maximum	Impulse test voltage (Pin 1 to Pin 2) V	Hi-pot test voltage (Winding to core)
LD2-1R0-HV	1.0 ± 30%	0.56	6.0	NA	15	1100	1000 Vac ; 60 s; 3 mA
LD2-1R5-HV	1.5 ± 30%	0.84	5.5	NA	17	1100	1000 Vac ; 60 s; 3 mA
LD2-2R2-HV	2.2 ± 20%	1.41	5.0	NA	20	1100	1000 Vac ; 60 ss 3 mA
LD2-3R3-HV	3.3 ± 20%	2.11	4.5	NA	28	1100	1000 Vac ; 60 s; 3 mA
LD2-4R7-HV	4.7 ± 20%	3.0	4.0	NA	36	1100	1000 Vac ; 60 s; 3 mA
LD2-6R8-HV	6.8 ± 20%	4.35	3.5	NA	40	1100	1000 Vac ; 60 s; 3 mA
LD2-100-HV	10 ± 20%	6.4	2.5	NA	60	1100	1000 Vac ; 60 s; 3 mA
LD2-150-HV	15 ± 20%	9.6	2.2	NA	85	1100	1000 Vac ; 60 s; 3 mA
LD2-220-HV	22 ± 20%	14.1	2.0	NA	100	1100	1000 Vac ; 60 s; 3 mA
LD2-330-HV	33 ± 20%	21.1	1.5	NA	150	1000	1000 Vac ; 60 s; 3 mA
LD2-470-HV	47 ± 20%	30.1	1.2	NA	200	1000	1000 Vac ; 60 s; 3 mA
LD2-680-HV	68 ± 20%	43.5	1.0	NA	270	1000	1000 Vac ; 60 s; 3 mA
LD2-820-HV	82 ± 20%	52.5	0.9	NA	300	1000	1000 Vac ; 60 s; 3 mA
LD2-101-HV	100 ± 20%	64.0	0.8	NA	380	900	1000 Vac ; 60 s; 3 mA
LD2-221-HV	220 ± 20%	140.8	0.5	NA	750	800	1000 Vac ; 60 s; 3 mA
LD2-331-HV	330 ± 20%	211.2	0.4	NA	1420	700	1000 Vac ; 60 s; 3 mA
LD2-471-HV	470 ± 20%	300.8	0.53	0.67	1900	700	1000 Vac ; 60 s; 3 mA
LD2-561-HV	560 ± 20%	358.4	0.5	0.61	2000	700	1000 Vac ; 60 s; 3 mA
LD2-681-HV	680 ± 20%	435.2	0.44	0.53	2500	600	1000 Vac ; 60 s; 3 mA
LD2-821-HV	820 ± 20%	524.8	0.41	0.5	3200	600	1000 Vac ; 60 s; 3 mA
LD2-102-HV	1000 ± 20%	640.0	0.36	0.44	4000	600	500 Vac ; 60 s; 3 mA
LD2-122-HV	1200 ± 20%	768.0	0.33	0.4	4500	600	500 Vac ; 60 s; 3 mA
LD2-152-HV	1500 ± 20%	960.0	0.31	0.36	5500	600	500 Vac ; 60 s; 3 mA
LD2-222-HV	2200 ± 20%	1408.0	0.25	0.3	10000	300	500 Vac ; 60 s; 3 mA

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

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

3. I_{avg}: Peak current for approximately 20% rolloff @ +25 °C

4. Part number definition: LD2-xxx-HV

LD2 = Product code

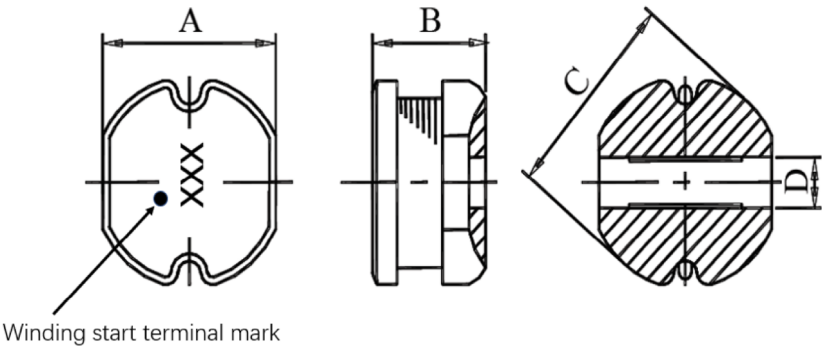
xxx= Inductance value in μH, R=decimal point

-HV suffix = High voltage capability

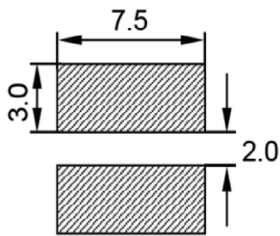
5. I_{rms}: DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of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

Dimensions-mm

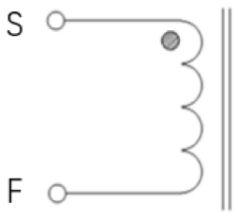
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Pad layout



Schematic



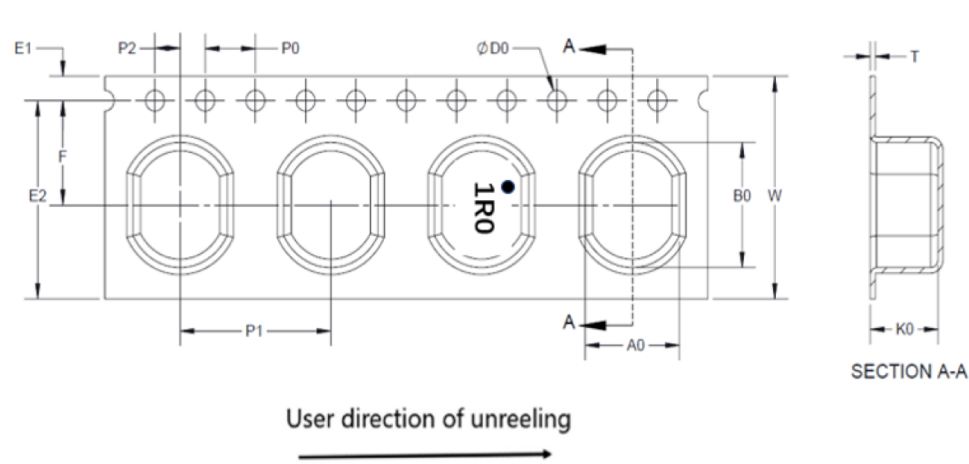
Dimension	Value
A	7.0 ± 0.3
B	5.0 ± 0.3
C	7.8 ± 0.3
D	2.5 reference

Part marking: xxx= inductance value in μH , R= decimal point. If no R is present then last character equals number of zeros.
Tolerances are ± 0.2 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

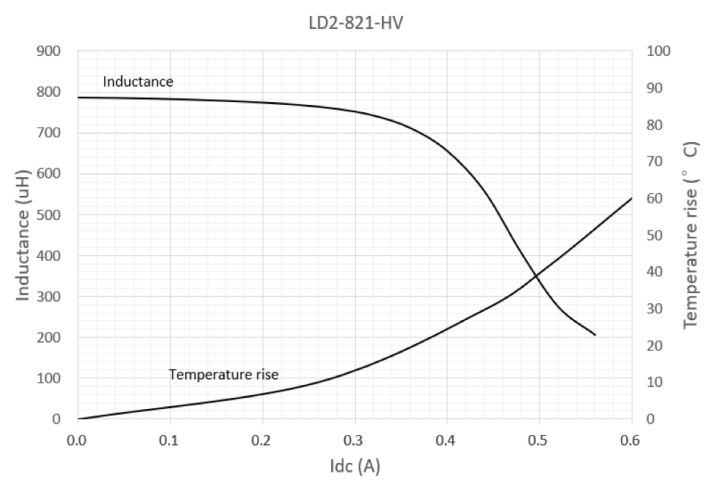
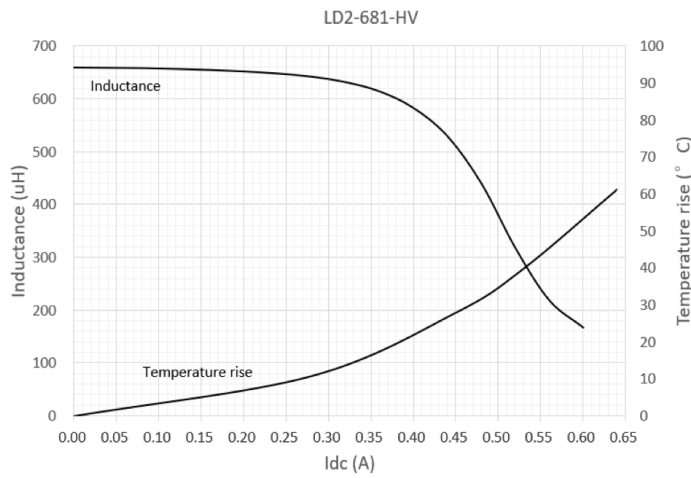
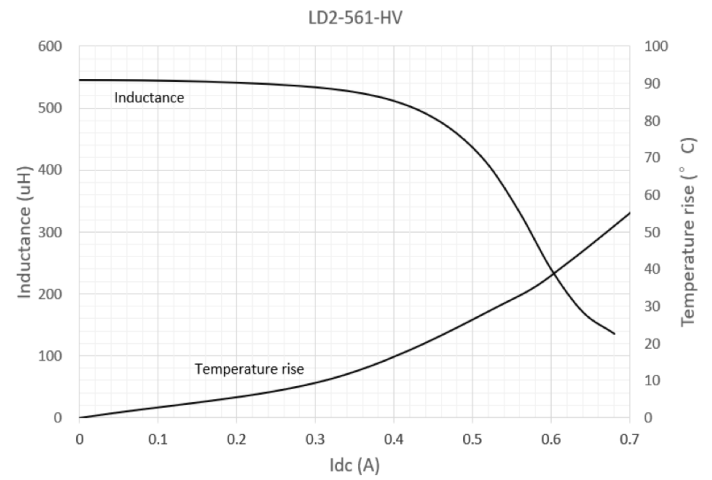
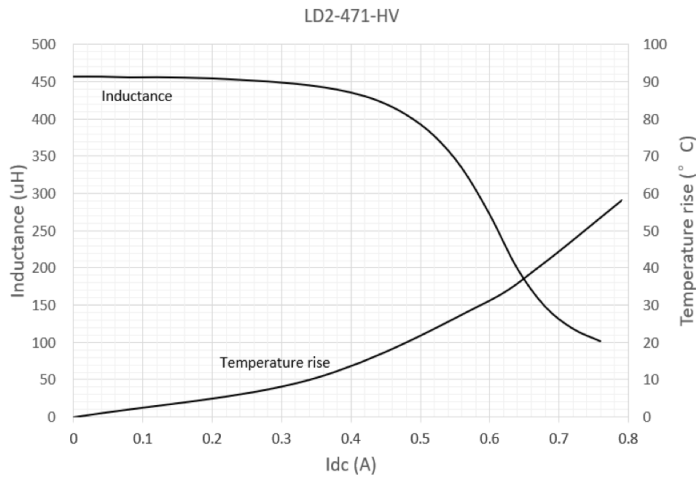
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Supplied in tape and reel packaging, 1000 parts per 13" diameter reel (EIA-481 compliant)
Drawing not to scale

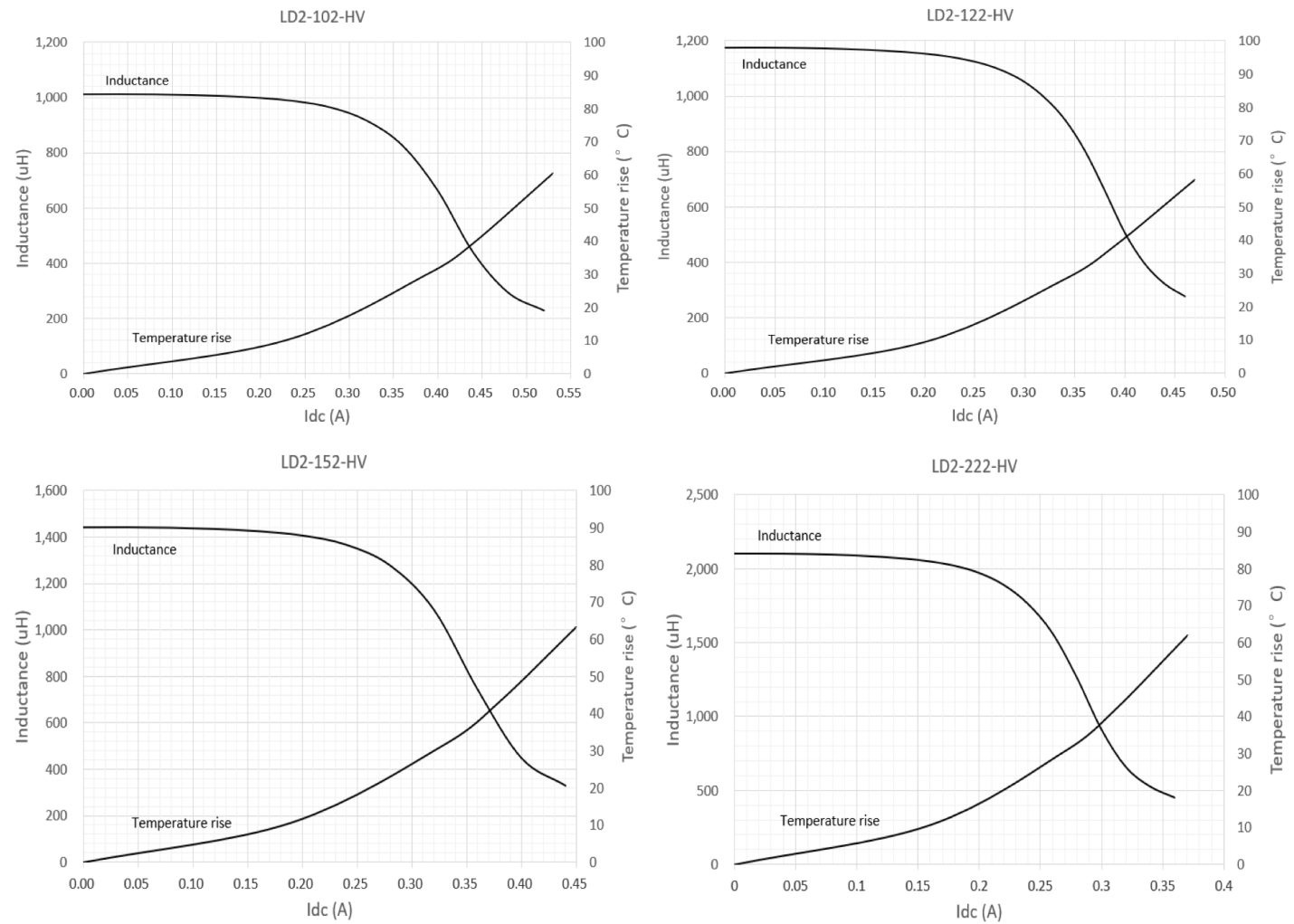


Dimension	Value
W	16.00 ± 0.30
F	7.50 ± 0.10
E1	1.75 ± 0.10
E2	N/A
P0	4.00 ± 0.10
P1	12.00 ± 0.10
P2	2.00 ± 0.10
ØD0	1.50 ± 0.10
ØD1	N/A
A0	7.50 ± 0.10
B0	9.00 ± 0.10
K0	5.40 ± 0.10
T	0.40 ± 0.05

Inductance and temperature rise vs current



Inductance and temperature rise vs current



Solder reflow profile

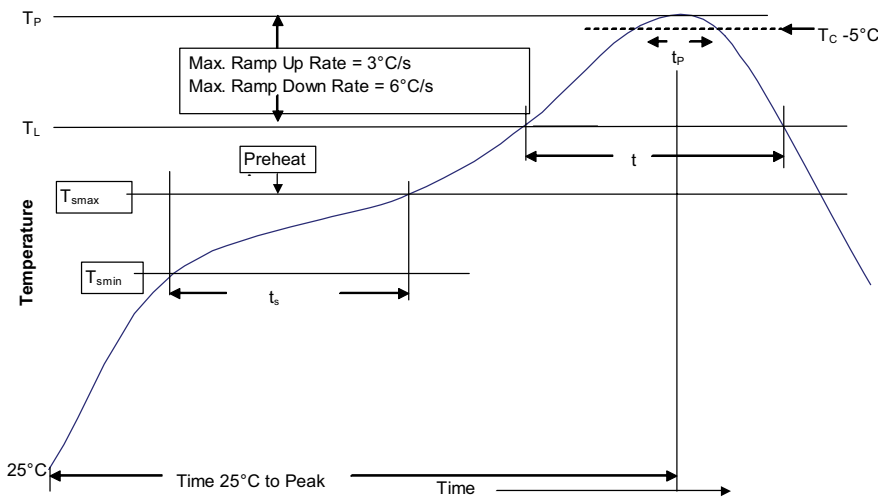


Table 1 - Standard SnPb solder (T_c)

Package thickness	Volume 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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