

SD3118

Low profile power inductors



Description

- Low profile shielded drum core
- Compact footprint utilizes less board space
- Inductance Range from 1.0 μ H to 1,000 μ H
- Current range from 0.083 to 2.94 amps
- 3.2 x 3.2mm footprint surface mount package in a 1.8mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Mobile/smart phones
- Tablets/e-readers
- Media players
- Digital cameras
- Small LED driver and LCD displays
- Handheld/mobile equipment

Environmental Data

- Storage temperature range (Component): -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant



Product Specifications

Part Number ⁶	OCL ¹ (μ H)	Part marking designator	I_{rms}^2 (amps)	I_{sat}^3 (amps)	DCR (Ω) typical @ +20°C	K-factor ⁴
SD3118-1R0-R	1.04 $\pm$ 30%	A	2.01	3.07	0.041	84
SD3118-1R5-R	1.44 $\pm$ 30%	B	1.81	2.42	0.051	68
SD3118-2R2-R	2.12 $\pm$ 30%	C	1.50	2.00	0.074	57
SD3118-3R3-R	3.36 $\pm$ 30%	D	1.22	1.59	0.11	56
SD3118-4R7-R	4.90 $\pm$ 30%	E	1.02	1.31	0.16	39
SD3118-6R8-R	6.72 $\pm$ 30%	F	0.85	1.12	0.23	32
SD3118- 8R2-R	8.10 $\pm$ 30%	G	0.81	1.02	0.26	29
SD3118- 100-R	10.4 $\pm$ 30%	H	0.75	0.90	0.30	26
SD3118-150-R	14.9 $\pm$ 30%	I	0.62	0.75	0.44	21
SD3118-220-R	22.5 $\pm$ 30%	J	0.50	0.61	0.68	18
SD3118-330-R	33.1 $\pm$ 30%	K	0.41	0.51	0.99	14
SD3118-470-R	47.5 $\pm$ 30%	L	0.37	0.42	1.2	12
SD3118-221-R	222 $\pm$ 20%	M	0.182	0.177	4.8	6
SD3118-331-R	330 $\pm$ 20%	N	0.146	0.145	7.4	5
SD3118-471-R	470 $\pm$ 20%	O	0.130	0.122	9.2	4
SD3118-681-R	680 $\pm$ 20%	P	0.107	0.101	14	3
SD3118-102-R	999 $\pm$ 20%	Q	0.087	0.083	21	3

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1Vrms, 0.0Adc, @ +25°C

2. 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.

3. I_{sat} : Peak current for approximately 30% rolloff @ +20°C

4. K-factor: Used to determine B_{pp} for core loss (see graph). $B_{pp} = K * L * \Delta I$. B_{pp} : (mTesla), K: (K-factor from table), L: (Inductance in μ H), ΔI (Peak to peak ripple current in Amps).

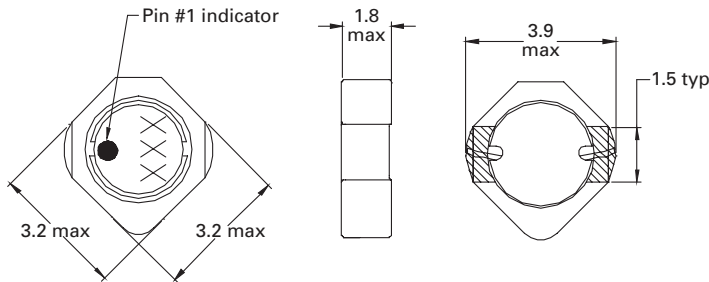
5. Part Number Definition: SD3118-xxx-R

SD3118 = Product code and size

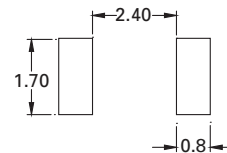
xxx= Inductance value in μ H, R= decimal point, if no R is present then last character equals number of zeros

-R suffix = RoHS compliant

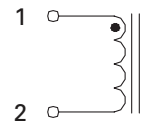
Dimensions (mm)



Recommended Pad Layout



Schematic

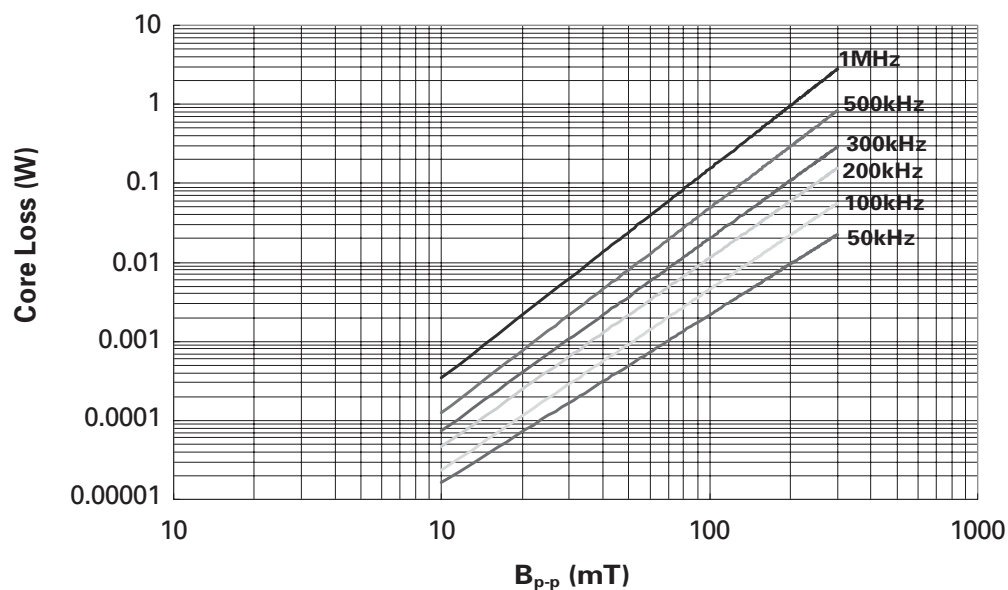


Part marking: dot for pin 1 indicator (orientation purposes only)
xxx = 3 digit marking (first digit indicates inductance value per letter in Part marking designator, second digit is bi-weekly date code, third digit is last digit of year produced)
All soldering surfaces to be coplanar within 0.10 millimeters
PCB tolerances are ± 0.1 millimeters unless stated otherwise
Do not route traces or vias underneath the inductor

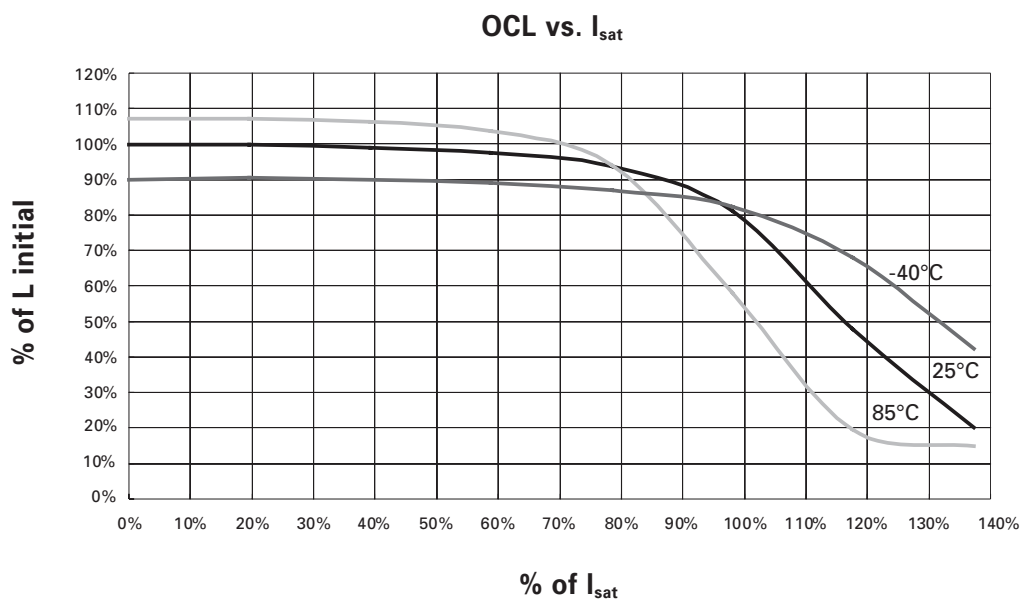
Supplied in tape and reel packaging, 4,100 parts per 13" diameter reel



Core loss vs. B_{p-p}



Inductance characteristics



Solder reflow profile

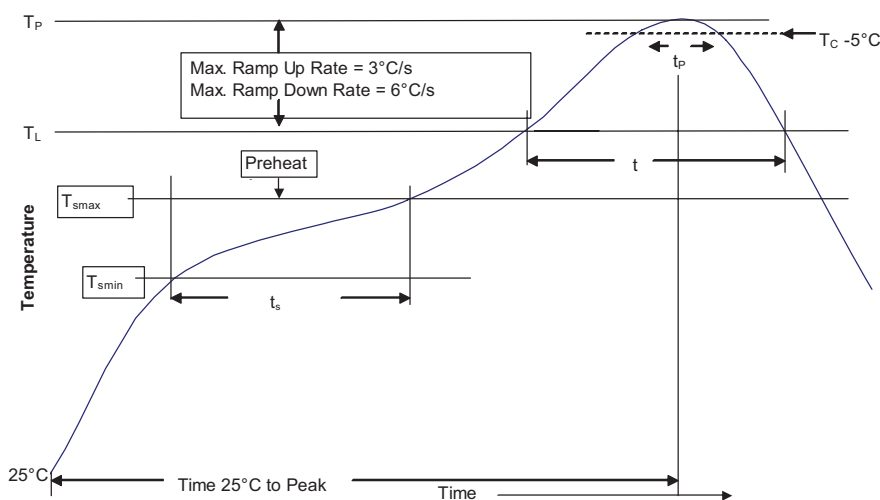


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥350
<2.5mm)	235°C	220°C
≥2.5mm	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
<1.6mm	260°C	260°C	260°C
1.6 – 2.5mm	260°C	250°C	245°C
>2.5mm	250°C	245°C	245°C

Reference JEDEC J-STD-020D

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
Average ramp up rate T_{smax} to T_p	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (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**
Average ramp-down rate (T_p to T_{smax})	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.

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

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