

Low-Profile Power Inductors

SD6030 Series



SMD Device



Description

- 125°C maximum total temperature operation
- Low profile surface mount inductors
- 6.0 x 6.0 x 3.0mm maximum surface mount package
- Ferrite core material
- Shielded drum core reduces EMI
- Inductance range from 2.7µH to 660µH
- Current range from 0.16 to 4.08 Amps
- Frequency range up to 1MHz

Applications

- Notebook computers, digital cameras
- High Power LED driver
- Battery power, TFT-LCD Bias supplies
- Gaming consoles, GPS receivers
- Wireless notebook adapters
- Wireless handsets, handheld instruments

Environmental Data

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

Packaging

- Supplied in tape and reel packaging, 2000 per 13" diameter reel

Product Specifications

Part Number ⁵	OCL ¹ µH ± 30%	I _{rms} ² (Amps)	I _{sat} ³ (Amps)	Typ. DCR mΩ @ 20°C	Max DCR mΩ @ 20°C	K-factor ⁴
SD6030-2R7-R	2.7	4.08	2.60	13	18	34
SD6030-3R3-R	3.3	3.54	2.40	18	24	30
SD6030-4R2-R	4.1	3.11	2.20	23	31	27
SD6030-5R0-R	4.9	2.81	1.90	28	38	24
SD6030-5R8-R	5.8	2.58	1.80	33	45	22
SD6030-7R8-R	7.8	2.38	1.60	39	53	19
SD6030-100-R	9.3	2.15	1.30	48	65	17
SD6030-120-R	11.3	1.99	1.20	56	76	16
SD6030-150-R	14.1	1.71	1.10	76	103	14
SD6030-180-R	17.1	1.65	1.00	82	110	13
SD6030-220-R	20.4	1.57	0.90	90	122	12
SD6030-270-R	26.0	1.31	0.85	130	175	11
SD6030-330-R	32.4	1.26	0.75	140	189	9.3
SD6030-360-R	34.4	1.19	0.70	157	212	8.7
SD6030-440-R	44.0	1.10	0.62	185	250	7.9
SD6030-520-R	52.0	0.99	0.58	226	305	7.2
SD6030-680-R	65.6	0.92	0.52	263	355	6.5
SD6030-820-R	81.6	0.80	0.46	343	463	5.9
SD6030-101-R	94.4	0.76	0.42	385	520	5.6
SD6030-121-R	110.1	0.70	0.40	517	620	5.6
SD6030-151-R	144.5	0.64	0.35	608	730	5.0
SD6030-181-R	175.7	0.55	0.32	817	980	4.5
SD6030-221-R	210.9	0.50	0.30	1000	1200	4.0
SD6030-271-R	264.2	0.44	0.27	1300	1560	3.6
SD6030-331-R	313.5	0.38	0.25	1733	2080	3.3
SD6030-391-R	373.7	0.35	0.22	2083	2500	3.0
SD6030-471-R	460.0	0.33	0.20	2250	2700	2.8
SD6030-561-R	546.2	0.30	0.18	2767	3320	2.5
SD6030-681-R	659.4	0.27	0.16	3458	4150	2.3

1) Open Circuit Inductance Test Parameters: 100kHz, 0.1V, 0.0Adc.

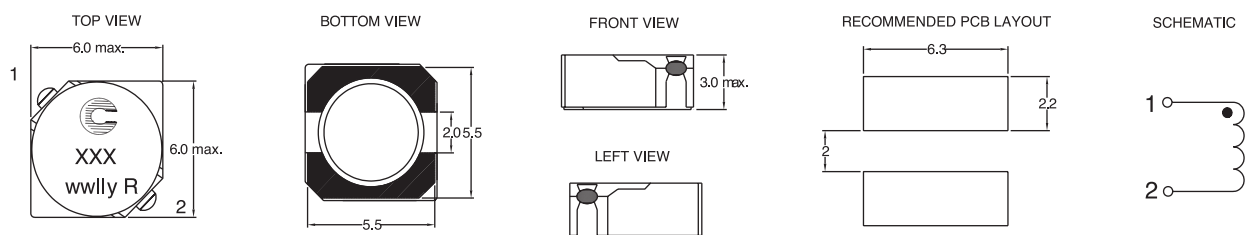
2) I_{rms}: DC current for an approximate ΔT of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed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

3) I_{sat} Amps peak for 35% rolloff (@25°C)

4) K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K*L*ΔI, B_{p-p} (mT), K: (K factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in Amps).

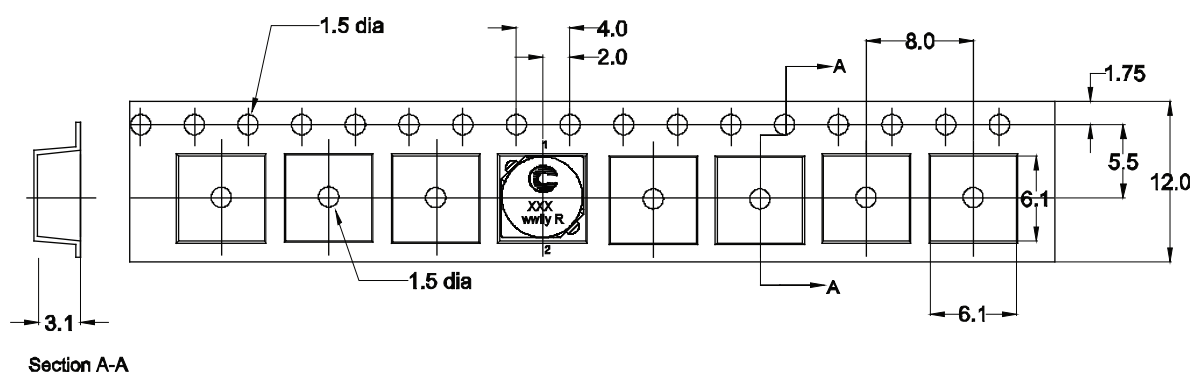
5) Part Number Definition: SD6030-xxx-R
SD6030 = Product code and size; -xxx = Inductance value in µH;
R = decimal point; If no R is present, third character = # of zeros.
-R suffix = RoHS compliant

Dimensions - mm



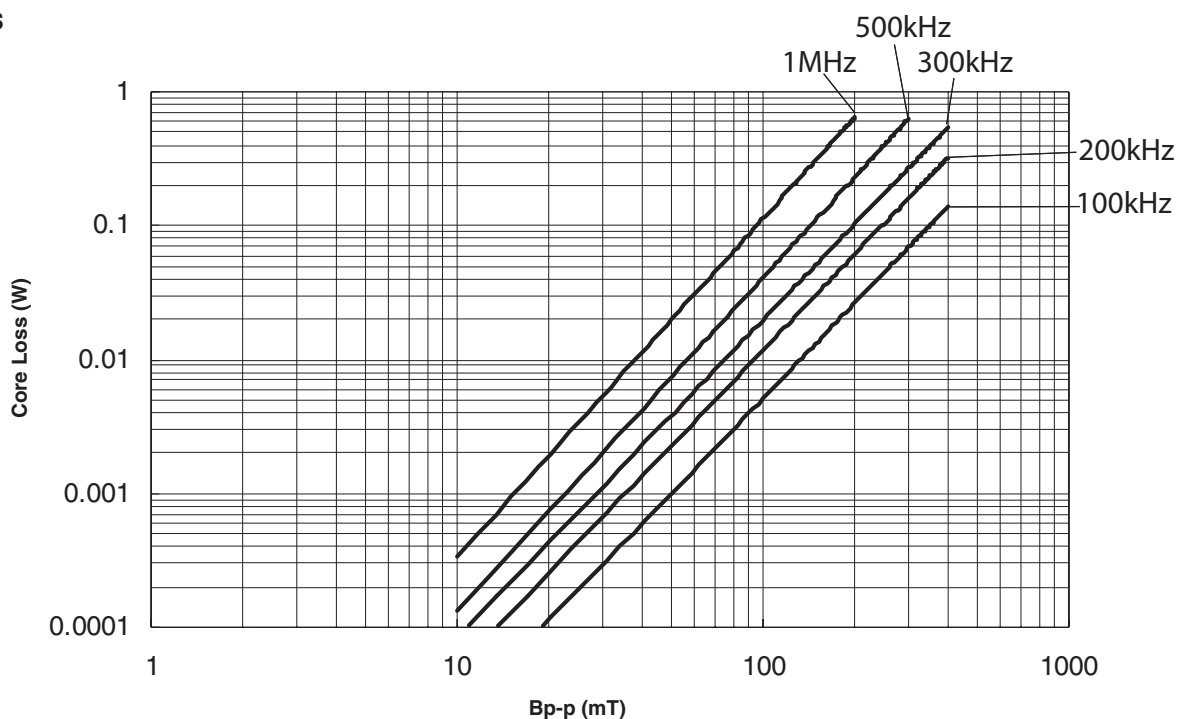
Part Marking: Coiltronics logo, xxx = Inductance value in uH. R = decimal point. If no R is present third character = # of zeros, wwly or wwlyy = Date code, R = Revision level.

Packaging Information - mm

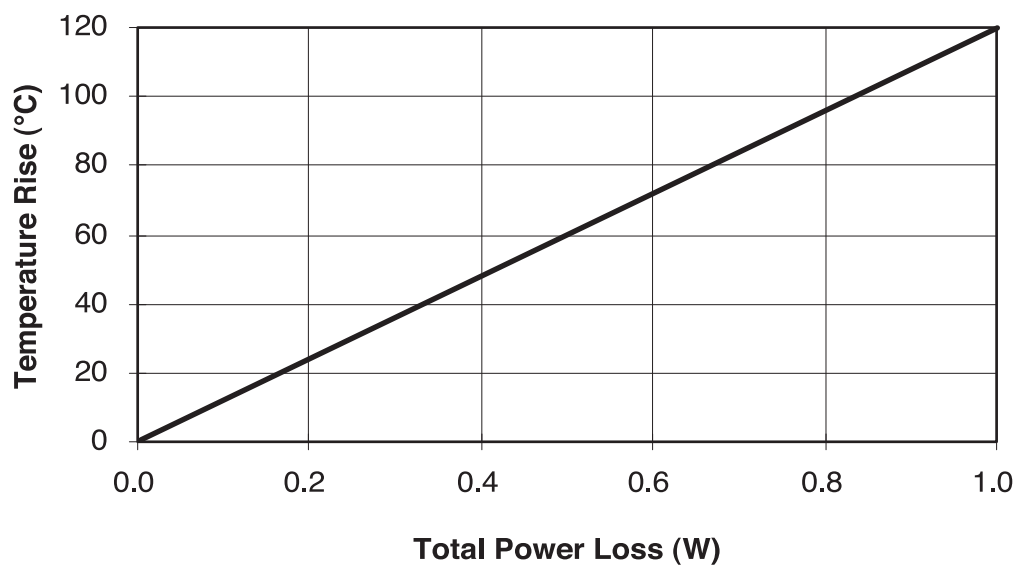


Parts packaged on 13" diameter reel, 2000 parts per reel.

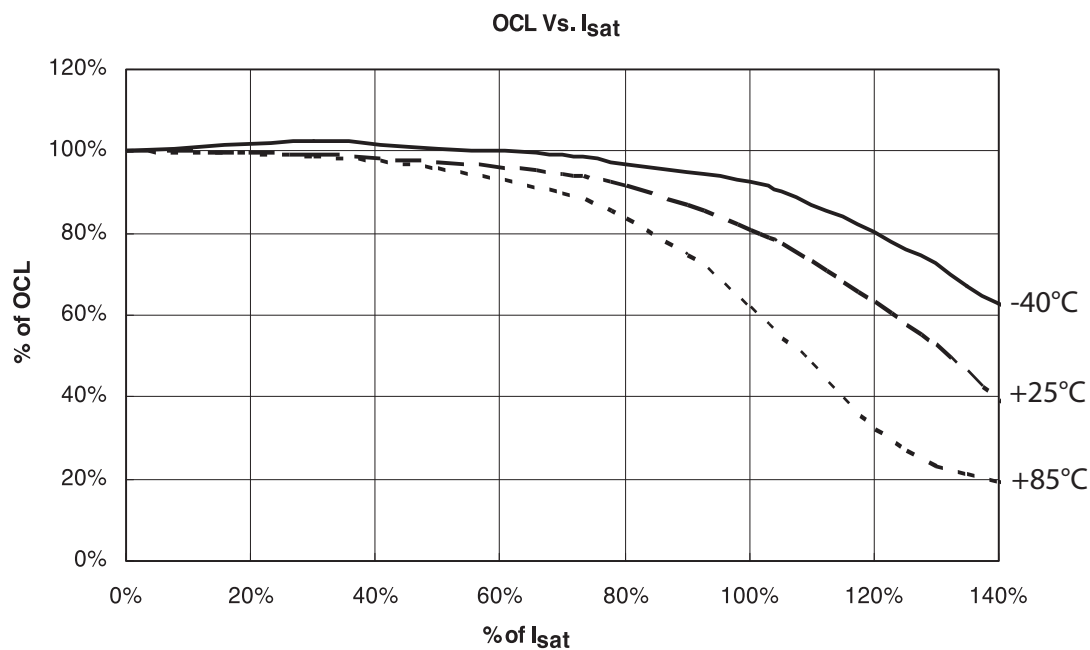
Core Loss



Temperature Rise vs. Loss



Inductance Characteristics



Solder Reflow Profile

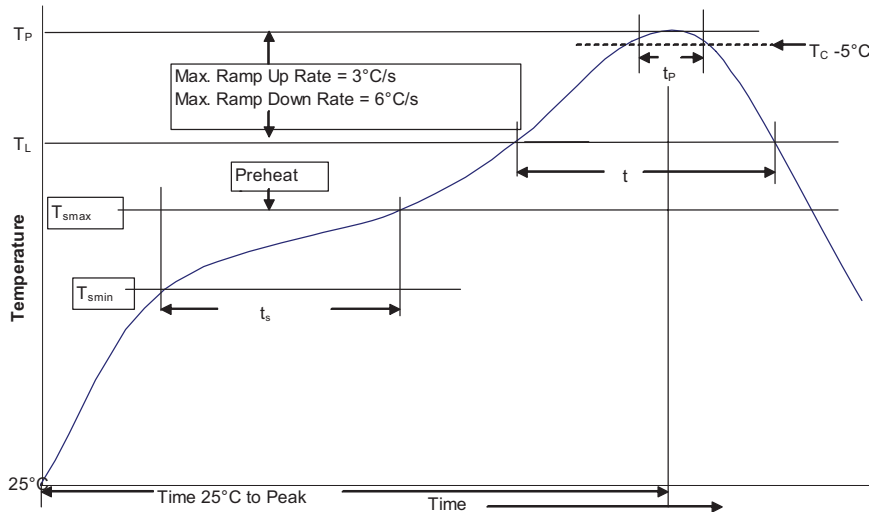


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	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
<1.6mm	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 JDEC 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.

North America

Cooper Electronic Technologies
1225 Broken Sound Parkway NW
Suite F
Boca Raton, FL 33487
Tel: 17561799874100
Fax: 17561724176640
Toll Free: 1788874142645

Europe

Cooper Electronic Technologies
Cooper (UK) Limited
Burton-on-the-Wolds
Leicestershire LE12 5TH
Tel: +44 (0) 1509 882 737
Fax: +44 (0) 1509 882 786

Asia Pacific

Cooper Electronic Technologies
Cooper Electronic Technologies
Avda. Santa Eulalia, 290 1
#06701 Pacific Tech Centre
Singapore 159303
Tel: +65 278 6151
Fax: +65 270 4160

The only controlled copy of this Data Sheet is the electronic read-only version located on the Cooper Bussmann Network Drive. All other documents are by definition uncontrolled. This bulletin is intended to clearly present comprehensive product data and provide technical information that will help the end user with design applications. Cooper Bussmann reserves the right, without notice, to change design or construction of products and to discontinue or limit distribution of any products. Cooper Bussmann also reserves the right to change or update, without notice, technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

Life Support Policy: Cooper Bussmann does not authorize the use of any of its products for use in life support devices or systems without the written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.