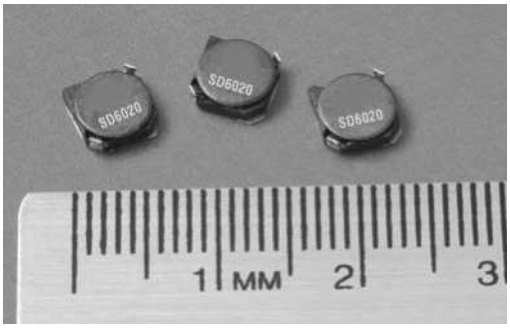
SD6020

Low profile shielded drum core power inductors



Product features

- Low profile surface mount shielded drum core inductors
- 6.0 mm x 6.0 mm x 2.0 mm surface mount package
- Ferrite core material
- Inductance range from 1.99 uH to 100 uH
- Current range from 0.36 A to 4.2 A
- Frequency range up to 1 MHz

Applications

- Notebook, laptop computers
- Digital cameras
- LED Drivers
- TFT LCD Bias supplies
- Wireless handsets,
- Handheld instruments
- Gaming consoles
- GPS devices
- Battery backup/power
- DC-DC Converters,
- Buck-boost regulators

Environmental data

- 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

Pb HALOGEN HF FREE RoHS

Powering Business Worldwide

Product specifications

Part Number[5]	OCL[1] µH ± 30%	I_{rms}[2] (A)	I_{sat}[3] (A)	Typ. DCR mΩ @ +20 °C	Max DCR mΩ @ +20 °C	K-factor[4]
SD6020-2R2-R	1.99	4.2	2.2	30.0	36.0	40.0
SD6020-4R1-R	3.9	2.22	1.95	47.5	57.0	28.5
SD6020-5R4-R	5.5	1.80	1.60	63.3	76.0	24.0
SD6020-6R2-R	6.5	1.63	1.40	80.0	96.0	22.2
SD6020-8R9-R	8.5	1.47	1.25	96.7	116.0	19.3
SD6020-100-R	9.7	1.39	1.20	103.3	124.0	18.1
SD6020-120-R	11	1.31	1.10	115.0	138.0	17.1
SD6020-150-R	13	1.07	0.97	163.3	196.0	15.4
SD6020-180-R	16	1.10	0.85	175.0	210.0	13.9
SD6020-220-R	20	0.94	0.80	241.7	290.0	12.7
SD6020-270-R	27	0.82	0.75	275.0	330.0	10.9
SD6020-330-R	29	0.76	0.65	320.8	385.0	10.5
SD6020-390-R	37	0.63	0.57	416.7	500.0	9.2
SD6020-470-R	45	0.61	0.54	495.8	595.0	8.2
SD6020-560-R	55	0.57	0.50	515.0	618.0	7.8
SD6020-680-R	68	0.50	0.43	700.0	840.0	6.7
SD6020-820-R	80	0.48	0.41	815.0	978.0	6.3
SD6020-101-R	94	0.42	0.36	1000.0	1200.0	5.8

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

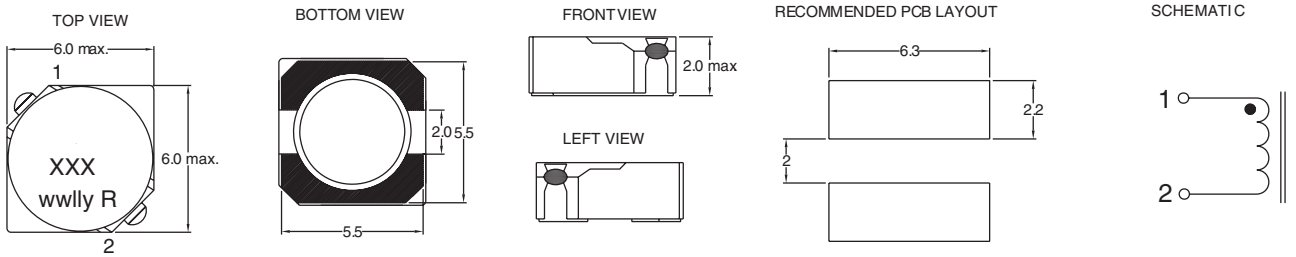
2 I_{rms}: DC current for an approximate ΔT of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +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: SD6020-xxx-R
SD6020 = Product code and size; -xxx = Inductance value in µH; R = decimal point; If no R is present, third character equals number of zeros. -R suffix = RoHS compliant

Dimensions-mm

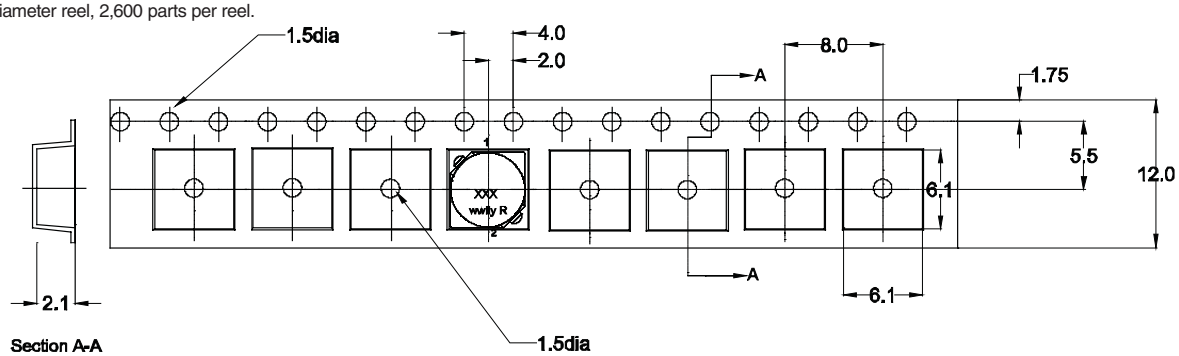


xxx = Inductance value in uH. R = decimal point. If no R is present third character = #of zeros, wwlly or wwllyy = Date code, R = Revision level.

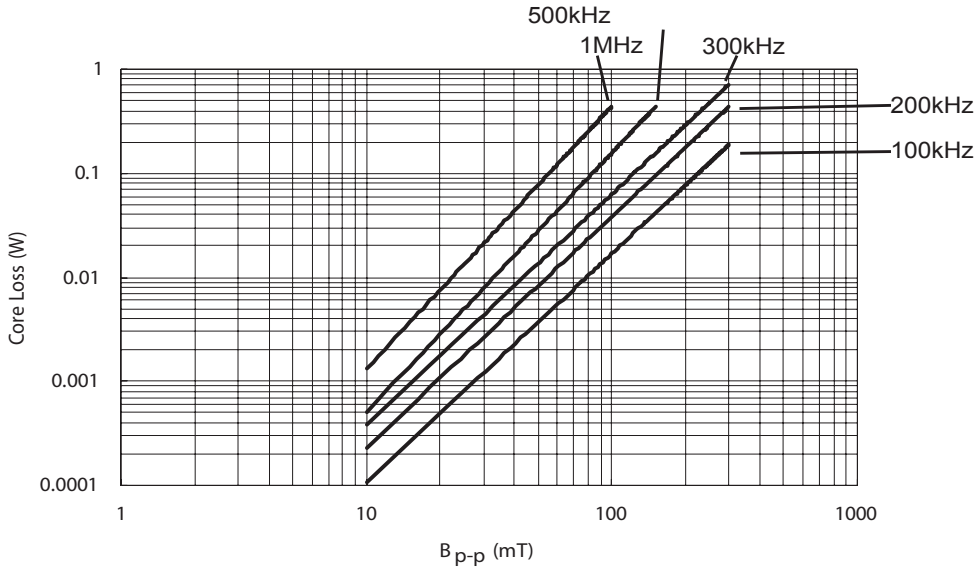
Do not route traces or vias underneath the inductor.

Packaging information-mm

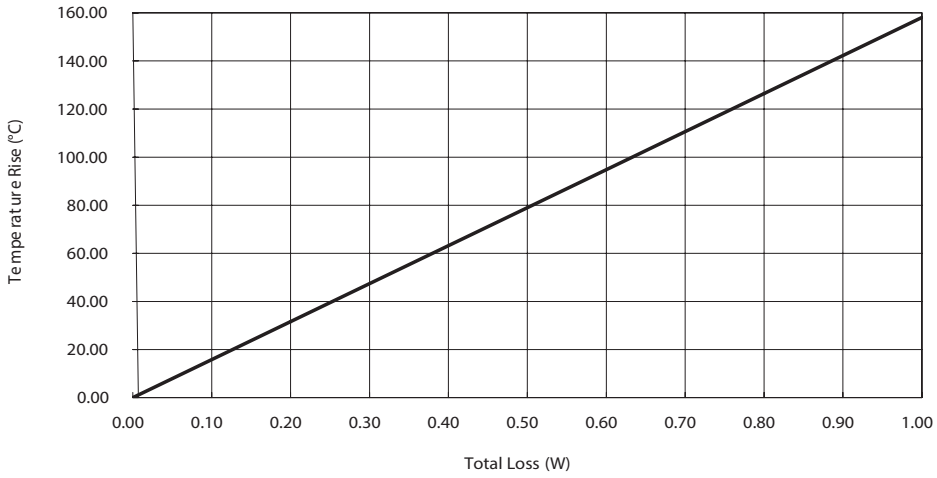
Parts packaged on 13" Diameter reel, 2,600 parts per reel.



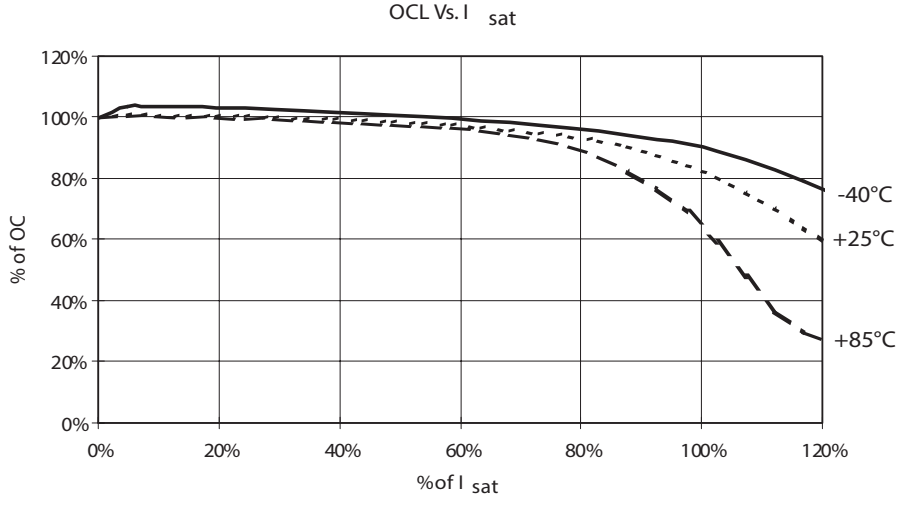
Core loss vs Bp-p



Temperature rise vs total loss



Inductance characteristics



Solder Reflow Profile

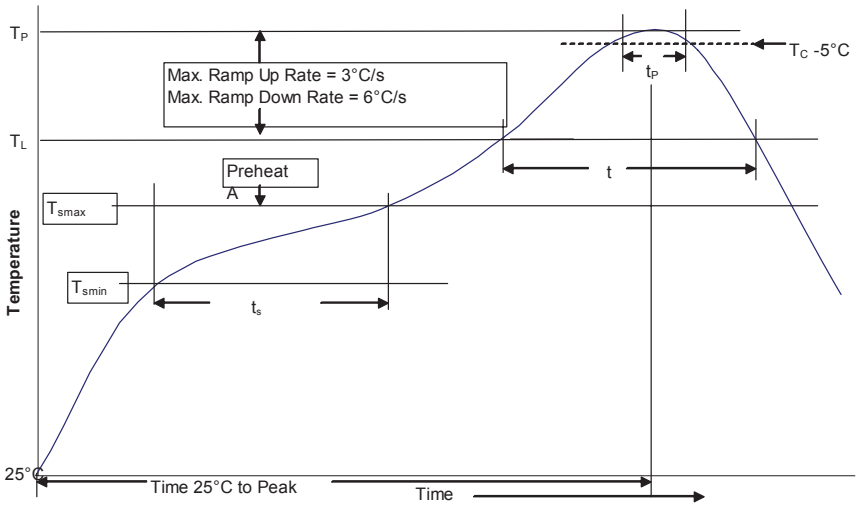


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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-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
Average ramp up rate T_{smax} to T_p		3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 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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