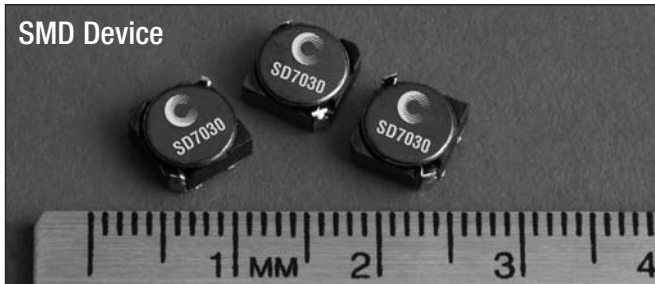


# Low-Profile Shielded Drum Inductors

## SD7030 Series



### Description

- 125°C maximum total operating temperature
- Low profile 7.0 x 7.0 x 3.0mm maximum surface mount package
- Ferrite material shielded drum core
- Inductance range from 1.5µH to 680µH
- Current range from 0.21 to 5.5 Amps
- Frequency range up to 1MHz

### Applications

- Notebook computers
- TFT LCD Bias supplies
- Handheld instruments
- Battery power, Li-Ion, 2-cell
- White LED driver
- Wireless handsets
- GPS Receivers
- ADSL/DSL/Cable modems
- Digital still camera
- Buck and boost inductor

### 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, 1500 parts per 13" diameter reel

### Product Specifications

Part Number <sup>5</sup>	OCL <sup>1</sup> µH ± 30%	I <sub>rms</sub> <sup>2</sup> Amps	I <sub>sat</sub> <sup>3</sup> Amps	Typ. DCR mΩ @ 25°C	Max DCR mΩ @ 25°C	K-factor <sup>4</sup>
SD7030-1R5-R	1.5	5.5	4.5	10	12	32
SD7030-3R3-R	3.3	3.7	3.00	20	24	22
SD7030-3R9-R	4.1	3.4	2.60	22	27	19
SD7030-5R0-R	4.9	3.2	2.40	26	31	17
SD7030-6R0-R	5.8	2.8	2.25	29	35	16
SD7030-7R3-R	7.0	2.3	2.10	45	54	13
SD7030-8R0-R	7.8	2.2	1.85	48	58	12
SD7030-100-R	10.0	2.1	1.70	54	65	11
SD7030-120-R	11.5	1.9	1.55	58	70	10
SD7030-150-R	14.6	1.7	1.40	70	84	9.3
SD7030-180-R	17.3	1.7	1.32	79	95	8.8
SD7030-220-R	21.0	1.4	1.20	107	128	7.6
SD7030-260-R	24.9	1.3	1.05	118	142	6.9
SD7030-300-R	30.0	1.2	0.97	138	165	6.4
SD7030-390-R	39.7	1.1	0.86	175	210	5.7
SD7030-440-R	43.4	1.1	0.80	198	238	5.3
SD7030-560-R	54.4	0.99	0.73	231	277	4.9
SD7030-680-R	66.6	0.85	0.65	253	304	4.3
SD7030-820-R	81.4	0.82	0.60	325	390	4.0
SD7030-101-R	95.5	0.70	0.54	446	535	3.6
SD7030-121-R	115.2	0.67	0.50	629	755	3.3
SD7030-151-R	145	0.57	0.44	715	858	2.9
SD7030-181-R	174	0.54	0.40	805	966	2.7
SD7030-221-R	211	0.51	0.36	1102	1322	2.4
SD7030-271-R	264	0.44	0.33	1259	1475	2.2
SD7030-331-R	317	0.38	0.30	1438	1725	2.0
SD7030-391-R	381	0.36	0.27	1857	2228	1.8
SD7030-471-R	460	0.34	0.25	2150	2581	1.7
SD7030-561-R	561.0	0.29	0.23	2857	3428	1.5
SD7030-681-R	677.2	0.28	0.21	3206	3847	1.4

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

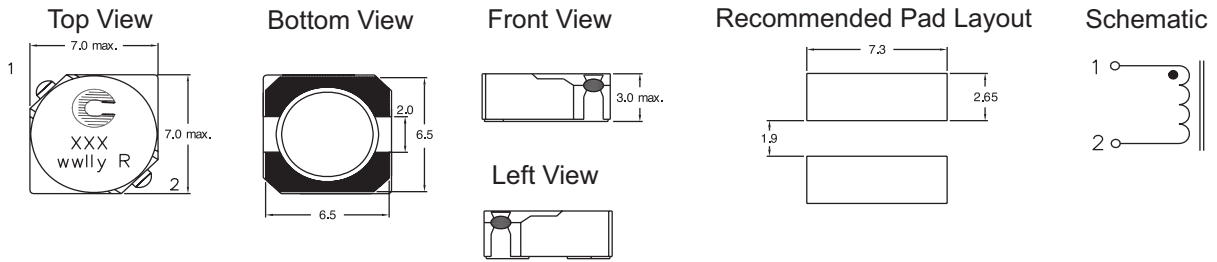
2 I<sub>rms</sub>: DC current for an approximate ΔT of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part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

3 I<sub>sat</sub>: Amps peak for approximately 35% rolloff (@25°C)

4 K-factor: Used to determine B<sub>p-p</sub> for core loss (see graph). B<sub>p-p</sub> = K\*L\*ΔI, B<sub>p-p</sub>(mT), K: (K factor from table), L: (Inductance in µH), ΔI (Peak-to-peak ripple current in Amps).

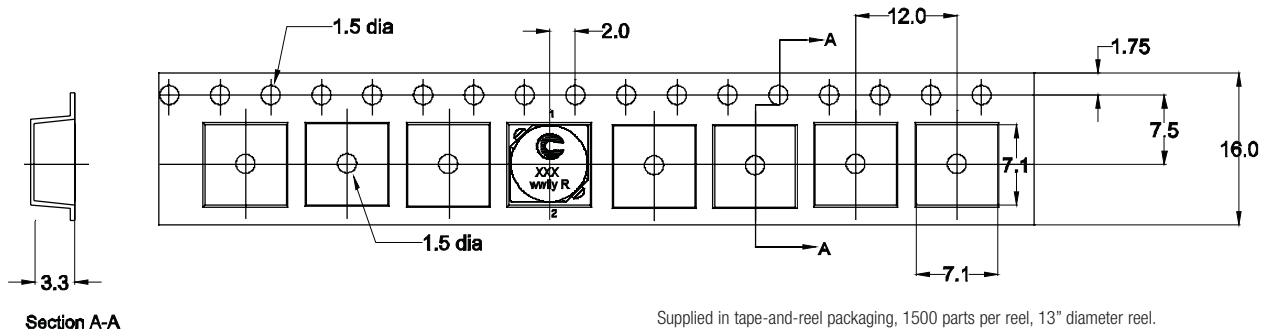
5 Part Number Definition: SD7030-xxx-R  
SD7030 = Product code and size; -xxx = Inductance value in µH;  
R = decimal point; If no R is present, third character = # of zeros.  
-R suffix = RoHS compliant

### Dimensions - mm



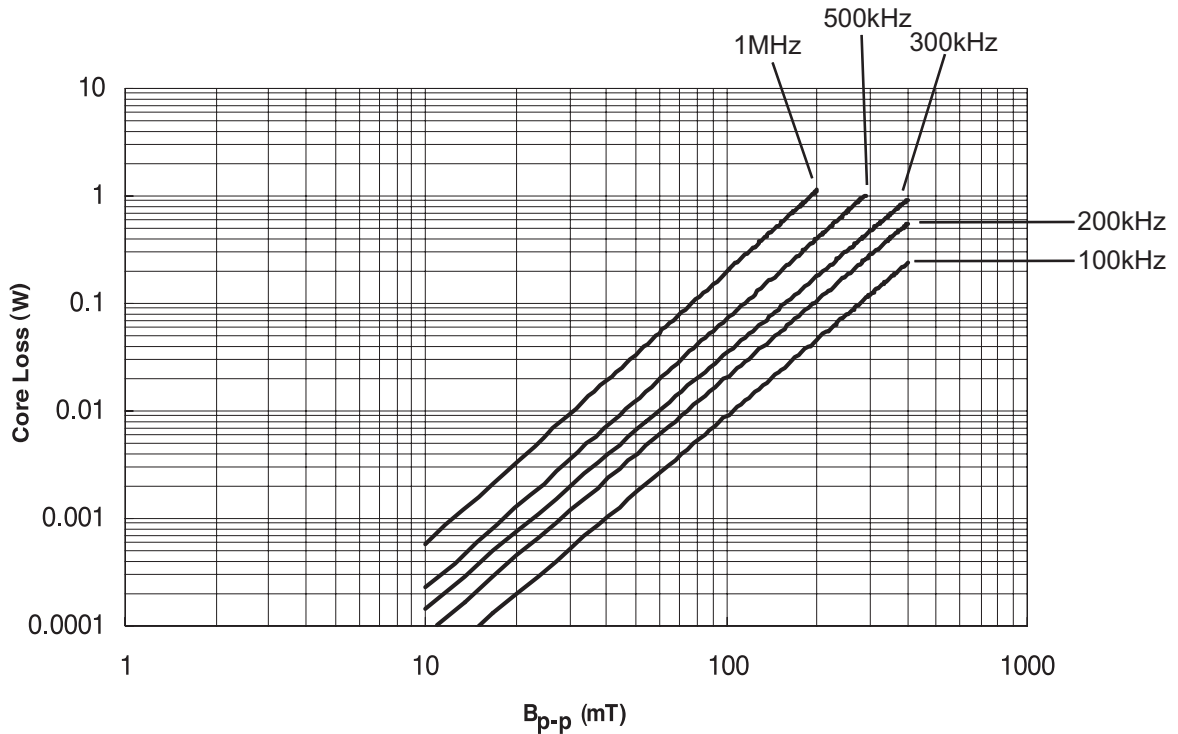
Part Marking: Coiltronics Logo    xxx = inductance value in  $\mu\text{H}$ . R = decimal point. If no "R" is present, third character = # of zeros. willy or willyy = date code. R = revision level

### Packaging Information - mm

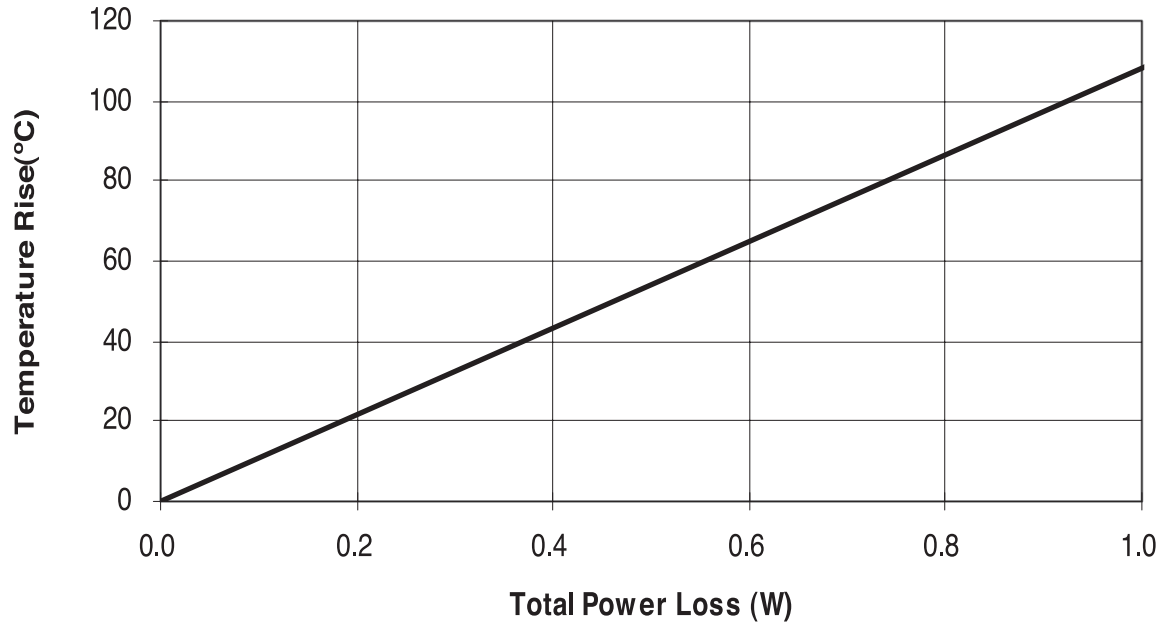


Supplied in tape-and-reel packaging, 1500 parts per reel, 13" diameter reel.

### Core Loss

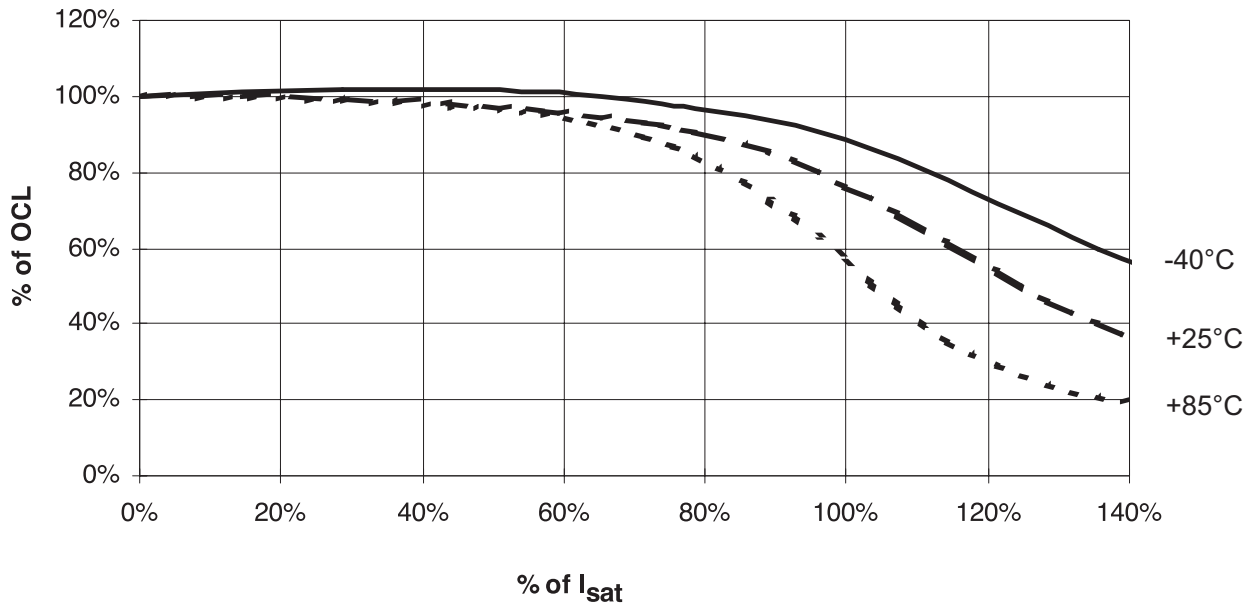


### Temperature Rise vs. Loss



### Inductance Characteristics

OCL Vs.  $I_{sat}$



## Solder Reflow Profile

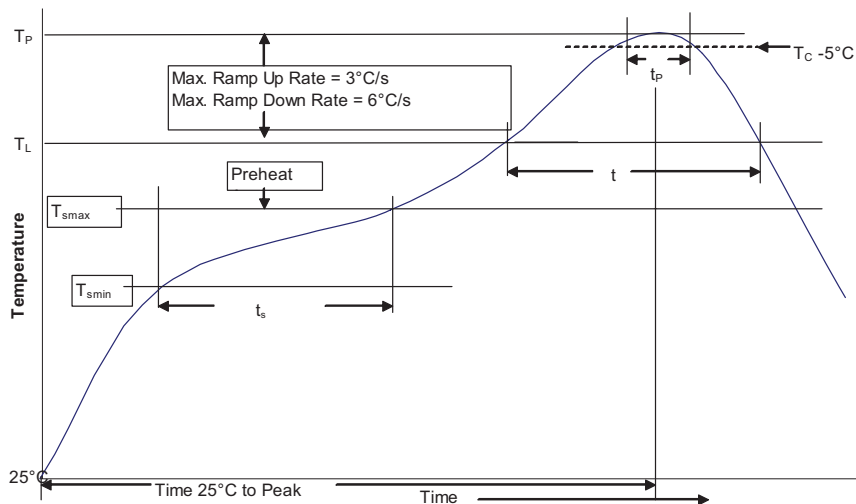


Table 1 - Standard SnPb Solder ( $T_C$ )

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<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 $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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	<ul style="list-style-type: none"> <li>Temperature min. (<math>T_{smin}</math>)</li> <li>Temperature max. (<math>T_{smax}</math>)</li> <li>Time (<math>T_{smin}</math> to <math>T_{smax}</math>) (<math>t_s</math>)</li> </ul>	<ul style="list-style-type: none"> <li>100°C</li> <li>150°C</li> <li>60-120 Seconds</li> </ul>
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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