

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 ^a	OC1 ¹ μH ± 30%	I _{rms} ² Amps	I _{sat} ³ Amps	Typ. DCR mΩ @ 25°C	Max DCR mΩ @ 25°C	K-factor ⁴
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, 0.0Adc.

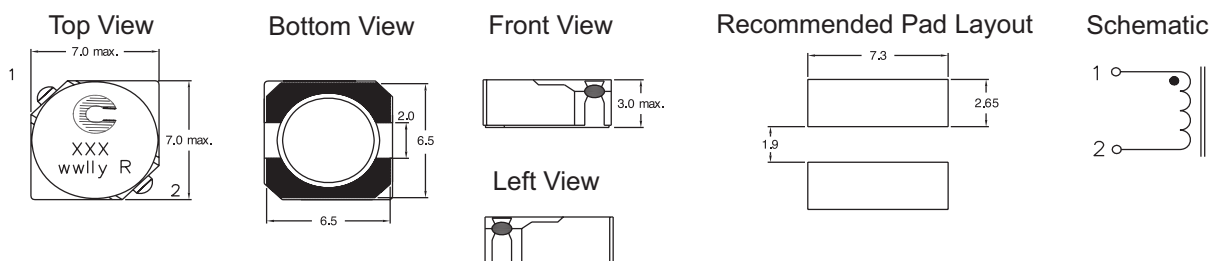
² I_{rms}: DC current for an approximate ΔT of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed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

³ I_{sat}: Amps peak for approximately 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).

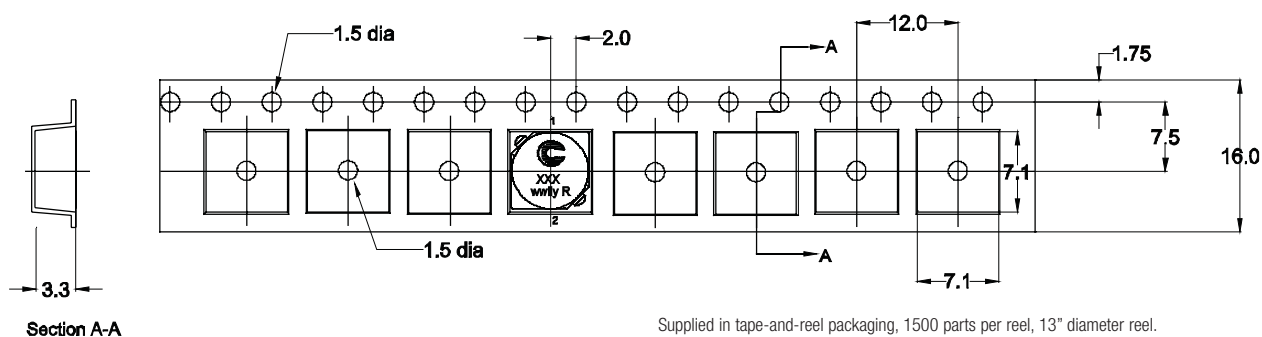
⁵ Part Number Definition: SD7030-xxx-R
SD7030 = Product code and size; -xxx = Inductance value in μH;
R = decimal point; If no R is present, third character = # of zeros.
-R suffix = RoHS compliant

Dimensions - mm



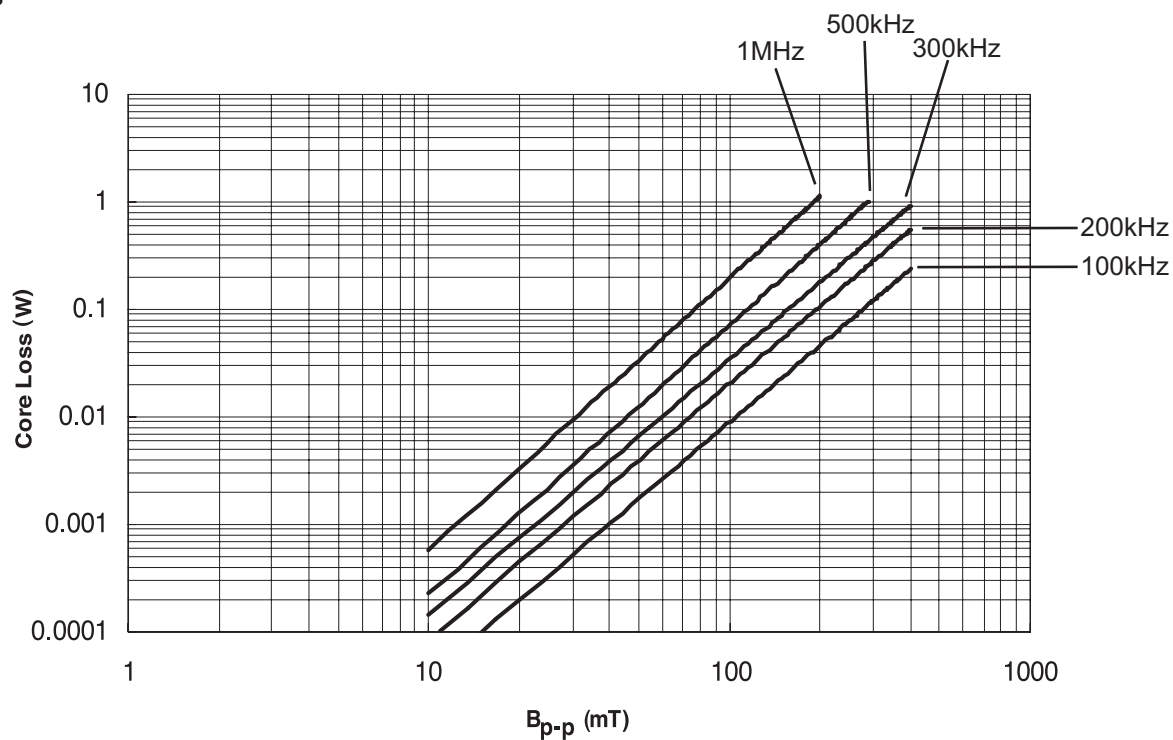
Part Marking: Coiltronics Logo xxx = inductance value in μH . R = decimal point. If no "R" is present, third character = # of zeros. wwly or wwlyy = date code. R = revision level

Packaging Information - mm

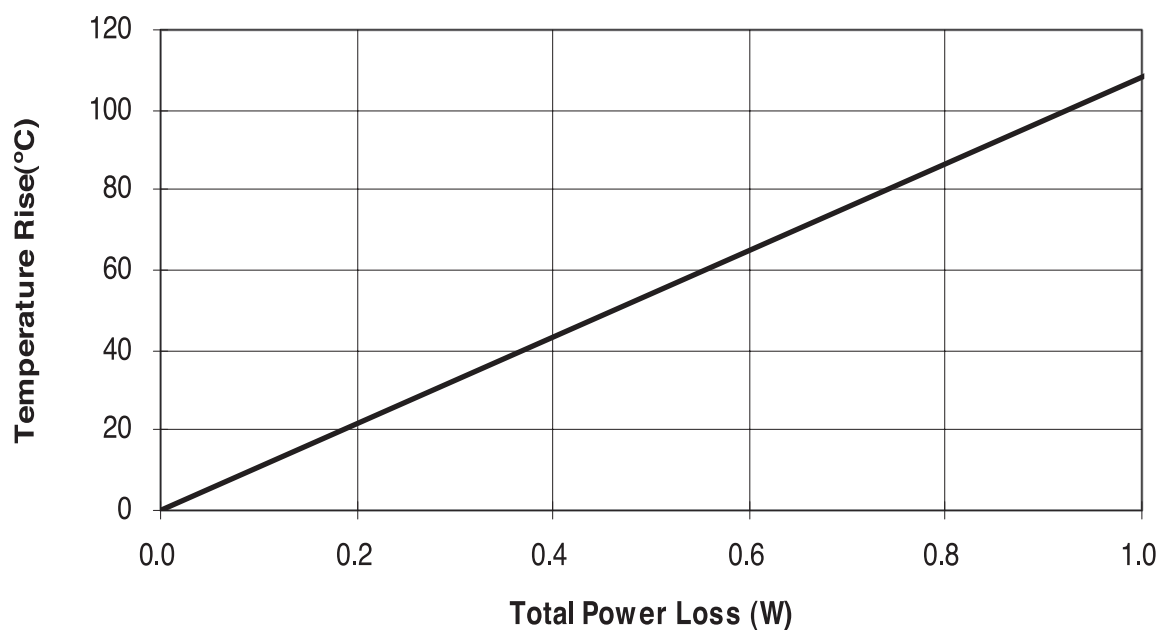


Supplied in tape-and-reel packaging, 1500 parts per reel, 13" diameter reel.

Core Loss

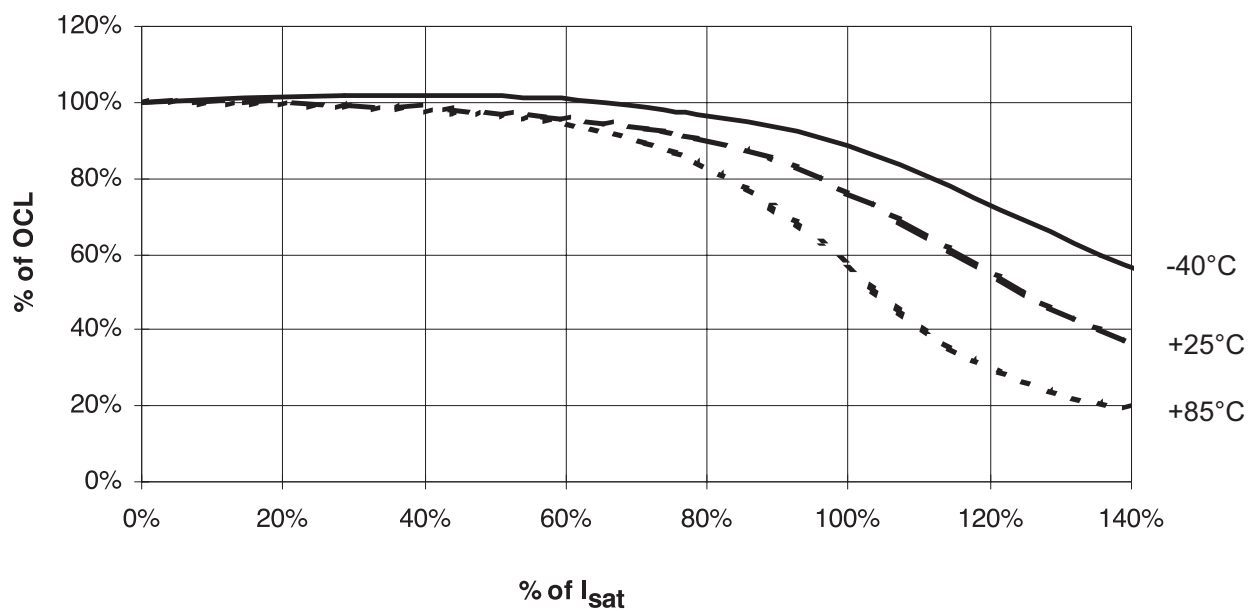


Temperature Rise vs. Loss



Inductance Characteristics

OCL Vs. I_{sat}



Solder Reflow Profile

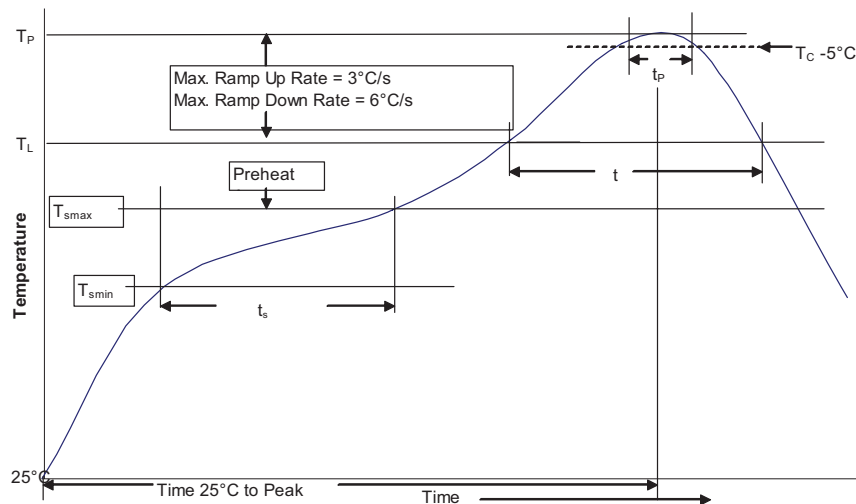


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume 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.

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<u>SD7030-680-R</u>	<u>SD7030-681-R</u>	<u>SD7030-6R0-R</u>	<u>SD7030-7R3-R</u>	<u>SD7030-820-R</u>	<u>SD7030-8R0-R</u>	<u>SD7030-1R5-R</u>