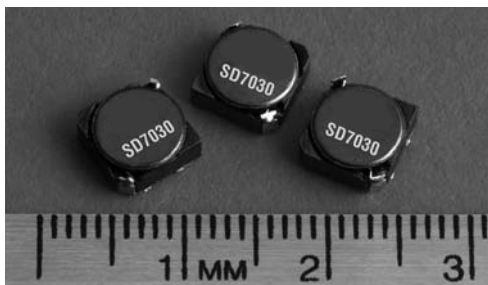


SD7030

Low profile shielded drum core power inductors



Product features

- Low profile 7.0 mm x 7.0 mm x 3.0 mm surface mount package
- Ferrite material shielded drum core
- Inductance range from 1.5 μ H to 680 μ H
- Current range from 0.21A to 5.5 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 power, Li-Ion, 2-cell

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



Product specifications

Part Number ⁵	OCL ¹ $\mu\text{H} \pm 30\%$	I_{rms}^2 (A)	I_{sat}^3 (A)	Typ. DCR $\text{m}\Omega$ @ +25 °C	Max DCR $\text{m}\Omega$ @ +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: 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.

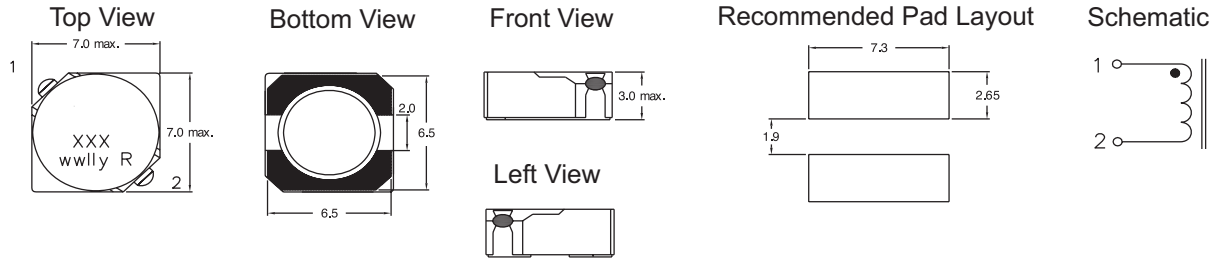
3 I_{sat} : Amps peak for approximately 35% rolloff (@ +25 °C)

4 K-factor: Used to determine $B_{\text{D-P}}$ for core loss (see graph). $B_{\text{D-P}} = K \cdot L \cdot \Delta I$, $B_{\text{D-P}}$ (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 equals number of zeros.
-R suffix = RoHS compliant

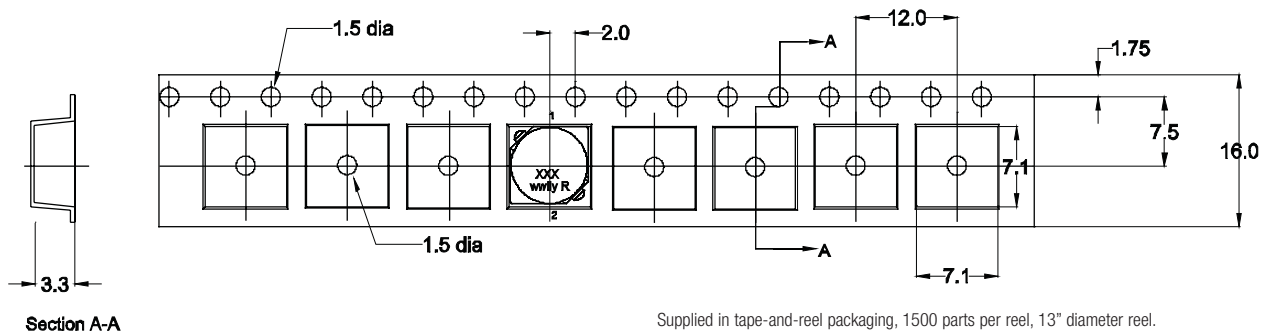
Dimensions-mm



Part Marking: 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

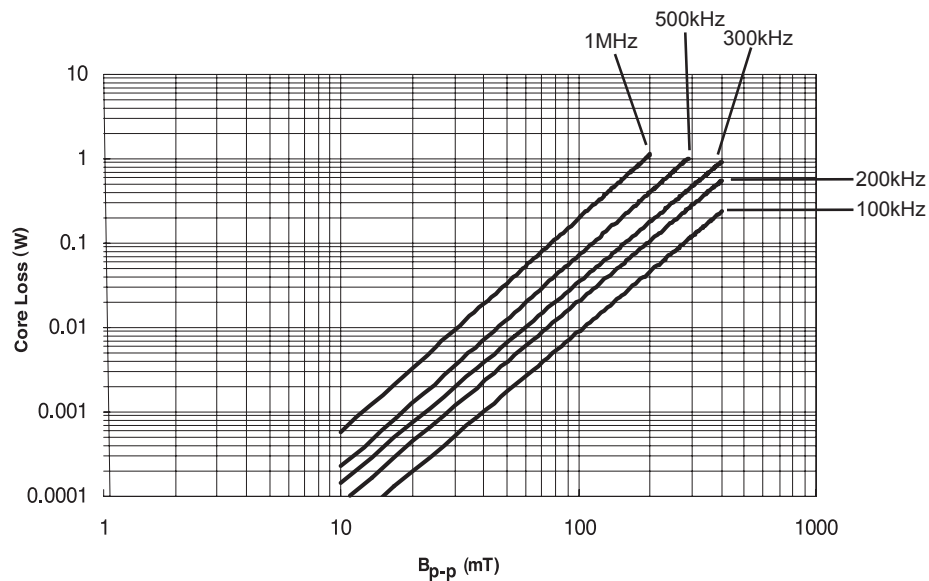
Do not route traces or vias underneath the inductor

Packaging information-mm

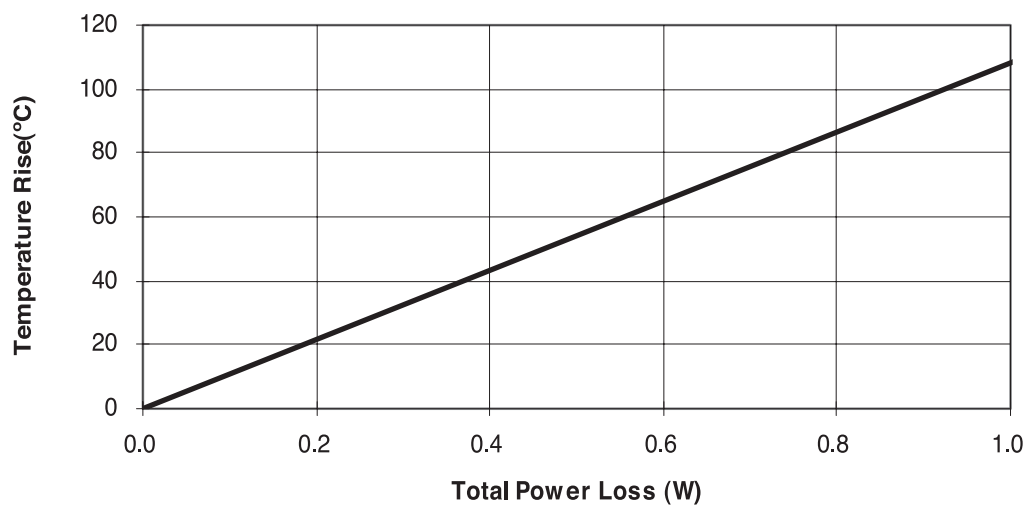


Supplied in tape-and-reel packaging, 1500 parts per reel, 13" diameter reel.

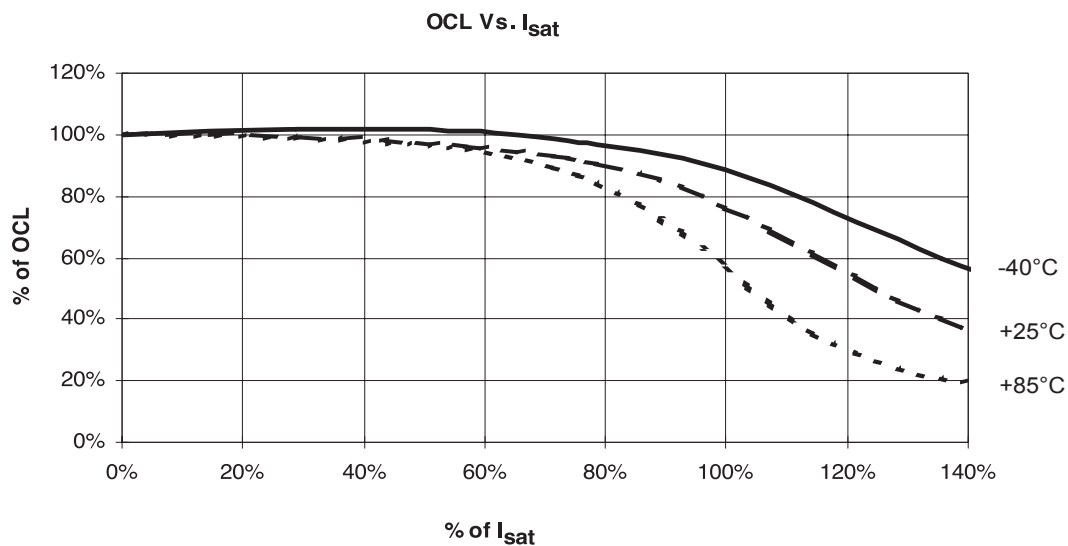
Core loss vs Bp-p



Temperature rise vs total loss



Inductance characteristics



Solder Reflow Profile

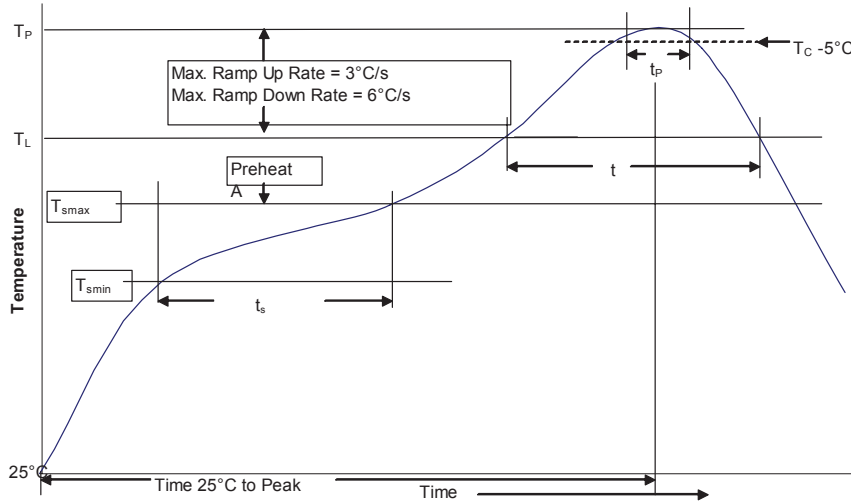


Table 1 - Standard SnPb Solder (T_p)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5mm$	220°C	220°C

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

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-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)	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.

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

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/electronics

© 2017 Eaton
All Rights Reserved
Printed in USA
Publication No. 4330 BU-SB111167
August 2017