



**THE DATASHEET OF  
DR1030-3R9-R**



# DR1030

## Shielded power inductors



### Description

- Shielded drum core
- Inductance range from 1.1  $\mu$ H to 155  $\mu$ H
- Current range from 0.68 A to 9.5 A
- 10.5 mm x 10.3 mm footprint surface mount package in a 3.0 mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

### Applications

- LED/LCD backlighting
- High definition televisions (HDTV)
- Server and desktop power supplies
- Portable electronics
- Notebook and laptop regulators
- Graphics cards and battery powered systems
- Point-of-load (POL) modules
- Printers and peripherals

### 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-020D compliant



Product Specifications

Part Number <sup>5</sup>	OCL <sup>1</sup> ( $\mu\text{H}$ ) $\pm 30\%$	$I_{\text{rms}}^2$ (A)	$I_{\text{sat}}^3$ (A)	DCR (m $\Omega$ ) typical @ 20°C	DCR (m $\Omega$ ) maximum @ 20°C	K-factor <sup>4</sup>
DR1030-1R1-R	1.1	7.0	9.5	6.5	7.9	22
DR1030-1R8-R	1.9	5.9	7.4	9.1	11.0	17
DR1030-2R8-R	2.8	5.1	6.08	12.1	14.5	14
DR1030-3R9-R	4.0	4.3	5.1	16.4	20.0	12
DR1030-5R2-R	5.2	3.7	4.75	22.9	27.5	10
DR1030-6R8-R	6.8	3.5	3.9	24.9	30.0	9
DR1030-8R2-R	8.4	3.3	3.54	28.4	34.1	8
DR1030-100-R	10.4	2.8	3.18	40.2	48.0	7
DR1030-150-R	14.8	2.3	2.66	57.3	68.8	6
DR1030-220-R	22.8	1.8	2.19	95.5	115	5
DR1030-330-R	32.4	1.6	1.81	114	136	4
DR1030-470-R	47.9	1.3	1.52	167	200	3.4
DR1030-680-R	67	1.1	1.24	253	304	2.9
DR1030-820-R	82	1.0	1.14	332	382	2.6
DR1030-101-R	100	0.86	1.05	375	450	2.4
DR1030-121-R	119	0.80	0.95	523	602	1.9
DR1030-151-R	155	0.68	0.86	590	700	1.4

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 Vrms, 0.0 Adc, +25 °C

2.  $I_{\text{rms}}$ : DC current for an approximate temperature rise 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.

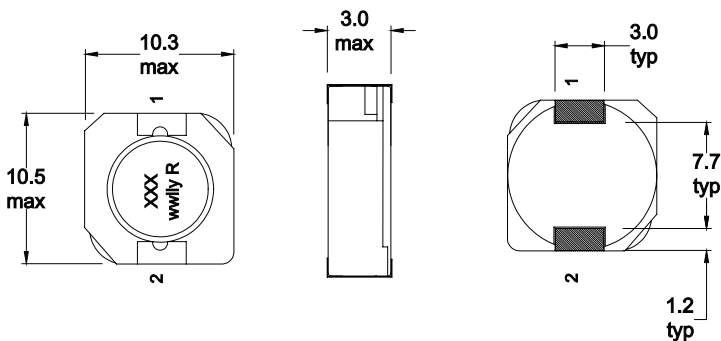
3.  $I_{\text{sat}}$ : Peak current for approximately 35% rolloff @ +25 °C

4. K-factor: K-factor: Used to determine Bp-p for core loss (see graph).  $Bp-p = K * L * \Delta I$ . Bp-p: (mT), K: (K-factor from table), L: (Inductance in  $\mu\text{H}$ ),  $\Delta I$  (Peak to peak ripple current in Amps).

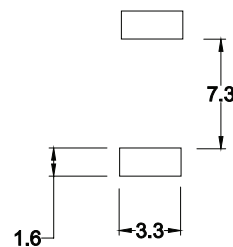
5. Part Number Definition: DR1030-xxx-R

DR1030 = Product code and size  
-xxx= inductance value in  $\mu\text{H}$ , R= decimal point,  
If no R is present then last character equals number of zeros  
-R suffix = RoHS compliant

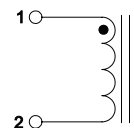
Dimensions (mm)



Recommended Pad Layout



Schematic



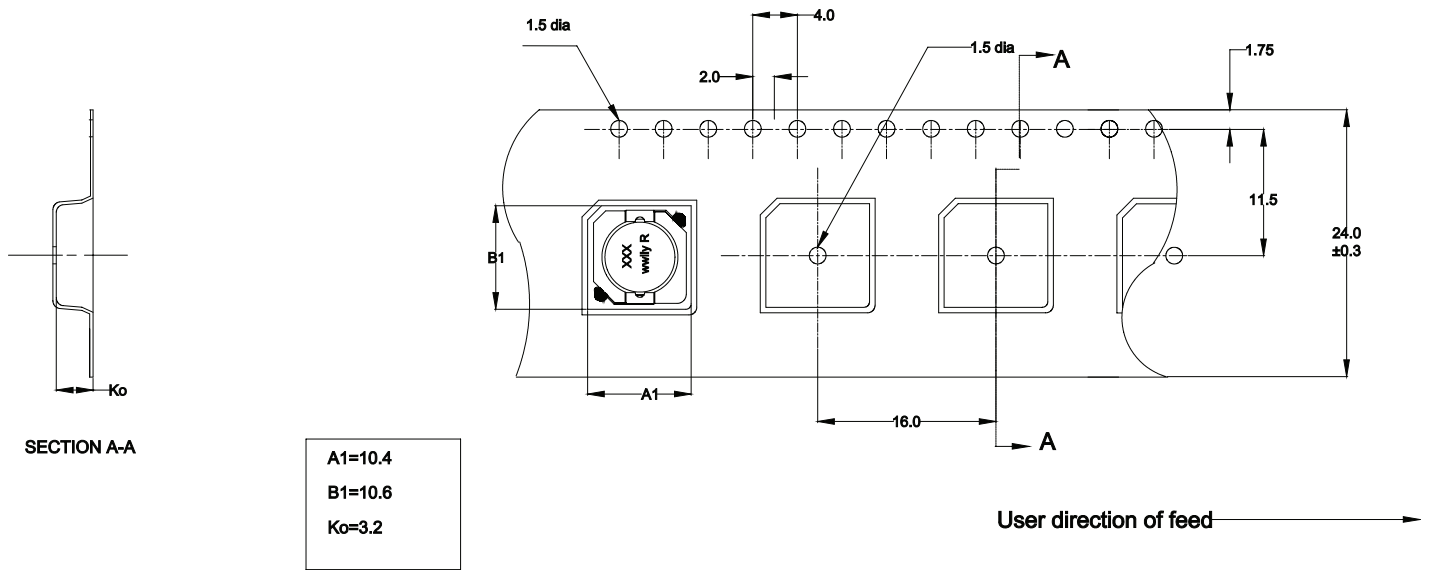
Part marking: inductance value in  $\mu\text{H}$ . R = decimal point. If no R is present then last character equals number of zeroes.

wwlly = date code, R = revision level

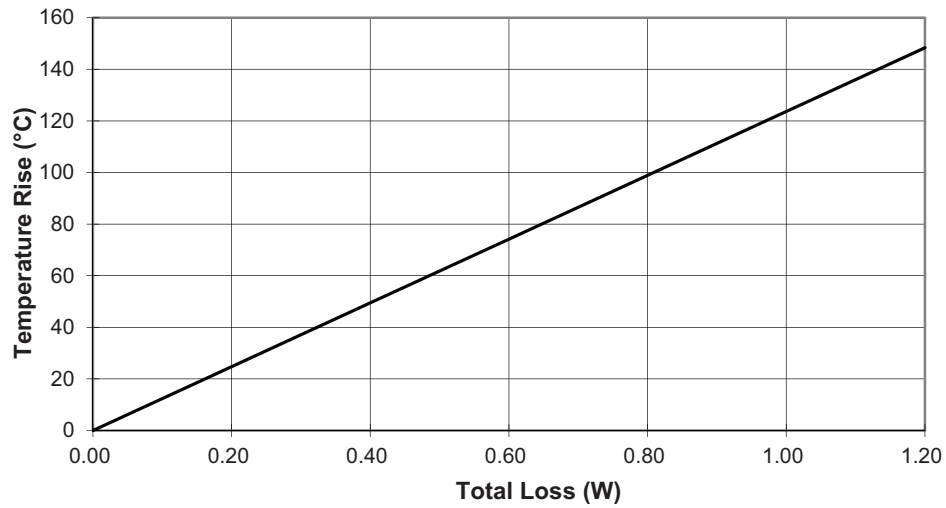
Do not route traces or vias underneath the inductor

**Packaging information (mm)**

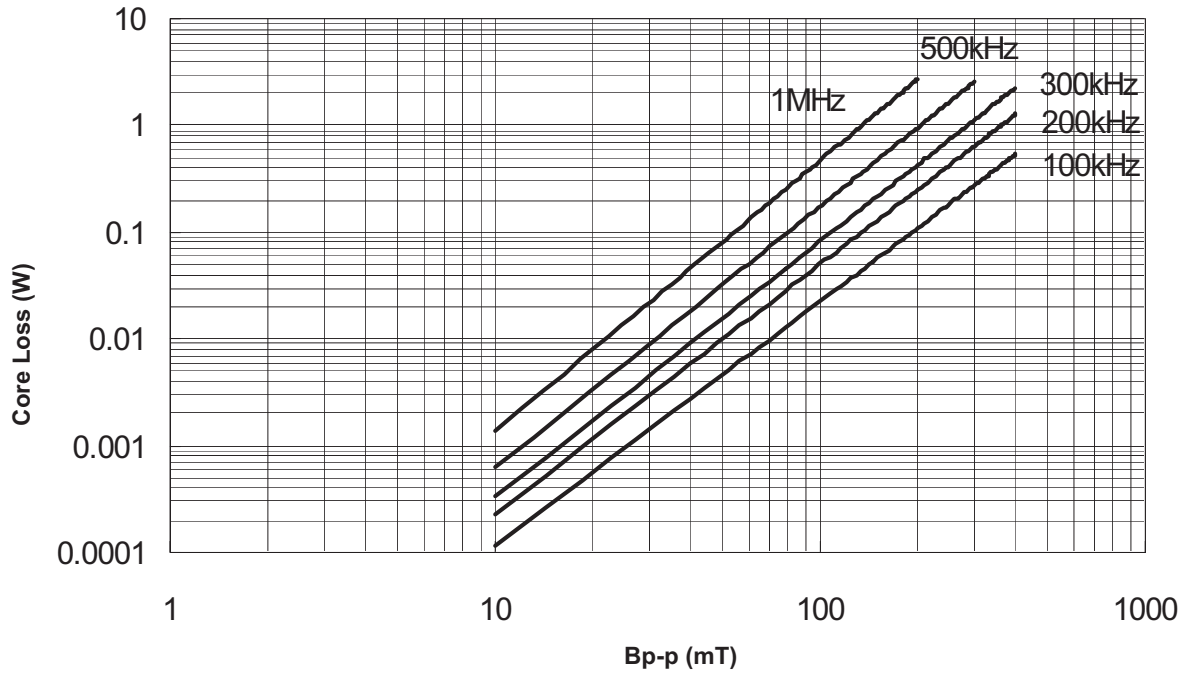
Supplied in tape and reel packaging , 1000 parts per 13" diameter reel



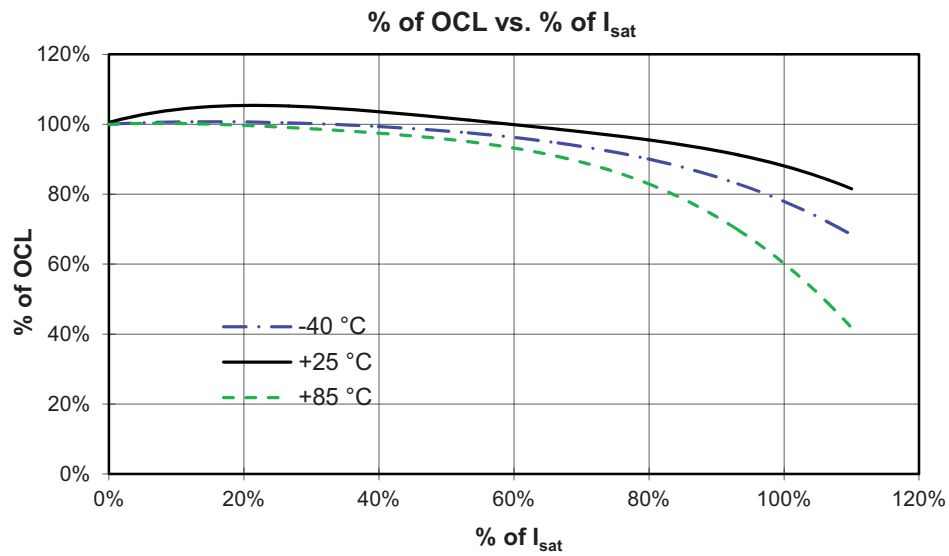
**Temperature rise vs. total loss**



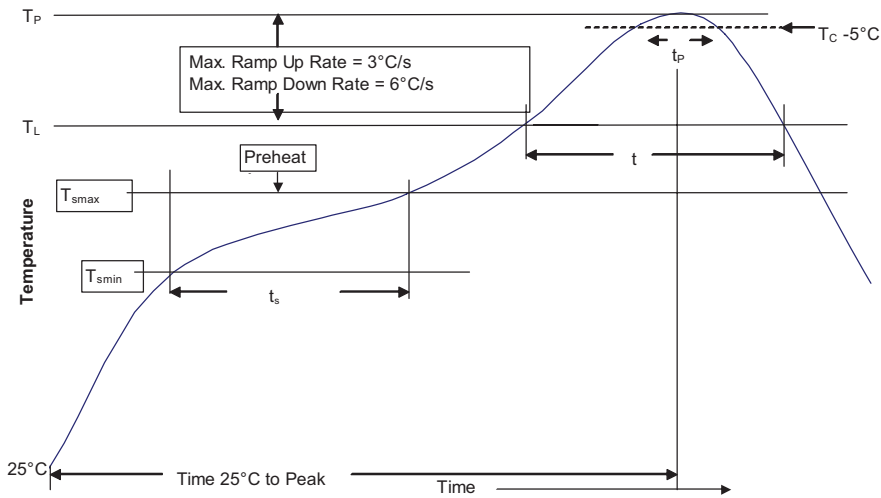
Core loss vs.  $B_{p-p}$



Inductance characteristics



**Solder reflow profile**



**Table 1 - Standard SnPb Solder ( $T_c$ )**

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

**Table 2 - Lead (Pb) Free Solder ( $T_c$ )**

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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 JEDEC 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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