



**THE DATASHEET OF
DR1030-8R2-R**



DR1030

Shielded power inductors



Description

- Shielded drum core
- Inductance range from 1.1 μ H to 155 μ 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 ⁵ | OCL ¹ (μH) $\pm 30\%$ | I_{rms}^2 (A) | I_{sat}^3 (A) | DCR (m Ω) typical @ 20°C | DCR (m Ω) maximum @ 20°C | K-factor ⁴ |
|--------------------------|--|---------------------------|---------------------------|--|--|-----------------------|
| 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_{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.

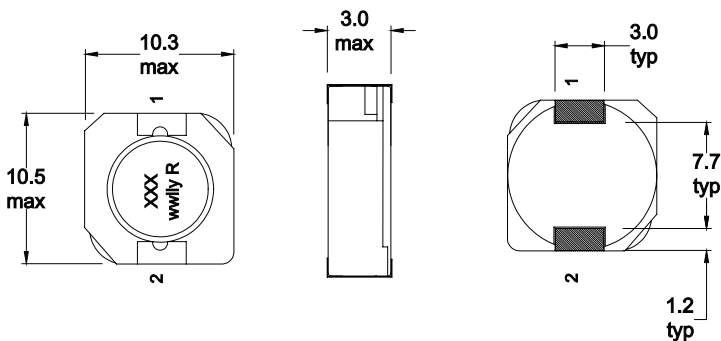
3. I_{sat} : Peak current for approximately 35% rolloff @ +25 °C

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 μH), ΔI (Peak to peak ripple current in Amps).

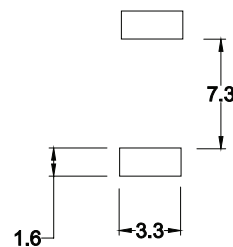
5. Part Number Definition: DR1030-xxx-R

DR1030 = Product code and size
-xxx= inductance value in μH , R= decimal point,
If no R is present then last character equals number of zeros
-R suffix = RoHS compliant

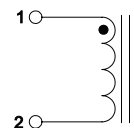
Dimensions (mm)



Recommended Pad Layout



Schematic



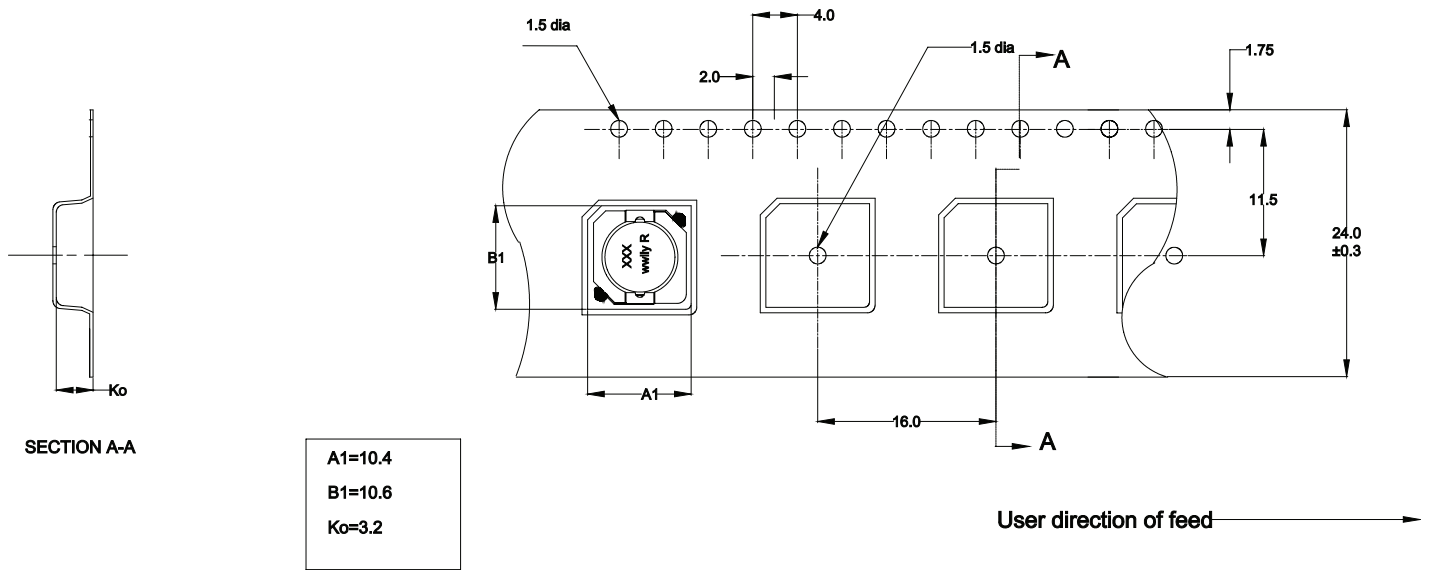
Part marking: inductance value in μH . R = decimal point. If no R is present then last character equals number of zeroes.

wwlly = date code, R = revision level

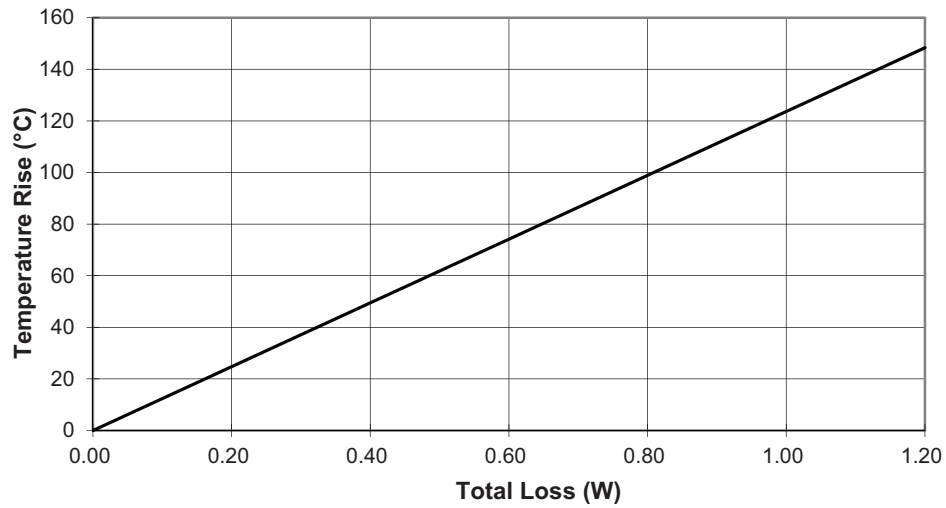
Do not route traces or vias underneath the inductor

Packaging information (mm)

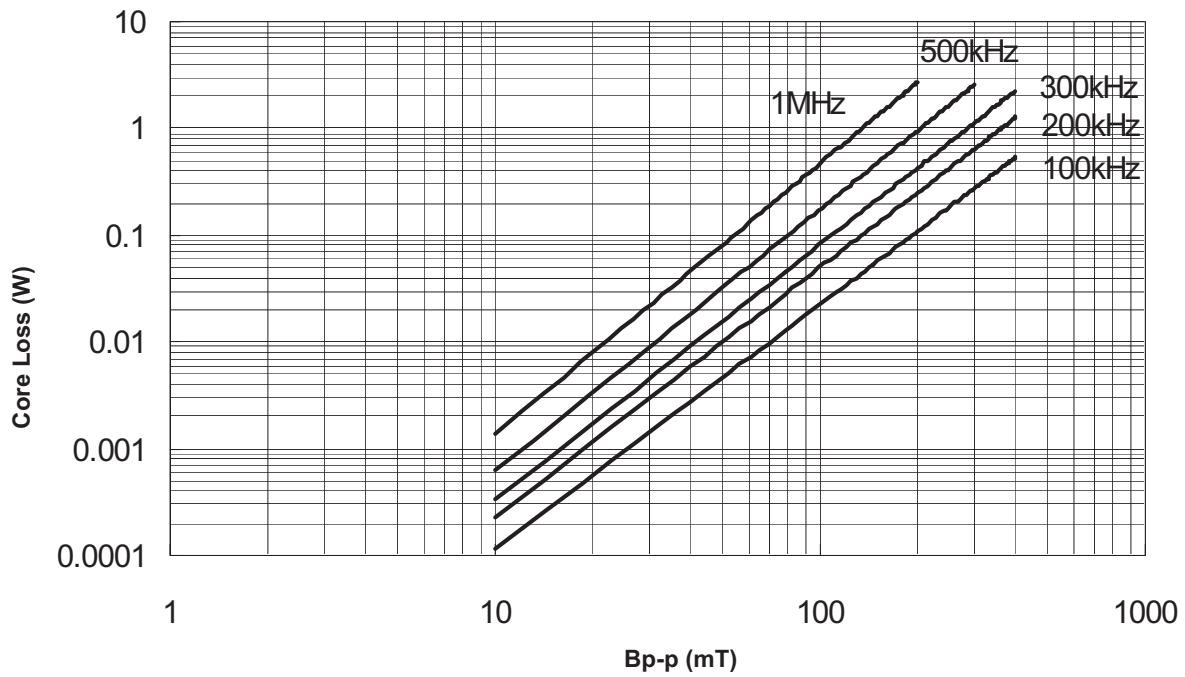
Supplied in tape and reel packaging , 1000 parts per 13" diameter reel



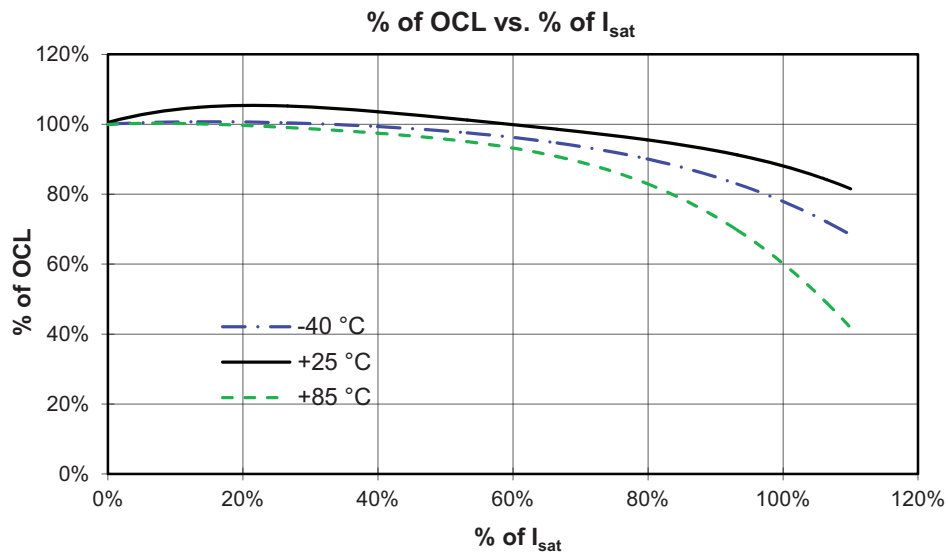
Temperature rise vs. total loss



Core loss vs. B_{p-p}



Inductance characteristics



Solder reflow profile

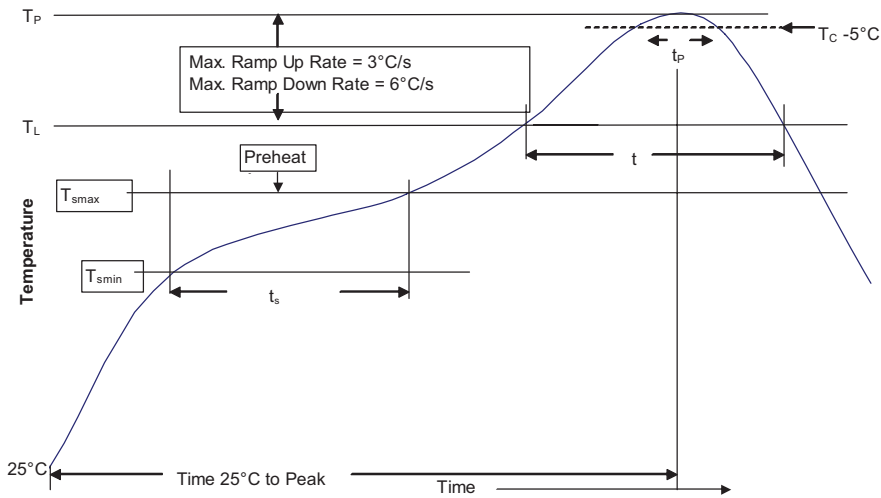


Table 1 - Standard SnPb Solder (T_C)

| Package Thickness | Volume mm ³ <350 | Volume mm ³ ≥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 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 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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