

## Product Specifications

| Part Number <sup>5</sup> | OCL <sup>1</sup><br>(μH) ±30% | I <sub>rms</sub> <sup>2</sup><br>(A) | I <sub>sat</sub> <sup>3</sup><br>(A) | DCR (mΩ)<br>typical<br>@ 20°C | DCR (mΩ)<br>maximum<br>@ 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<sub>rms</sub>: 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.

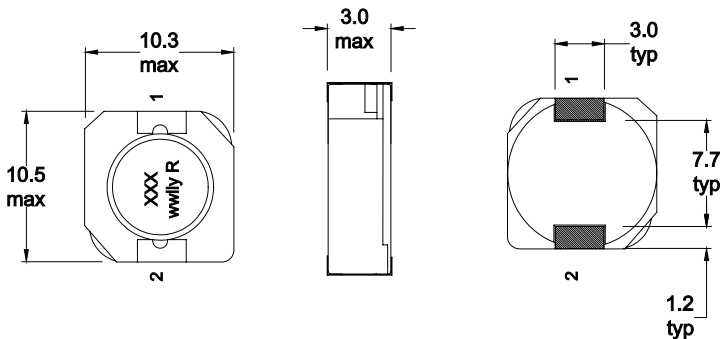
3. I<sub>sat</sub>: Peak current for approximately 35% rolloff @ +25 °C

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

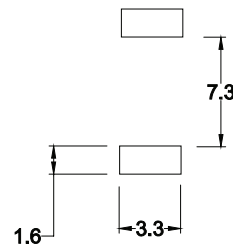
5. Part Number Definition: DR1030-xxx-R

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

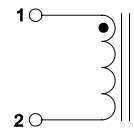
## Dimensions (mm)



## Recommended Pad Layout



## Schematic



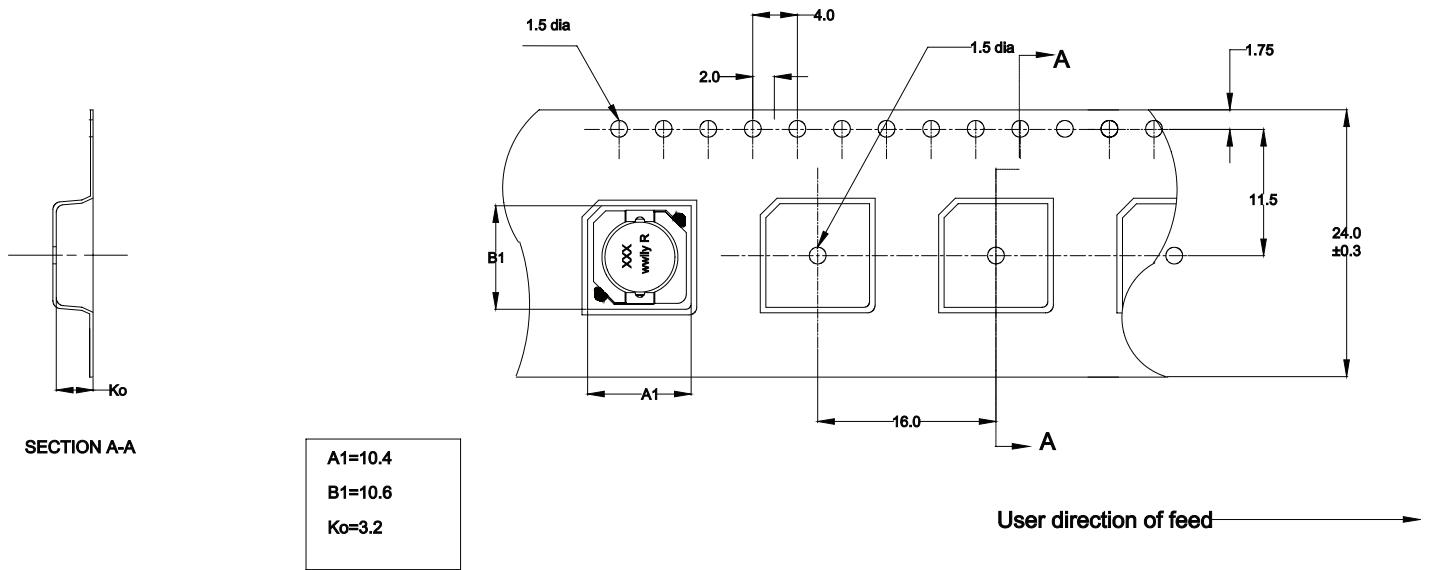
Part marking: inductance value in uH. R = decimal point. If no R is present then last character equals number of zeroes.

wwly = date code, R = revision level

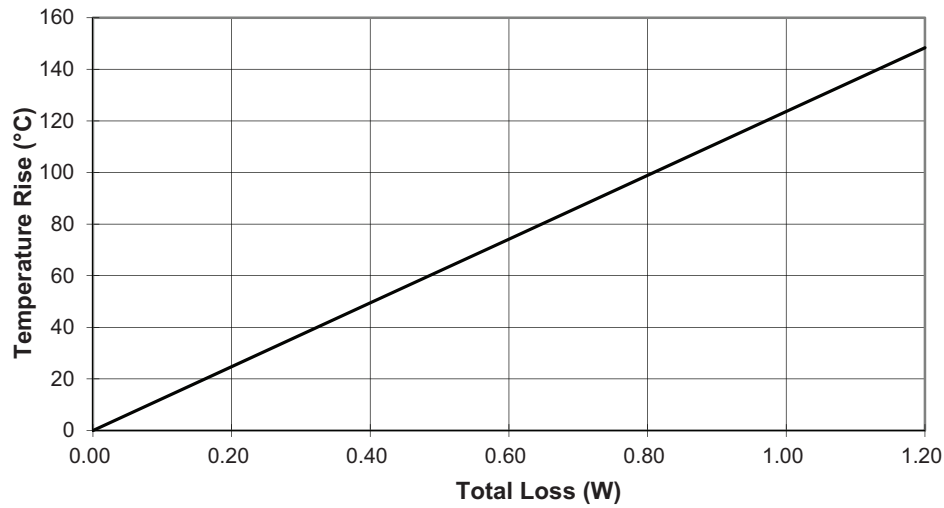
Do not route traces or vias underneath the inductor

Packaging information (mm)

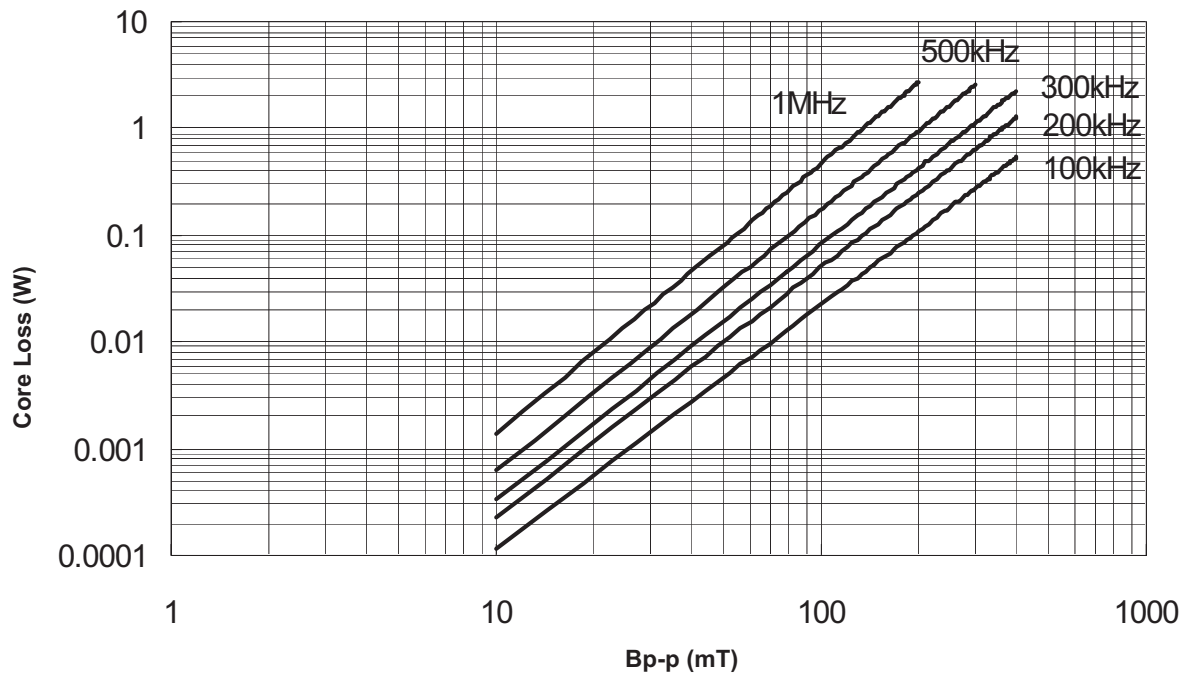
Supplied in tape and reel packaging , 1000 parts per 13" diameter reel



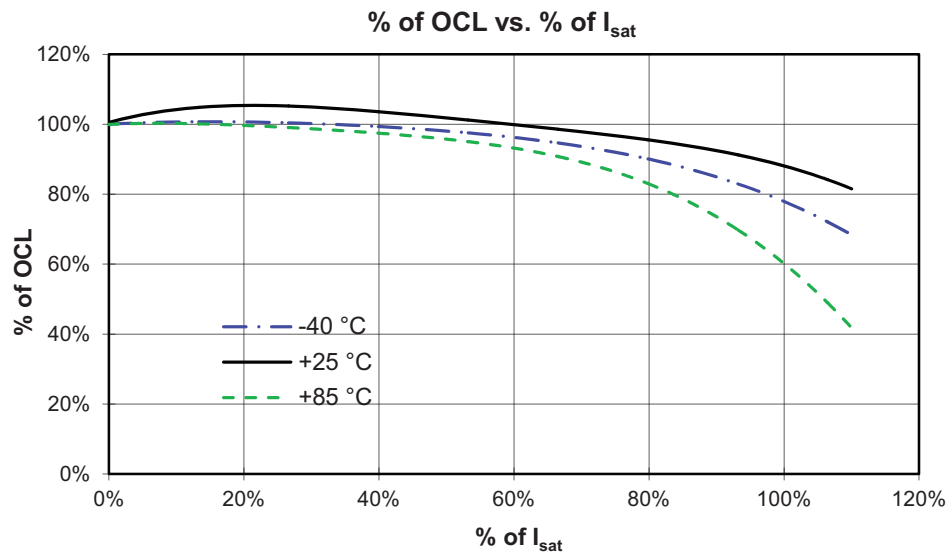
Temperature rise vs. total loss



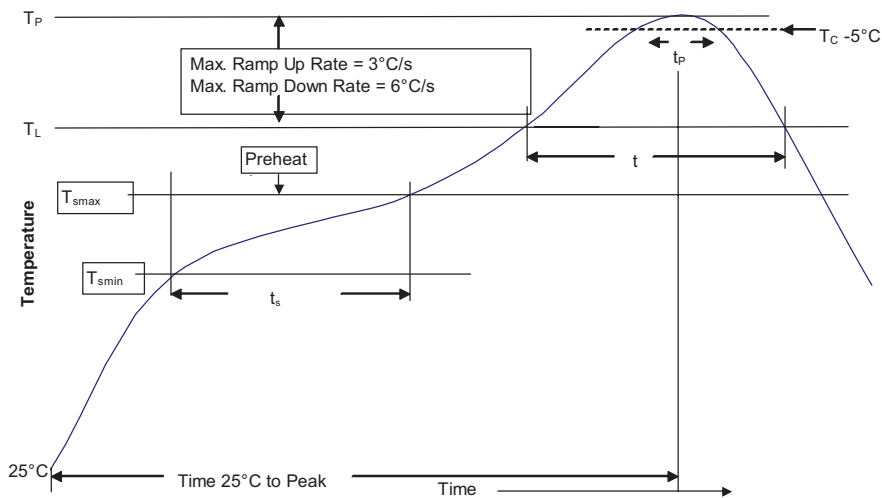
### Core loss vs. $B_{p-p}$



### 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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