

### Description

- 165°C maximum total temperature operation
- Five sizes of Automotive grade shielded drum core inductors
- Inductance range from 0.28uH to 1000uH
- Current range up to 56 Amperes
- Mechanical secure mounting for high shock and vibration environments
- Good thermal dispersion with thermal conductive epoxy
- Customized dual winding versions available upon request for SEPIC or Flyback configurations

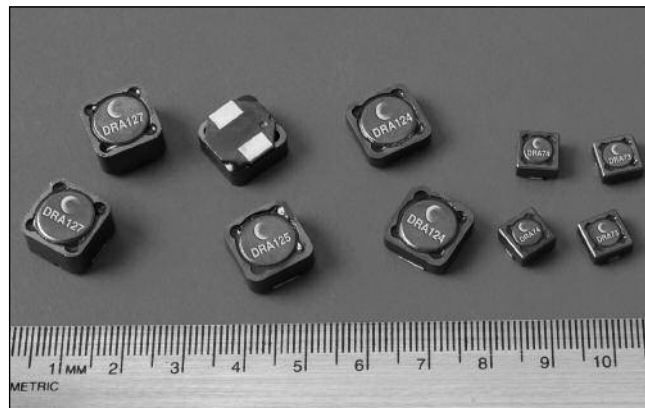


### Applications

- Automotive Electronics (under the hood, interior/exterior)
- Telematics
- DC-DC converters
- Buck, boost, forward, and resonant converters
- Noise filtering and filter chokes

### Environmental Data

- Storage temperature range: -40°C to +165°C
- Operating temperature range: -40°C to +165°C (range is application specific)
- Solder reflow temperature: +260°C max. for 10 seconds max.
- Complies with AEC-Q200 standard



### Packaging

- Supplied in tape and reel packaging, 1350 (DRA73), 1100 (DRA74), 750 (DRA124), 600 (DRA125), and 350 (DRA127) per reel

| Part Number | Rated Inductance | OCL (1)<br>μH<br>+/-20% | Irms (2)<br>Amperes | Isat (3)<br>Amperes | Isat (4)<br>Amperes | DCR (5)<br>(Ω)<br>Typ. | K-factor (6) |
|-------------|------------------|-------------------------|---------------------|---------------------|---------------------|------------------------|--------------|
| DRA73-R33-R | 0.33             | 0.29                    | 8.42                | 14.80               | 11.84               | 0.0040                 | 60.6         |
| DRA73-1R0-R | 1.00             | 0.91                    | 6.50                | 8.22                | 6.58                | 0.0067                 | 33.7         |
| DRA73-1R5-R | 1.50             | 1.36                    | 5.39                | 6.73                | 5.38                | 0.0097                 | 27.5         |
| DRA73-2R2-R | 2.20             | 2.52                    | 4.18                | 4.93                | 3.95                | 0.016                  | 20.2         |
| DRA73-3R3-R | 3.30             | 3.18                    | 3.59                | 4.35                | 3.48                | 0.022                  | 17.8         |
| DRA73-4R7-R | 4.70             | 4.86                    | 2.92                | 3.52                | 2.82                | 0.033                  | 14.4         |
| DRA73-6R8-R | 6.80             | 6.63                    | 2.62                | 2.96                | 2.37                | 0.041                  | 12.1         |
| DRA73-8R2-R | 8.20             | 8.06                    | 2.30                | 2.74                | 2.19                | 0.053                  | 11.2         |
| DRA73-100-R | 10.0             | 10.27                   | 2.11                | 2.39                | 1.91                | 0.064                  | 9.8          |
| DRA73-150-R | 15.0             | 14.98                   | 1.74                | 2.00                | 1.60                | 0.094                  | 8.2          |
| DRA73-220-R | 22.0             | 22.39                   | 1.42                | 1.64                | 1.32                | 0.141                  | 6.7          |
| DRA73-330-R | 33.0             | 31.84                   | 1.25                | 1.35                | 1.08                | 0.183                  | 5.5          |
| DRA73-470-R | 47.0             | 47.83                   | 1.02                | 1.10                | 0.884               | 0.275                  | 4.5          |
| DRA73-680-R | 68.0             | 66.89                   | 0.845               | 0.937               | 0.749               | 0.397                  | 3.8          |
| DRA73-820-R | 82.0             | 83.77                   | 0.731               | 0.851               | 0.680               | 0.530                  | 3.5          |
| DRA73-101-R | 100              | 101.7                   | 0.682               | 0.763               | 0.610               | 0.609                  | 3.1          |
| DRA73-151-R | 150              | 151.1                   | 0.551               | 0.632               | 0.506               | 0.932                  | 2.6          |
| DRA73-221-R | 220              | 218.8                   | 0.479               | 0.510               | 0.408               | 1.23                   | 2.1          |
| DRA73-331-R | 330              | 326.4                   | 0.391               | 0.423               | 0.338               | 1.85                   | 1.7          |
| DRA73-471-R | 470              | 472.6                   | 0.326               | 0.354               | 0.283               | 2.67                   | 1.4          |
| DRA73-681-R | 680              | 682.9                   | 0.270               | 0.297               | 0.238               | 3.89                   | 1.2          |
| DRA73-821-R | 820              | 825.3                   | 0.252               | 0.267               | 0.214               | 4.46                   | 1.1          |
| DRA73-102-R | 1000             | 991.9                   | 0.235               | 0.239               | 0.192               | 5.15                   | 1.0          |

(1) Open Circuit Inductance test parameters: 100kHz, 0.25V, 0.0Adc, tolerance is ±20%

(2) Irms: 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 165°C under worst case operating conditions verified in the end application.

(3) Isat Amperes peak for approximately 30% rolloff (@25°C)

(4) Isat Amperes peak for approximately 40% rolloff (@125°C)

(5) DCR limits @ 25°C

(6) 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).

(7) Part Number Definition: DRAxxx-xxx-R

DRAxxx = Product code and size; -xxx = Inductance value in uH;

R = decimal point; If no R is present, third character = # of zeros.

-R suffix = RoHS compliant

| Part Number  | Rated Inductance | OCL (1)<br>μH<br>+/-20% | Irms (2)<br>Amperes | Isat (3)<br>Amperes | Isat (4)<br>Amperes | DCR (5)<br>(Ω)<br>Typ. | K-factor (6) |
|--------------|------------------|-------------------------|---------------------|---------------------|---------------------|------------------------|--------------|
| DRA74-R33-R  | 0.33             | 0.288                   | 7.26                | 18.40               | 14.72               | 0.0054                 | 52.6         |
| DRA74-1R0-R  | 1.00             | 0.897                   | 6.01                | 10.22               | 8.18                | 0.0078                 | 29.2         |
| DRA74-1R5-R  | 1.50             | 1.31                    | 5.55                | 8.36                | 6.69                | 0.0092                 | 23.9         |
| DRA74-2R2-R  | 2.20             | 2.33                    | 4.82                | 6.13                | 4.91                | 0.012                  | 17.5         |
| DRA74-3R3-R  | 3.30             | 3.05                    | 4.16                | 5.41                | 4.33                | 0.016                  | 15.5         |
| DRA74-4R7-R  | 4.70             | 4.68                    | 3.41                | 4.38                | 3.50                | 0.024                  | 12.5         |
| DRA74-6R8-R  | 6.80             | 6.51                    | 2.91                | 3.68                | 2.94                | 0.034                  | 10.5         |
| DRA74-8R2-R  | 8.20             | 8.51                    | 2.66                | 3.17                | 2.54                | 0.040                  | 9.1          |
| DRA74-100-R  | 10.0             | 9.62                    | 2.56                | 2.97                | 2.37                | 0.043                  | 8.5          |
| DRA74-150-R  | 15.0             | 15.14                   | 2.06                | 2.36                | 1.89                | 0.067                  | 6.7          |
| DRA74-220-R  | 22.0             | 22.25                   | 1.68                | 1.96                | 1.57                | 0.100                  | 5.6          |
| DRA74-330-R  | 33.0             | 33.21                   | 1.37                | 1.61                | 1.29                | 0.151                  | 4.6          |
| DRA74-470-R  | 47.0             | 46.56                   | 1.14                | 1.37                | 1.099               | 0.219                  | 3.9          |
| DRA74-680-R  | 68.0             | 68.37                   | 0.996               | 1.108               | 0.887               | 0.286                  | 3.2          |
| DRA74-820-R  | 82.0             | 81.45                   | 0.879               | 1.034               | 0.827               | 0.367                  | 3.0          |
| DRA74-101-R  | 100              | 98.5                    | 0.822               | 0.929               | 0.743               | 0.419                  | 2.7          |
| DRA74-151-R  | 150              | 150.9                   | 0.661               | 0.748               | 0.598               | 0.648                  | 2.1          |
| DRA74-221-R  | 220              | 218.9                   | 0.544               | 0.626               | 0.501               | 0.96                   | 1.8          |
| DRA74-331-R  | 330              | 328.9                   | 0.435               | 0.514               | 0.411               | 1.50                   | 1.5          |
| DRA74-471-R  | 470              | 471.5                   | 0.383               | 0.420               | 0.336               | 1.93                   | 1.2          |
| DRA74-681-R  | 680              | 682.8                   | 0.315               | 0.352               | 0.282               | 2.86                   | 1.0          |
| DRA74-821-R  | 820              | 815.0                   | 0.279               | 0.327               | 0.262               | 3.63                   | 0.9          |
| DRA74-102-R  | 1000             | 1001.7                  | 0.260               | 0.292               | 0.234               | 4.19                   | 0.8          |
| DRA124-R47-R | 0.47             | 0.423                   | 15.15               | 30.80               | 24.6                | 0.0019                 | 16.7         |
| DRA124-1R0-R | 1.00             | 0.821                   | 11.65               | 22.00               | 17.6                | 0.0031                 | 12.0         |
| DRA124-1R5-R | 1.50             | 1.36                    | 9.36                | 17.11               | 13.7                | 0.0049                 | 9.3          |
| DRA124-2R2-R | 2.20             | 2.04                    | 7.64                | 14.00               | 11.2                | 0.007                  | 7.6          |
| DRA124-3R3-R | 3.30             | 2.79                    | 6.94                | 11.85               | 9.48                | 0.009                  | 6.4          |
| DRA124-4R7-R | 4.70             | 4.74                    | 5.47                | 9.06                | 7.25                | 0.014                  | 4.9          |
| DRA124-6R8-R | 6.80             | 7.28                    | 4.46                | 7.33                | 5.87                | 0.021                  | 4.0          |
| DRA124-8R2-R | 8.20             | 8.88                    | 3.87                | 6.70                | 5.36                | 0.028                  | 3.6          |
| DRA124-100-R | 10.0             | 10.37                   | 3.67                | 6.16                | 4.93                | 0.031                  | 3.3          |
| DRA124-150-R | 15.0             | 14.10                   | 3.10                | 5.31                | 4.25                | 0.044                  | 2.9          |
| DRA124-220-R | 22.0             | 23.00                   | 2.44                | 4.16                | 3.33                | 0.071                  | 2.3          |
| DRA124-330-R | 33.0             | 34.13                   | 1.98                | 3.42                | 2.74                | 0.108                  | 1.9          |
| DRA124-470-R | 47.0             | 46.27                   | 1.78                | 2.91                | 2.325               | 0.134                  | 1.6          |
| DRA124-680-R | 68.0             | 69.77                   | 1.454               | 2.369               | 1.895               | 0.201                  | 1.3          |
| DRA124-820-R | 82.0             | 80.57                   | 1.285               | 2.232               | 1.786               | 0.257                  | 1.2          |
| DRA124-101-R | 100              | 98.8                    | 1.199               | 2.000               | 1.600               | 0.296                  | 1.1          |
| DRA124-151-R | 150              | 151.7                   | 0.967               | 1.621               | 1.297               | 0.454                  | 0.9          |
| DRA124-221-R | 220              | 209.6                   | 0.865               | 1.363               | 1.090               | 0.568                  | 0.7          |
| DRA124-331-R | 330              | 326.9                   | 0.690               | 1.092               | 0.874               | 0.892                  | 0.6          |
| DRA124-471-R | 470              | 473.0                   | 0.568               | 0.911               | 0.729               | 1.32                   | 0.5          |
| DRA124-681-R | 680              | 682.1                   | 0.466               | 0.759               | 0.607               | 1.96                   | 0.4          |
| DRA124-821-R | 820              | 826.7                   | 0.406               | 0.697               | 0.557               | 2.57                   | 0.4          |
| DRA124-102-R | 1000             | 1001.0                  | 0.380               | 0.629               | 0.503               | 2.94                   | 0.3          |
| DRA125-R47-R | 0.47             | 0.453                   | 18.47               | 33.20               | 26.56               | 0.0016                 | 16.7         |
| DRA125-1R0-R | 1.00             | 0.854                   | 15.94               | 23.71               | 18.97               | 0.0021                 | 12.0         |
| DRA125-1R5-R | 1.50             | 1.41                    | 12.89               | 18.44               | 14.76               | 0.0033                 | 9.3          |
| DRA125-2R2-R | 2.20             | 2.12                    | 10.61               | 15.09               | 12.07               | 0.0048                 | 7.6          |
| DRA125-3R3-R | 3.30             | 2.89                    | 9.69                | 12.77               | 10.22               | 0.0058                 | 6.4          |
| DRA125-4R7-R | 4.70             | 4.90                    | 7.67                | 9.76                | 7.81                | 0.0092                 | 4.9          |
| DRA125-6R8-R | 6.80             | 6.23                    | 6.81                | 8.74                | 6.99                | 0.012                  | 4.4          |
| DRA125-8R2-R | 8.20             | 7.49                    | 6.41                | 7.90                | 6.32                | 0.013                  | 4.0          |
| DRA125-100-R | 10.0             | 9.22                    | 5.57                | 7.22                | 5.77                | 0.017                  | 3.6          |

- (1) Open Circuit Inductance test parameters: 100kHz, 0.25V, 0.0Adc, tolerance is ±20%
- (2) Irms: 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 165°C under worst case operating conditions verified in the end application.
- (3) Isat Amperes peak for approximately 30% rolloff (@25°C)
- (4) Isat Amperes peak for approximately 40% rolloff (@125°C)

- (5) DCR limits @ 25°C
- (6) K-factor: Used to determine B p-p for core loss (see graph).  
 $B\ p-p = K \cdot L \cdot \Delta I$ ,  $B\ p-p(mT)$ ,  $K$ : (K factor from table),  $L$ : (Inductance in μH),  
 $\Delta I$  (Peak to peak ripple current in Amps).
- (7) Part Number Definition: DRAxxx-xxx-R  
 DRAxxx = 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

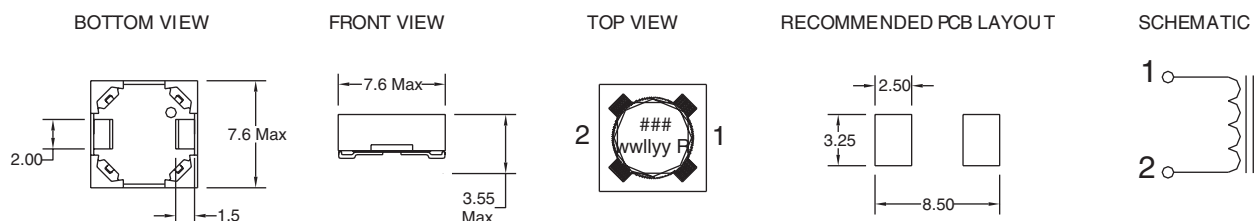
| Part Number  | Rated Inductance | OCL (1)<br>μH<br>+/-20% | I <sub>rms</sub> (2)<br>Amperes | Isat (3)<br>Amperes | Isat (4)<br>Amperes | DCR (5)<br>(Ω)<br>Typ. | K-factor (6) |
|--------------|------------------|-------------------------|---------------------------------|---------------------|---------------------|------------------------|--------------|
| DRA125-150-R | 15.0             | 14.67                   | 4.45                            | 5.72                | 4.58                | 0.027                  | 2.9          |
| DRA125-220-R | 22.0             | 20.65                   | 3.95                            | 4.74                | 3.79                | 0.035                  | 2.4          |
| DRA125-330-R | 33.0             | 31.47                   | 3.19                            | 3.86                | 3.09                | 0.053                  | 1.9          |
| DRA125-470-R | 47.0             | 47.83                   | 2.59                            | 3.13                | 2.506               | 0.081                  | 1.6          |
| DRA125-680-R | 68.0             | 68.48                   | 2.125                           | 2.635               | 2.108               | 0.120                  | 1.3          |
| DRA125-820-R | 82.0             | 80.86                   | 2.005                           | 2.406               | 1.925               | 0.135                  | 1.2          |
| DRA125-101-R | 100              | 97.6                    | 1.745                           | 2.213               | 1.771               | 0.178                  | 1.1          |
| DRA125-151-R | 150              | 150.0                   | 1.409                           | 1.785               | 1.428               | 0.273                  | 0.9          |
| DRA125-221-R | 220              | 222.8                   | 1.142                           | 1.469               | 1.175               | 0.416                  | 0.7          |
| DRA125-331-R | 330              | 325.1                   | 0.998                           | 1.194               | 0.955               | 0.543                  | 0.6          |
| DRA125-471-R | 470              | 466.3                   | 0.826                           | 1.006               | 0.805               | 0.79                   | 0.5          |
| DRA125-681-R | 680              | 683.3                   | 0.673                           | 0.834               | 0.667               | 1.20                   | 0.4          |
| DRA125-821-R | 820              | 813.6                   | 0.632                           | 0.758               | 0.606               | 1.36                   | 0.4          |
| DRA125-102-R | 1000             | 992.8                   | 0.552                           | 0.695               | 0.556               | 1.78                   | 0.4          |
| DRA127-R47-R | 0.47             | 0.413                   | 22.50                           | 56.0                | 44.8                | 0.0012                 | 14.3         |
| DRA127-1R0-R | 1.00             | 0.772                   | 19.22                           | 40.0                | 32.0                | 0.0017                 | 10.2         |
| DRA127-1R5-R | 1.50             | 1.27                    | 15.32                           | 31.1                | 24.9                | 0.0027                 | 7.9          |
| DRA127-2R2-R | 2.20             | 1.92                    | 12.52                           | 25.5                | 20.4                | 0.0040                 | 6.5          |
| DRA127-3R3-R | 3.30             | 3.51                    | 9.59                            | 18.7                | 14.93               | 0.0068                 | 4.8          |
| DRA127-4R7-R | 4.70             | 4.58                    | 8.14                            | 16.5                | 13.18               | 0.0094                 | 4.2          |
| DRA127-6R8-R | 6.80             | 6.72                    | 7.32                            | 13.3                | 10.67               | 0.012                  | 3.4          |
| DRA127-8R2-R | 8.20             | 8.33                    | 6.33                            | 12.2                | 9.74                | 0.016                  | 3.1          |
| DRA127-100-R | 10.0             | 9.63                    | 6.02                            | 11.2                | 8.96                | 0.017                  | 2.9          |
| DRA127-150-R | 15.0             | 14.90                   | 4.83                            | 9.03                | 7.23                | 0.027                  | 2.3          |
| DRA127-220-R | 22.0             | 21.47                   | 3.98                            | 7.57                | 6.05                | 0.040                  | 1.9          |
| DRA127-330-R | 33.0             | 32.01                   | 3.22                            | 6.22                | 4.98                | 0.060                  | 1.6          |
| DRA127-470-R | 47.0             | 47.91                   | 2.62                            | 5.09                | 4.07                | 0.091                  | 1.3          |
| DRA127-680-R | 68.0             | 68.22                   | 2.333                           | 4.18                | 3.34                | 0.115                  | 1.1          |
| DRA127-820-R | 82.0             | 83.91                   | 2.008                           | 3.84                | 3.07                | 0.155                  | 1.0          |
| DRA127-101-R | 100              | 100.8                   | 1.888                           | 3.46                | 2.77                | 0.175                  | 0.9          |
| DRA127-151-R | 150              | 151.2                   | 1.524                           | 2.83                | 2.26                | 0.269                  | 0.7          |
| DRA127-221-R | 220              | 219.8                   | 1.253                           | 2.35                | 1.88                | 0.398                  | 0.6          |
| DRA127-331-R | 330              | 328.3                   | 1.011                           | 1.93                | 1.54                | 0.612                  | 0.5          |
| DRA127-471-R | 470              | 474.5                   | 0.827                           | 1.62                | 1.29                | 0.91                   | 0.4          |
| DRA127-681-R | 680              | 676.6                   | 0.736                           | 1.33                | 1.06                | 1.15                   | 0.3          |
| DRA127-821-R | 820              | 824.6                   | 0.637                           | 1.22                | 0.978               | 1.54                   | 0.3          |
| DRA127-102-R | 1000             | 998.7                   | 0.598                           | 1.10                | 0.878               | 1.75                   | 0.3          |

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- (2) I<sub>rms</sub>: 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 165°C under worst case operating conditions verified in the end application.
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- (5) DCR limits @ 25°C
- (6) 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).
- (7) Part Number Definition: DRAxxx-xxx-R  
DRAxxx = 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

## Mechanical Diagrams

### DRA73 Series

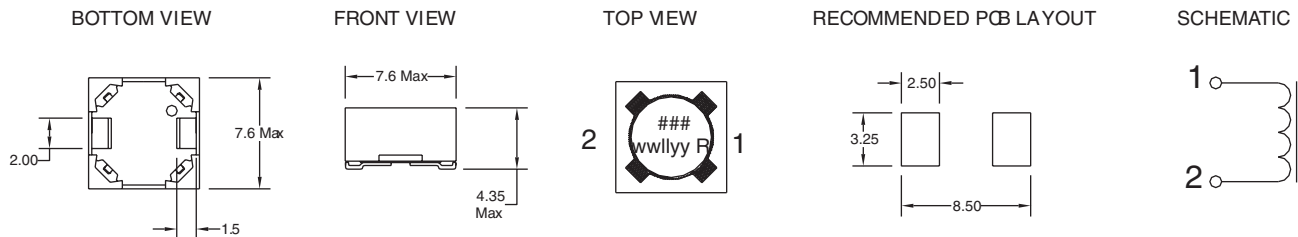


Dimensions in Millimeters.

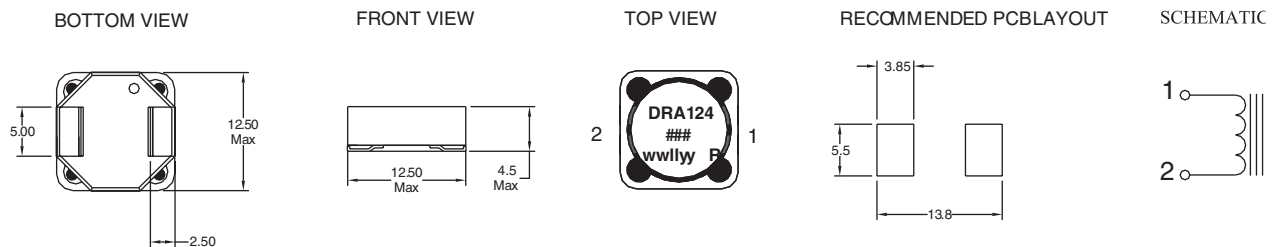
### = Inductance value in μH. R = decimal point.  
If no R is present third character = # of zeros  
wwllyy = (date code) R = revision level

## Mechanical Diagrams

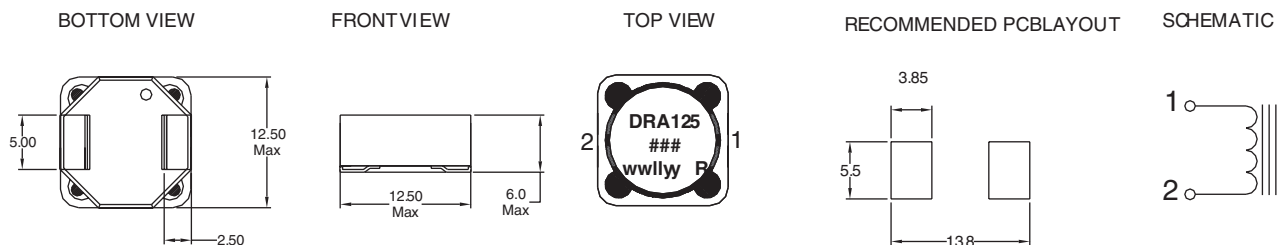
### DRA74 Series



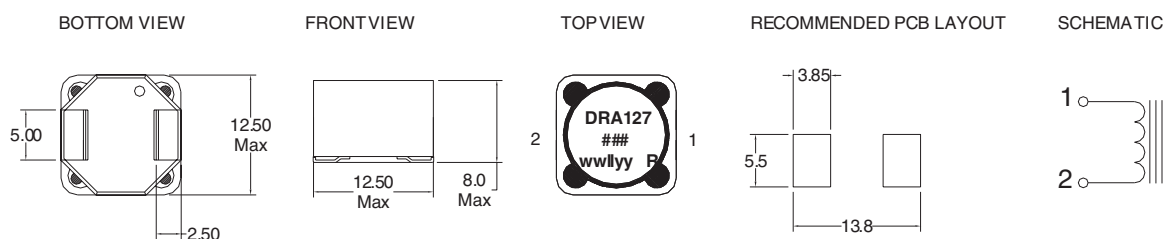
### DRA124 Series



### DRA125 Series



### DRA127 Series

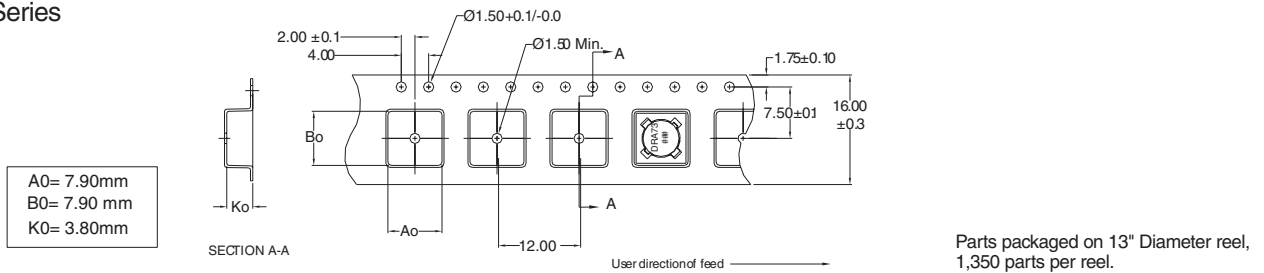


Dimensions in Millimeters.

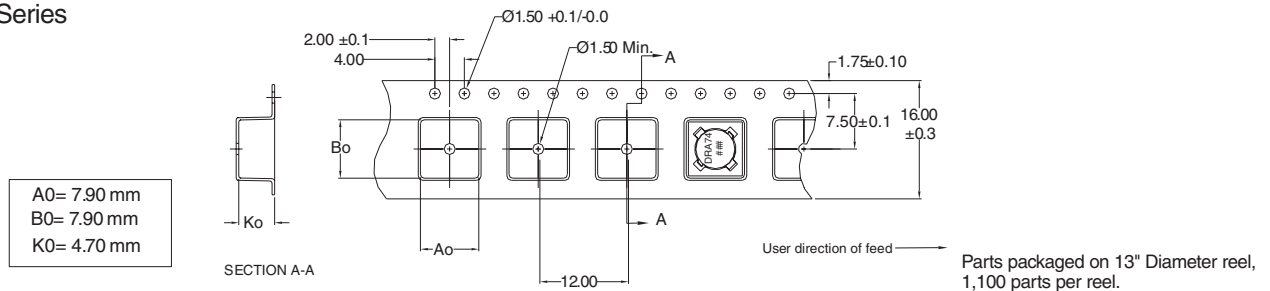
### = Inductance value in uH. R = decimal point.  
 If no R is present third character = # of zeros  
 wwllly = (date code) R = revision level

## Packaging Information

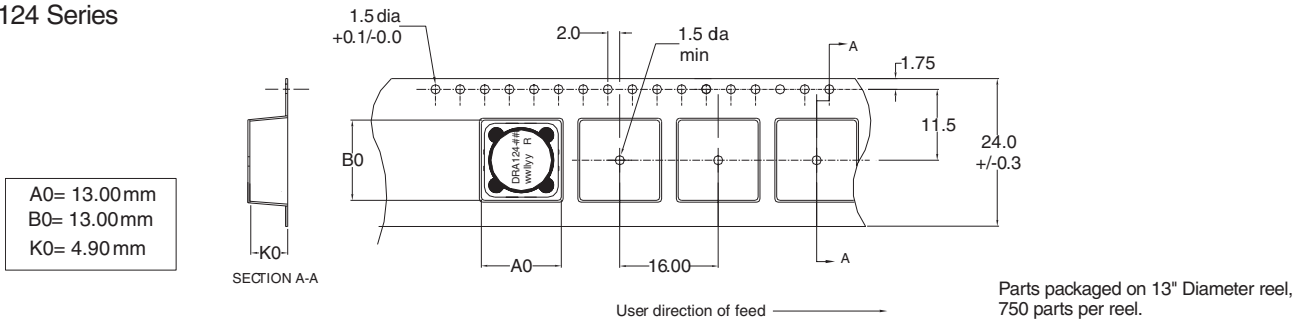
### DRA73 Series



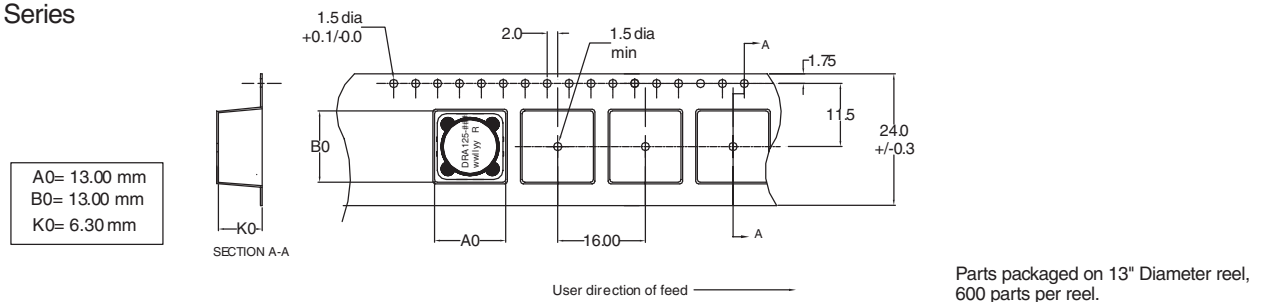
### DRA74 Series



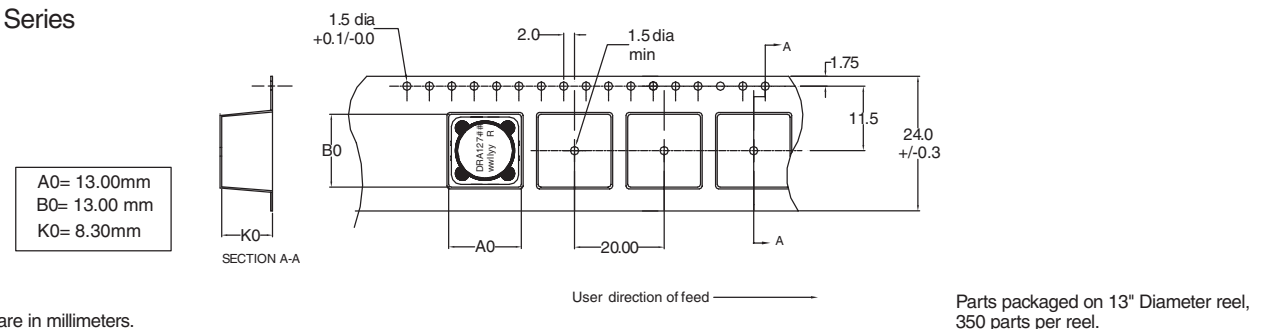
### DRA124 Series



### DRA125 Series

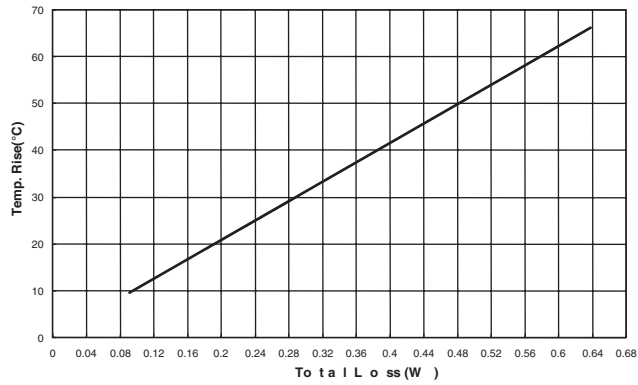


### DRA127 Series

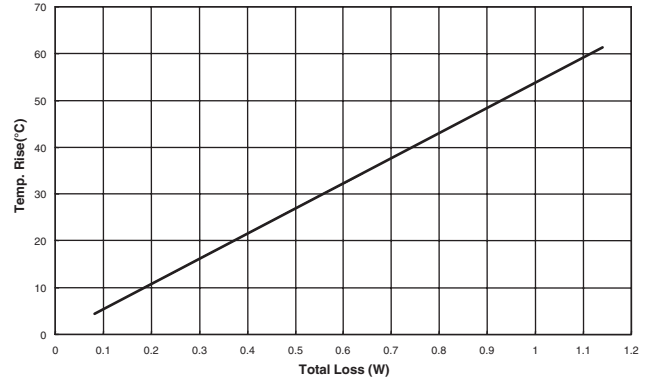


**Temperature Rise vs. Watt Loss**

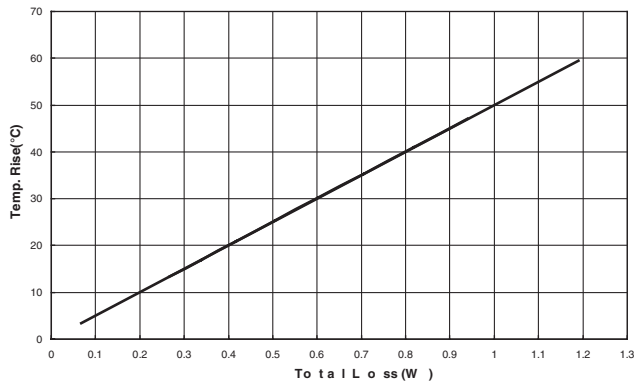
DRA 73 series



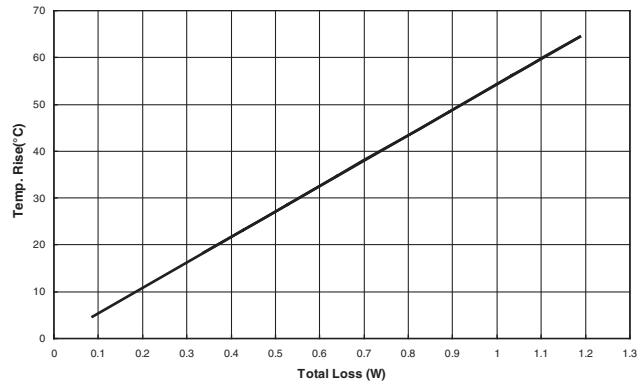
DRA 74 series



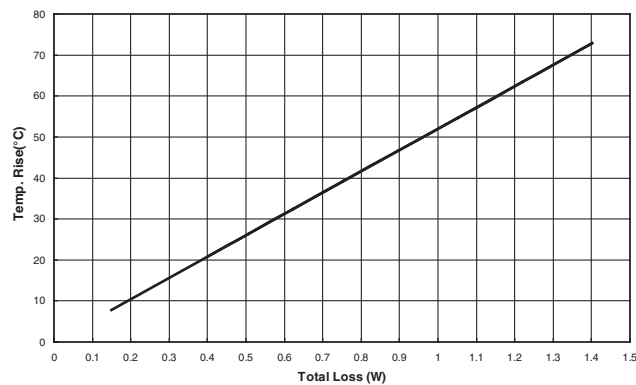
DRA 124 series



DRA 125 series

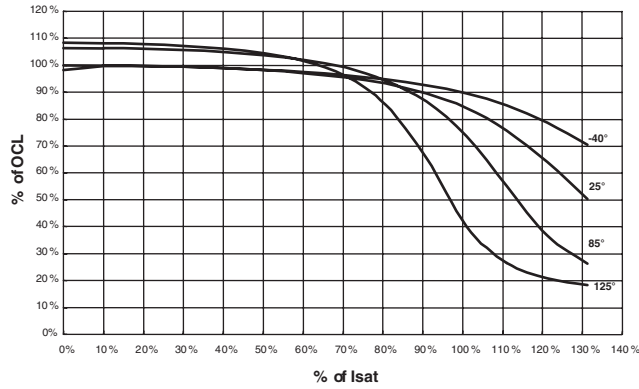


DRA 127 series

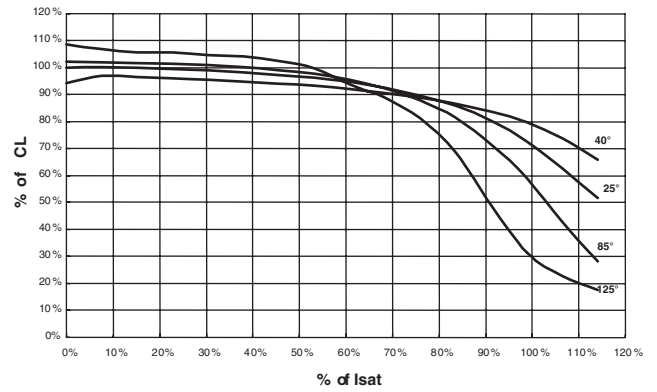


**Inductance Characteristics**

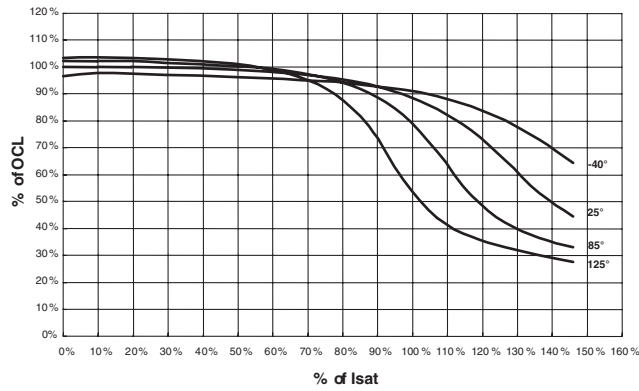
OCL vs Isat/DRA 73 series



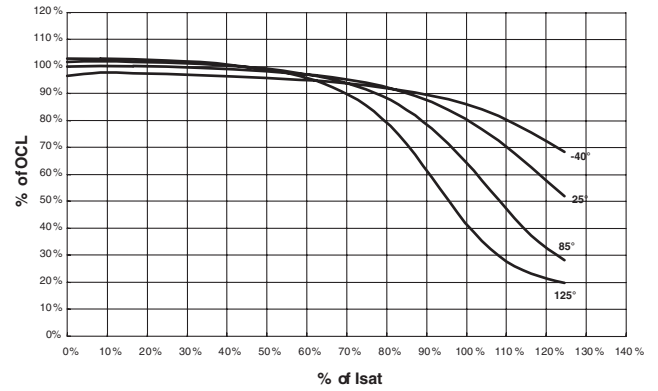
OCL vs Isat/DRA 74 series



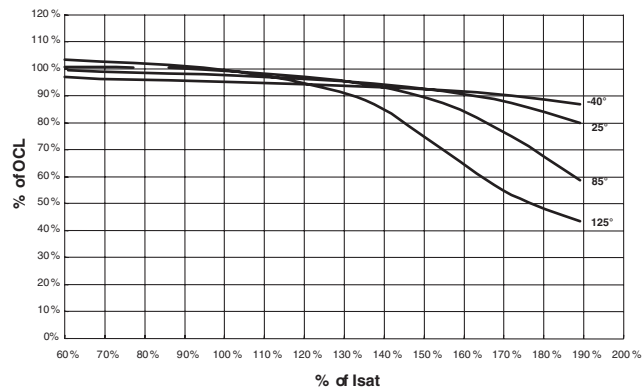
OCL vs Isat/DRA 124 series



OCL vs Isat/DRA 125 series

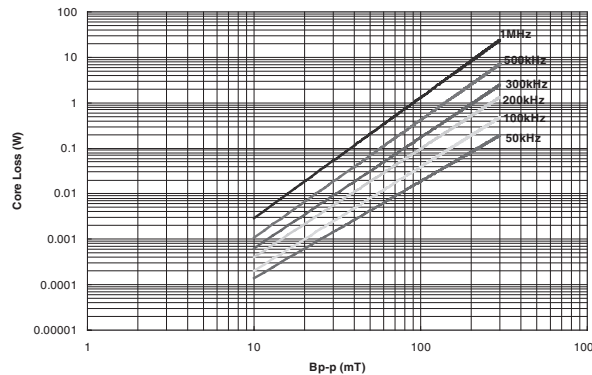


OCL vs Isat/DRA 127 series

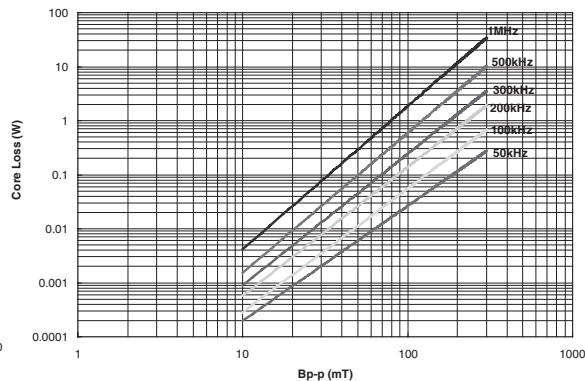


## Inductance Characteristics

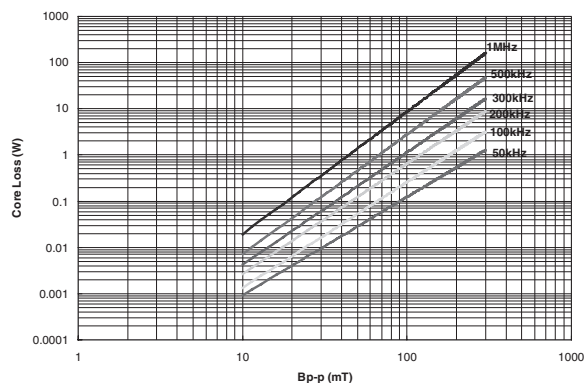
DRA 73 series



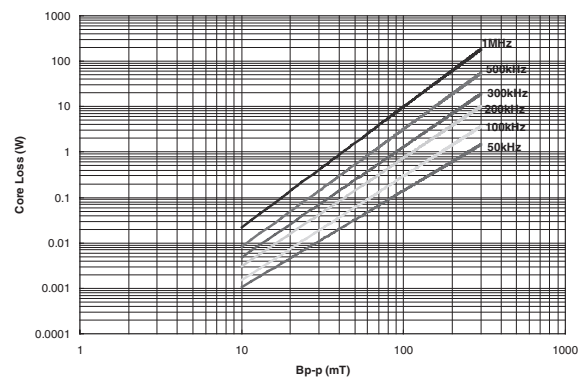
DRA 74 series



DRA 124 series



DRA 125 series



DRA 127 series

