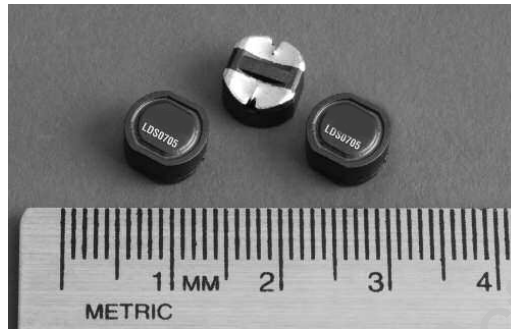


LDS0705

Shielded metalized drum core power inductors



Product features

- 7.8 mm x 7.0 mm x 5.0 mm shielded drum core
- Ferrite core material
- Metalized core mounting utilizes board space
- Inductance range from 0.82 μ H to 470 μ H
- Current range from 0.368 A to 8.57 A
- Frequency range up to 1 MHz

Applications

- Buck or Boost Inductor
- Noise filtering and output filter chokes
- Battery Power, DC-DC converters
- Notebook and laptop power
- Hand held devices
- Media players

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



Discontinued, Effective October 2018 or until inventory is depleted.
No replacement available.
DRA74-R possible alternate solution.

Product specifications

| Part Number | Rated Inductance (μH) | OCL (1) μH | I _{rms} (2) (A) | I _{sat} (3) (A) | DCR (Ω) @+20 °C (Typical) | K-factor (4) |
|----------------|-----------------------|------------|--------------------------|--------------------------|---------------------------|--------------|
| LDS0705-R82M-R | 0.82 | 0.861±20% | 7.68 | 8.57 | 0.0040 | 24.8 |
| LDS0705-1R5M-R | 1.5 | 1.42±20% | 6.17 | 6.67 | 0.0061 | 19.3 |
| LDS0705-2R2M-R | 2.2 | 2.13±20% | 5.06 | 5.45 | 0.009 | 15.8 |
| LDS0705-3R3M-R | 3.3 | 2.97±20% | 4.19 | 4.62 | 0.013 | 13.4 |
| LDS0705-4R7M-R | 4.7 | 5.08±20% | 3.32 | 3.53 | 0.021 | 10.2 |
| LDS0705-6R8M-R | 6.8 | 6.34±20% | 3.11 | 3.16 | 0.024 | 9.2 |
| LDS0705-8R2M-R | 8.2 | 7.75±20% | 2.67 | 2.86 | 0.033 | 8.3 |
| LDS0705-100M-R | 10.0 | 9.30±20% | 2.54 | 2.61 | 0.036 | 7.6 |
| LDS0705-150M-R | 15.0 | 14.78±20% | 2.04 | 2.07 | 0.056 | 6.0 |
| LDS0705-220M-R | 22.0 | 21.53±20% | 1.66 | 1.71 | 0.084 | 5.0 |
| LDS0705-330M-R | 33.0 | 32.50±20% | 1.48 | 1.40 | 0.107 | 4.0 |
| LDS0705-470M-R | 47.0 | 45.71±20% | 1.21 | 1.18 | 0.153 | 3.4 |
| LDS0705-680M-R | 68.0 | 69.76±20% | 0.985 | 0.952 | 0.240 | 2.8 |
| LDS0705-820M-R | 82.0 | 83.67±20% | 0.850 | 0.870 | 0.323 | 2.5 |
| LDS0705-101M-R | 100.0 | 98.9±20% | 0.808 | 0.800 | 0.357 | 2.3 |
| LDS0705-151M-R | 150.0 | 152.0±20% | 0.649 | 0.645 | 0.554 | 1.9 |
| LDS0705-221M-R | 220.0 | 216.5±20% | 0.584 | 0.541 | 0.68 | 1.6 |
| LDS0705-331M-R | 330.0 | 329.9±20% | 0.470 | 0.438 | 1.06 | 1.3 |
| LDS0705-471M-R | 470.0 | 467.0±20% | 0.387 | 0.368 | 1.56 | 1.1 |

(1) Open Circuit Inductance Test Parameters: 100 kHz, 0.1 V, 0.0 Adc.

(2) I_{rms}: DC current for an approximate ΔT of 30 °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} Amperes peak for approximately 15% rolloff (@+25 °C)

(4) K-factor: Used to determine B p-p for core loss (see graph).

B p-p = K²L²ΔI, B p-p(mT), K: (K factor from table), L: (Inductance in μH), ΔI(Peak to peak ripple current in Amps).

(5) Part Number Definition: LDS0705-xxx-R

LDS0705 = Product code and size; -xxx = Inductance value in uH;

R = decimal point; If no R is present, last character equals number of zeros.

M = Inductance tolerance +/- 20% -R suffix = RoHS compliant

Dimensions- mm

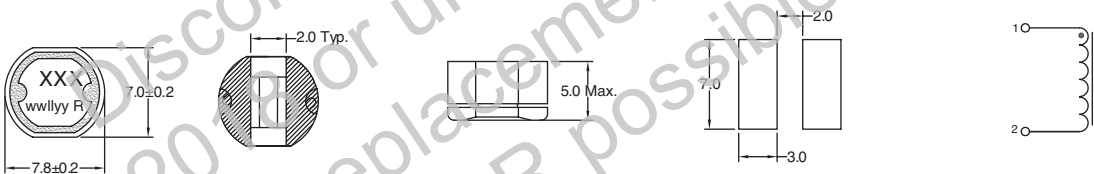
TOP VIEW

BOTTOM VIEW

SIDE VIEW

RECOMMENDED PCB LAYOUT

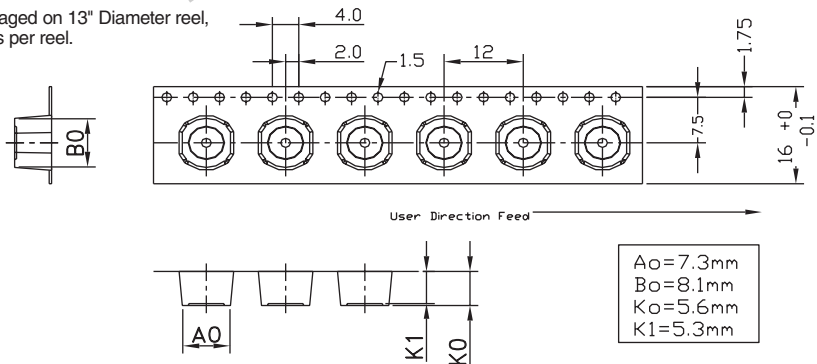
SCHEMATIC



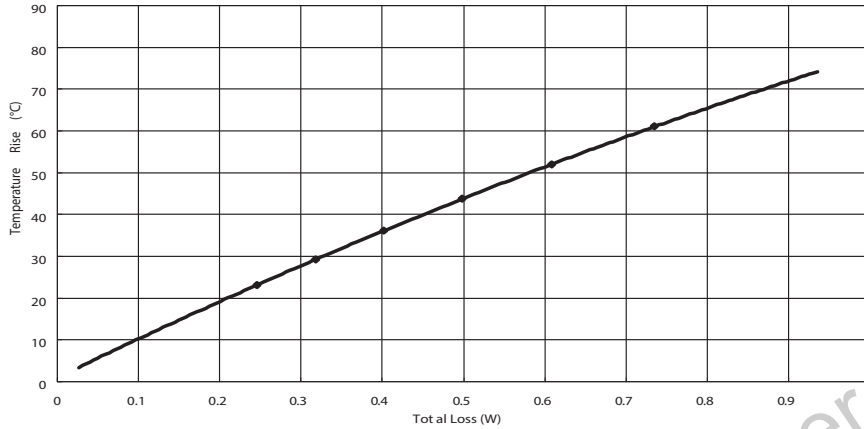
Marking: xxx = Inductance in uH. R = decimal point. If no R is present last character equals number of zeros. wwlllyy = Date code. R = Revision level.
Do not route traces or vias underneath the inductor

Packaging information- mm

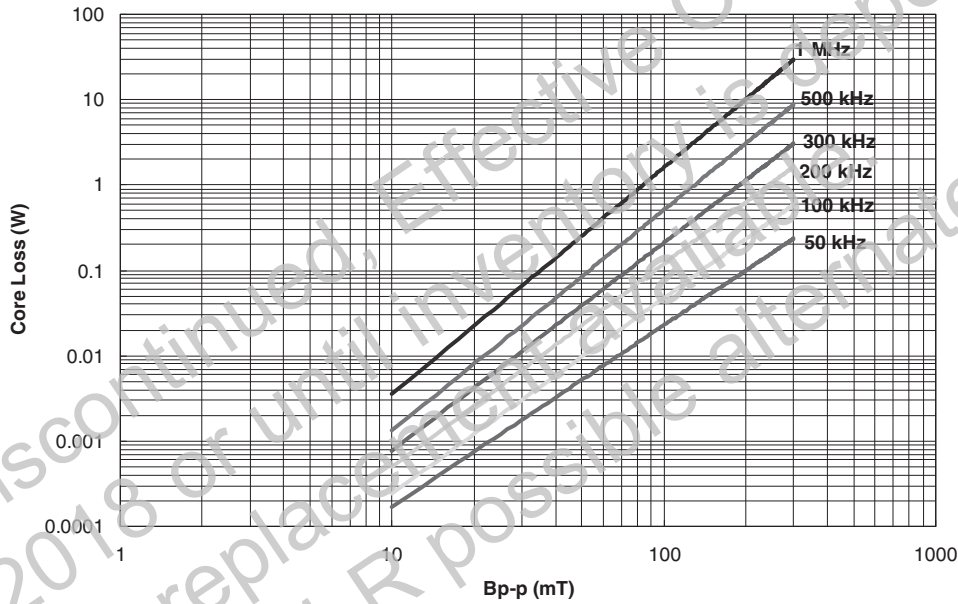
Parts packaged on 13" Diameter reel,
1,000 parts per reel.



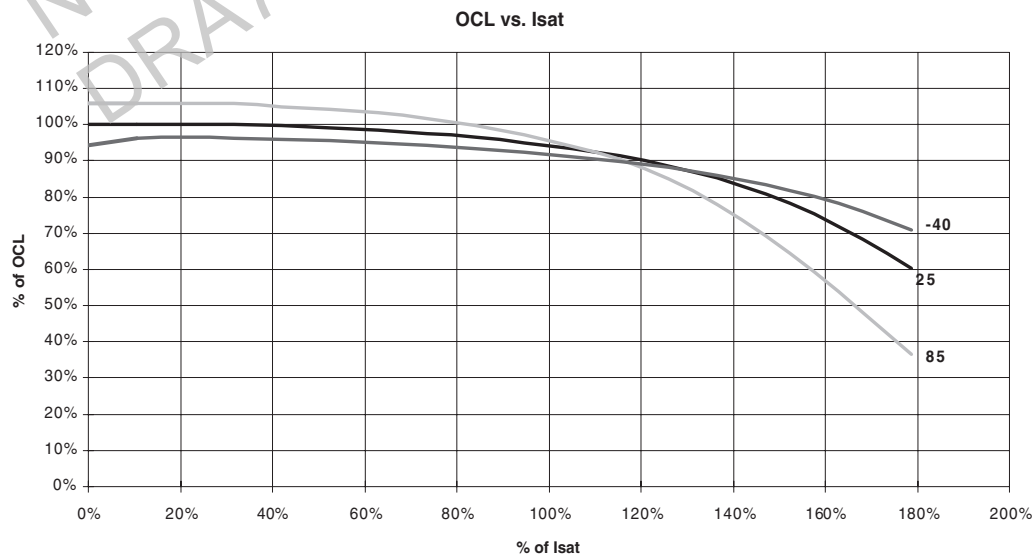
Temperature rise vs. total loss



Core loss vs Bp-p



Inductance characteristics



Solder Reflow Profile

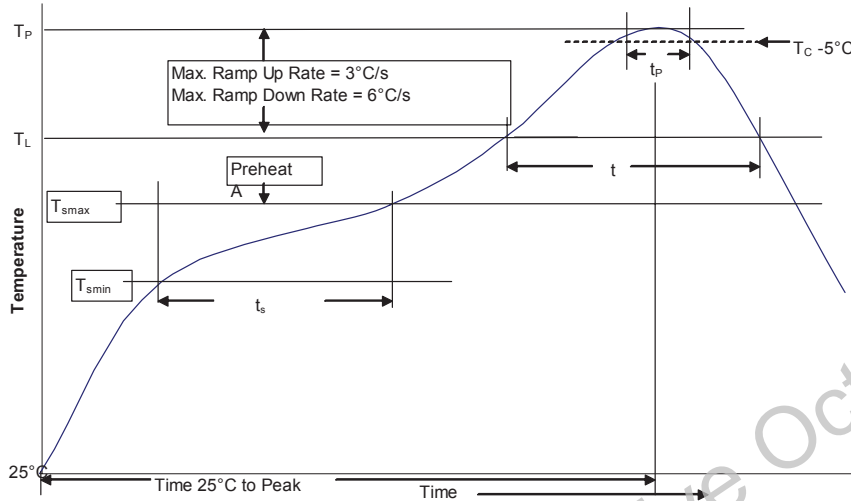


Table 1 - Standard SnPb Solder (T_p)

| Package Thickness | Volume mm^3 <350 | Volume mm^3 ≥ 350 |
|---------------------|---------------------------|---------------------------------|
| <2.5mm | 235°C | 220°C |
| $\geq 2.5\text{mm}$ | 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 | <ul style="list-style-type: none"> Temperature min. (T_{smin}) Temperature max. (T_{smax}) Time (T_{smin} to T_{smax}) (t_s) | <ul style="list-style-type: none"> 100°C 150°C 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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