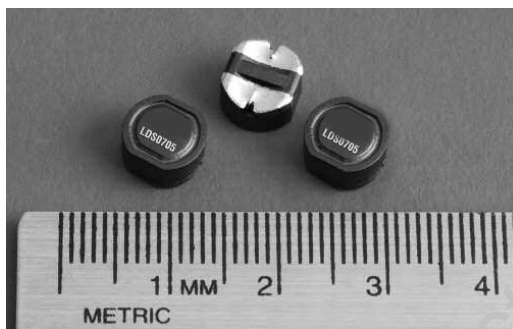


# LDS0705

## 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  $\mu$ H to 470  $\mu$ 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



## Product specifications

Part Number	Rated Inductance (μH)	OCL (1) μH	I <sub>rms</sub> (2) (A)	I <sub>sat</sub> (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<sub>rms</sub>: 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<sub>sat</sub> 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 = K\*L\*ΔI, 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

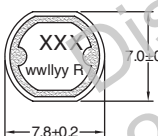
LDS0705 = Product code and size; -xxx = Inductance value in uH;

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

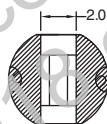
M = Inductance tolerance +/- 20% -R suffix = RoHS compliant

## Dimensions- mm

TOP VIEW



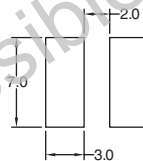
BOTTOM VIEW



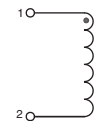
SIDE VIEW



RECOMMENDED PCB LAYOUT



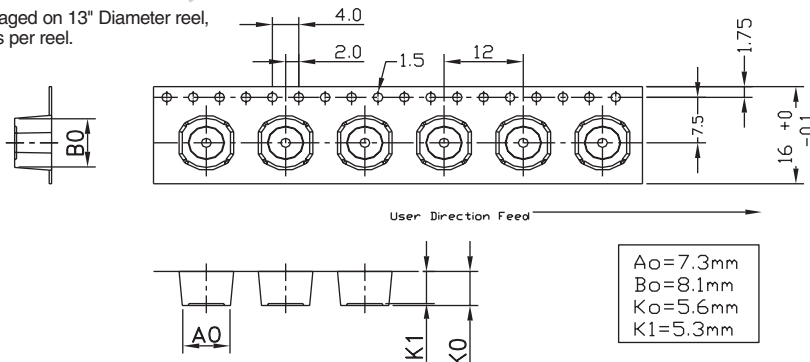
SCHEMATIC



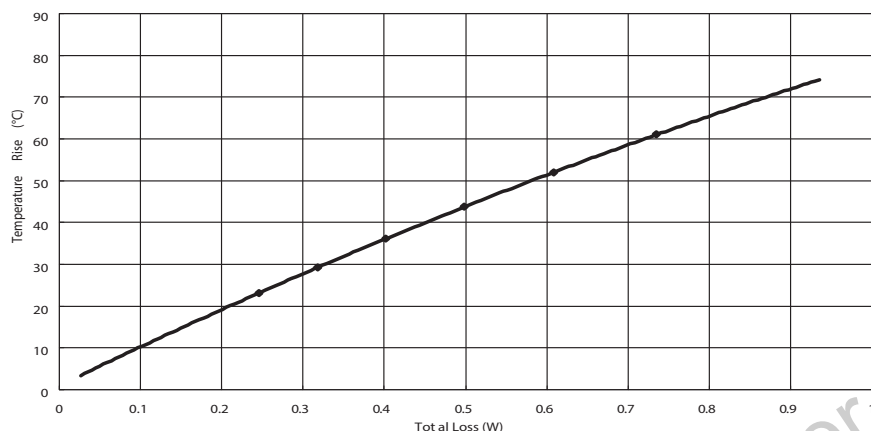
Marking: xxx = Inductance in uH. R = decimal point. If no R is present last character equals number of zeros. wwlllyy = Date code. R = Revision level.  
Do not route traces or vias underneath the inductor

## Packaging information- mm

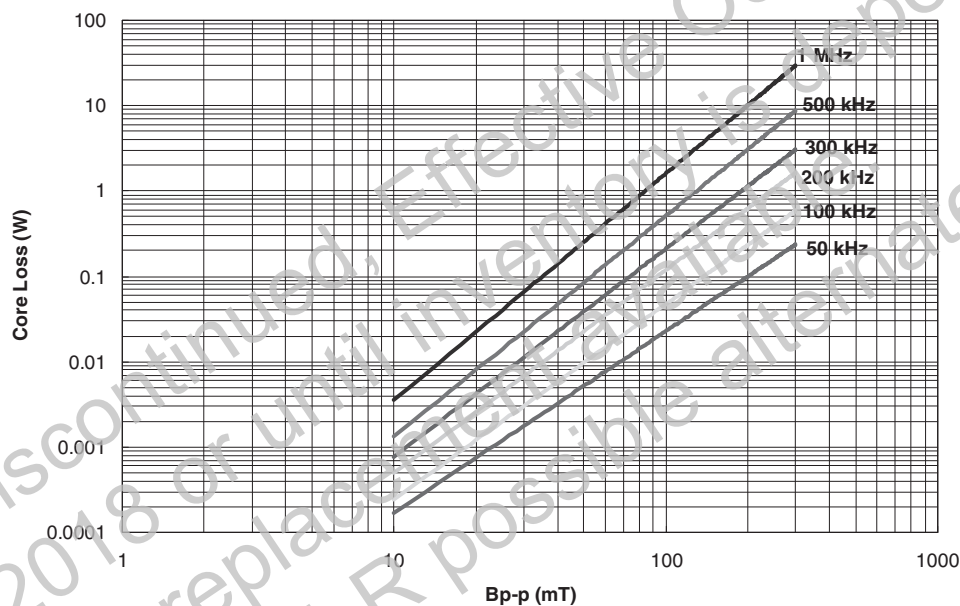
Parts packaged on 13" Diameter reel,  
1,000 parts per reel.



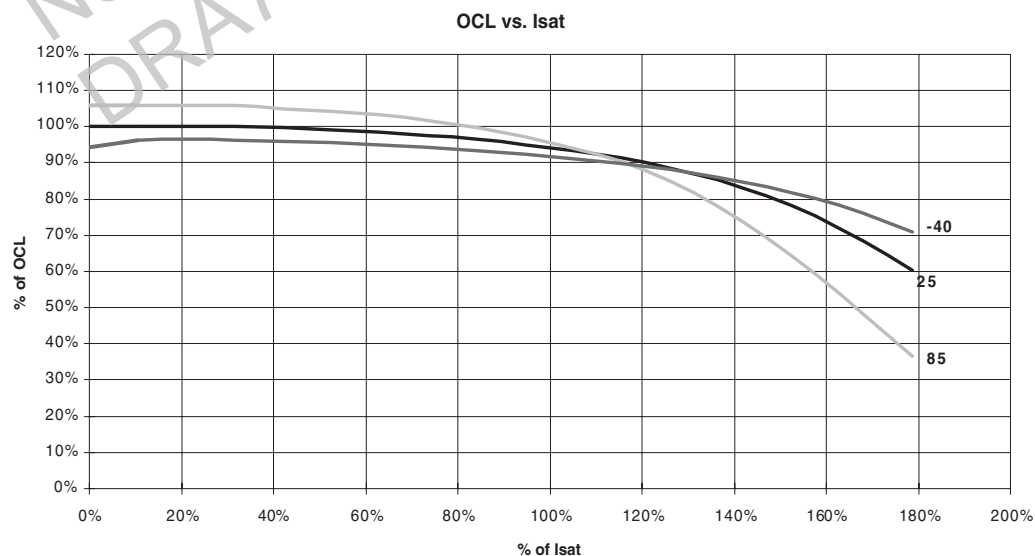
### Temperature rise vs. total loss



### Core loss vs Bp-p



### Inductance characteristics



## Solder Reflow Profile

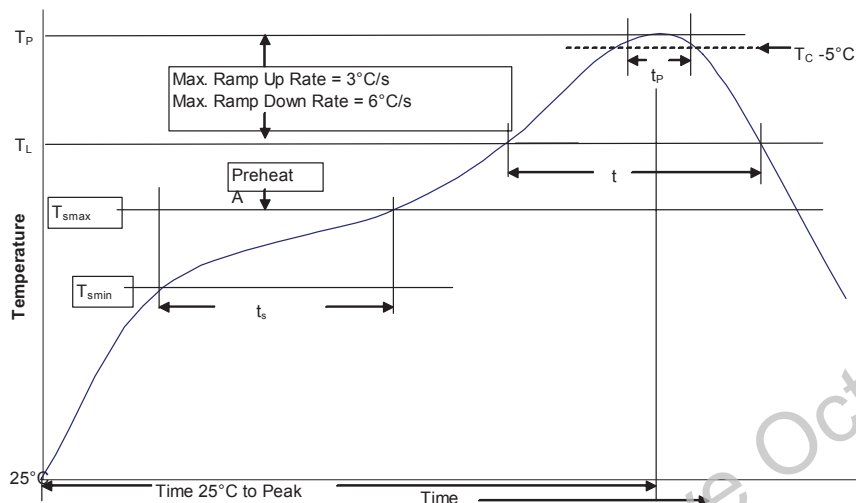


Table 1 - Standard SnPb Solder ( $T_C$ )

Package Thickness	Volume $mm^3$ <350	Volume $mm^3$ $\geq 350$
<2.5mm	235°C	220°C
$\geq 2.5mm$	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 JDEC J-STD-020

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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