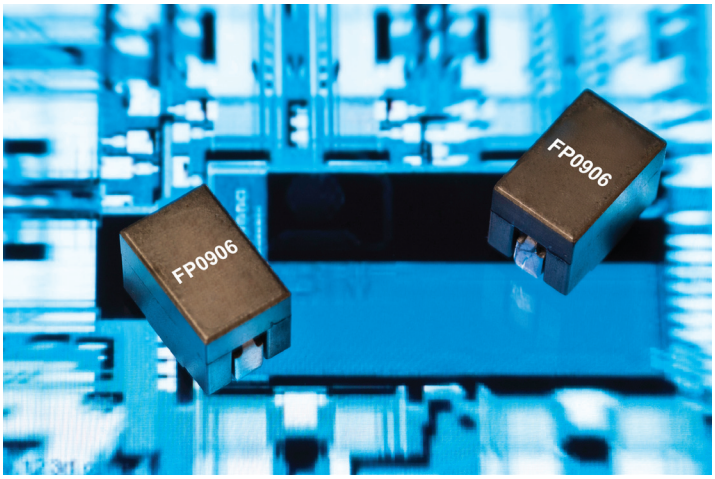
Coiltronics FP0906

High Frequency, High Current Power Inductors



Applications:

- Multi-phase regulators
- Voltage Regulator Module (VRM)
- Desktop and server VRMs and EVRDs
- Data networking and storage systems
- Graphics cards and battery power systems
- Point-of-load modules
- Notebook regulators
- DCR Sensing

Environmental data:

- Storage temperature range (component): -40°C to +125 °C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant

Packaging:

- Supplied in tape and reel packaging, 600 parts per 13" diameter reel

Product description:

- Halogen free, lead free, RoHS compliant
- 125°C Maximum total temperature operation
- 9.6 x 6.4 x 8.0mm maximum surface mount package
- Ferrite core material
- High current carrying capacity, low core losses
- Controlled DCR tolerance for sensing circuits
- Inductance Range from 100nH to 300nH
- Current range from 32.5 to 94 amps
- Frequency range up to 2MHz

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

Coiltronics is now part of Eaton
Same great products plus even more.

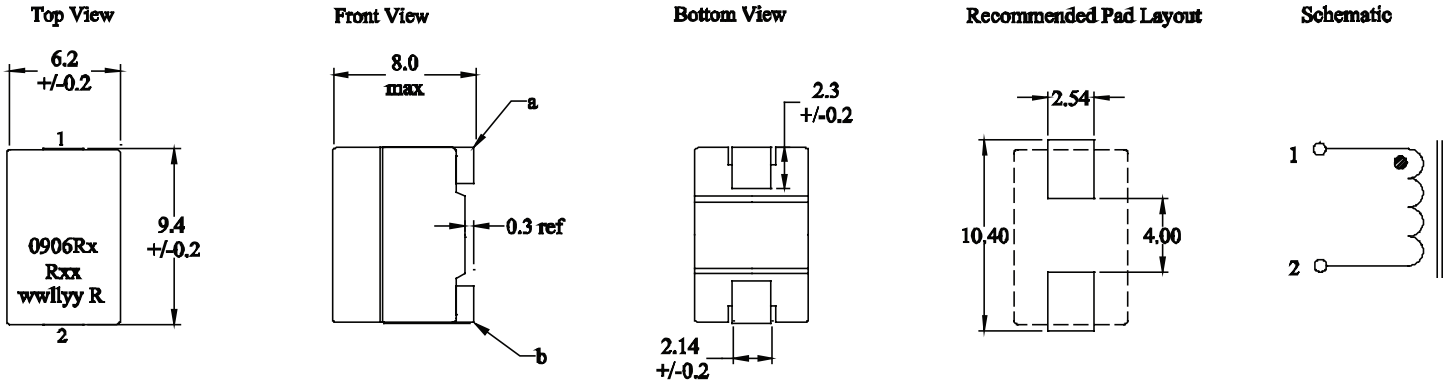
Powering Business Worldwide

Product specifications

Part Number[7]	OCL[1] ± 10% (nH)	FLL[2] Min. (nH)	I_{rms}[3] (Amps)	$I_{sat}1$[4] (Amps)	$I_{sat}2$[5] (Amps)	DCR (mΩ) @ 20°C	K-factor[6]
FP0906R1-R10-R	100	72	51	94	81.0	0.29±5%	451
FP0906R1-R12-R	120	86		79	68.0		451
FP0906R1-R15-R	150	108		65	54.5		451
FP0906R1-R22-R	220	155		44	37.5		451
FP0906R1-R28-R	280	200		34	29.0		451
FP0906R1-R30-R	300	216		32.5	27.5		451

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 1.0V_{rms}, 0.0Adc @ 25°C
2 Full Load Inductance (FLL) Test Parameters: 100kHz, 1.0V_{rms}, $I_{sat}1$ @ 25°C
3 I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB pad layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
4 $I_{sat}1$: Peak current for approximately 20% rolloff at +25°C.
5 $I_{sat}2$: Peak current for approximately 20% rolloff at +125°C.
6 K-factor: Used to determine Bp-p for core loss (see graph). $B_{p-p} = K * L * DI * 10^{-3}$, B_{p-p} : (Gauss), K: (K-factor from table), L: (inductance in nH), DI (peak-to-peak ripple current in amps).
7 Part Number Definition: FP0906Rx-Rxx-R
- FP0906 = Product code and size
- Rx is the DCR indicator
- Rxx= Inductance value in µH, R = decimal point
- "-R" suffix = RoHS compliant

Dimensions - mm

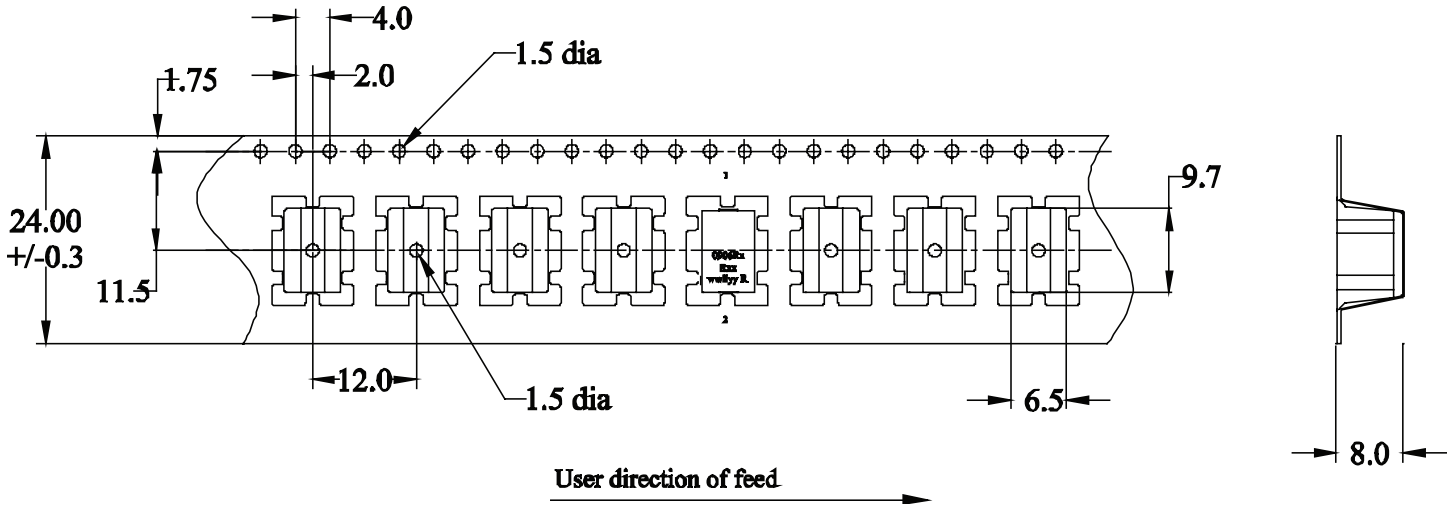


The nominal DCR is measured between point "a" and point "b."

Part marking: 0906Rx (Rx = DCR indicator), Rxx = Inductance value in µH, wwllyy = date code, R = revision level.

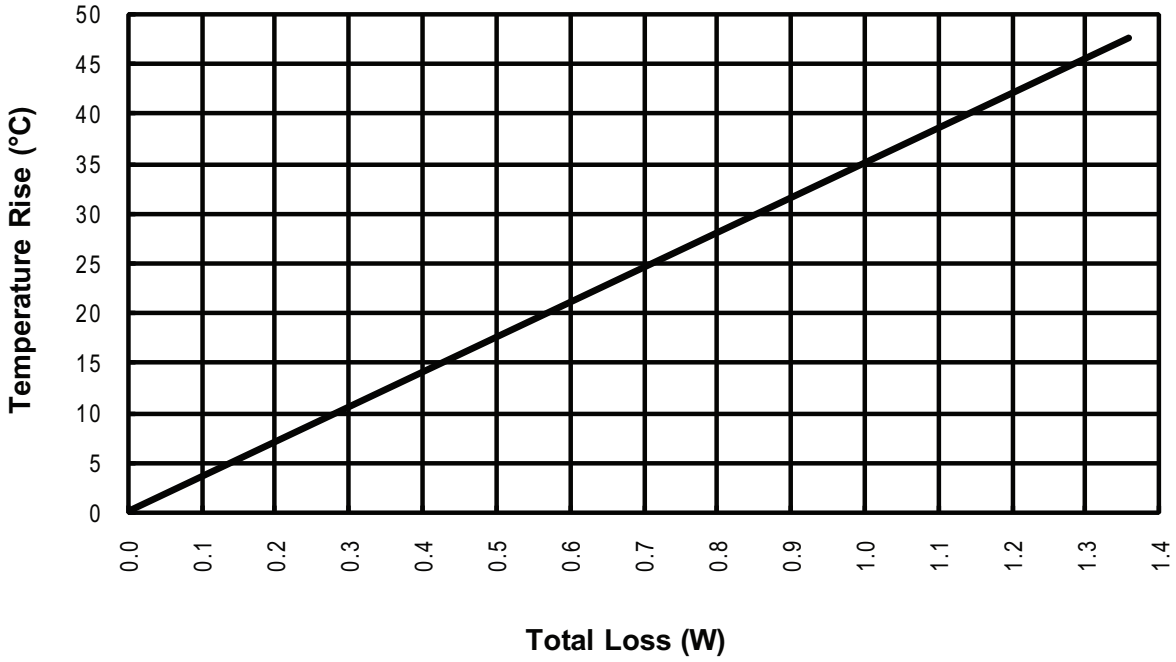
Soldering surfaces to be coplanar within 0.1 millimeters.

Packaging information - mm

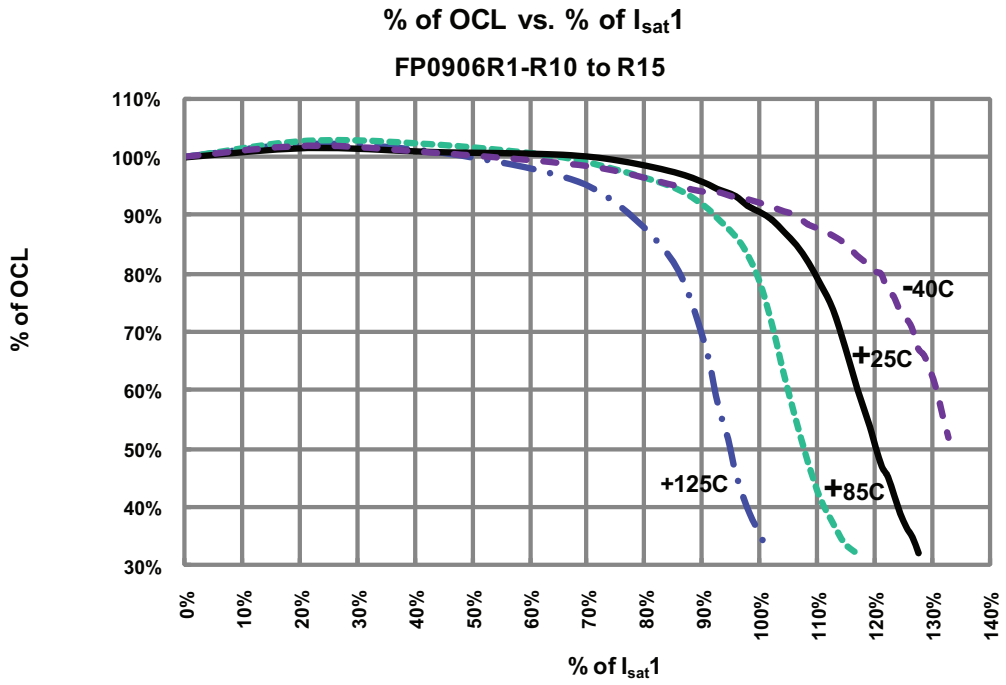


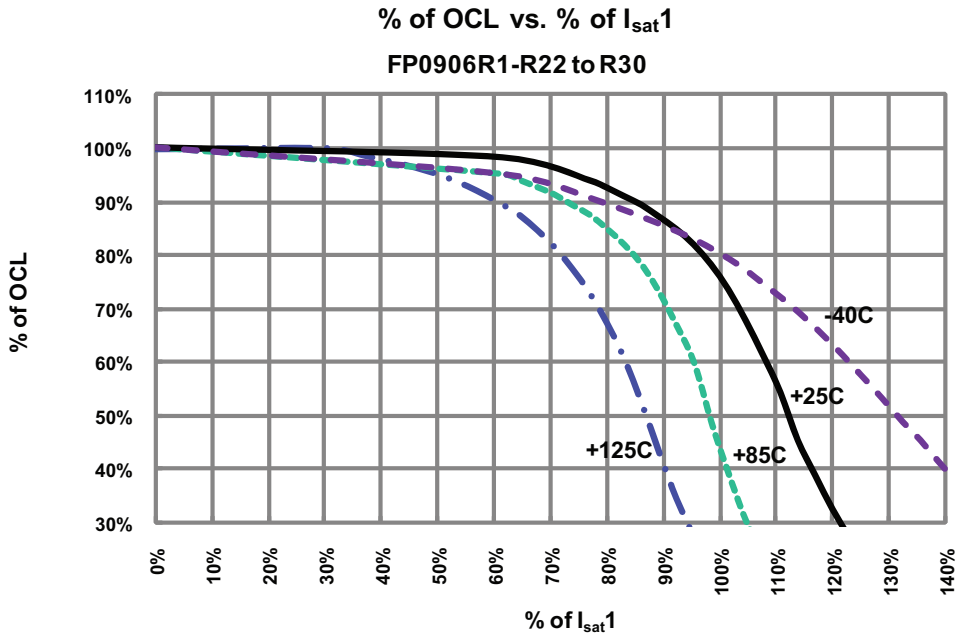
Supplied in tape-and-reel packaging, 600 parts on 13" diameter reel.

Temperature rise vs.total loss

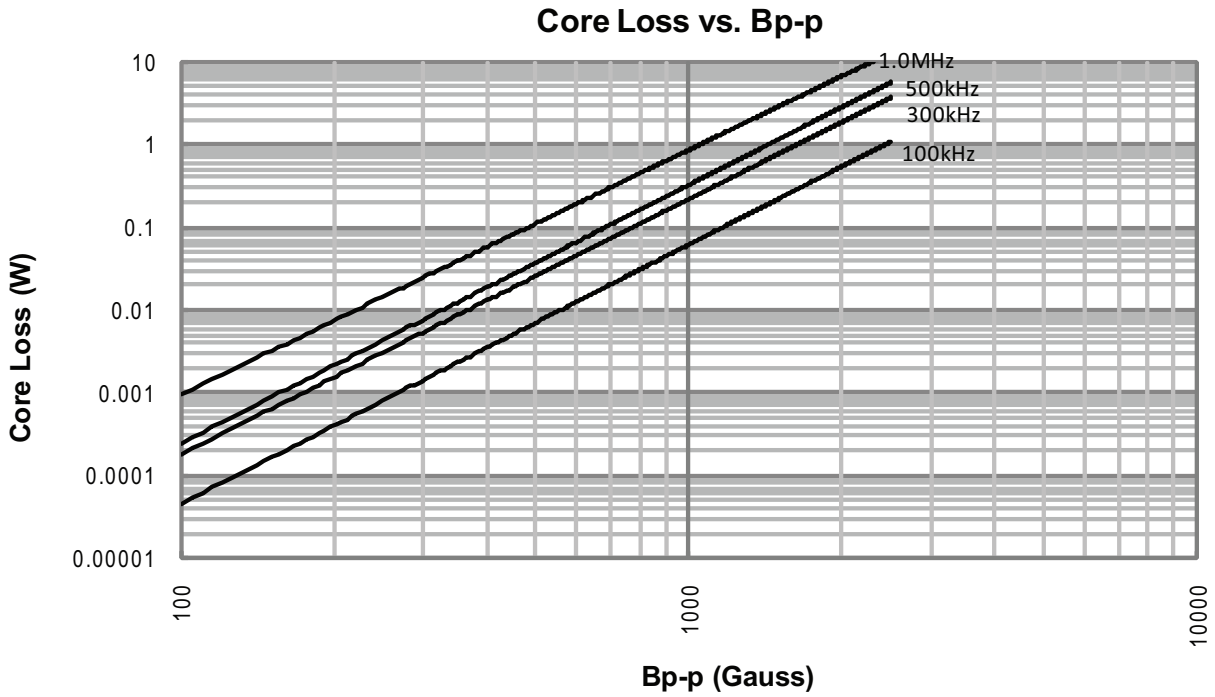


Inductance characteristics





Core loss


Core Loss vs. Bp-p
10
1
0.1
0.01
0.001
0.0001
0.00001
Core Loss (W)
1.0MHz
500kHz
300kHz
100kHz
100
1000
10000
Bp-p (Gauss)

Solder reflow profile

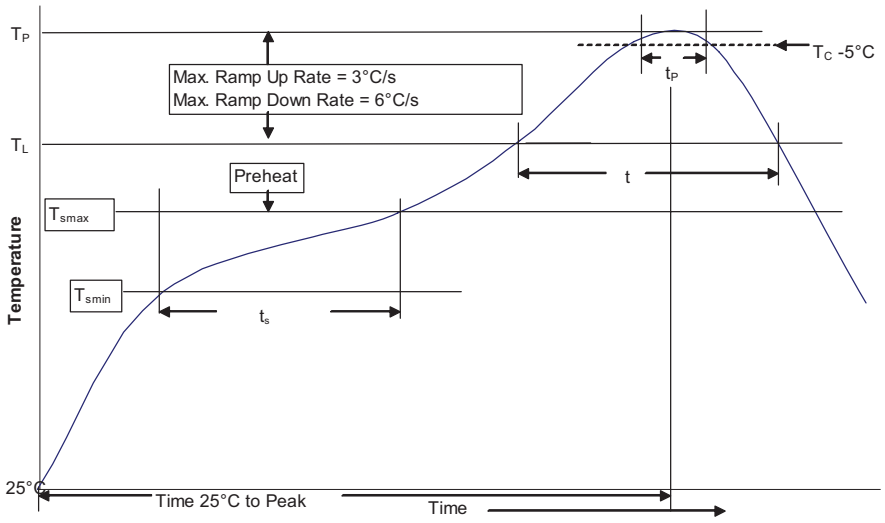


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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-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) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 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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