

Coiltronics FP1008 Family

High frequency, high current power inductors



Product description

- High current carrying capacity
- Low core loss
- Controlled DCR for sensing circuits
- Inductance range from 120nH to 180nH
- Current range from 63 to 100 Amps
- 10.8 x 8.0mm footprint surface mount package in a 8.0mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Multi-phase and Vcore regulators
- Voltage Regulator Modules (VRMs)
- Desktop and server VRMs and EVRDs
- Laptop and notebook regulators
- Data networking and storage systems
- Graphics cards and battery power systems
- Point-of-Load modules
- DCR Sensing circuits

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



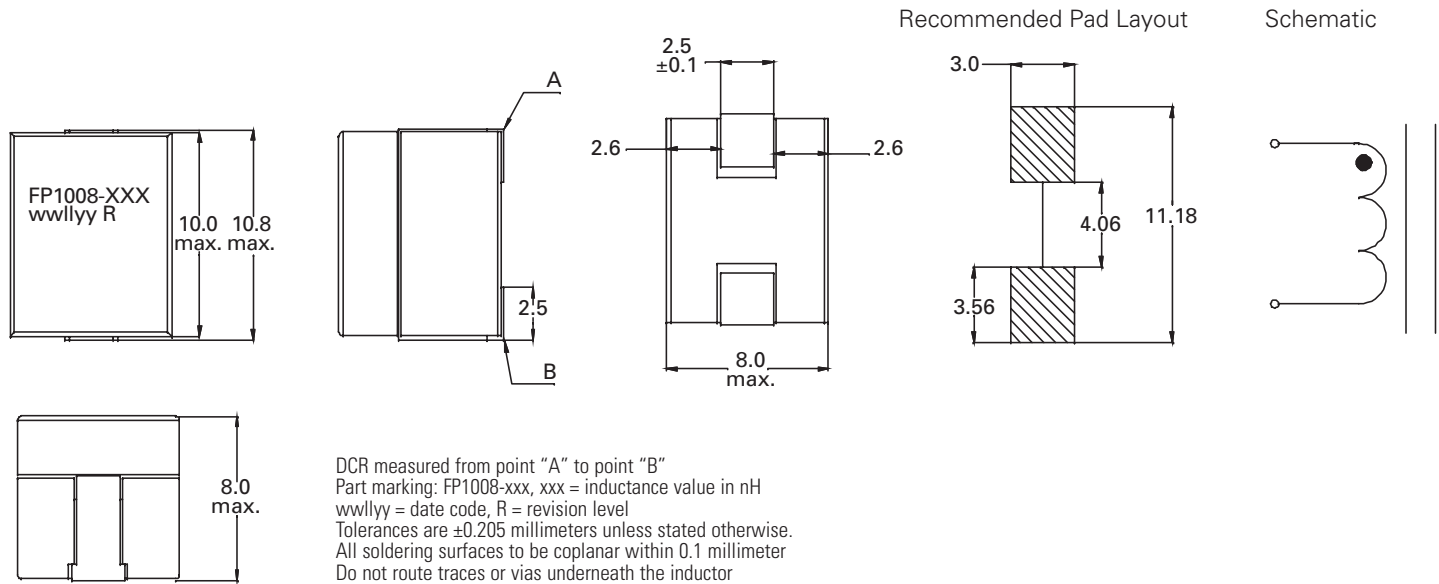
Product specifications

Part Number ⁹	OCL ¹ (nH)±10%	FLL ² (nH) minimum	I _{rms} ³ (amps)	I _{sat} 1 ⁴ (amps)	I _{sat} 2 ⁵ (amps)	I _{sat} 3 ⁶ (amps)	I _{sat} 4 ⁷ (amps)	DCR (mΩ) @ 20°C ±5%	K-factor ⁸
FP1008-120-R	120	82	63	100	95.0	91.0	82	0.17	366
FP1008-150-R	150	104	63	82	78.0	75.0	68	0.17	366
FP1008-180-R	180	130	63	64	60.8	58.6	53	0.17	366

- Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1V_{rms}, 0.0Adc @ 25°C
- Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1V_{rms}, I_{sat}1
- I_{rms}: 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.
- I_{sat}1: Peak current for approximately 20% rolloff @ 25°C
- I_{sat}2: Peak current for approximately 20% rolloff @ 85°C
- I_{sat}3: Peak current for approximately 20% rolloff @ 100°C

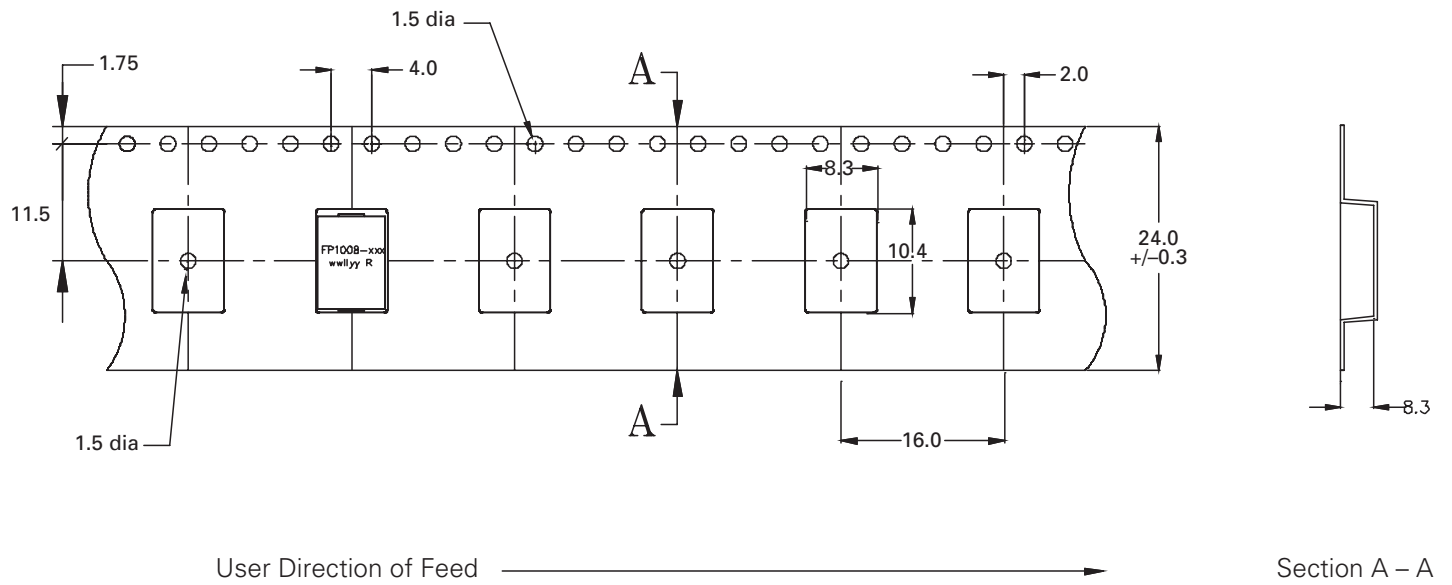
- I_{sat}4: Peak current for approximately 20% rolloff @ 125°C
- K-factor: Used to determine B_{pp} for core loss (see graph).
B_{pp} = K * L * ΔI * 10⁻³. B_{pp}(Gauss), K: (K-factor from table),
L: (Inductance in nH), ΔI (Peak-to-peak ripple current in Amps).
- Part Number Definition: FP1008-xxx-R
- FP1008= Product code and size
- xxx= Inductance value in nH
- "-R" suffix = RoHS compliant

Dimensions (mm)

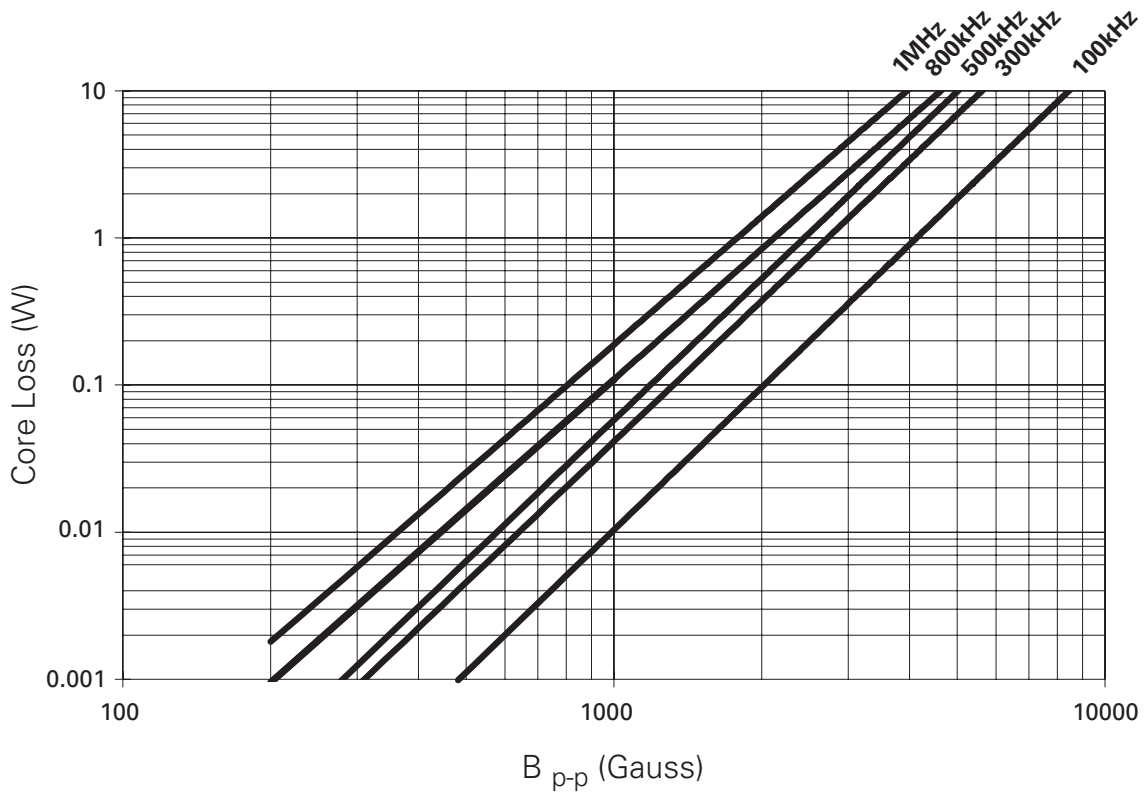


Packaging information (mm)

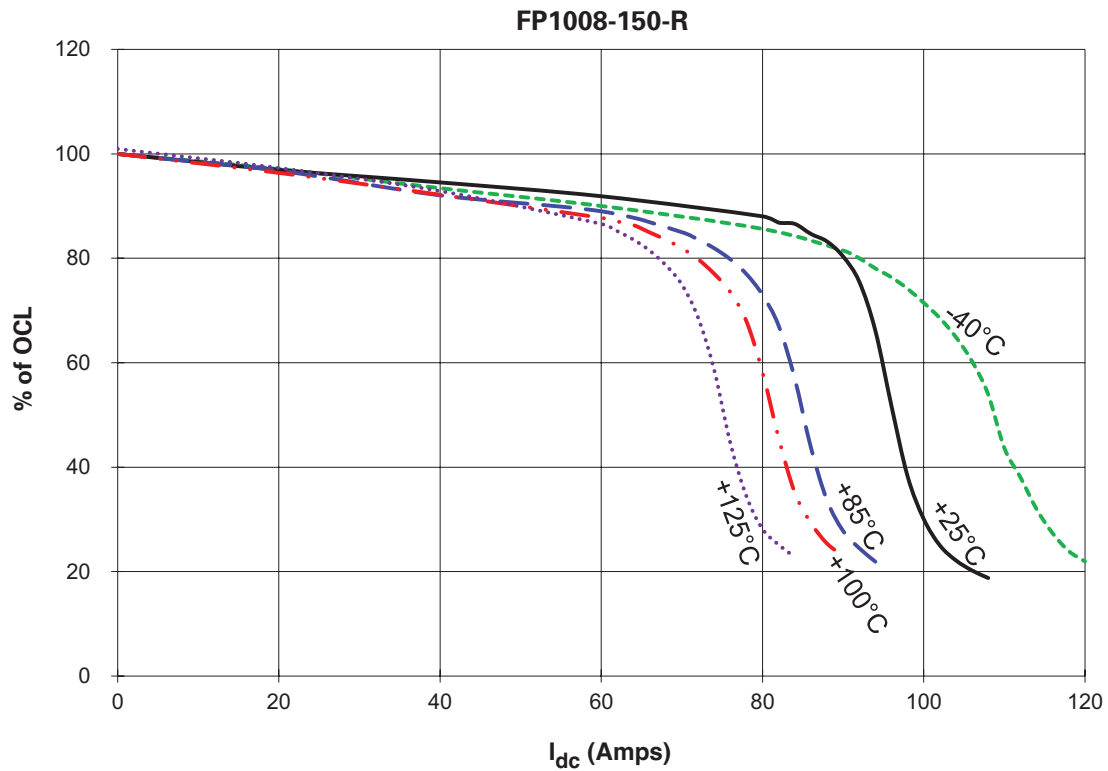
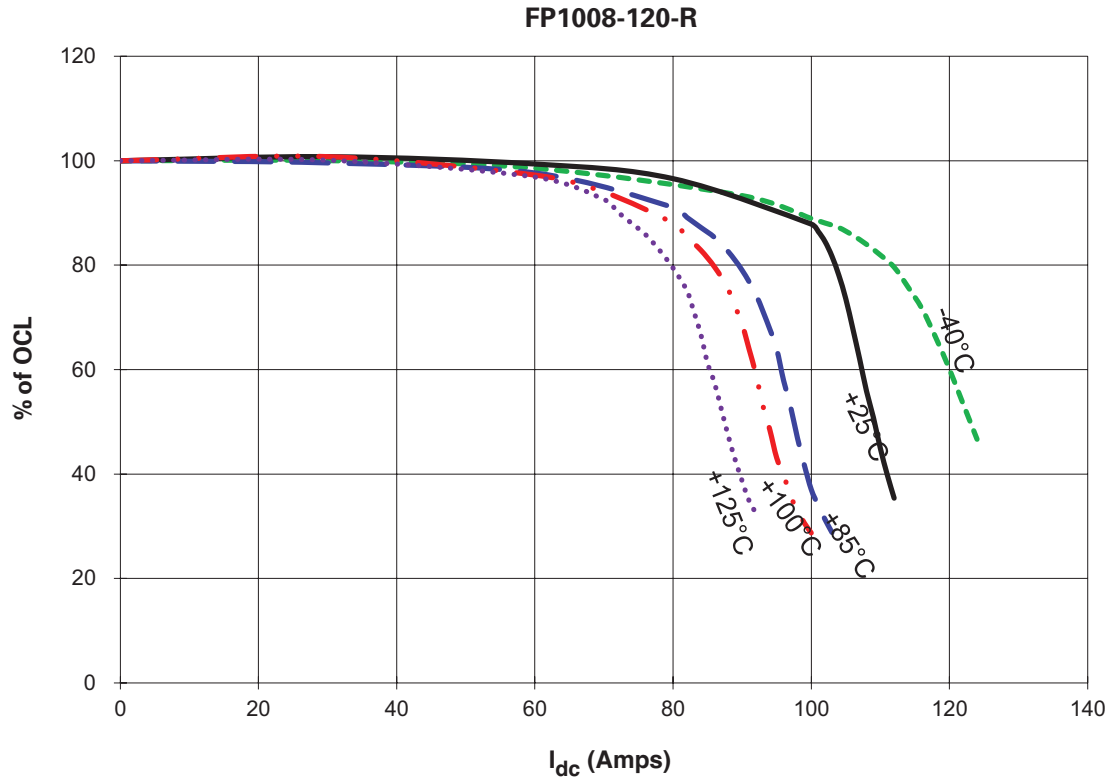
Supplied in tape-and-reel packaging, 350 parts on a 13" diameter reel.



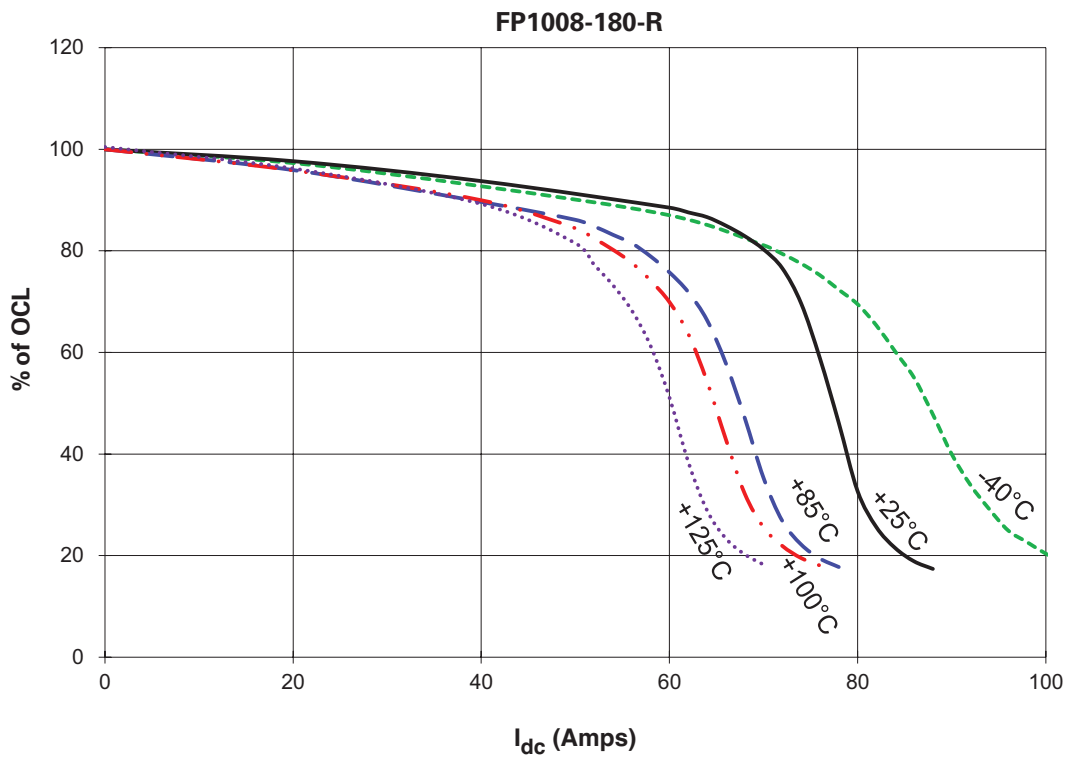
Core loss vs. B_{p-p}



Inductance characteristics



Inductance characteristics



Solder reflow profile

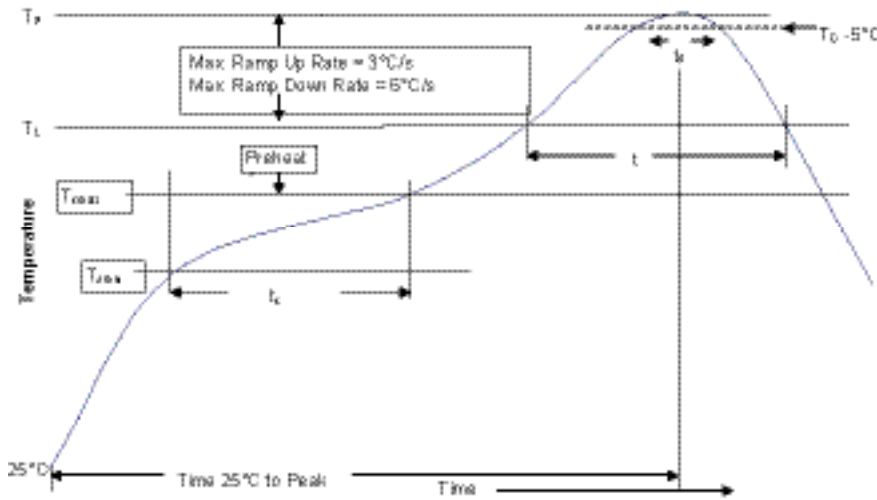


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm ³ <350	Volume mm ³ ≥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 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-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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Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/elx

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