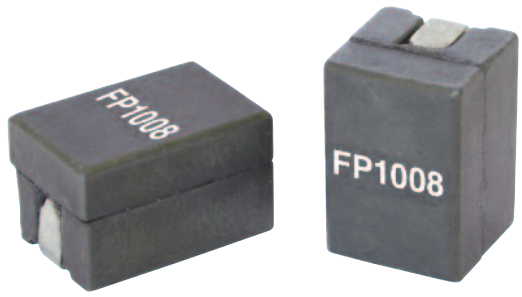
COILTRONICS

High Frequency, High Current Power Inductors

Flat-Pac™ FP1008 Series



Description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total temperature operation
- 10.8 x 8.0 x 8.0mm maximum surface mount package
- Ferrite core material
- Controlled DCR for sensing circuits
- Inductance range from 114nH to 180nH
- Current range from 63 to 106 Amps

Applications

- Multi-phase regulators
- Voltage Regulator Modules (VRMs)
- Desktop and server VRMs and EVRDs
- 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

Packaging

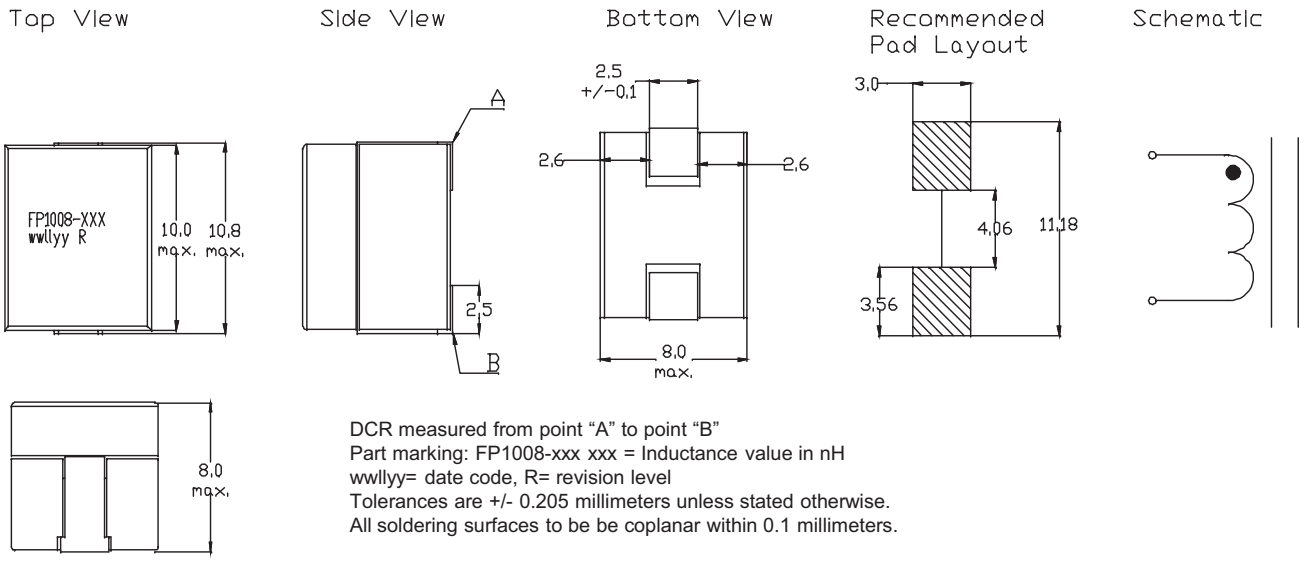
- Supplied in tape-and-reel packaging, 350 parts per 13" diameter reel

Product Specifications

Part Number[9]	OCL[1] (nH)±10%	FLL min.[2] (nH)	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	K-factor[8]
FP1008-120-R	114	82	63	106	100.7	97	88	0.17±5%	366
FP1008-150-R	144	104		82	78	75	68		366
FP1008-180-R	180	130		64	60.8	58.6	53		366

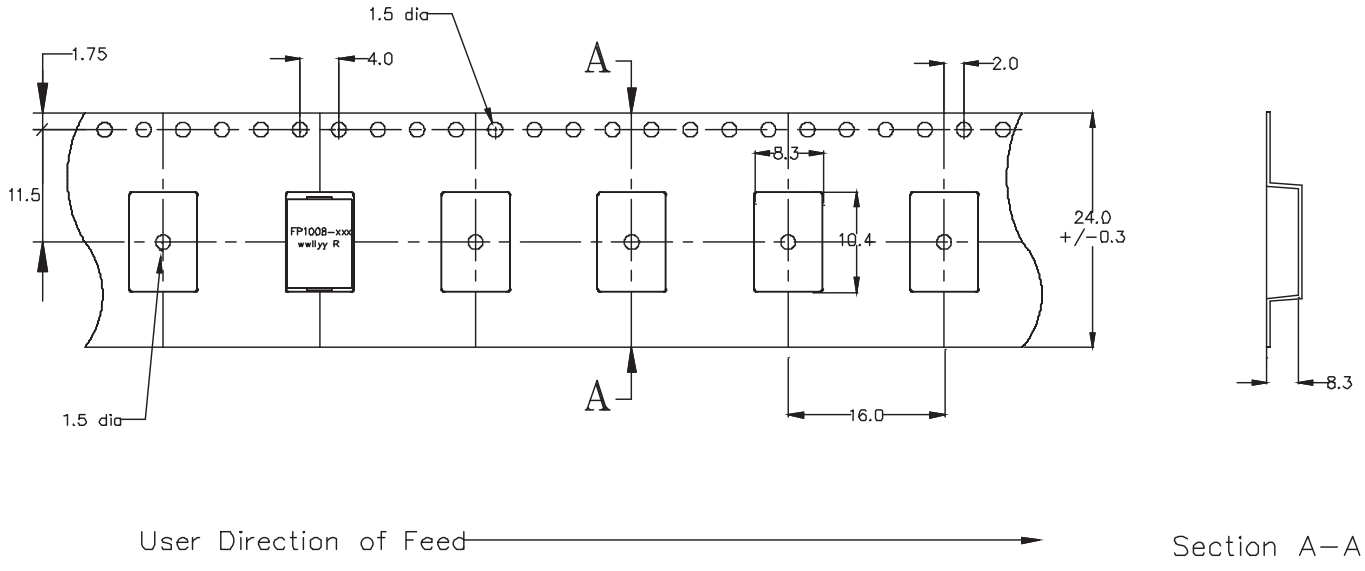
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1V_{rms}, 0.0Adc @ 25°C
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1V_{rms}, $I_{sat}1$
3. I_{rms}: DC current for an approximate temperature rise of 30°C without core loss. Derating is necessary for AC currents. PCB layout, trace 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.
4. $I_{sat}1$: Peak current for approximately 20% rolloff @ 25°C
5. $I_{sat}2$: Peak current for approximately 20% rolloff @ 85°C
6. $I_{sat}3$: Peak current for approximately 20% rolloff @ 100°C
7. $I_{sat}4$: Peak current for approximately 20% rolloff @ 125°C
8. K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I * 10^{-3}$. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak-to-peak ripple current in Amps).
9. Part Number Definition: FP1008-xxx-R
   - FP1008= Product code and size
   - xxx= Inductance value in nH
   - "-R" suffix = RoHS compliant

Dimensions - mm



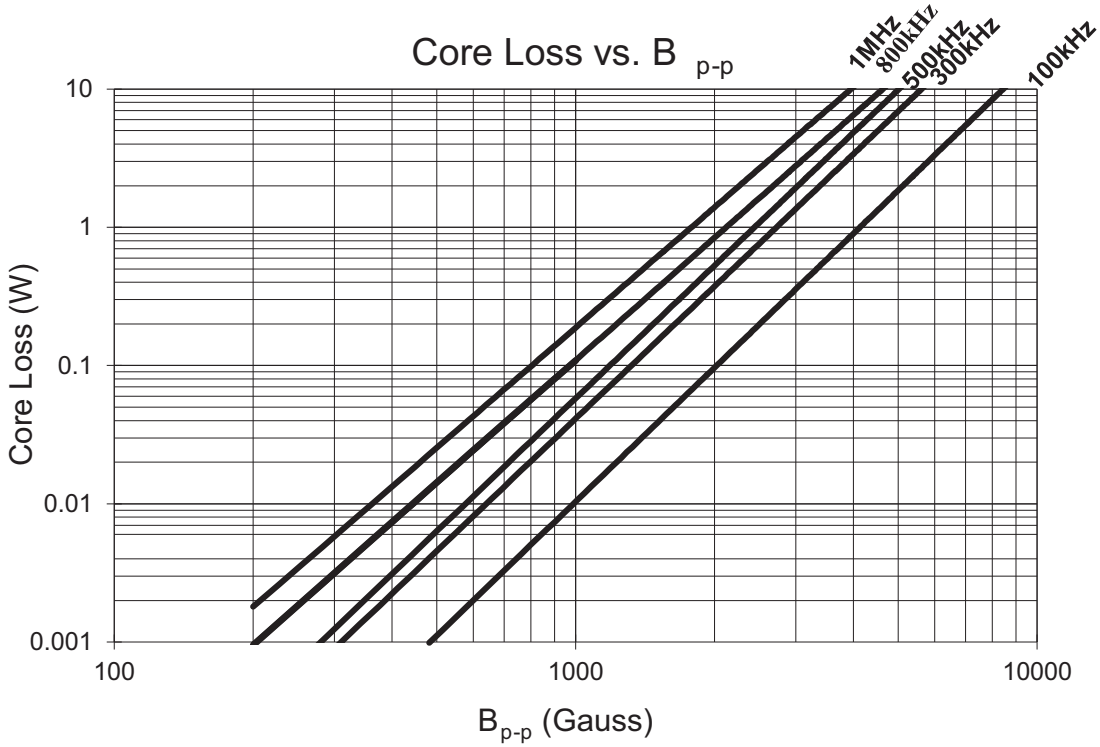
DCR measured from point “A” to point “B”
Part marking: FP1008-xxx xxx = Inductance value in nH
wwllyy= date code, R= revision level
Tolerances are +/- 0.205 millimeters unless stated otherwise.
All soldering surfaces to be be coplanar within 0.1 millimeters.

Packaging Information - mm

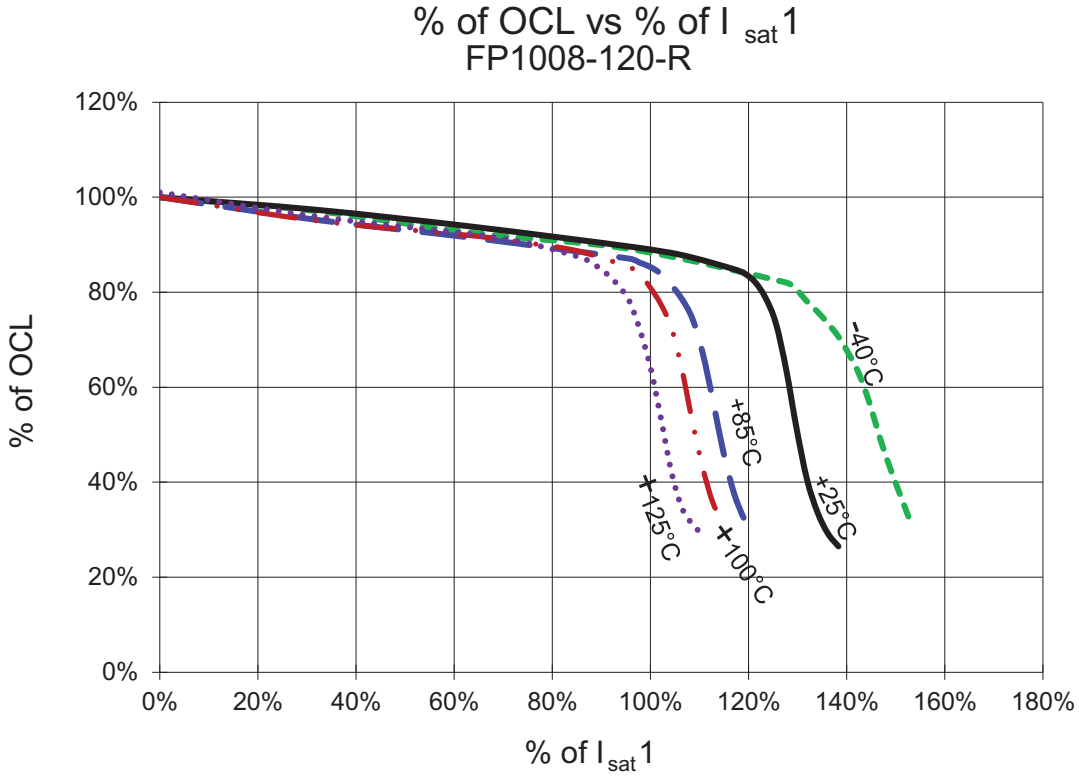


Supplied in tape-and-reel packaging, 350 parts on a 13” diameter reel.

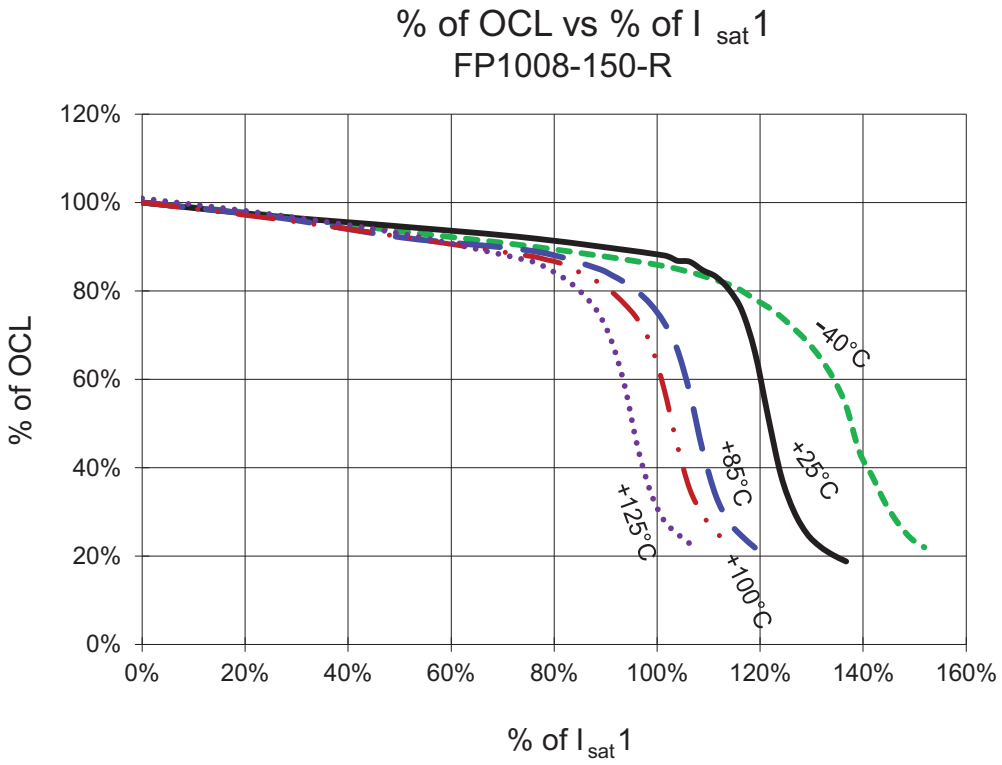
Core Loss

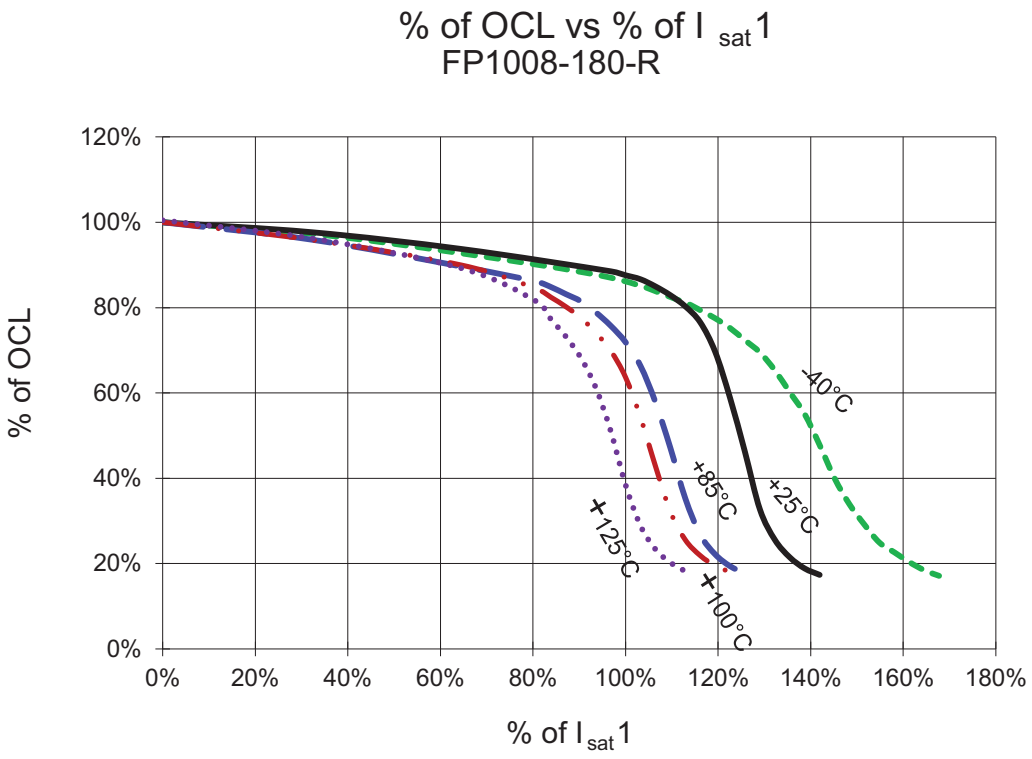


Inductance Characteristics



Inductance Characteristics





Solder Reflow Profile

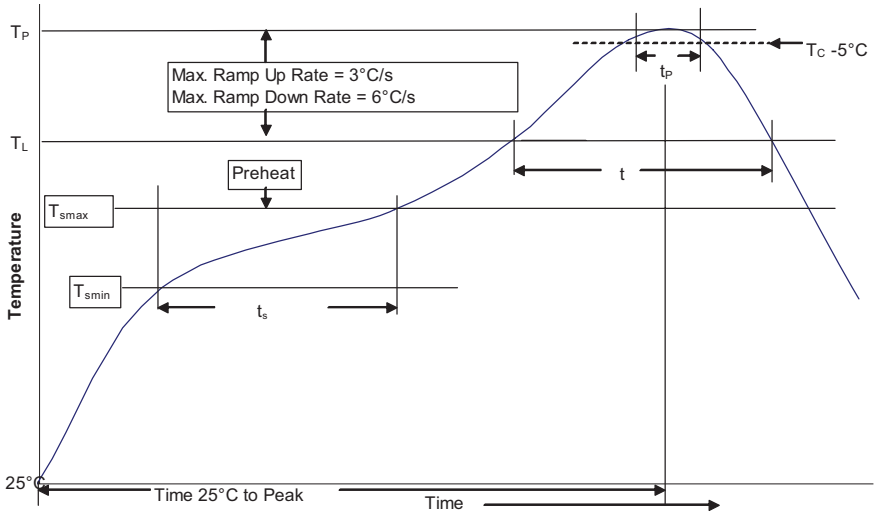


Table 1 - Standard SnPb Solder (T_C)

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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