FP1108L3 and FP1108L4

High frequency, high current power inductors



Description

- High current carrying capacity
- Ultra low DCR
- Low core loss
- Operating frequency
  - L3 version 500kHz-800kHz
  - L4 version 1MHz-3MHz
- Inductance range from 105nH to 180nH
- Current range from 33 to 57 amps
- 11.0 x 8.0mm footprint surface mount package in an 8.0mm heightt
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Servers
- Multi-phase and Vcore regulators
- Voltage Regulator Modules (VRMs)
- Desktop VRMs and EVRDs
- Data networking and storage systems
- Graphics cards and battery power systems
- Point-of-Load modules

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

Pb HALOGEN HF FREE RoHS

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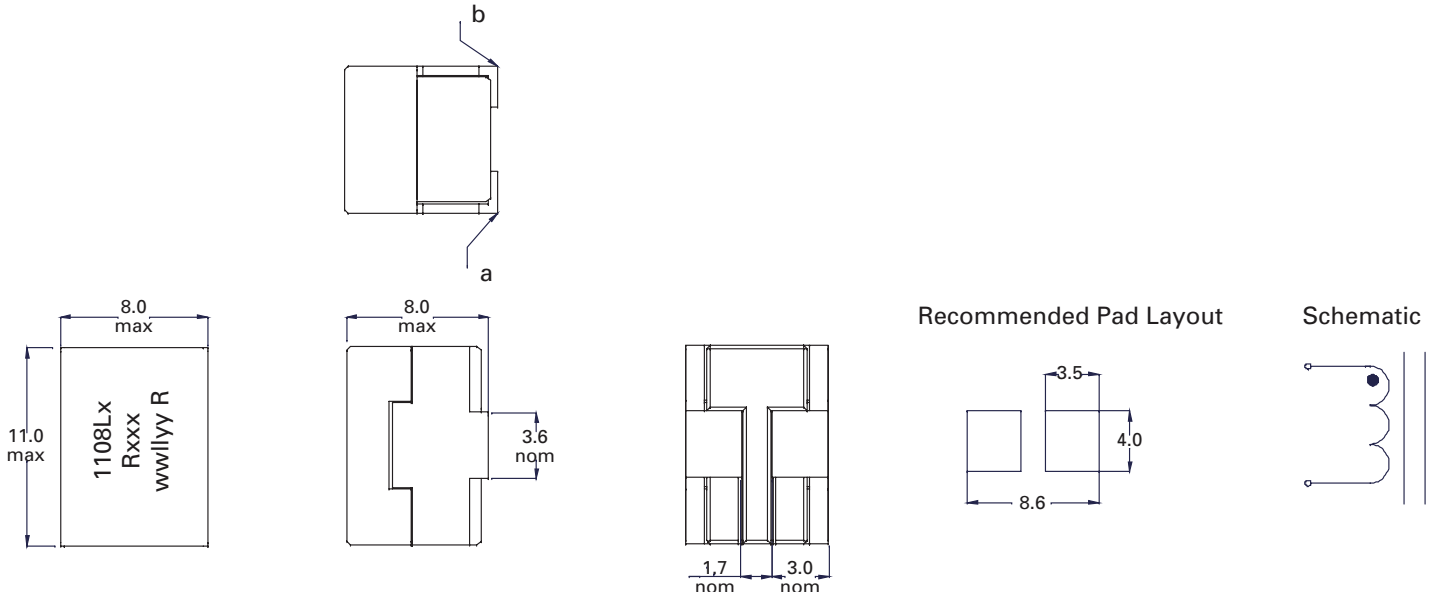
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Product Specifications

Part Number[8]	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)	DCR (mΩ) ±10% @ 20°C	K-factor[7]
L3 Version								
FP1108L3-R105-R	105	76	91	57	48	45	0.05	552
L4 Version								
FP1108L4-R120-R	120	86	91	50	42	40	0.05	552
FP1108L4-R150-R	150	108	91	40	34	32	0.05	552
FP1108L4-R180-R	180	129	91	33	28	26	0.05	552

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1Vrms, 0.0Adc, @ +25°C
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1Vrms, @ $I_{sat}1$, @ +25ºC
3. I_{rms}: DC current for an approximate temperature rise of 40°C without core loss. This is for reference only and does not represent absolute maximum ratings. 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 @ +100°C
6. $I_{sat}3$: Peak current for approximately 20% rolloff @ +125°C
7. K-factor: Used to determine B_{p-p} for core loss (see graph). Bp-p = K * L * ΔI * 10^{-3} B_{p-p}: (Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak to peak ripple current in Amps).
8. Part Number Definition: FP1108Lx-Rxxx-R
   FP1108L = Product code and size
   x= Version indicator
   Rxxx= inductance value in µH, R= decimal point ,
   -R suffix = RoHS compliant

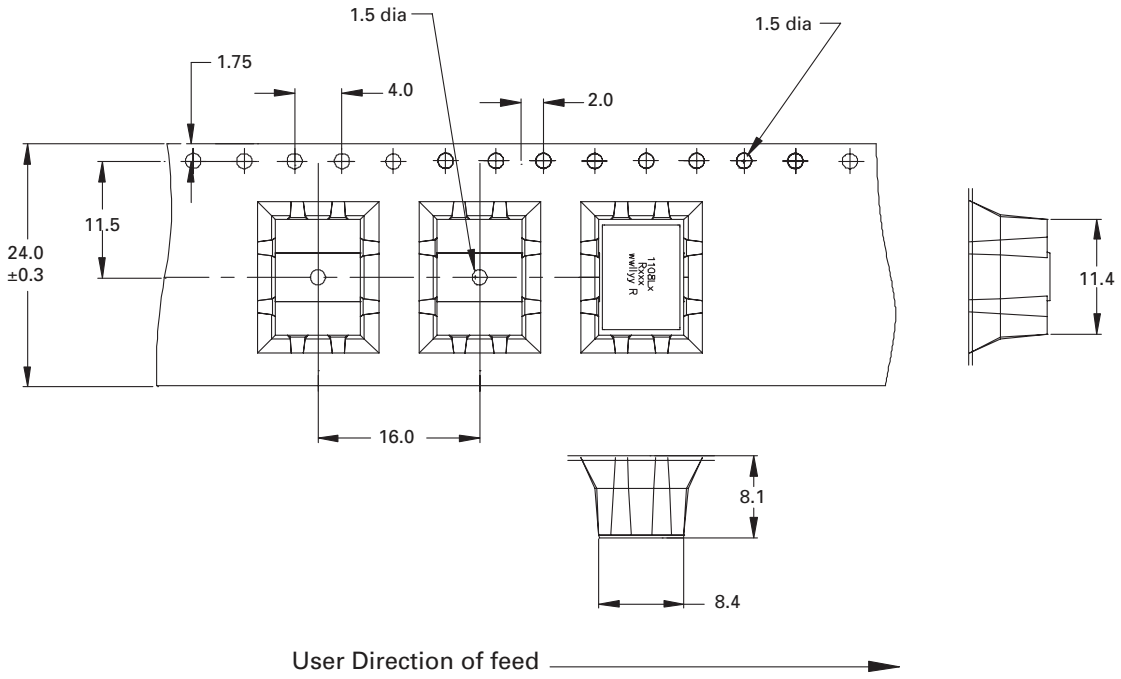
Dimensions (mm)



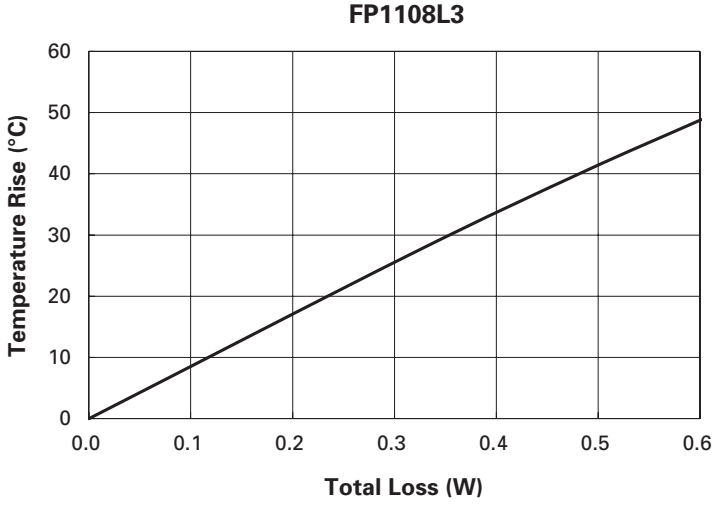
Part marking: 1108Lx (x = Version indicator), Rxxx = Inductance value in uH (R= decimal point)
wwllyy = date code, R = revision level
All soldering surfaces to be coplanar within 0.1 millimeters
PCB tolerances are ±0.1 millimeters unless otherwise specified
DCR measured from point "a" to point "b"
Do not route traces or vias underneath the inductor

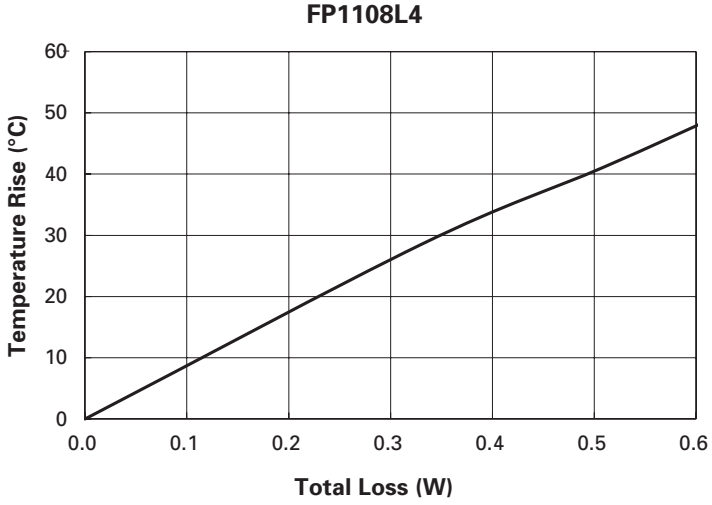
Packaging information (mm)

Supplied in tape and reel packaging, 500 parts per 13" diameter reel



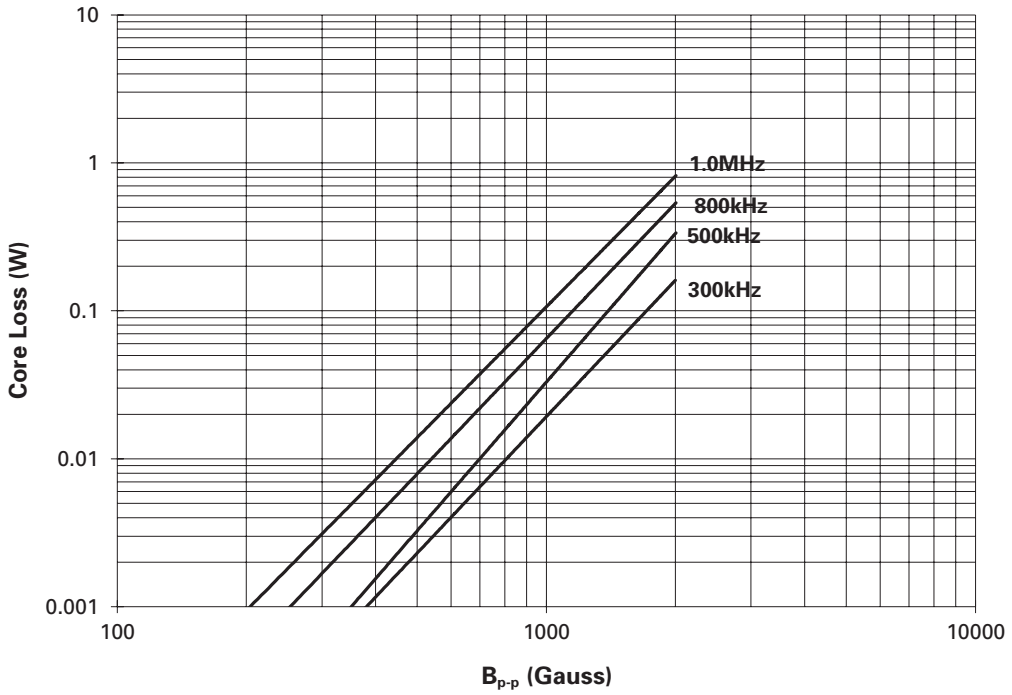
Temperature rise vs. total loss



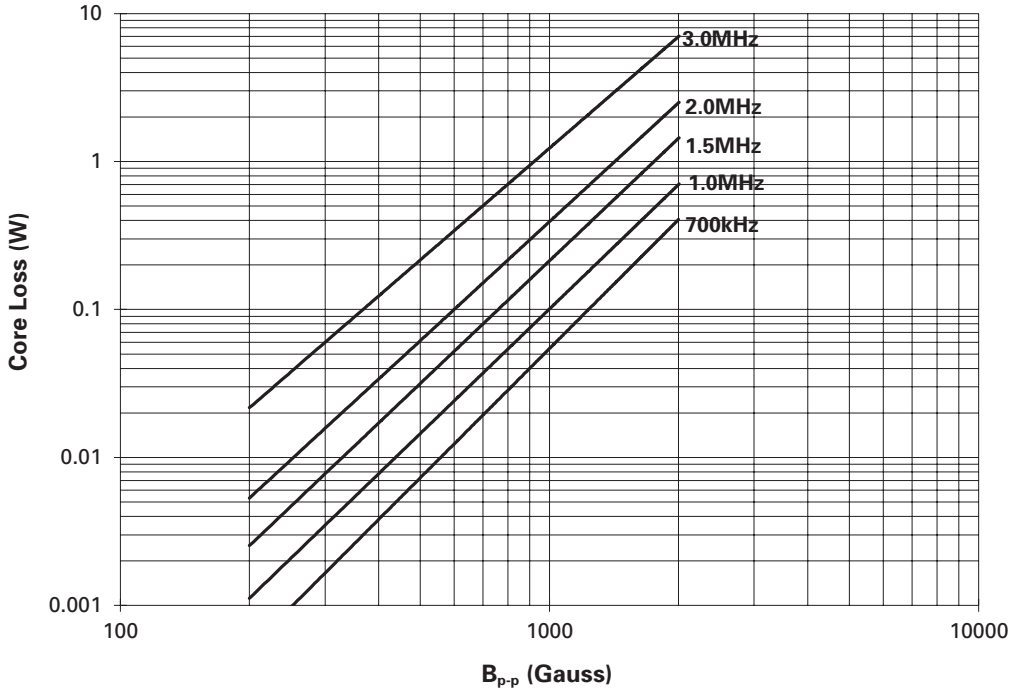


Core loss vs. B_{p-p}

FP1108L3

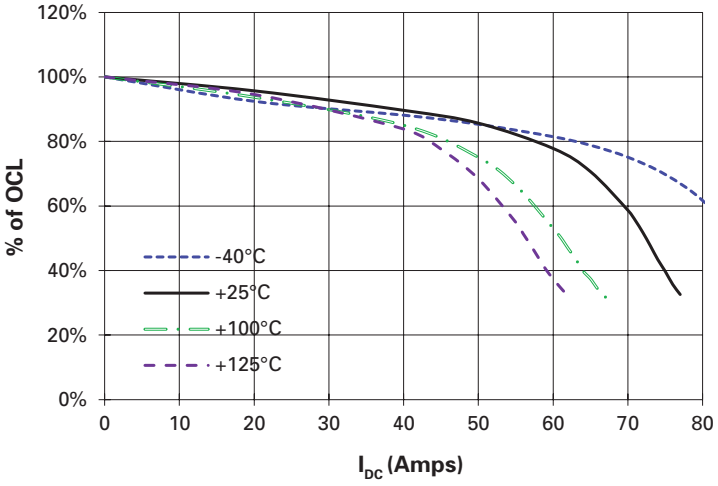


FP1108L4

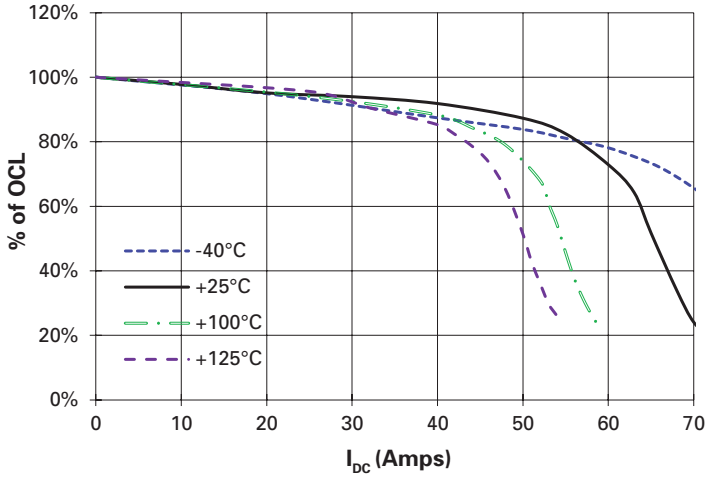


Inductance characteristics

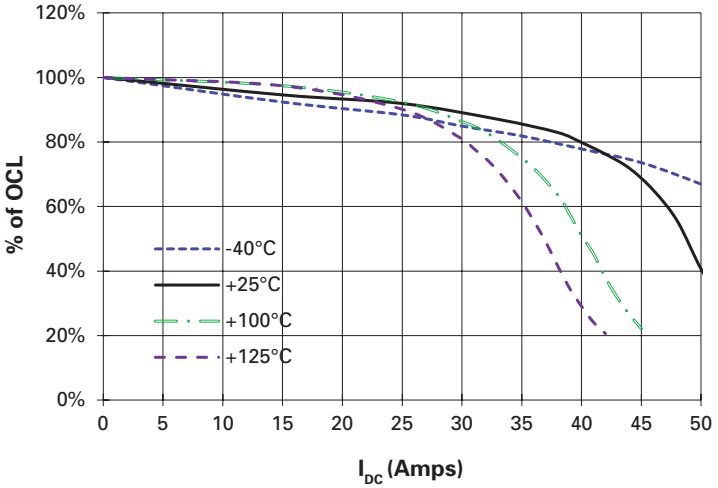
FP1108L3-R105-R



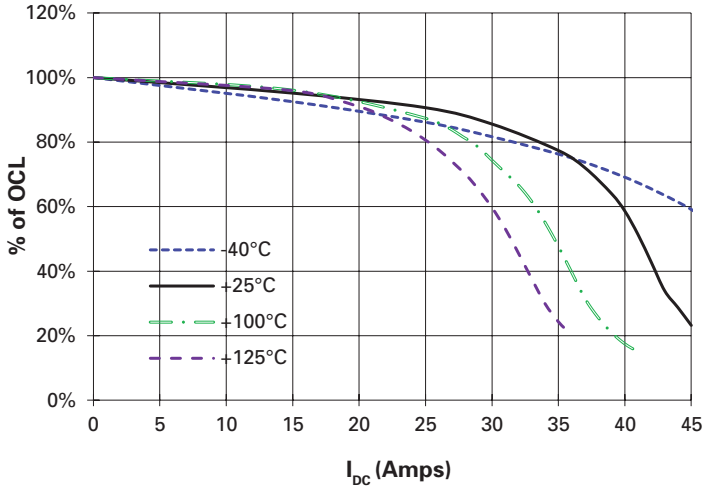
FP1108L4-R120-R



FP1108L4-R150-R



FP1108L4-R180-R



Solder reflow profile

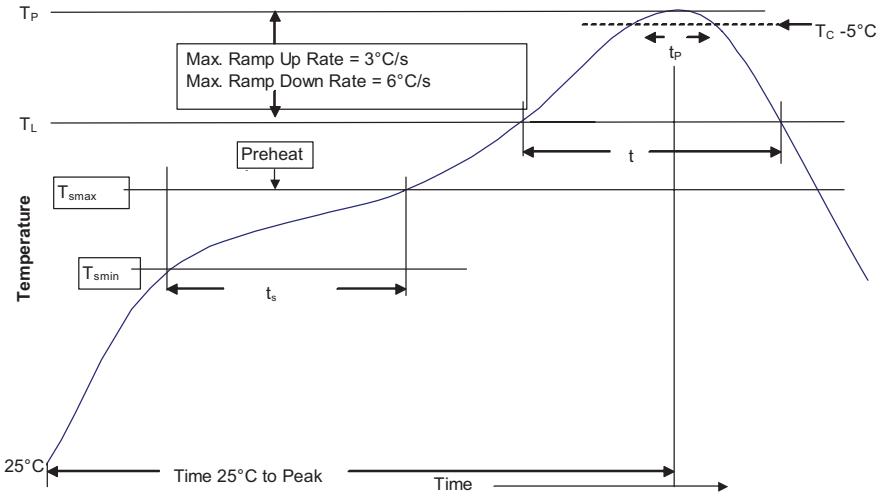


Table 1 - Standard SnPb Solder (T_C)

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 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) 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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