FP1 108B

High frequency, high current power inductors



Product description

- High current carrying capacity
- Low core loss
- Tight tolerance DCR for sensing circuits
- 11.6 x 8.0mm footprint surface mount package in 8.0mm height
- Ferrite core material
- Halogen free, lead free, RoHS compliant

Applications

- Servers
- Multi-phase and Vcore regulators
- Voltage Regulator Modules (VRMs)
  - Server and desktop
  - Central processing unit (CPU)
  - Graphics processing unit (GPU)
  - Application specific integrated circuit (ASIC)
  - High power density
- Data centers, networking and storage 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

Pb HALOGEN HF FREE RoHS

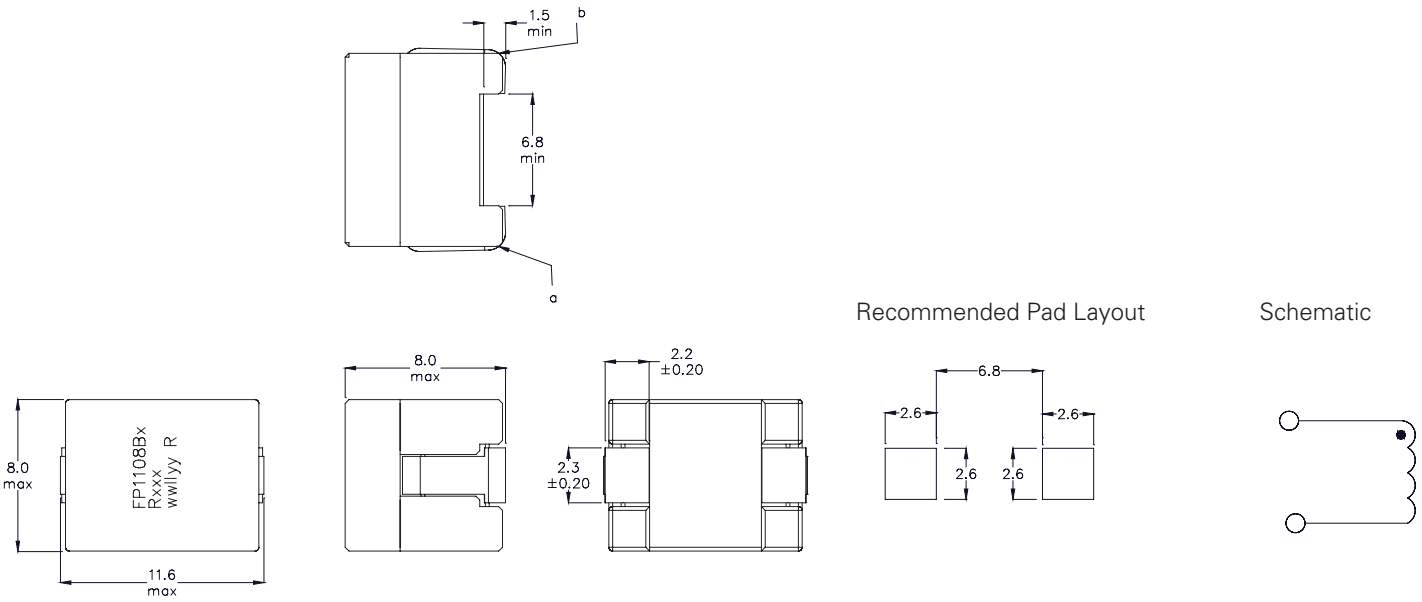
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Product specifications

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) ±5% @ 20°C	K-factor[7]
B1 version								
FP1108B1-R180-R	180	130	40	63	55	50	0.29	349

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1Vrms, 0.0Adc, +25°C
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1Vrms, $I_{sat}1$, +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 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. $I_{sat}2$: Peak current for approximately 20% rolloff @ +125°C
7. 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).
8. Part Number Definition: FP1108Bx-Rxxx-R
   FP1108B= Product code and size
   x= Version indicator
   Rxxx= Inductance value in µH, R= decimal point
   -R suffix = RoHS compliant

Dimensions (mm)



Part marking: FP1108Bx (Product code and size, x = version indicator),
Rxxx = Inductance value in uH, R = decimal point

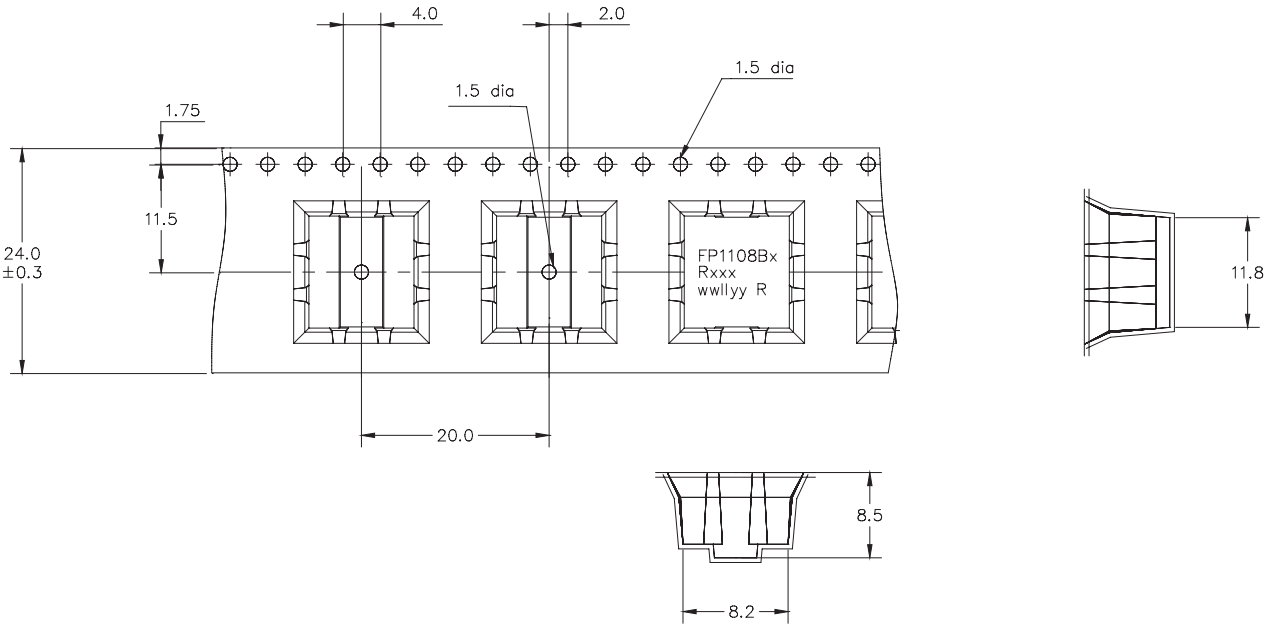
wwllyy = date code, R = revision level

All soldering surface to be coplanar within 0.10mm

DCR measured between point "a" and point "b"

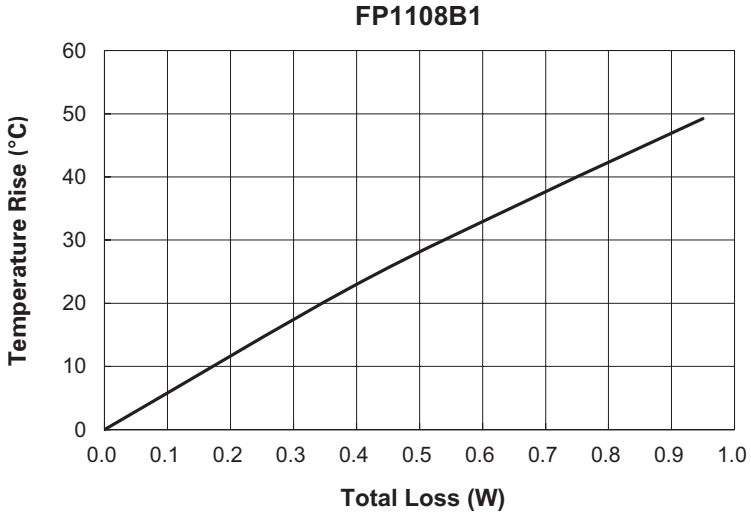
Packaging information (mm)

Supplied in tape and reel packaging 350 parts per 13 ″ diameter reel

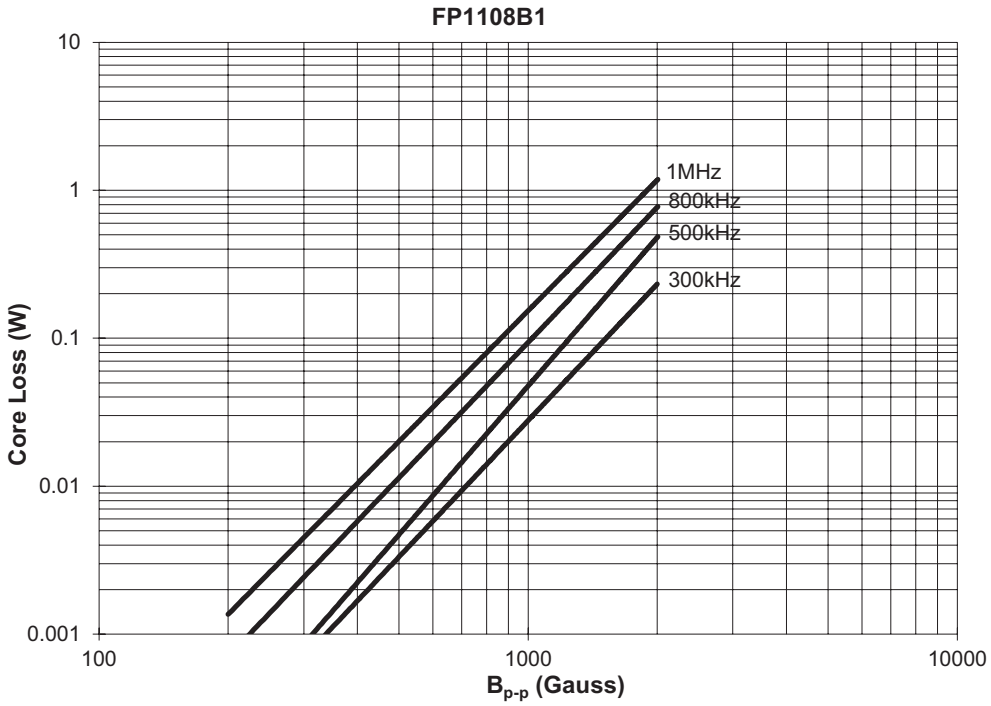


User Direction of Feed

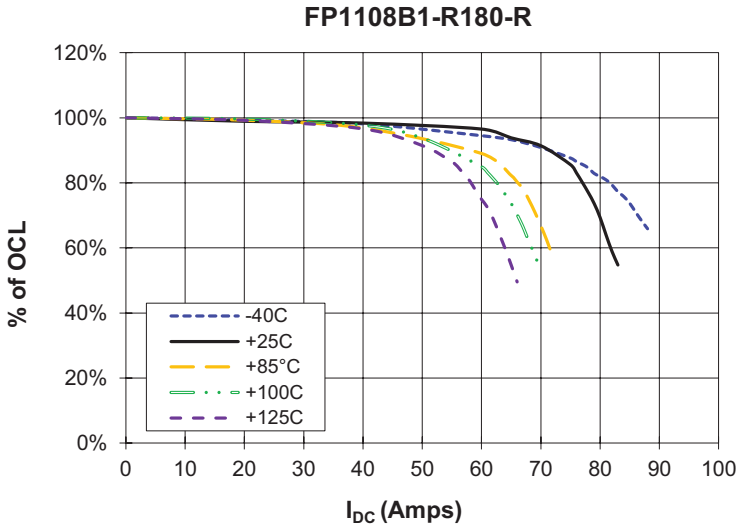
Temperature rise vs. total loss



Core loss vs. B_{p-p}



Inductance characteristics



Solder reflow profile

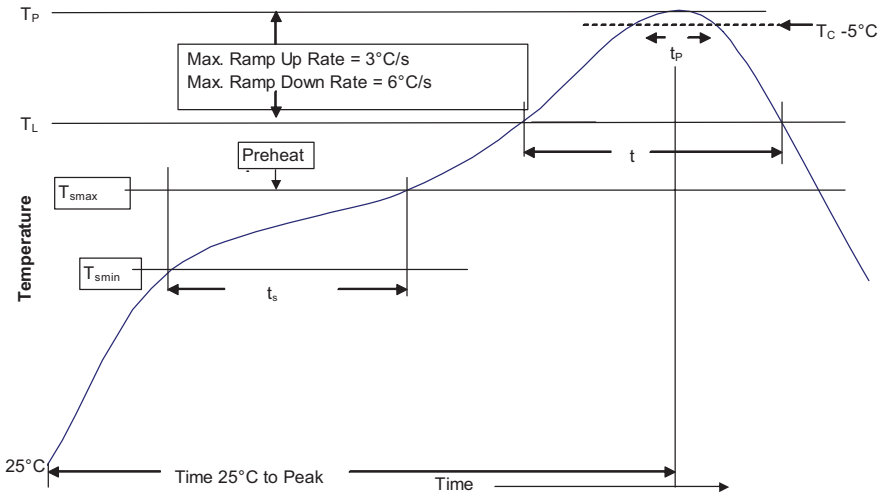


Table 1 - Standard SnPb Solder (T_C)

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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