

FP1108R

High frequency, high current power inductors



Product features

- 11.0 mm x 8.0 mm x 7.5 mm surface mount package
- Ferrite core material
- Tight tolerance DCR for sensing circuits
- Inductance range from 100 nH to 210 nH
- Current range from 55 A to 100+ A

Applications

- Multi-phase regulators
- Voltage Regulator Modules (VRMs)
- Desktop and server VRMs and EVRDs
- Notebook and laptop 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 plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant

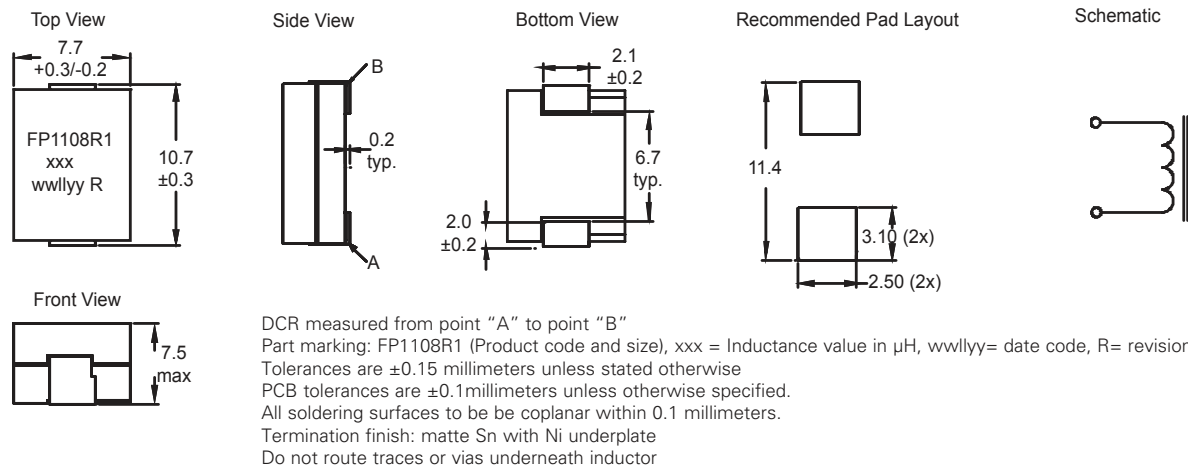


Product specifications

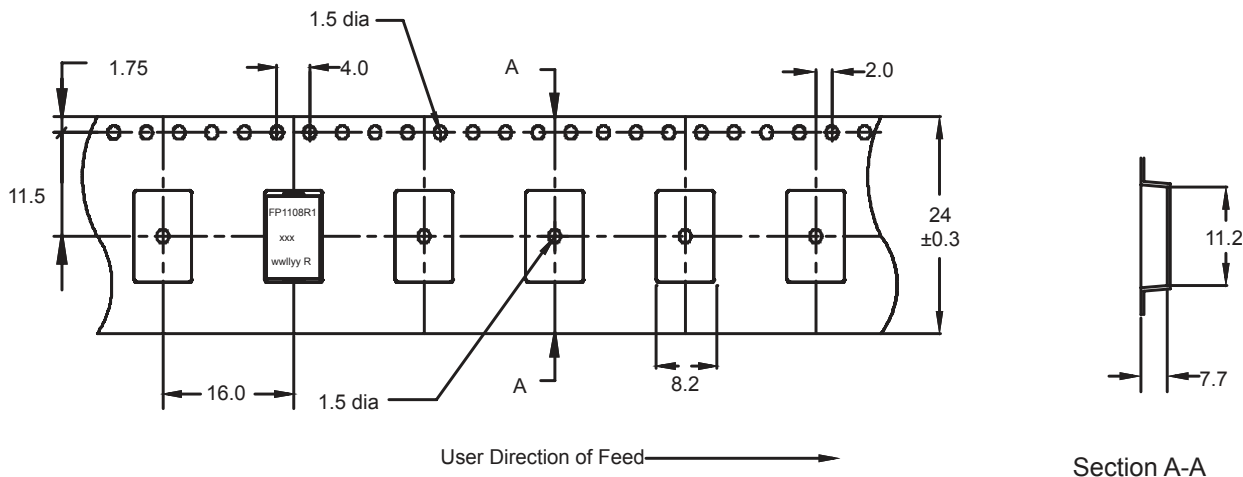
Part Number ⁹	OCL ¹ (nH) ±10%	FLL min. ² (nH)	I _{rms} ³ (A)	I _{sat} 1 ⁴ (A)	I _{sat} 2 ⁵ (A)	I _{sat} 3 ⁶ (A)	I _{sat} 4 ⁷ (A)	DCR (mΩ) @ +20 °C	K-factor ⁸
FP1108R1-R10-R	100	81	65	100+	96	94	90	0.29±5%	330
FP1108R1-R15-R	150	110		77	72	66	63		330
FP1108R1-R18-R	180	132		65	61	58	50		330
FP1108R1-R21-R	210	151		55	51	48	45		330

- Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 V_{rms}, 0.0 Adc, +25 °C
- Full Load Inductance (FLL) Test Parameters: 100 kHz, 0.1 V_{rms}, I_{sat}1, +25 °C
- 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% (R10 10%) rolloff @ +25 °C (R10 10%)
- I_{sat}2: Peak current for approximately 20% (R10 10%) rolloff @ +85 °C
- I_{sat}3: Peak current for approximately 20% (R10 10%) rolloff @ +100 °C
- I_{sat}4: Peak current for approximately 20% (R10 10%) rolloff @ +125 °C
- K-factor: Used to determine B_{pp} for core loss (see graph). B_{pp} = K * L * ΔI. B_{pp}:(Gauss), K: (K-factor from table), L: (Inductance in μH), ΔI (peak to peak ripple current in amps).
- Part Number Definition: FP1108Rx-yyy-R
 - FP1108Rx = Product code and size
 - Rx = DCR indicator
 - yyy= Inductance value in μH
 - "-R" suffix = RoHS compliant

Dimensions - mm



Packaging information - mm

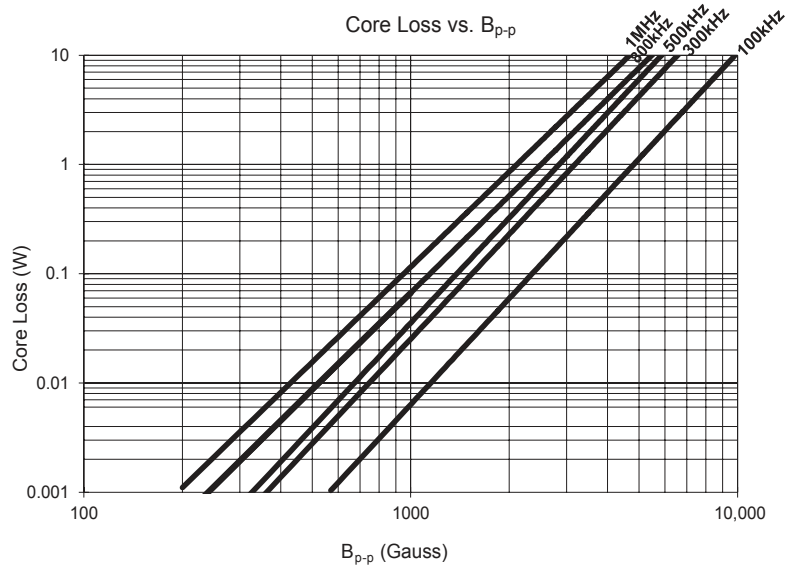


Supplied in tape and reel packaging, 500 parts per 13" diameter reel.

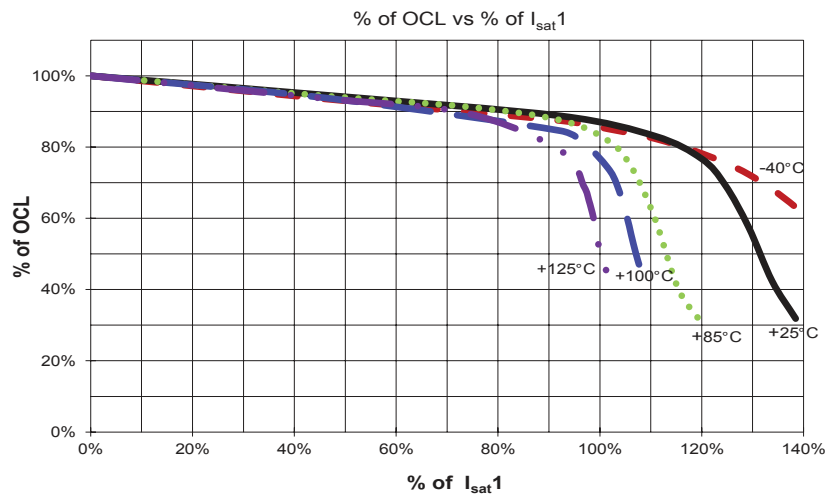
Temperature rise vs total loss



Core loss vs Bp-p



Inductance characteristics



Solder Reflow Profile

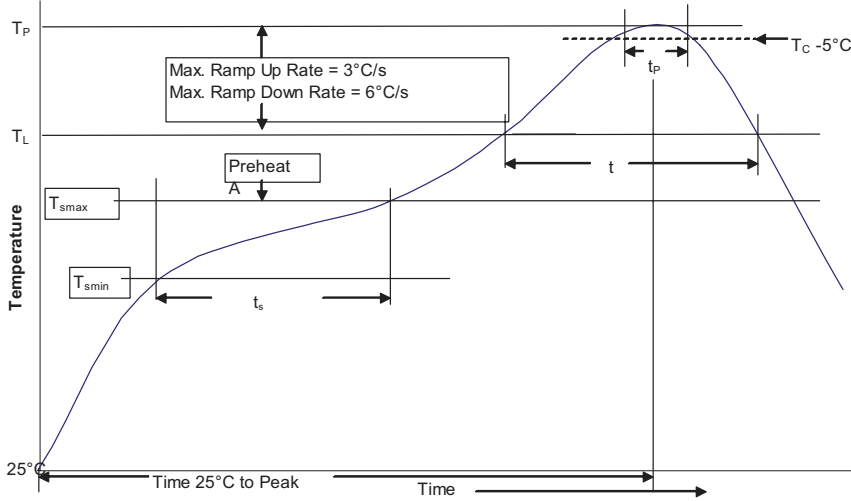


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	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-020

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak	• Temperature min. (T_{smin})	100°C
	• Temperature max. (T_{smax})	150°C
	• Time (T_{smin} to T_{smax}) (t_s)	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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