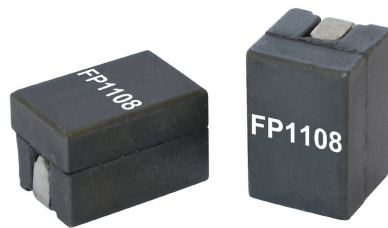


# FP1108R

## 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

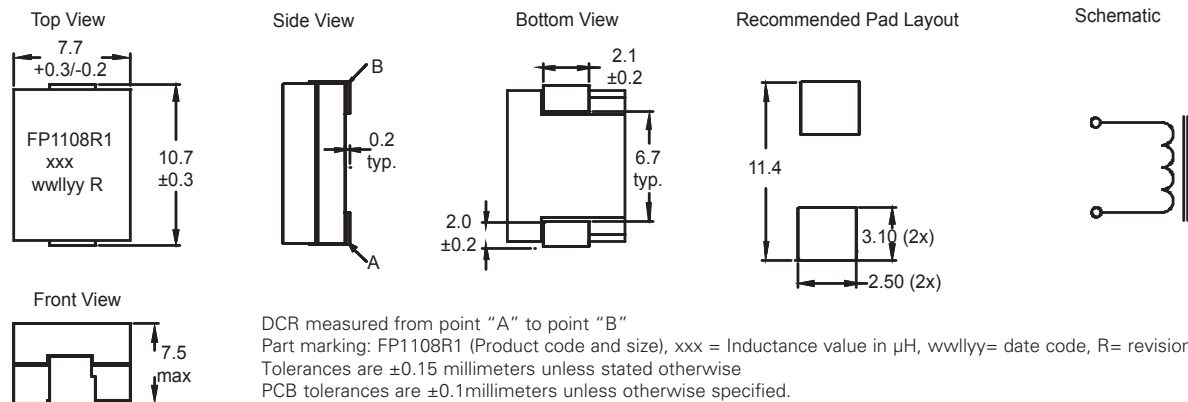


Product specifications

Part Number <sup>9</sup>	OCL <sup>1</sup> (nH) ±10%	FLL min. <sup>2</sup> (nH)	I <sub>rms</sub> <sup>3</sup> (A)	I <sub>sat</sub> 1 <sup>4</sup> (A)	I <sub>sat</sub> 2 <sup>5</sup> (A)	I <sub>sat</sub> 3 <sup>6</sup> (A)	I <sub>sat</sub> 4 <sup>7</sup> (A)	DCR (mΩ) @ +20 °C	K-factor <sup>8</sup>
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

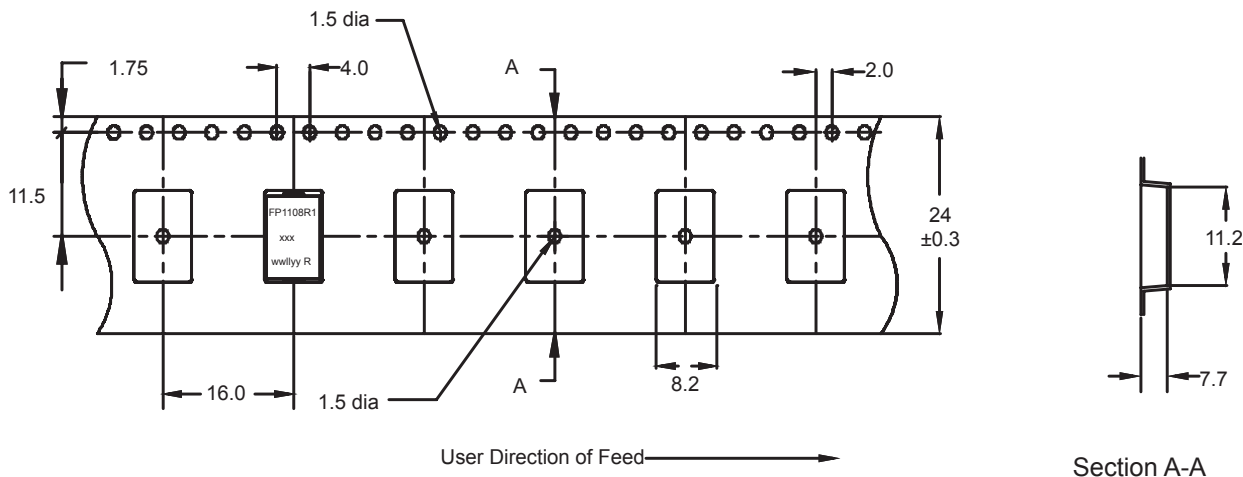
- Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 V<sub>rms</sub>, 0.0 Adc, +25 °C
- Full Load Inductance (FLL) Test Parameters: 100 kHz, 0.1 V<sub>rms</sub>, I<sub>sat</sub>1, +25 °C
- I<sub>rms</sub>: DC current for an approximate temperature rise of 40 °C without core loss. Derating is 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<sub>sat</sub>1: Peak current for approximately 20% (R10 10%) rolloff @ +25 °C (R10 10%)
- I<sub>sat</sub>2: Peak current for approximately 20% (R10 10%) rolloff @ +85 °C
- I<sub>sat</sub>3: Peak current for approximately 20% (R10 10%) rolloff @ +100 °C
- I<sub>sat</sub>4: Peak current for approximately 20% (R10 10%) rolloff @ +125 °C
- K-factor: Used to determine B<sub>pp</sub> for core loss (see graph). B<sub>pp</sub> = K \* L \* ΔI. B<sub>pp</sub>: (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



DCR measured from point "A" to point "B"  
 Part marking: FP1108R1 (Product code and size), xxx = Inductance value in μH, wwlyy= date code, R= revision level  
 Tolerances are ±0.15 millimeters unless stated otherwise  
 PCB tolerances are ±0.1 millimeters unless otherwise specified.  
 All soldering surfaces to be coplanar within 0.1 millimeters.  
 Termination finish: matte Sn with Ni underplate  
 Do not route traces or vias underneath inductor

Packaging information - mm

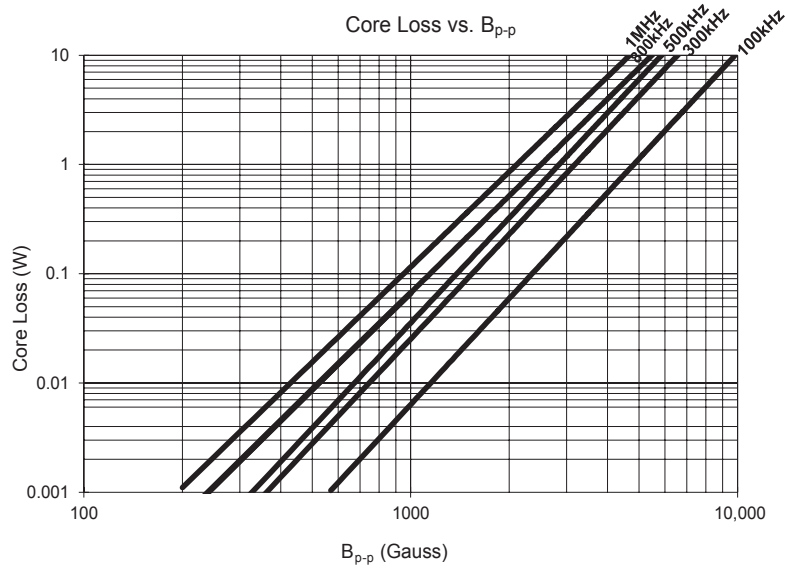


Supplied in tape and reel packaging, 500 parts per 13" diameter reel.

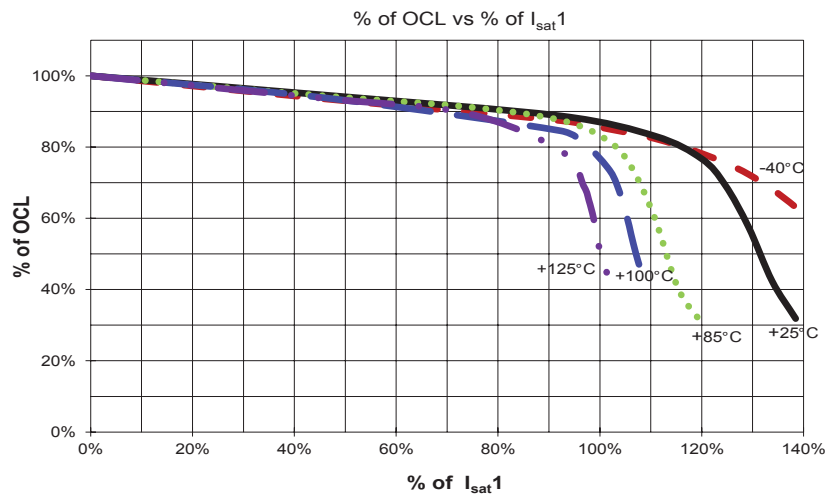
Temperature rise vs total loss



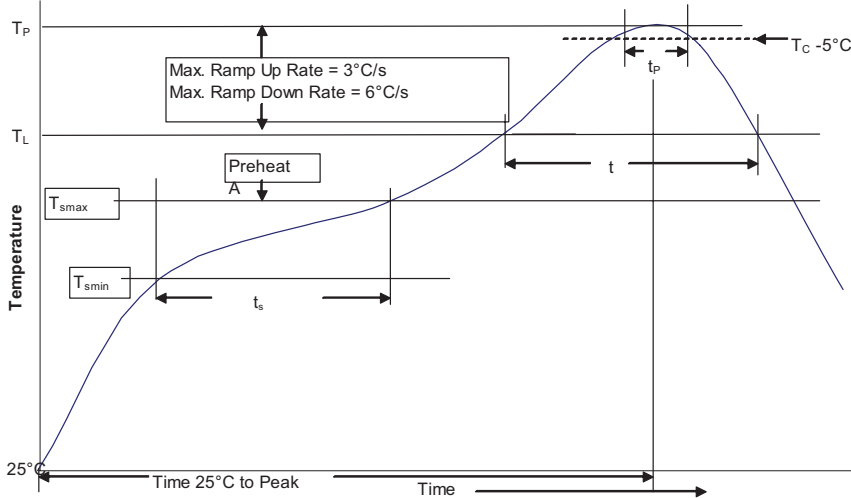
Core loss vs Bp-p



Inductance characteristics



**Solder Reflow Profile**



**Table 1 - Standard SnPb Solder ( $T_c$ )**

Package Thickness	Volume $\text{mm}^3$ <350	Volume $\text{mm}^3$ $\geq 350$
<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 $\text{mm}^3$ <350	Volume $\text{mm}^3$ 350 - 2000	Volume $\text{mm}^3$ >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	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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