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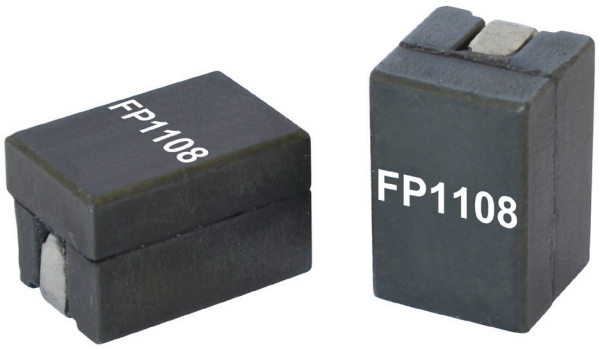
# Coiltronics FP1108 Series

## High frequency, high current, power inductors




### Product description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total temperature operation
- 11.0 x 8.0 x 7.5mm maximum surface mount package
- Ferrite core material
- Controlled DCR for sensing circuits
- Inductance range from 100nH to 210nH
- Current range from 55 to 100+ 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, 500 parts per 13" reel

Pb HALOGEN HF FREE RoHS

The Coiltronics brand of magnetics (formerly of the Bussmann Division of Cooper Industries) is now part of Eaton's Electrical Group, Electronics Division.

**Coiltronics is now part of Eaton**
**Same great products plus even more.**

EATON
*Powering Business Worldwide*

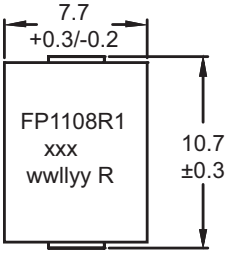
## Product specifications

| 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] |
|---|---|---|---|---|---|---|---|---|---|
| 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 |

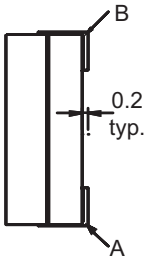
1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1$V_{rms}$, 0.0Adc, 25°C
2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1$V_{rms}$, $I_{sat}1$
3. $I_{rms}$: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents. PCB layout, 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% (R10 10%) rolloff @ +25°C (R10 10%)
5. $I_{sat}2$: Peak current for approximately 20% (R10 10%) rolloff @ +85°C
6. Isat3 : Peak current for approximately 20% (R10 10%) rolloff @ +100°C
7. Isat4: Peak current for approximately 20% (R10 10%) rolloff @ +125°C
8. K-factor: Used to determine $B_{p-p}$ for core loss (see graph). $B_{p-p}$ = K * L * ΔI. $B_{p-p}$:(Gauss), K: (K-factor from table), L: (Inductance in µH), ΔI (peak to peak ripple current in amps).
9. 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

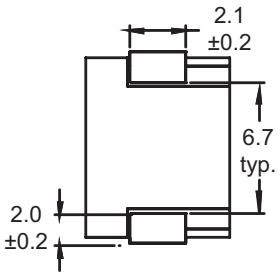
Top View



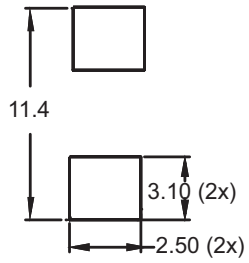

Side View



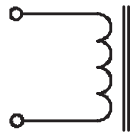

Bottom View



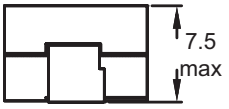

Recommended Pad Layout




Schematic



Front View




DCR measured from point "A" to point "B"

Part marking: FP1108R1 (Product code and size), xxx = Inductance value in µH, wwllyy= date code, R= revision level

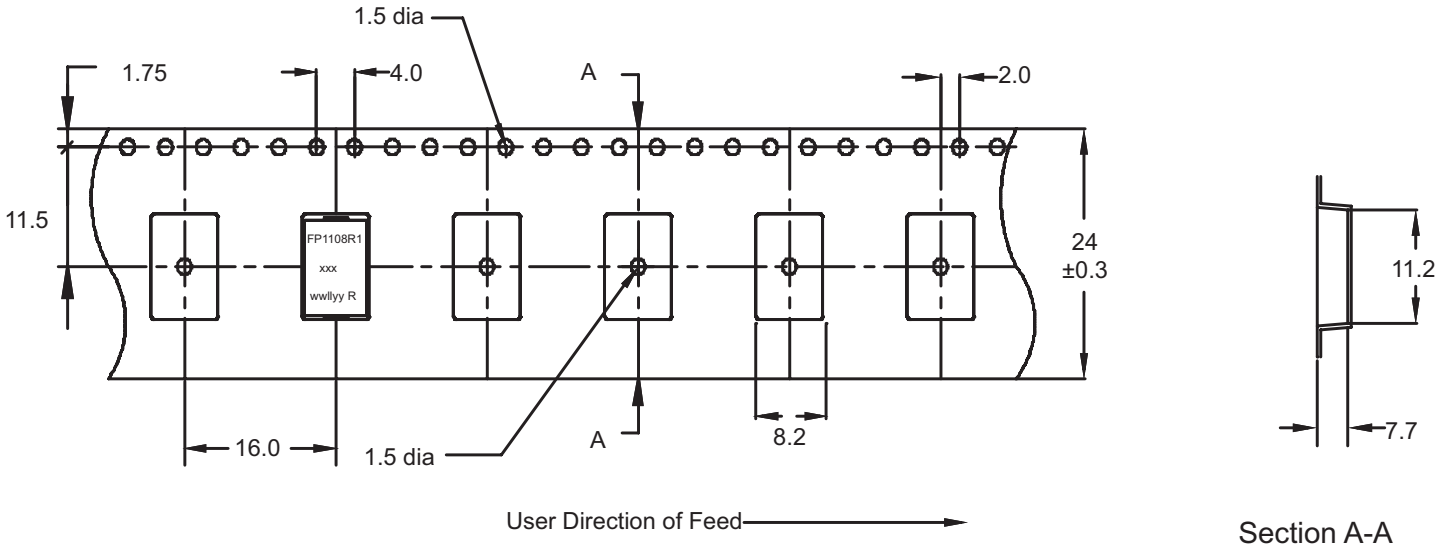
Tolerances are ±0.15 millimeters unless stated otherwise

PCB tolerances are ±0.1millimeters unless otherwise specified.

All soldering surfaces to be be coplanar within 0.1 millimeters.

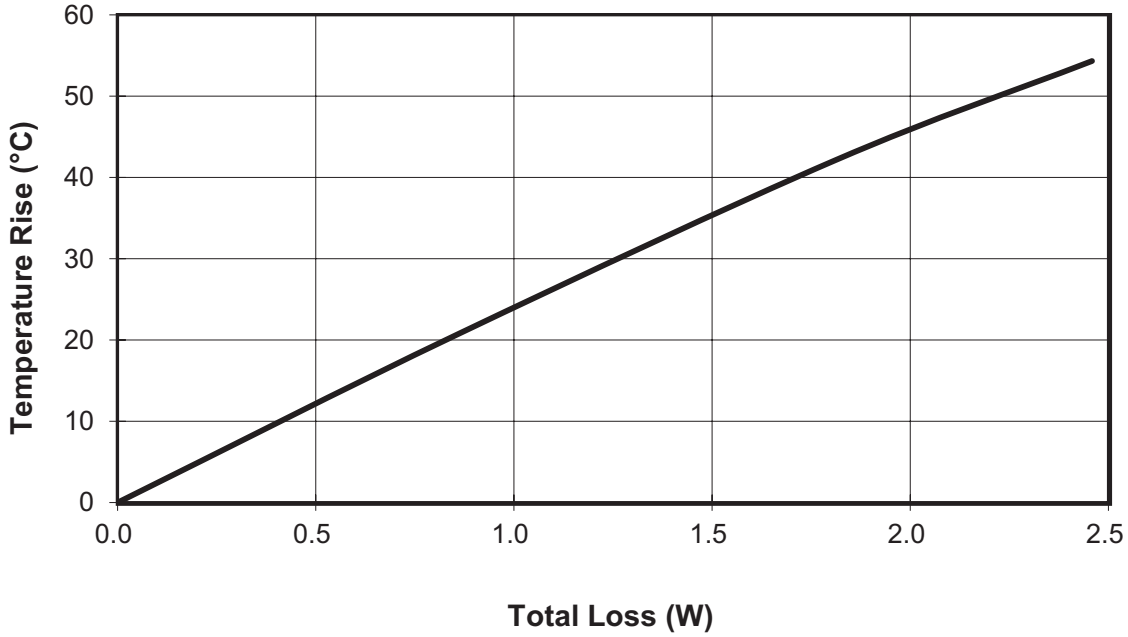
Termination finish: matte Sn with Ni underplate

**Packaging information - mm**

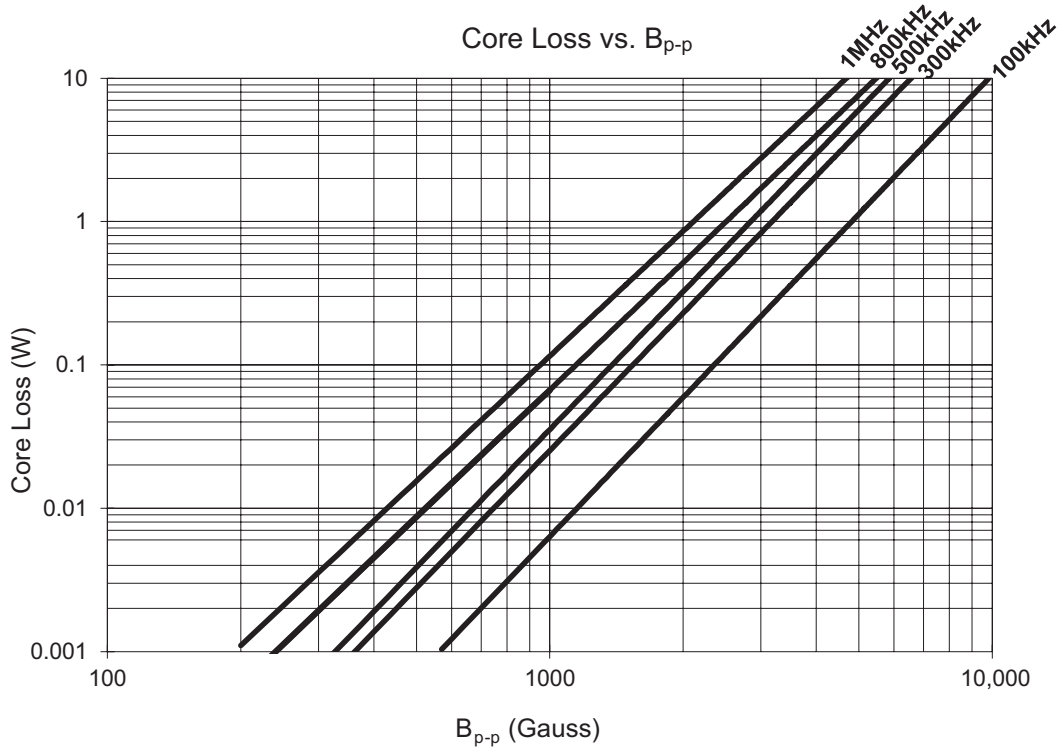



Supplied in tape and reel packaging, 500 parts per 13” diameter reel,

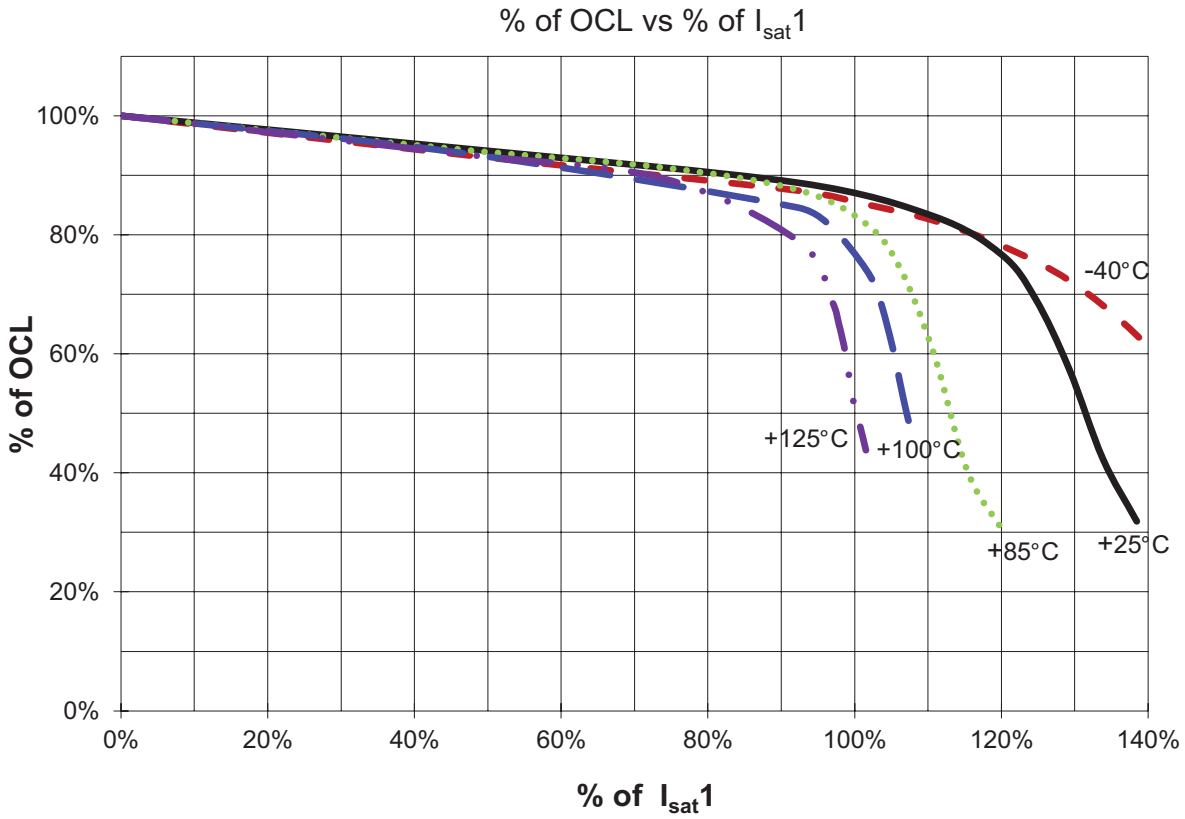
**Temperature rise vs. total loss**



**Core loss**




**Inductance characteristics**



### Solder reflow profile

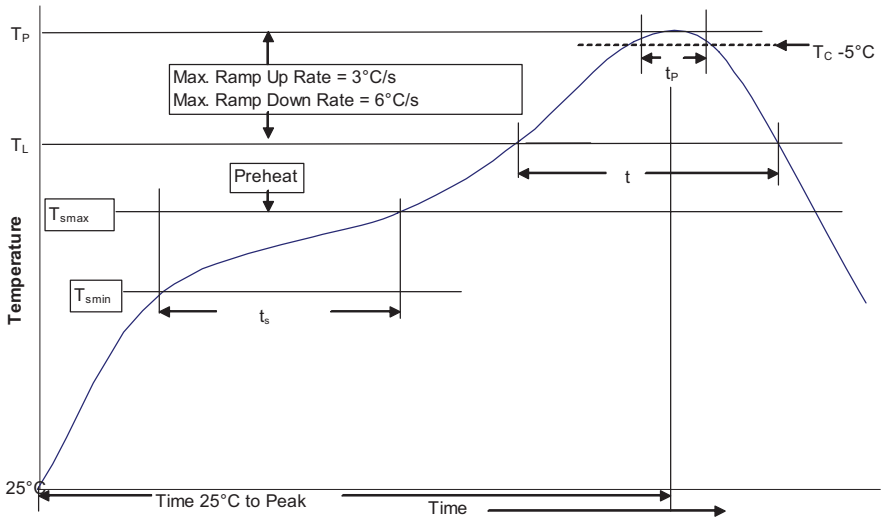



**Table 1 - Standard SnPb Solder ($T_C$)**

| 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 ($T_L$)<br>Time at liquidous ($t_L$) | | 183°C<br>60-150 Seconds | 217°C<br>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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