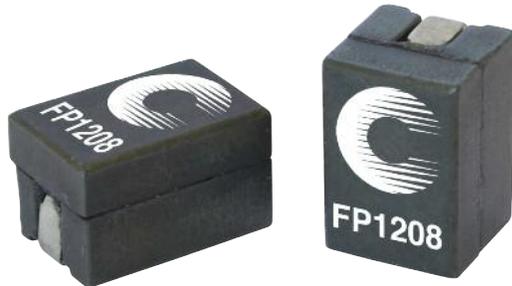


High Frequency, High Current Power Inductors

Flat-Pac™ FP1208 Series



Description

- Halogen free, lead free, RoHS compliant
- 125°C maximum total temperature operation
- 12.1x8.0x8.0mm maximum surface mount package
- Ferrite core material
- Controlled DCR for sensing circuits
- Inductance range from 150nH to 250nH
- Current range from 44 to 85 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" diameter reel

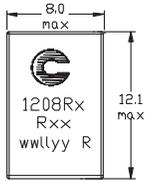
| Product Specifications | | | | | | | | |
|--------------------------|------------------------------|-------------------------------|---|---|---|---|--------------------|-----------------------|
| Part Number ⁸ | OCL ¹ (nH)±10% | FLL min. ² (nH) | I _{rms} ³ (Amps) | I _{sat} 1 ⁴ (Amps) | I _{sat} 2 ⁵ (Amps) | I _{sat} 3 ⁶ (Amps) | DCR (mΩ) @ 20°C | K-factor ⁷ |
| FP1208R1-R15-R | 150 | 114 | 50 | 85 | 79 | 72 | 0.29±5% | 283 |
| FP1208R1-R18-R | 180 | 137 | | 72 | 66 | 63 | | 283 |
| FP1208R1-R21-R | 210 | 160 | | 65 | 57 | 55 | | 283 |
| FP1208R1-R23-R | 230 | 176 | | 61 | 53 | 50 | | 283 |
| FP1208R1-R25-R | 250 | 191 | | 55 | 48 | 44 | | 283 |

1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.1V_{rms}, 0.0A_{dc}@25°C
 2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1V_{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% rolloff @ 25°C

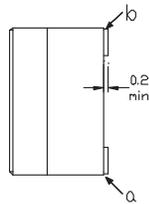
5. I_{sat}2: Peak current for approximately 20% rolloff @ 85°C
 6. I_{sat}3: Peak current for approximately 20% rolloff @ 125°C
 7. K-factor: Used to determine B_{p-p} for core loss (see graph).
 $B_{p-p} = K * L * \Delta I * 10^{-3}$. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak to peak ripple current in Amps).
 8. Part Number Definition: FP1208Rx-Rxx-R:
 - FP1208= Product code and size
 - Rx= DCR indicator
 - Rxx= Inductance value in μH
 - "-R" suffix = RoHS compliant

Dimensions - mm

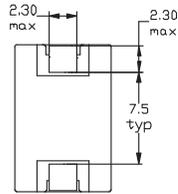
Top View



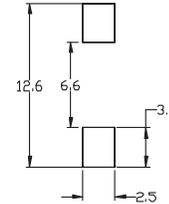
Side View



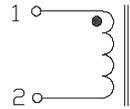
Bottom View



Recommended Pad Layout



Schematic



Front View



DCR measured from point "a" to point "b"

Part marking: Coiltronics logo, 1208Rx (Rx= DCR indicator), Rx = Inductance value in uH (R= decimal point)

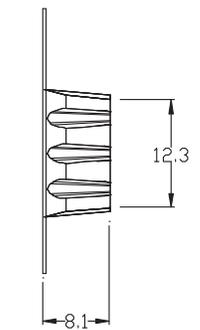
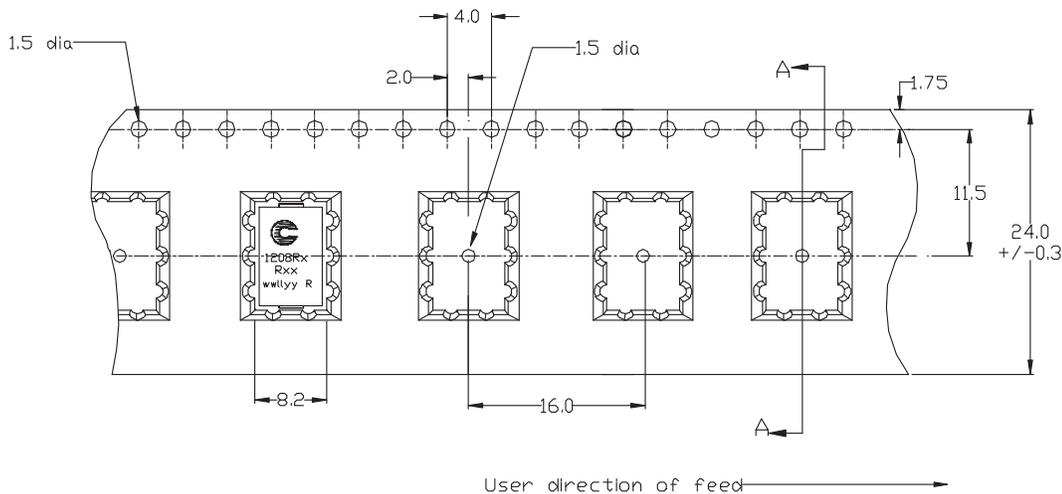
wwlyy= date code, r= revision level

Tolerances are +/- 0.15 millimeters unless stated otherwise.

PCB tolerances are +/- 0.10 millimeters unless stated otherwise.

All soldering surfaces to be coplanar within 0.1 millimeters.

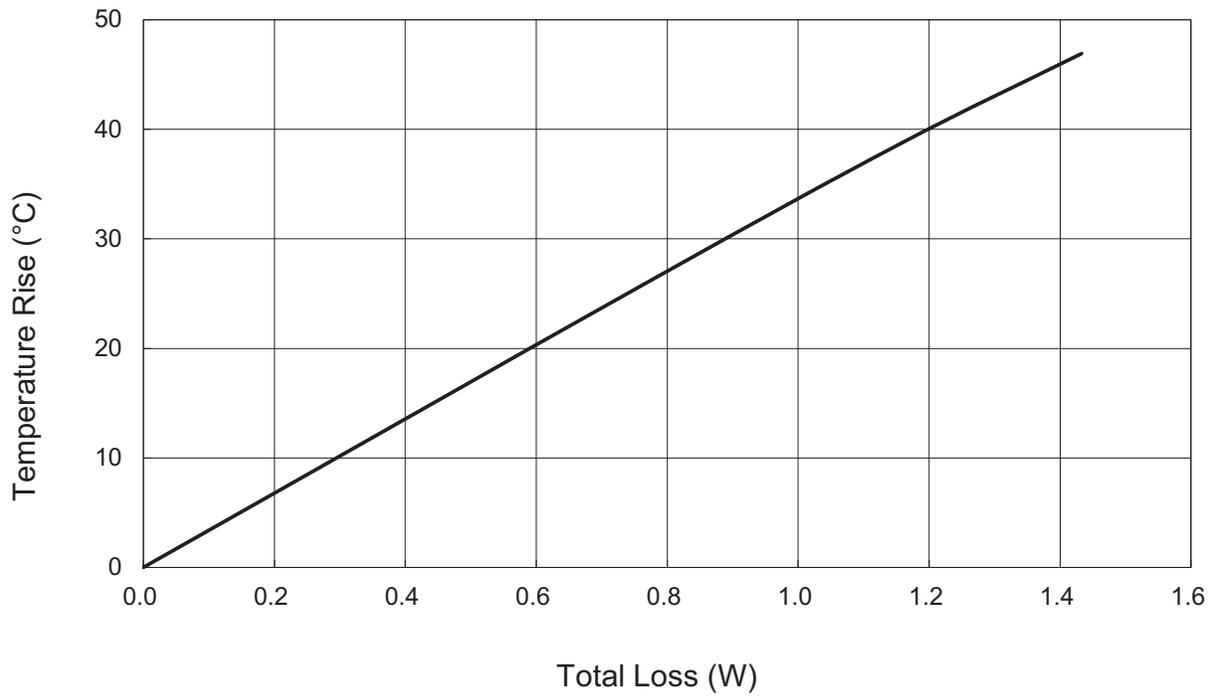
Packaging Information - mm



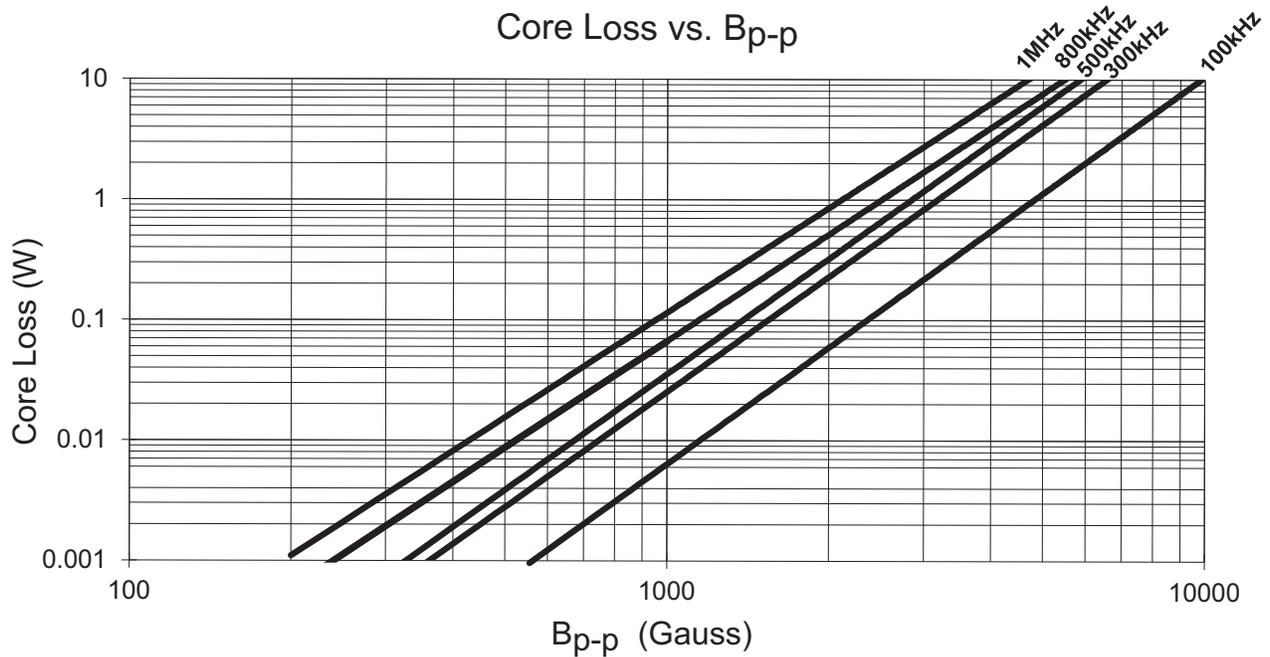
Section A-A

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

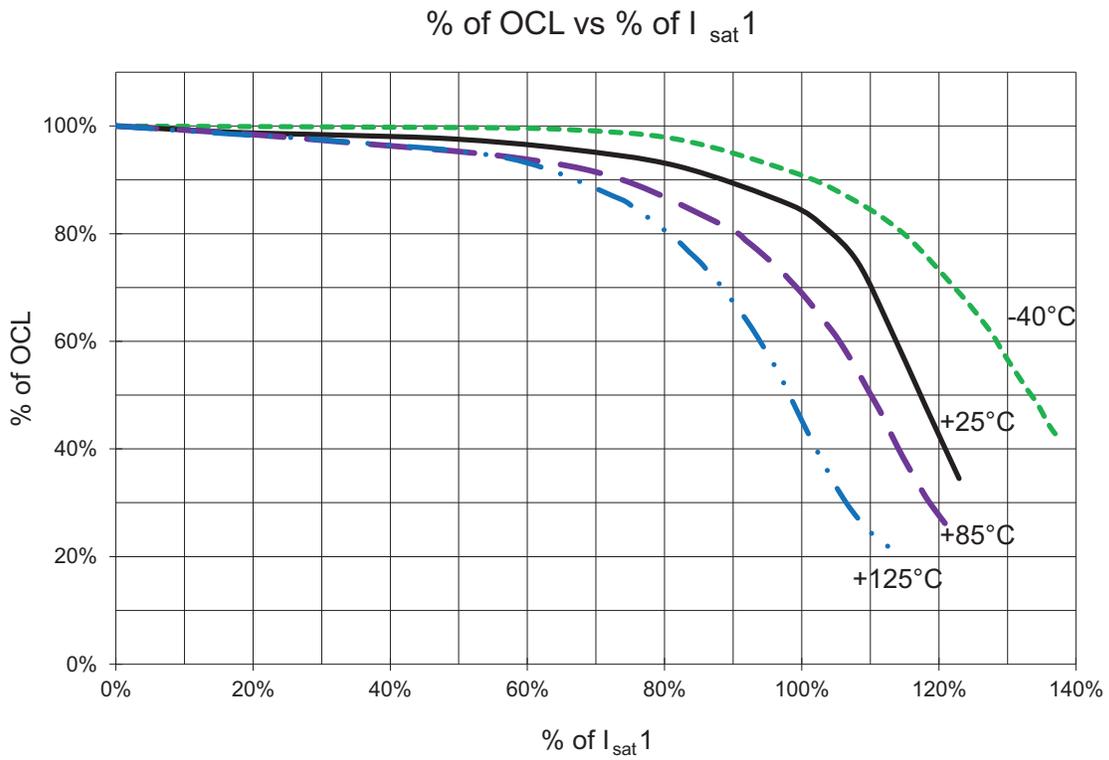
Temperature Rise vs. Total Loss



Core Loss



Inductance Characteristics



Solder Reflow Profile

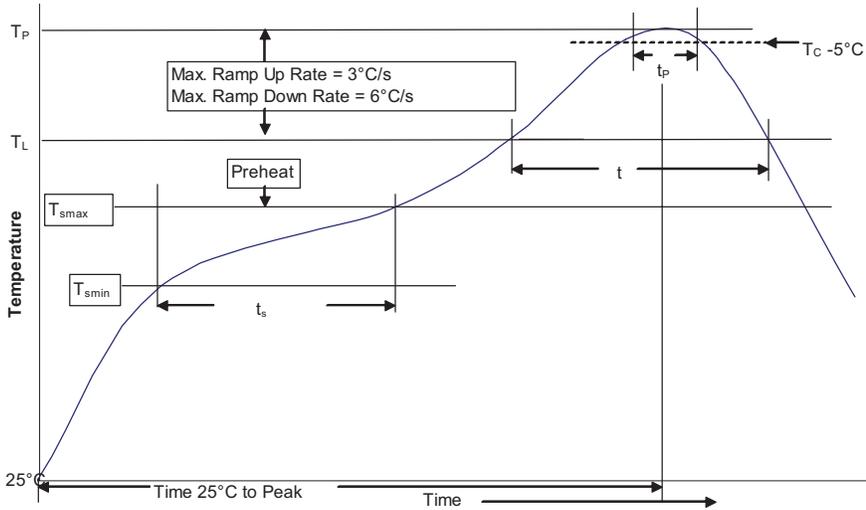


Table 1 - Standard SnPb Solder (T_c)

| Package Thickness | Volume 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-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) | 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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Other:

[FP1208-R15-R](#) [FP1208-R18-R](#) [FP1208-R21-R](#) [FP1208-R23-R](#) [FP1208-R25-R](#)