

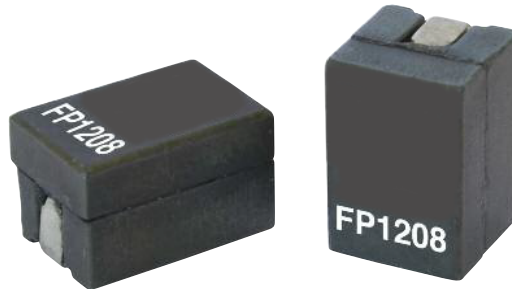


**THE DATASHEET OF
FP1208R1-R21-R**



FP1208

High frequency, high current power inductors



Product features

- 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
- Halogen free, lead free, RoHS compliant

Applications

- Multi-phase regulators
- Voltage Regulator Modules (VRMs)
- Desktop and server VRMs and EVRDs
- 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 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}, 0.0Adc@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

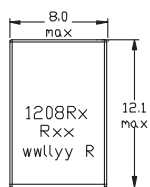
* $\Delta I \cdot 10^{-3}$. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in nH), ΔI (Peak to peak ripple current in Amps).

8. Part Number Definition: FP1208Rx-Rxx-R:

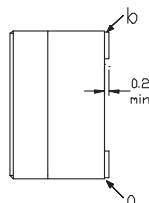
- FP1208= Product code and size
- Rx= DCR indicator
- Rxx= Inductance value in μH
- "-R" suffix = RoHS compliant

Dimensions- mm

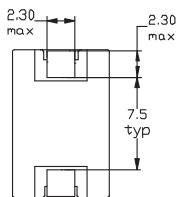
Top View



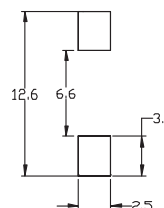
Side View



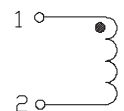
Bottom View



Recommended Pad Layout



Schematic



Front View



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

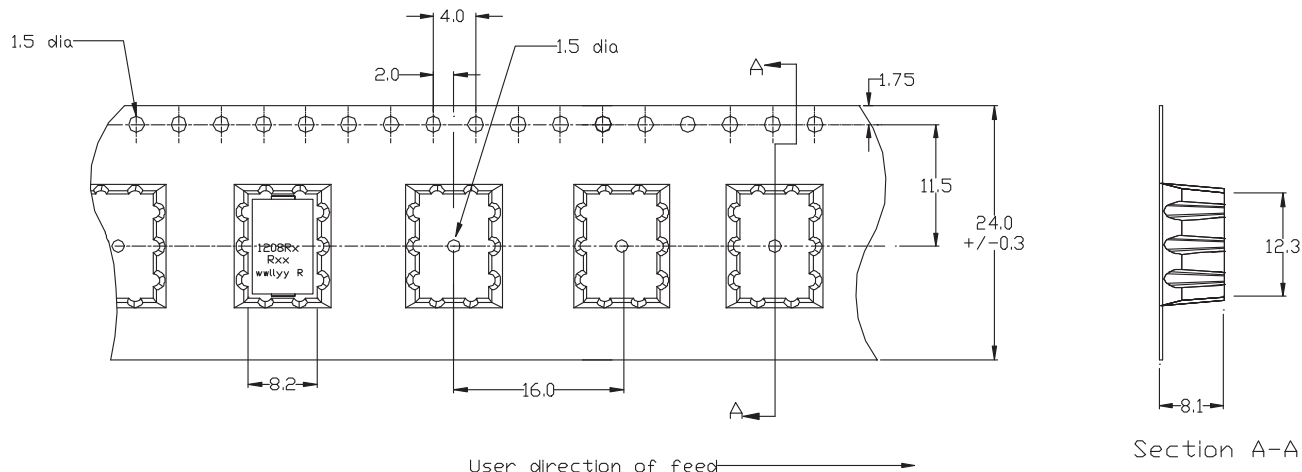
Part marking: 1208Rx (Rx= DCR indicator), Rxx = Inductance value in uH (R= decimal point) wllly= date code, r= revision level

Tolerances are +/- 0.15 millimeters unless stated otherwise.

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

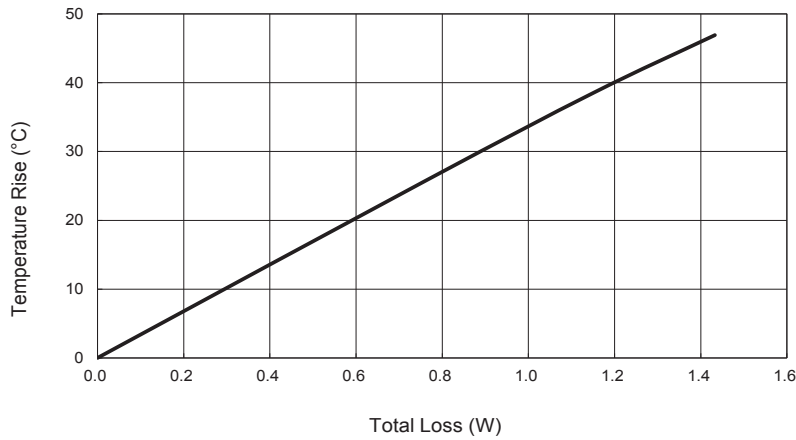
All soldering surfaces to be coplanar within 0.1 millimeters.

Packaging information - mm

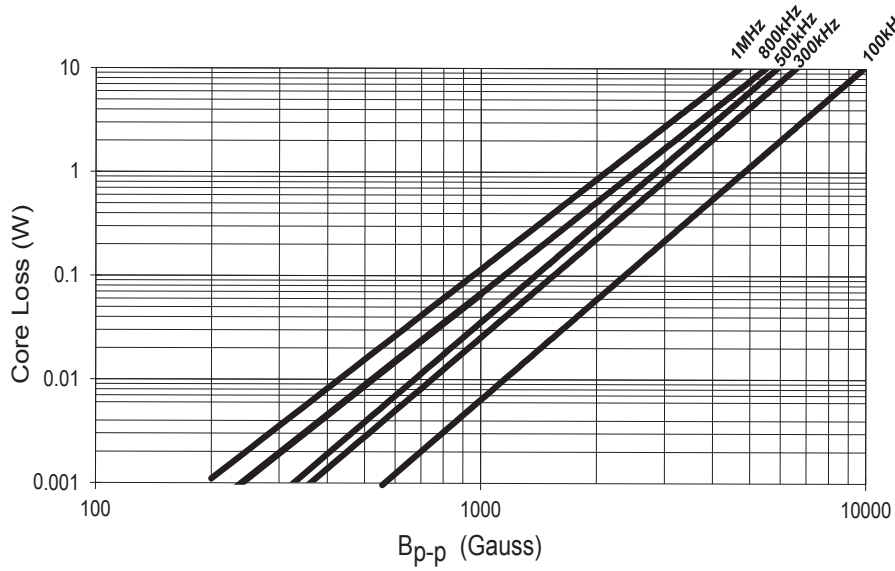


Supplied in tape and reel packaging, 500 parts on a 13" diameter reel.

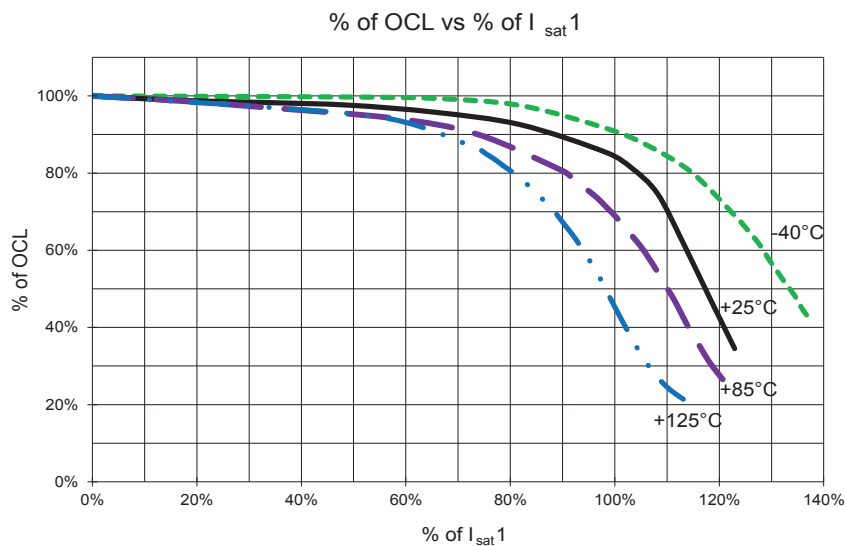
Temperature rise vs total loss



Core loss vs Bp-p



Inductance characteristics



Solder Reflow Profile

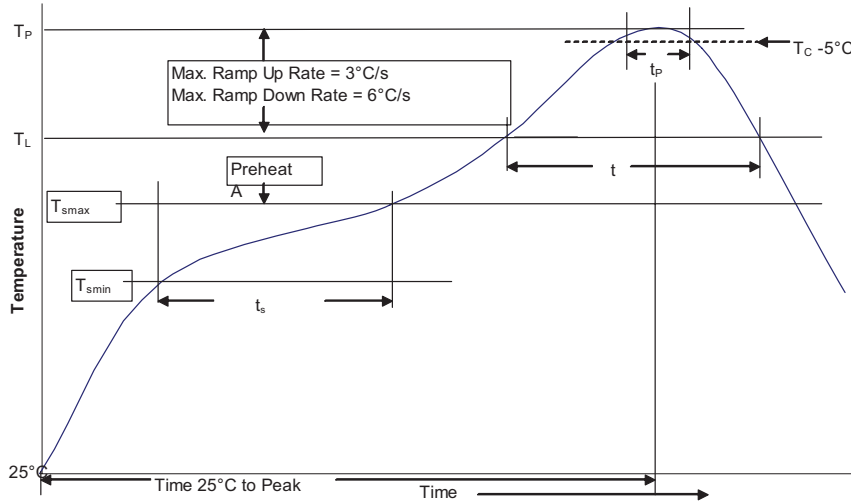


Table 1 - Standard SnPb Solder (T_c)

Package Thickness	Volume ≤ 350 mm ³	Volume ≥ 350 mm ³
<2.5mm	235°C	220°C
≥ 2.5 mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_c)

Package Thickness	Volume ≤ 350 mm ³	Volume 350 - 2000 mm ³	Volume > 2000 mm ³
<1.6mm	260°C	260°C	260°C
1.6 - 2.5mm	260°C	250°C	245°C
> 2.5 mm	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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