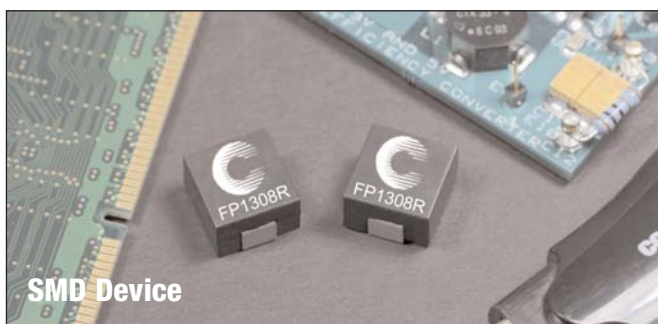


High Current, High Frequency, Power Inductors

FLAT-PAC™ FP1308R Series



Description

- Halogen Free
- 125°C maximum total temperature operation
- 12.70 x 13.46 x 8.0mm surface mount package
- Ferrite core material
- High current carrying capacity, Low core losses
- Controlled DCR tolerance for sensing circuits
- Inductance range from 110nH to 440nH
- Current range from 37 to 120 Amps
- Frequency range up to 2MHz
- RoHS compliant

Applications

- Multi-phase regulators
- Voltage Regulator Module (VRM)
- Desktop and server VRMs and EVRDs
- Data networking and storage systems
- Notebook regulators
- Graphics cards and battery power systems
- Point-of-load modules
- DCR sensing



Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (with derated current)
- Solder reflow temperature: J-STD-020D compliant

Packaging

- Supplied in tape and reel packaging, 400 parts per reel, 13" diameter reel

Product Specifications

Part Number ⁷	OCL ¹ ± 10% (nH)	FLL ² (nH)	I _{rms} ³ (Amps)	I _{sat} ¹⁴ @ 25°C (Amps)	I _{sat} ²⁵ @ 125°C (Amps)	DCR (mΩ) @ 20°C	K-factor ⁶
R1 Version							
FP1308R1-R11-R	110	79	57	120	105	0.32 ± 9.4%	233
FP1308R1-R21-R	210	152		80	68		233
FP1308R1-R26-R	260	187		64	52		233
FP1308R1-R32-R	320	230		52	40		233
FP1308R1-R44-R	440	317		37	28		233
R2 Version							
FP1308R2-R11-R	110	79	45	120	105	0.53 ± 10%	233
FP1308R2-R21-R	210	152		80	68		233
FP1308R2-R26-R	260	187		64	52		233
FP1308R2-R32-R	320	230		52	40		233
FP1308R2-R44-R	440	317		37	28		233
R3 Version							
FP1308R3-R11-R	110	79	68	120	105	0.18 ± 20%	233
FP1308R3-R21-R	210	152		80	68		233
FP1308R3-R26-R	260	187		64	52		233
FP1308R3-R32-R	320	230		52	40		233
FP1308R3-R44-R	440	317		37	28		233

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.10V_{rms}, 0.0A_{dc}

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 pad layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended the part temperature not exceed 125°C under worst case operating conditions verified in the end application.

4 I_{sat}¹: Peak current for approximately 20% rolloff at +25°C.

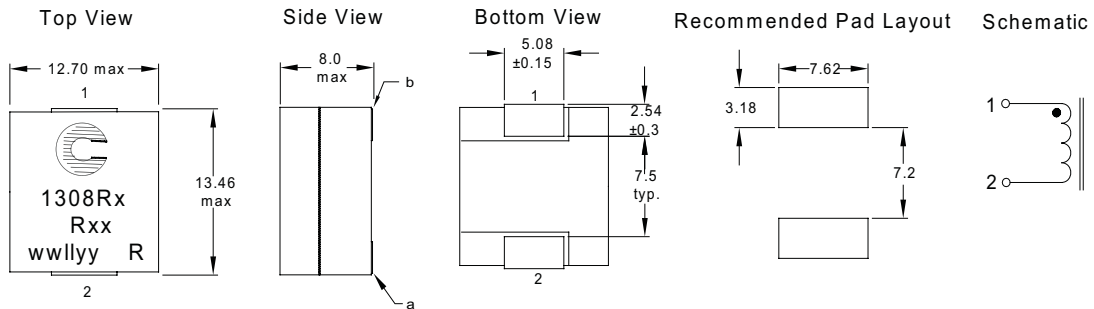
5 I_{sat}²⁵: Peak current for approximately 20% rolloff at +125°C.

6 K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K · L · ΔI · 10⁻³. B_{p-p} (Gauss), K: (K-factor from table), L: (inductance in nH), ΔI (peak-to-peak ripple current in amps).

7 Part Number Definition: FP1308Rx-Rxx-R

- FP1308 = Product code and size
- Rx = DCR indicator
- Rxx = Inductance value in μH, R = decimal point.
- "-R" suffix = RoHS compliant

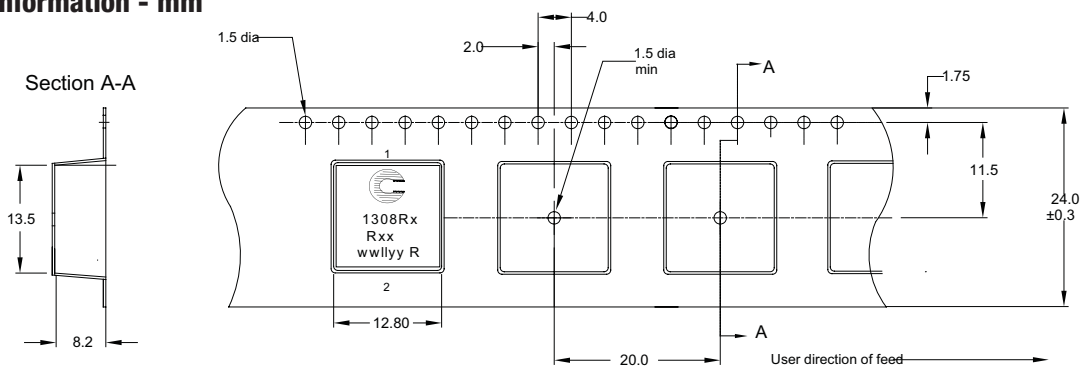
Dimensions - mm



The nominal DCR is measured from point "a" to point "b"

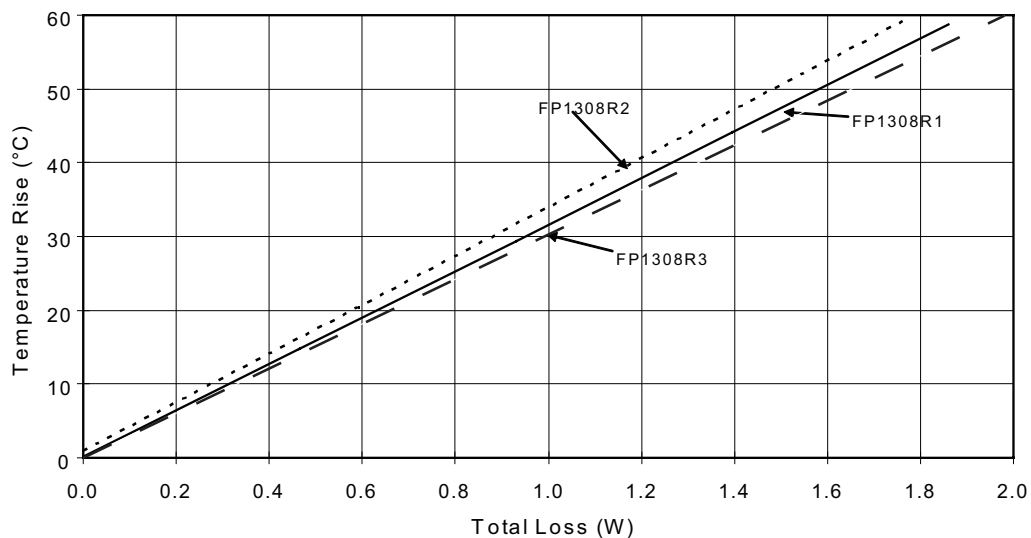
Part Marking: Coiltronics logo FP1308R (Rx = DRC indicator) Rxx = Inductance value in μH . (R = Decimal point). wwllyy = Date code R = Revision level

Packaging Information - mm

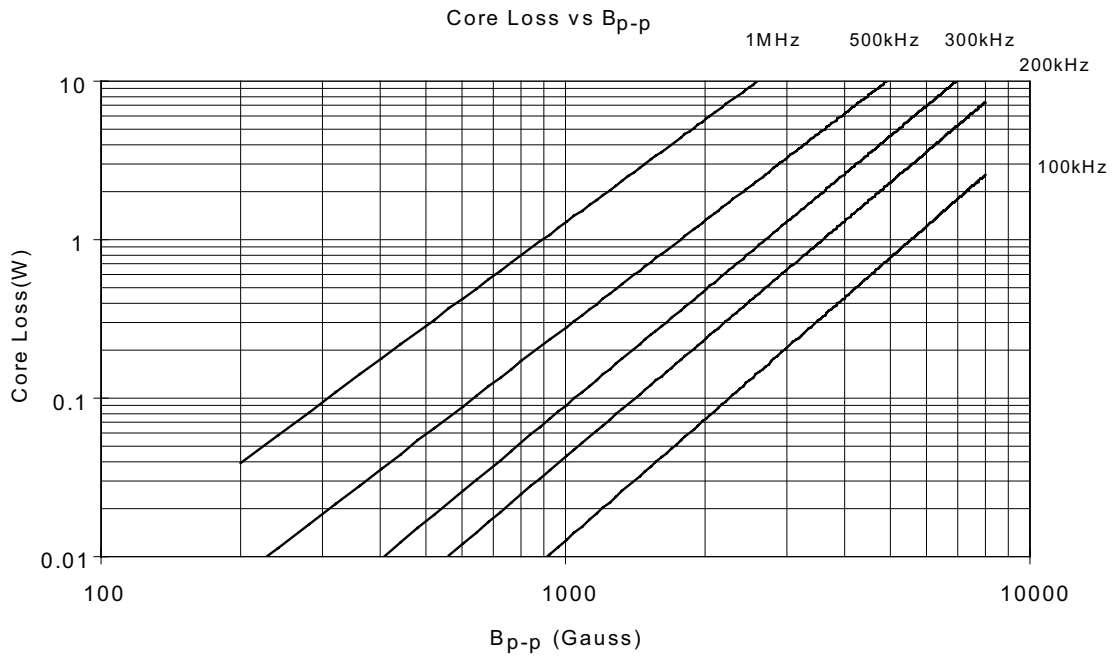


Supplied in tape-and-reel packaging, 400 parts per reel, 13" diameter reel.

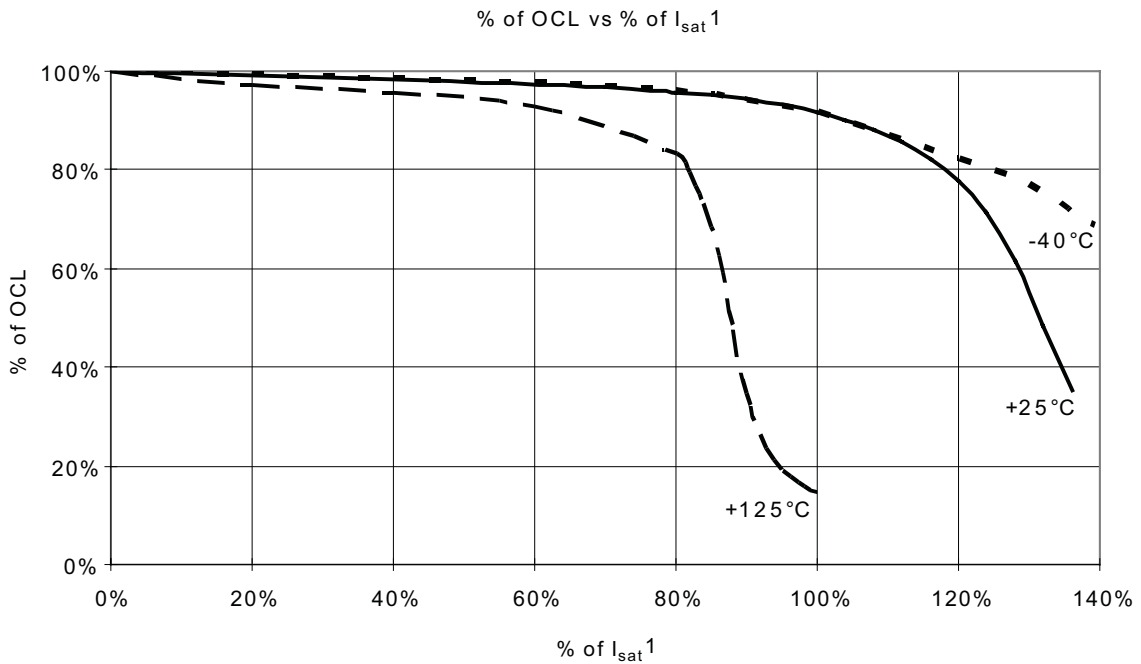
Temperature Rise vs. Total Loss



Core Loss



Inductance Characteristics



Solder Reflow Profile

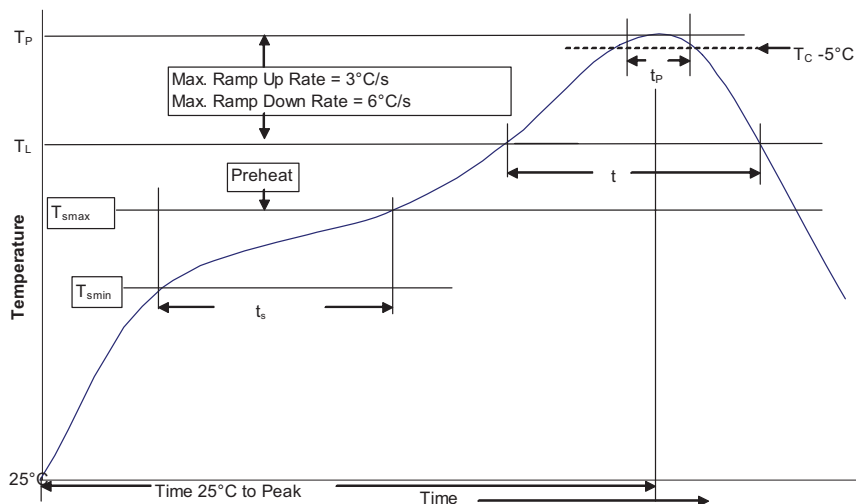


Table 1 - Standard SnPb Solder (T_C)

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
$> 2.5\text{mm}$	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
	• 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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