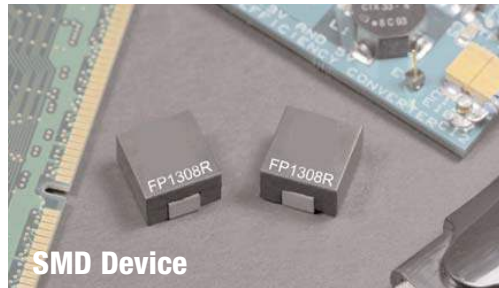


FP1308R

High frequency, high current power inductors



SMD Device

Product features

- 13.4 x 12.7 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

Applications

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

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	OC1 ± 10% (nH)	FLL2 (nH)	I _{rms} 3 (Amps)	I _{sat} 14 @ 25°C (Amps)	I _{sat} 25 @ 125°C (Amps)	DCR (mΩ) @ 20°C	K-factor6
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 (OC1) Test Parameters: 100kHz, 1.0V_{rms}, 0.0Adc

2 Full Load Inductance (FLL) Test Parameters: 100kHz, 1.0V_{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}: Peak current for approximately 20% rolloff at +25°C.

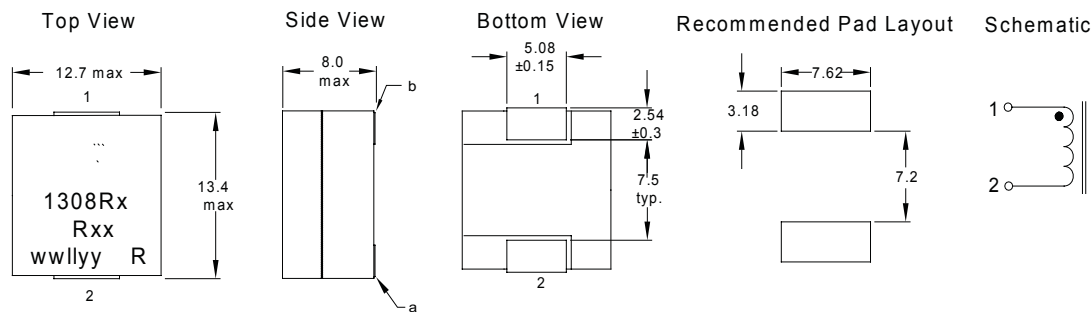
5 I_{sat}2: Peak current for approximately 20% rolloff at +125°C.

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

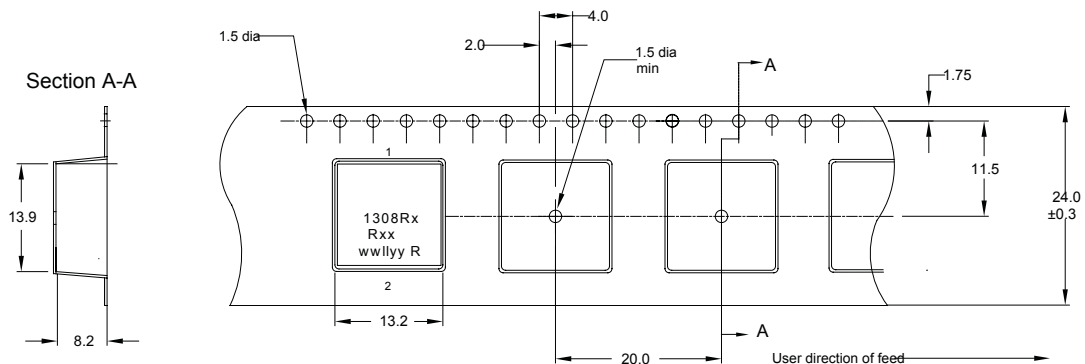


The nominal DCR is measured from point "a" to point "b"

All soldering surfaces to be coplanar within 0.1016mm.

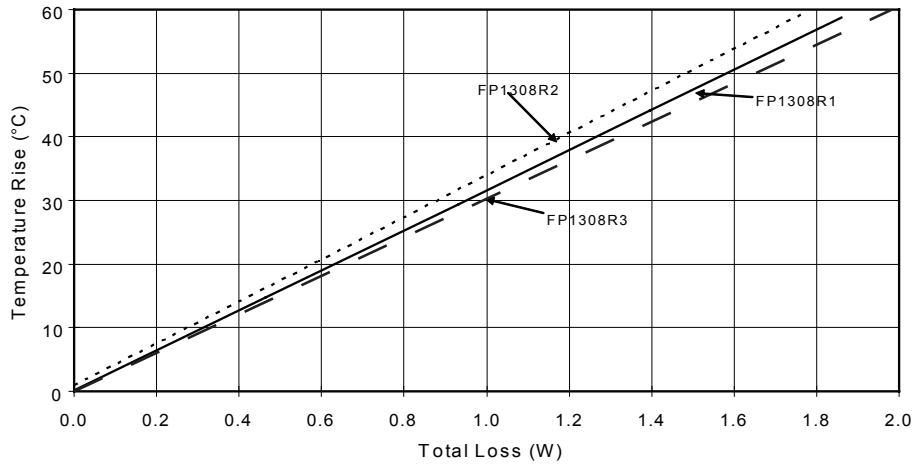
Part Marking: FP1308R (Rx = DCR indicator) Rxx = Inductance value in μH. (R = Decimal point). wwllyy = Date code R = Revision level

Packaging information - mm

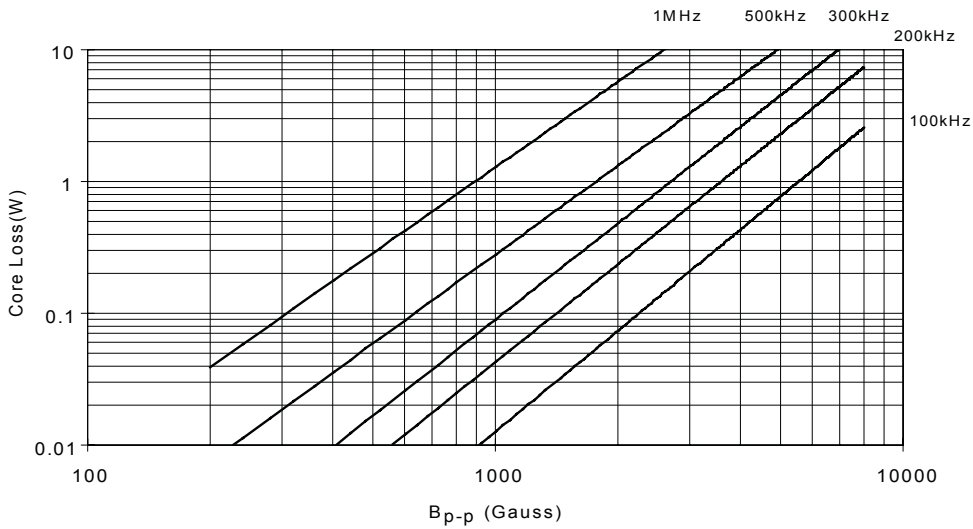


Supplied in tape-and-reel packaging, 400 parts per reel, 13" diameter reel.

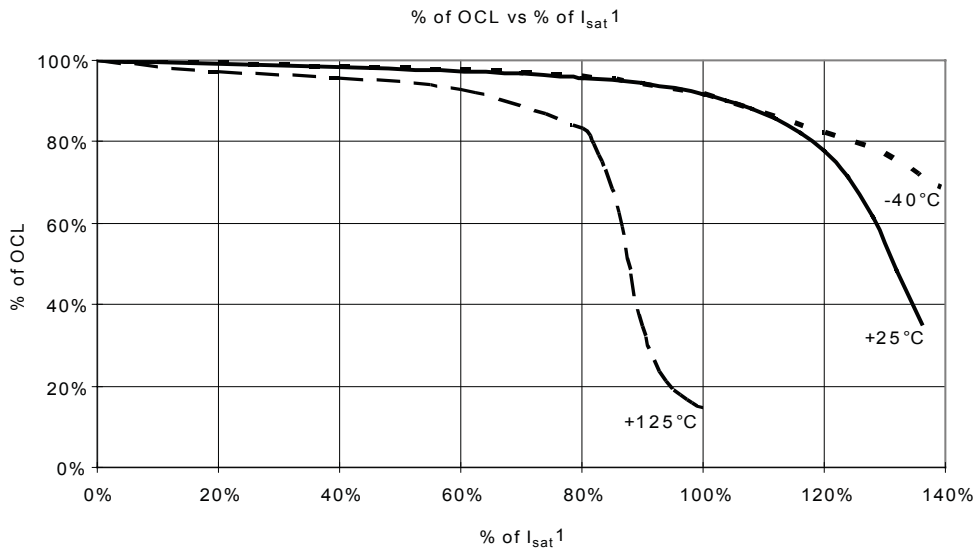
Temperature rise vs total loss



Core loss vs Bp-p



Inductance characteristics



Solder Reflow Profile

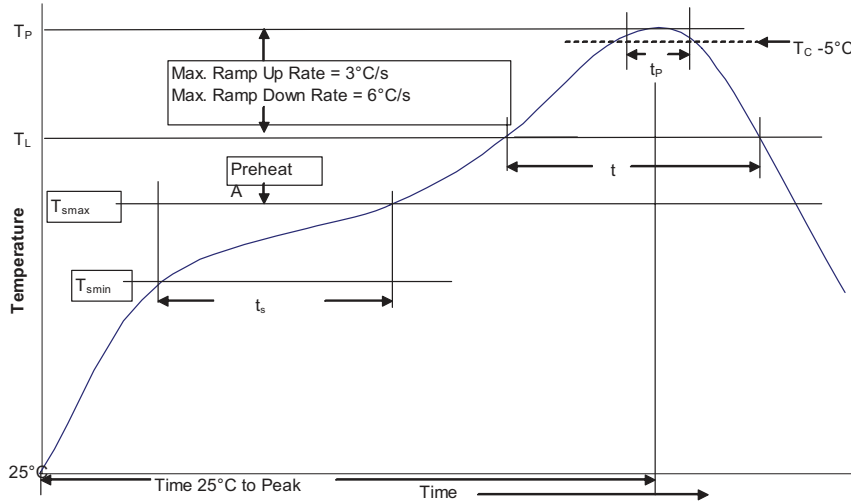


Table 1 - Standard SnPb Solder (T_c)

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-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.

Life Support Policy: Eaton does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Eaton reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Eaton also reserves the right to change or update, without notice, any technical information contained in this bulletin.

Eaton
Electronics Division
1000 Eaton Boulevard
Cleveland, OH 44122
United States
www.eaton.com/electronics

© 2017 Eaton
All Rights Reserved
Printed in USA
Publication No. 4355 BU-SB12178
June 2017