

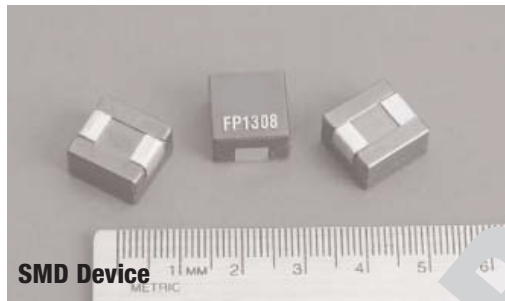


**THE DATASHEET OF  
FP1308-R21-R**



# FP1308

## High frequency, high current power inductors



SMD Device

### Product features

- 13.7 x 12.9 x 8.0mm surface mount package footprint
- High current handling capability from 32 to 120A
- Ferrite core material
- Inductance range from 0.110µH to 0.440µH
- Current range from 32 to 120A
- Frequency range up to 2MHz
- Halogen free, lead free, RoHS compliant

### Applications

- Voltage regulator modules (VRMs) for servers and microprocessors
- Multi-phase buck converters
- High frequency, high current switching power supplies

### Environmental

- 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: 260 °C (MSL-020 (latest revision) compliant)



### Product Specifications

Part Number <sup>5</sup>	Rated Inductance (µH)	OCL <sup>1</sup> ± 10% (µH)	I <sub>rms</sub> <sup>2</sup> (Amps)	I <sub>sat</sub> <sup>3</sup> (Amps)	DCR (mΩ) @ 25°C Typical	DCR (mΩ) @ 25°C Max	K-factor <sup>4</sup>
FP1308-R11-R	0.110	0.110	68	120	0.20	0.24	21.330
FP1308-R21-R	0.210	0.210	68	72	0.20	0.24	21.333
FP1308-R26-R	0.260	0.260	68	60	0.20	0.24	21.335
FP1308-R32-R	0.320	0.320	68	45	0.20	0.24	21.340
FP1308-R44-R	0.440	0.440	68	32	0.20	0.24	21.366

1 OCL: Open Circuit Inductance (OCL) Test Parameters: 100kHz, 1.0V<sub>rms</sub>, 0.0Adc

2 I<sub>rms</sub>: 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.

3 I<sub>sat</sub>: Peak current for approximately 20% rolloff at +25°C.

4 K-factor: Used to determine B<sub>p-p</sub> for core loss (see graph). B<sub>p-p</sub> = K \* L \* ΔI. B<sub>p-p</sub> (mT): (Gauss), K: (K-factor from table), L: (inductance in µH), ΔI (peak-to-peak ripple current in amps).

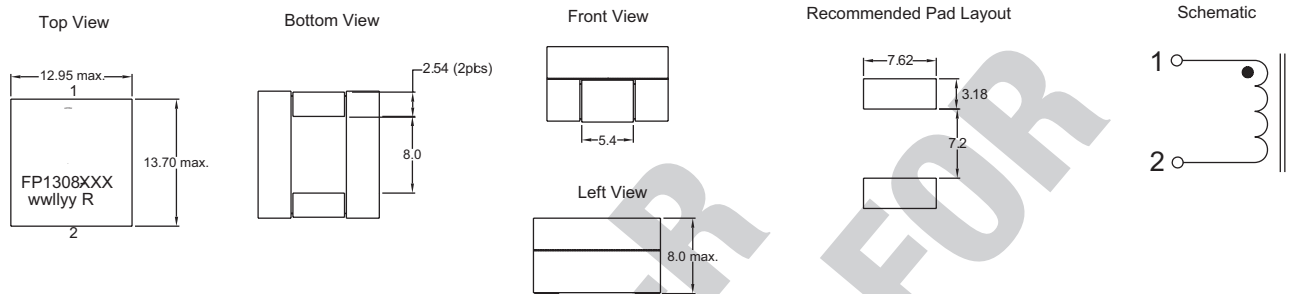
5 Part Number Definition: FP1308-xxx-R

- FP1308 = Product code and size
- xxx= Inductance value in µH, R = decimal point. If no "R" is present, then third character = # of zeros.
- "-R" suffix = RoHS compliant



Powering Business Worldwide

**Dimensions - mm**



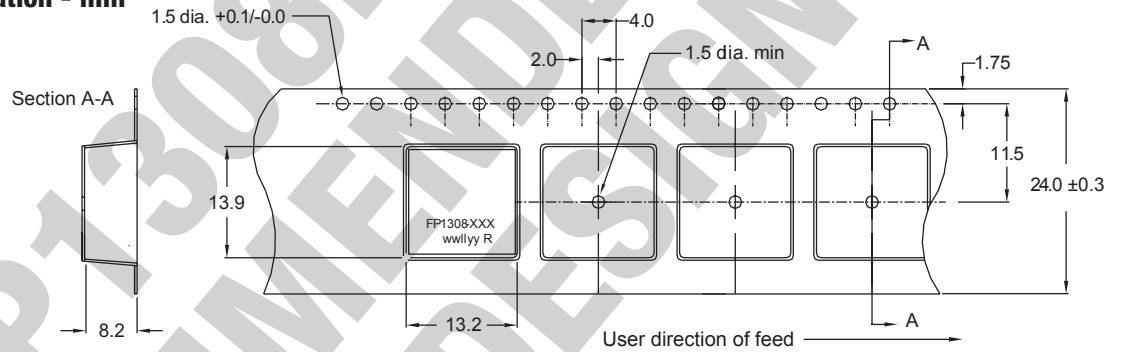
Part Marking: FP1308

xxx = Inductance value in  $\mu\text{H}$ . (R = Decimal point). If no "R" is present, then last character is # Of zeros

wwlyy = Date code

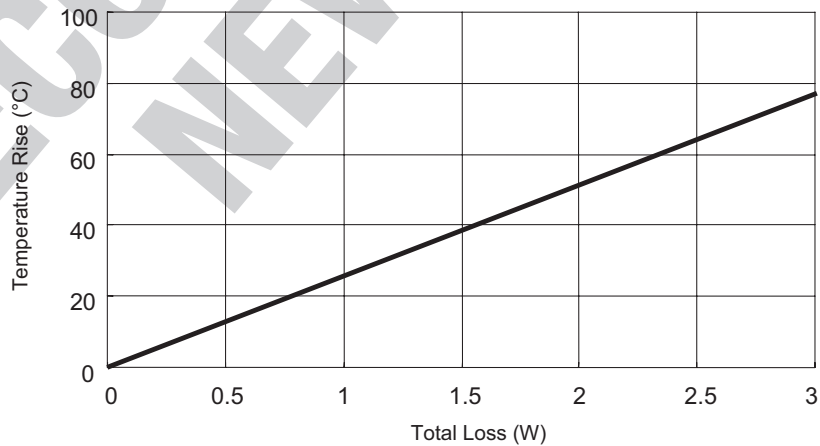
R = Revision level

**Packaging Information - mm**

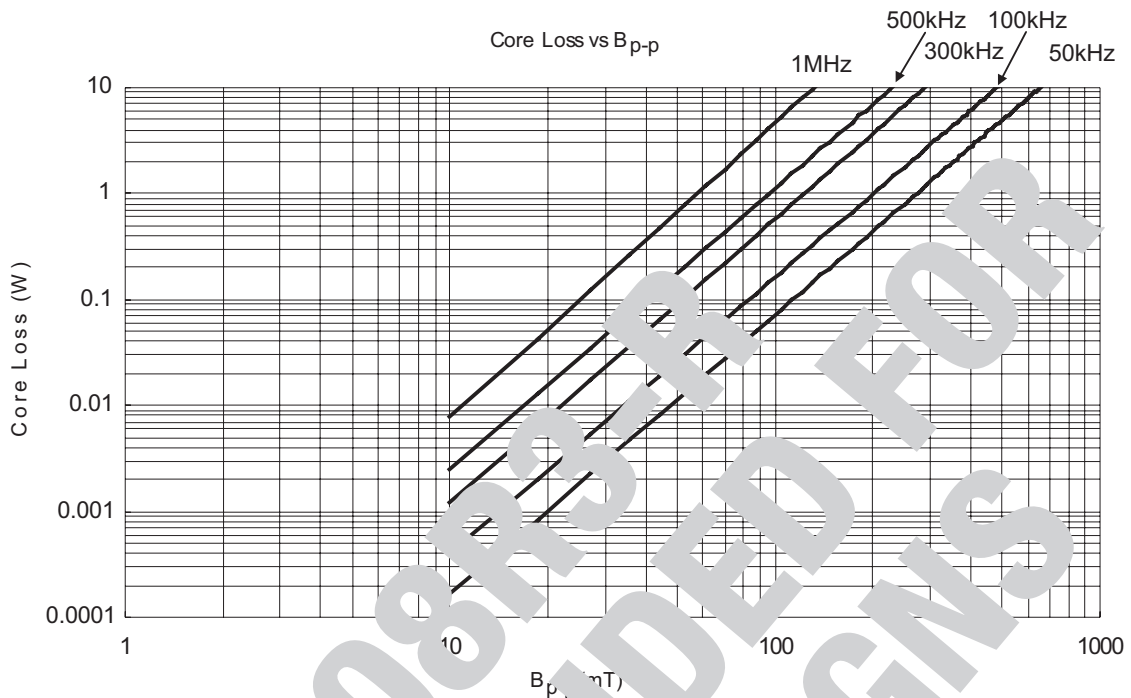


Supplied in tape-and-reel packaging, 400 parts per reel, 13" diameter reel.

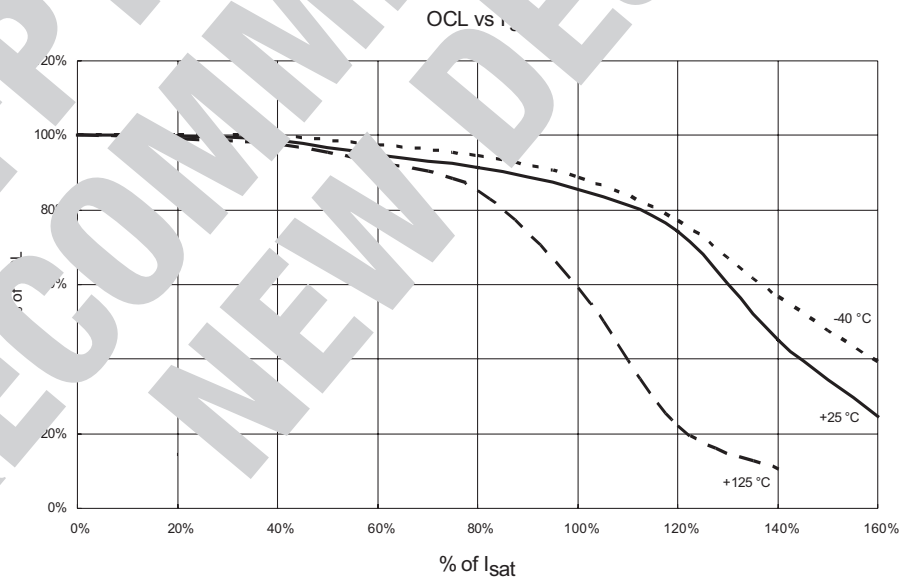
**Temperature Rise vs. Total Loss**



**Core Loss**



**Inductance Characterist**



**Solder Reflow Profile**

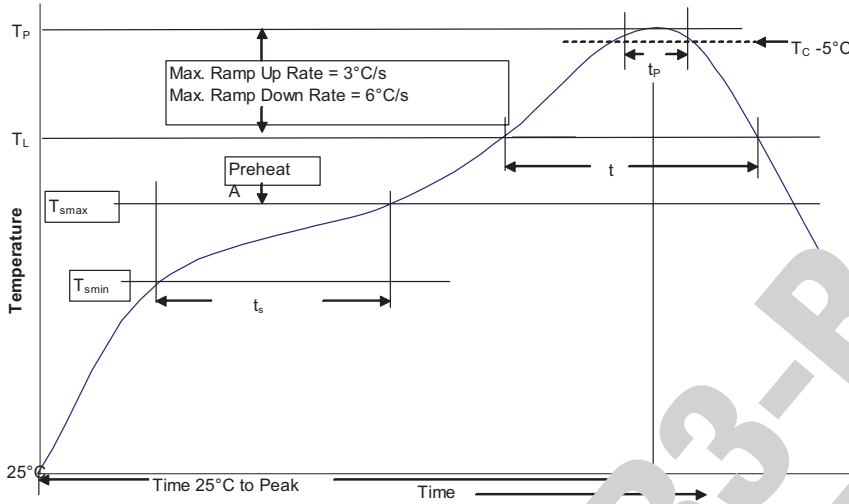


Table 1 - Standard SnPb Solder ( $T_p$ )

Package Thickness	Volume $\leq 350$ mm <sup>3</sup>	Volume $\geq 350$ mm <sup>3</sup>
<2.5mm	235°C	220°C
$\geq 2.5$ mm	220°C	

Table 2 - Lead Free Solder ( $T_p$ )

Package Thickness	Volume $\leq 350$ mm <sup>3</sup>	Volume 350 - 2000 mm <sup>3</sup>	Volume $>2000$ mm <sup>3</sup>
<1.6mm	260°C	260°C	260°C
1.6 - 2.5mm	250°C	250°C	245°C
$\geq 2.5$ mm	250°C	245°C	245°C

**Reference JDEC J-STD-020**

Profile Feature	Standard SnPb Solder	Lead Free Solder
Preheat and Soak		
• Temperature min. ( $T_{smin}$ )	100°C	150°C
• Temperature max. ( $T_{smax}$ )	250°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 ( $T_L$ )	235°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 ( $T_c$ )	30 Seconds**	30 Seconds**
Average ramp-down rate ( $T_p$ to $T_{smin}$ )	6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature	8 Minutes Max.	8 Minutes Max.

\* Tolerance for peak profile temperature ( $T_p$ ) is specified as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature is specified 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. DS4313 BU-SB111090  
June 2017

Eaton is a registered trademark.

All other trademarks are property of their respective owners.

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View FP1308-R21-R on WIN SOURCE](#)

 [Eaton Bussmann Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management