Excellent Integrated System Limited

Stocking Distributor

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Eaton (formerly Cooper Bussmann) FP0807R1-R12-R

For any questions, you can email us directly: sales@integrated-circuit.com

Distributor of Eaton (formerly Cooper Bussmann) : Excellent Integrated System Limited

Datasheet of FP0807R1-R12-R - FIXED IND 120NH 49A 0.5 MOHM SMD

Contact us: sales@integrated-circuit.com Website: www.integrated-circuit.com

Technical Data 4343

Effective December 2015 Supersedes September 2008

FP0807

High frequency, high current power inductors



Product description

- · High current carrying capacity
- · Low core losses
- Inductance range from 70nH to 220nH
- Current range from 35 to 108 amps
- Frequency range up to 2MHz
- 7.4 x 7.6 footprint surface mount package in a 7.0mm height
- · Ferrite core material
- · Halogen free, lead free, RoHS compliant

Applications

- Multi-phase and Vcore 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

Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020D compliant









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DCR (mO)

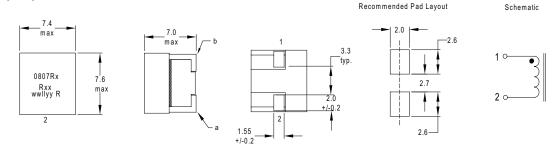
Product Specifications

Part Number ⁷	OCL1 (nH) ±10%	FLL ² (nH) min	Irms³ (amps)	Isat1 ⁴ (amps)	(amps)	±6% @ 20°C	K-factor ⁶
R1 version							
FP0807R1-R07-R	70	50	45	108	79	0.50	520
FP0807R1-R10-R	100	72	45	77	55	0.50	520
FP0807R1-R12-R	120	86	45	66	48	0.50	520
FP0807R1-R16-R	160	115	45	48	36	0.50	520
FP0807R1-R18-R	180	129	45	42	32	0.50	520
FP0807R1-R20-R	200	144	45	38	28	0.50	520
FP0807R1-R22-R	220	158	45	35	25	0.50	520

- 1. Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.10Vrms, 0.0Adc @25°C
- 2. Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1Vrms, Isat1 @25°C
- 3. Irms: 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. Isat1: Peak current for approximately 20% rolloff at +25°C.

- 5. Isat2: Peak current for approximately 20% rolloff at +125°C.
- 6. K-factor: Used to determine Bp-p for core loss (see graph). Bp-p = K * L * \Delta I * 103, Bp-p : (Gauss), K: (K-factor from table), L: (inductance in nH), \Delta I (peak-to-peak ripple current in amps).
- 7. Part Number Definition: FP0807Rx-Rxx-R
- FP0807R = Product code and size
- · x is the version indicator
- -Rxx= Inductance value in µH, R = decimal point
- "-R" suffix = RoHS compliant

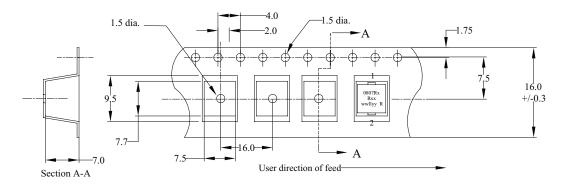
Dimensions (mm)



Part marking: 0807Rx (x= version indicator) Rxx (xx=inductance value in uH, R= decimal point) wwllyy = date code, R = revision level DCR measured from point "a" to point "b" Do not route traces or vias underneath the inductor

Packaging information (mm)

Supplied in tape-and-reel packaging, 600 parts per reel, 13" diameter reel.



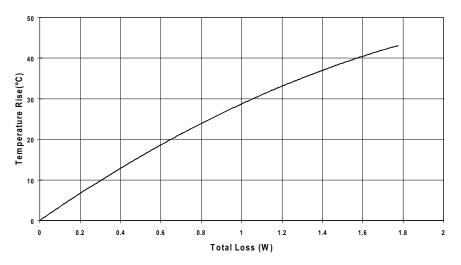
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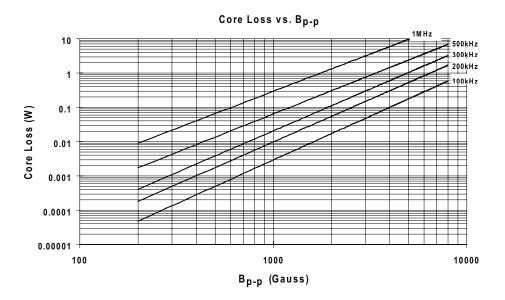
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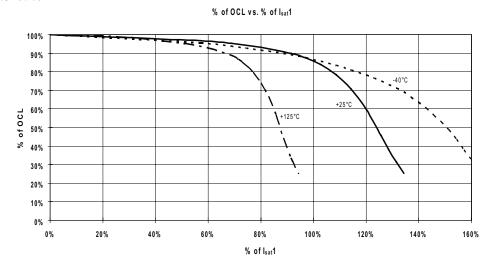
Temperature rise vs.total loss



Core loss



Inductance characteristics





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Solder reflow profile

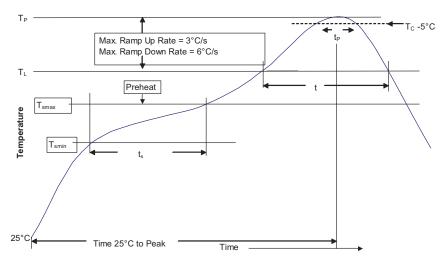


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm3 <350	Volume mm3 ≥350
<2.5mm)	235°C	220°C
≥2.5mm	220°C	220°C

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

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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 (TL) Time at liquidous (t _L)	183°C 60-150 Seconds	217°C 60-150 Seconds	
Peak package body temperature (Tp)*	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.	

 $^{^{\}star}$ Tolerance for peak profile temperature (T_{p}) is defined as a supplier minimum and a user maximum.

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^{**} Tolerance for time at peak profile temperature (t_p) is defined as a supplier minimum and a user maximum.