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Eaton (formerly Cooper Bussmann)
FP0807R1-R12-R

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

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

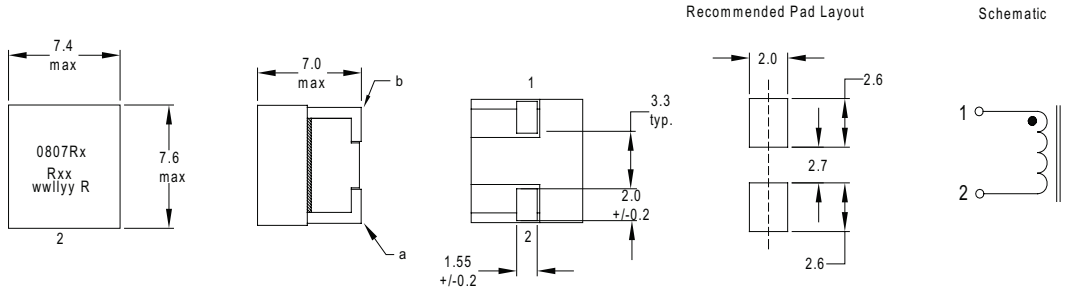
Powering Business Worldwide

Product Specifications

Part Number[7]	OCL[1] (nH) ±10%	FLL[2] (nH) min	Irms[3] (amps)	Isat1[4] (amps)	I sat2[5] (amps)	DCR (mΩ) ±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 * ΔI * 10^{-3}, Bp-p : (Gauss), K: (K-factor from table), L: (inductance in nH), ΔI (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

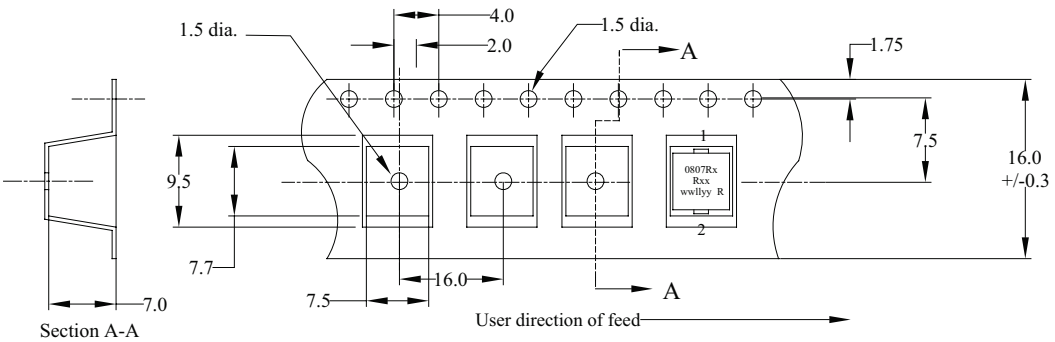
Dimensions (mm)



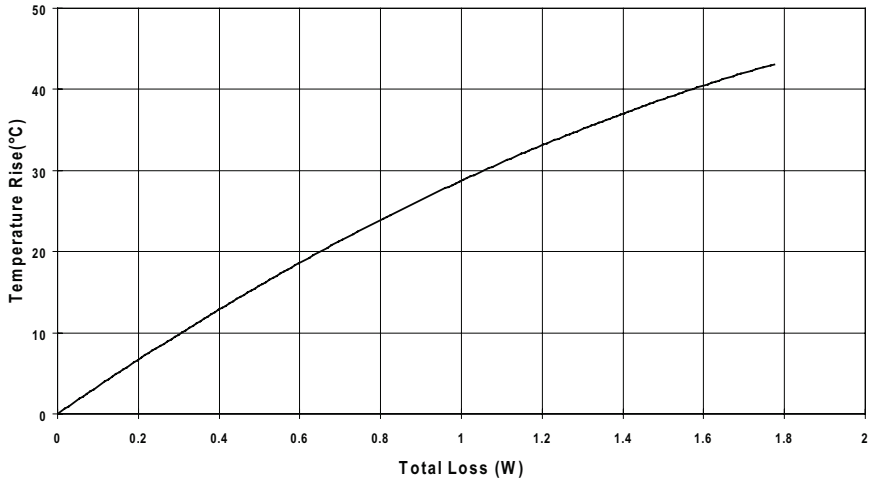
Part marking: 0807Rx (x= version indicator)
Rxx (xx=inductance value in uH, R= decimal point)
wwllyy = date code, R = revision level
DCR measured from point "a" to point "b"
Do not route traces or vias underneath the inductor

Packaging information (mm)

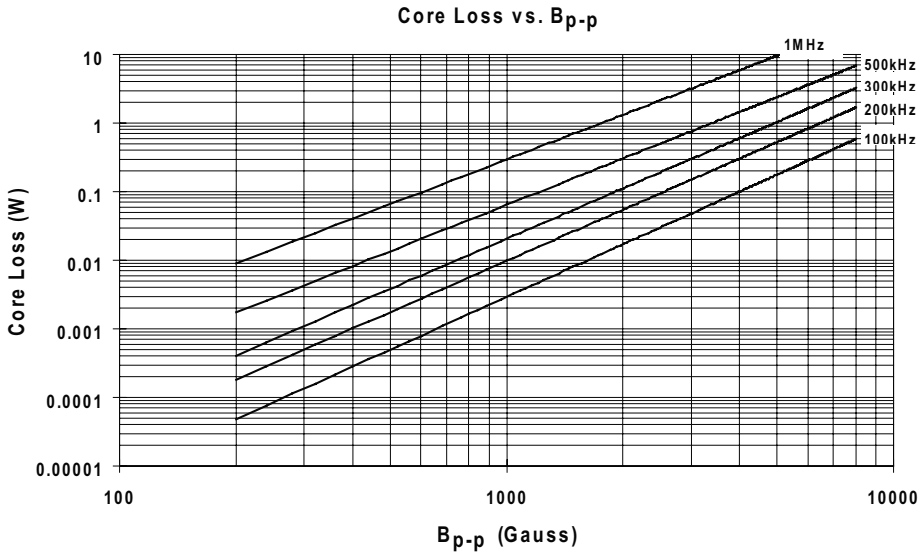
Supplied in tape-and-reel packaging, 600 parts per reel, 13" diameter reel.



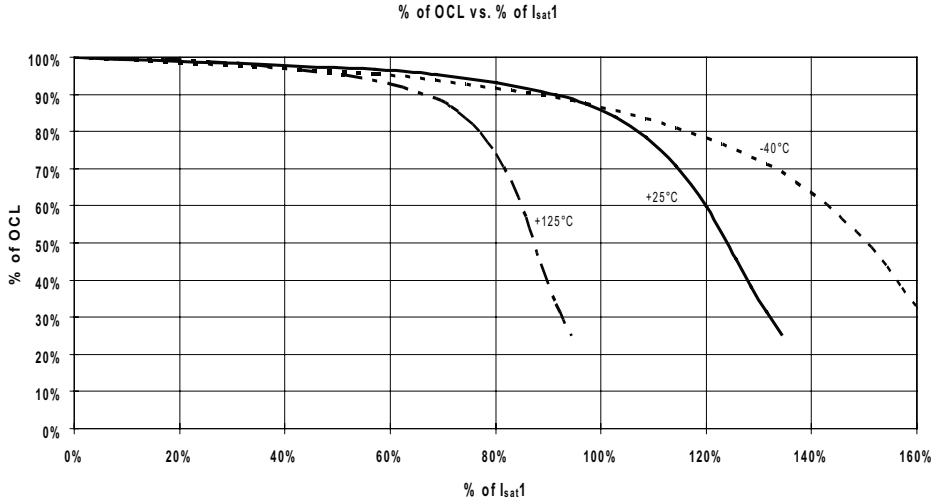
Temperature rise vs.total loss



Core loss



Inductance characteristics



Solder reflow profile

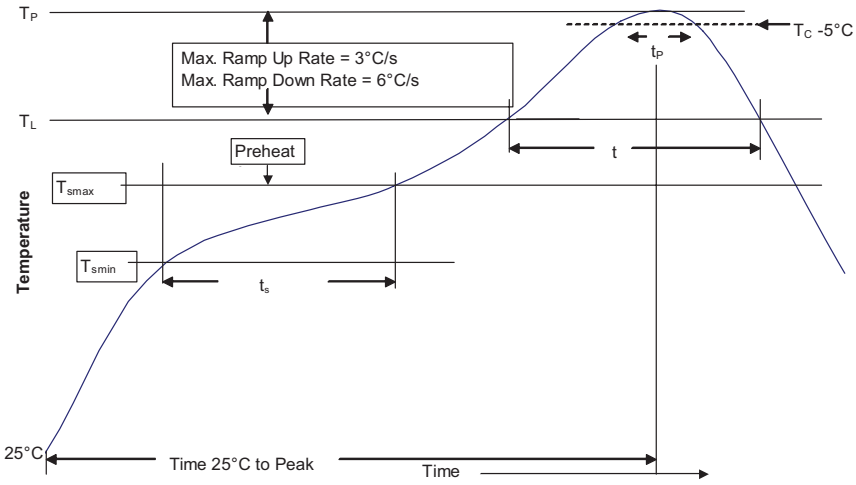


Table 1 - Standard SnPb Solder (T_C)

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 (T_L) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 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.

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