COILTRONICS®

High Current Power Inductors

FLAT-PAC™ FP0708 Series

SMD Device

Description

- 125°C maximum total temperature operation
- 8.5 x 7.0 x 7.2mm surface mount package
- Ferrite core material
- High current carrying capacity
- Low core losses
- Controlled DCR tolerance for sensing circuits
- Inductance range from 72nH to 190nH
- Current range from 37 to 90 amps
- Frequency range up to 2MHz
- RoHS compliant

Applications

RoHS 2002/95/EC

- Multi-phase regulators
- Voltage Regulator Module (VRM)
- Point of load modules
- Servers and workstations
- Data networking and storage systems
- Notebook and desktop computers
- Graphics cards and battery power systems
- DCR sensing

Environmental Data

- Storage temperature range: -40°C to +125 °C
- Operating temperature range: -40°C to +125°C (Range is application specific)
- Solder reflow temperature: J-STD-020D compliant

Packaging

- Supplied in tape and reel packaging, 640 parts per reel, 13" diameter reel

Product Specifications

Part Number	OCL[1] ± 10% (nH)	FLL[2] Min. (nH)	I_{rms}[3] (Amps)	$I_{sat}1$[4] @ 25°C (Amps)	$I_{sat}2$[5] @ 125°C (Amps)	DCR (mΩ) @ 20°C	K-factor[6]
FP0708R1-R07-R	72	52	44	90	72	0.35 ± 8.6%	557
FP0708R1-R09-R	90	64		75	60		557
FP0708R1-R10-R	105	75		68	54		557
FP0708R1-R12-R	120	86		59	47		557
FP0708R1-R15-R	150	108		47	37		557
FP0708R1-R20-R	190	1.5		37	29		557

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

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.

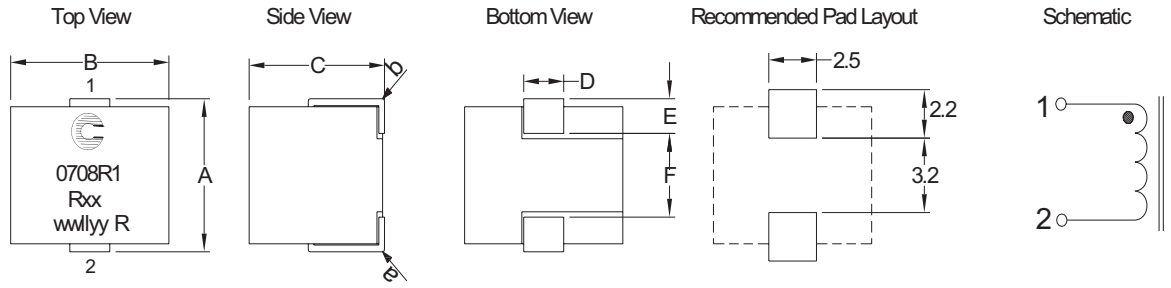
4 $I_{sat}1$: Peak current for approximately 20% rolloff at +25°C.

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

6 K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I * 10^{-3}$, 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: FP0708Rx-Rxx-R
- FP0708 = Product code and size
- Rxx= Inductance value in μH, R = decimal point
- Rx is the DCR indicator
- "-R" suffix = RoHS compliant

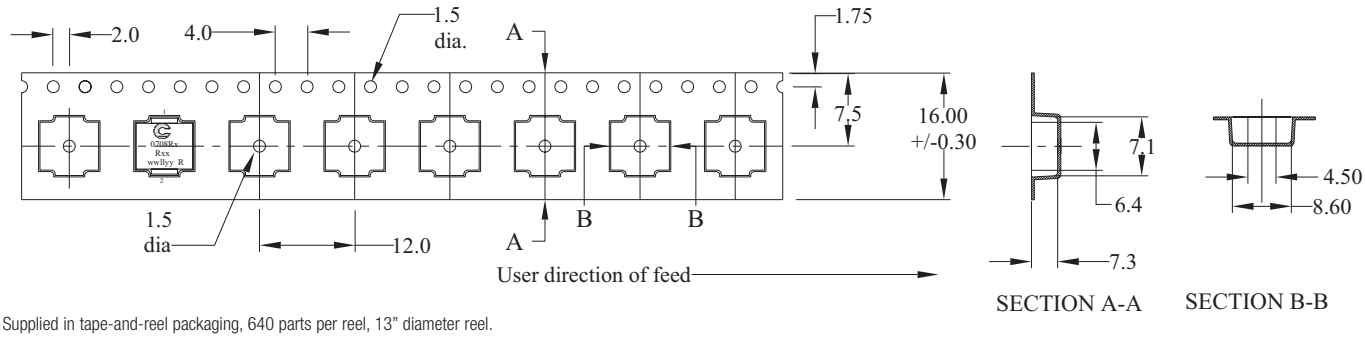
Dimensions - mm A = 7.0 Max. B = 8.5 Max. C = 7.2 Max. D = 2.1 ± 0.15 E = 1.52 ± 0.2 F = 3.6 Typ.



Nominal DCR is measured from point "a" to point "b."

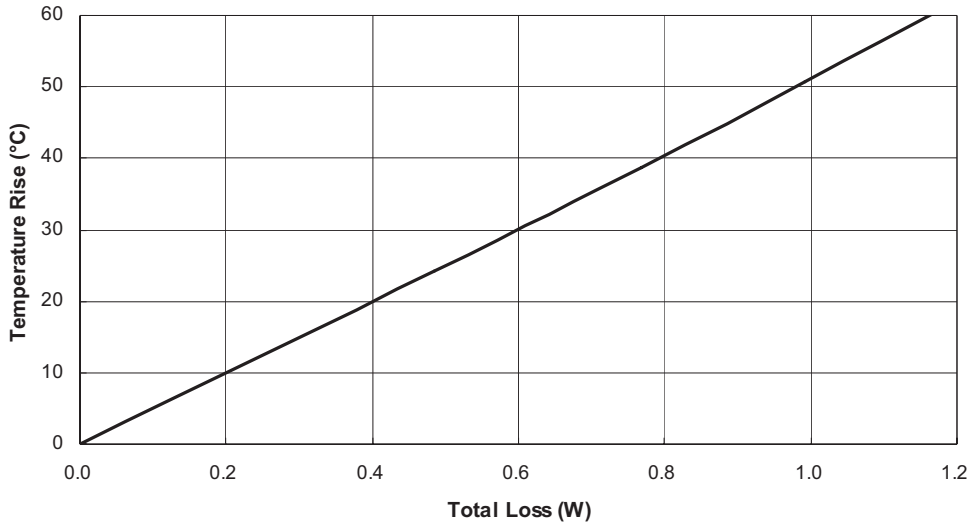
Part Marking: Coiltronics Logo 0708Rx (Rx = DCR indicator) Rxx = inductance value in μH (R = decimal point) wwllyy = date code R = revision level

Packaging Information - mm

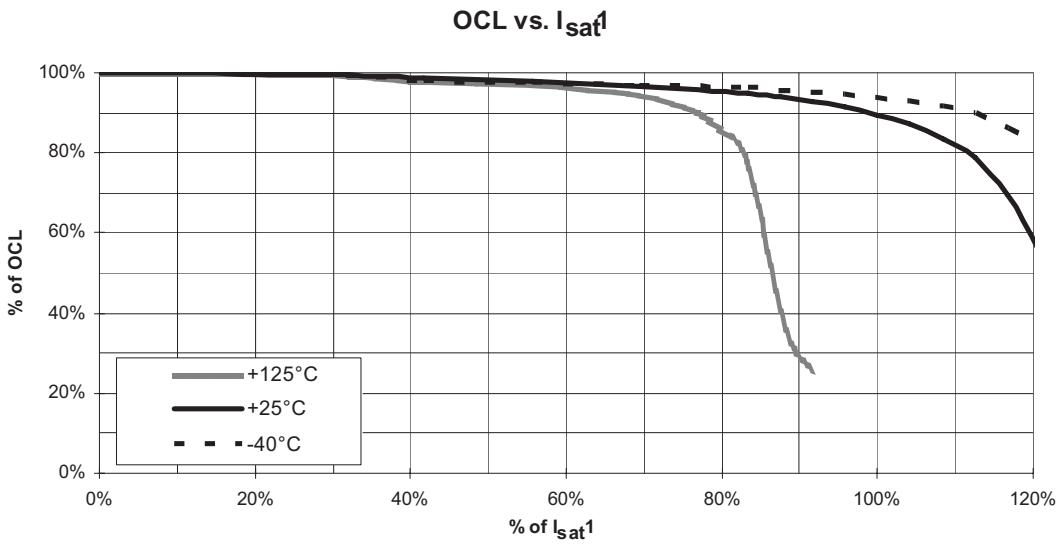


Supplied in tape-and-reel packaging, 640 parts per reel, 13" diameter reel.

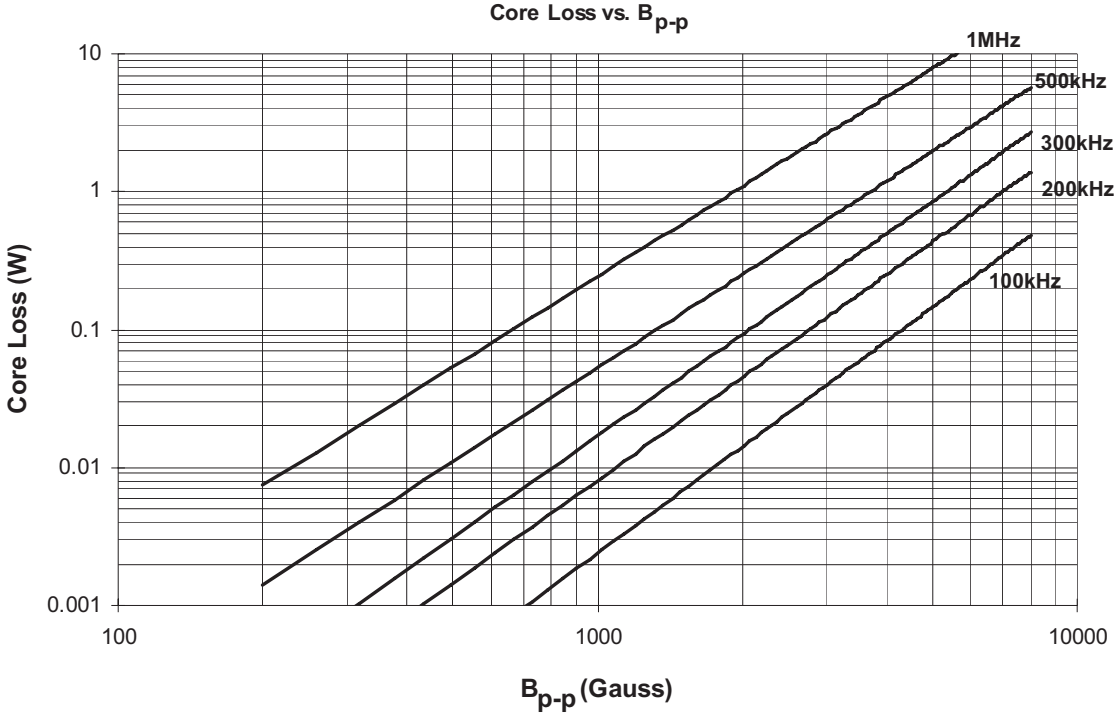
Temperature Rise vs.Total Loss



Inductance Characteristics



Core Loss



Solder Reflow Profile

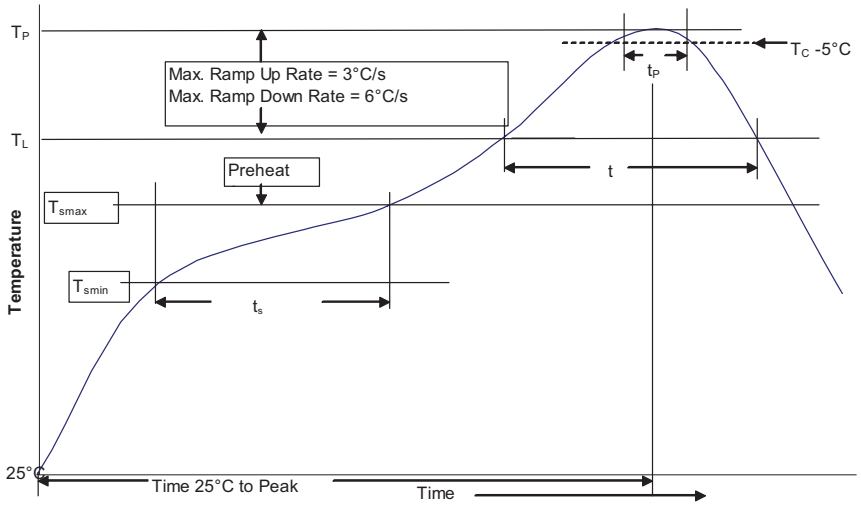


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥350
<2.5mm	235°C	220°C
≥2.5mm	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-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.

North America
Cooper Electronic Technologies
1225 Broken Sound Parkway NW
Suite F
Boca Raton, FL 33487-3533
Tel: 1-561-998-4100
Fax: 1-561-241-6640
Toll Free: 1-888-414-2645

Cooper Bussmann
P.O. Box 14460
St. Louis, MO 63178-4460
Tel: 1-636-394-2877
Fax: 1-636-527-1607

Europe
Cooper Electronic Technologies
Cooper (UK) Limited
Burton-on-the-Wolds
Leicestershire • LE12 5TH UK
Tel: +44 (0) 1509 882 737
Fax: +44 (0) 1509 882 786

Cooper Electronic Technologies
Avda. Santa Eulalia, 290
08223
Terrassa, (Barcelona), Spain
Tel: +34 937 362 812
+34 937 362 813
Fax: +34 937 362 719

Asia Pacific
Cooper Electronic Technologies
1 Jalan Kilang Timor
#06-01 Pacific Tech Centre
Singapore 159303
Tel: +65 278 6151
Fax: +65 270 4160