Effective June 2017 Supersedes June 2008

FP1105 High current power inductors



Product features

- 11.0 x 8.0 x 4.90mm surface mount package
- Ferrite core material
- High current carrying capacity
- Low core losses
- Controlled DCR tolerance for sensing circuits
- Inductance range from 101nH to 226nH
- Current range from 39 to 81Amps
- Frequency range up to 2MHz
- Halogen free, lead free, RoHS compliant

Applications

- Multi-phase regulators
- Voltage Regulator Module (VRM)
- Portable electronics
- 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 (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





Dimensions- mm

Product Specifications									
Part Number	0CL ¹ ± 10% (nH)	FLL ² Min. (nH)	I _{rms} ³ (Amps)	I _{sat} 1⁴ @ 25°C (Amps)	I _{sat} 2 ⁵ @ 125°C (Amps)	DCR (mΩ) @ 20°C	K-factor ⁶		
FP1105R1-R10-R	100	72		81	63		467		
FP1105R1-R12-R	120	86		66	50		467		
FP1105R1-R15-R	150	109	46	54	42	0.35 ± 8.6%	467		
FP1105R1-R20-R	192	138	1	42	34		467		
FP1105R1-R22-R	226	163	1	39	28]	467		

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 0.10Vrms, 0.0Adc

2 Full Load Inductance (FLL) Test Parameters: 100kHz, 0.1Vrms, Isat1

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 B_{p-p} for core loss (see graph). $B_{p-p} = K \star L \star \Delta I \star 10^{-3}$, 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: FP1105Rx-Rxx-R • FP1105 = Product code and size

Rxx= Inductance value in μH, R = decimal point
 "-R" suffix = RoHS compliant



Packaging information - mm

Packaging Information - mm



[•] Rx is the DCR indicator

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Temperature rise vs. total loss



Core Loss vs Bp-p





OCL vs. I sat1



Solder Reflow Profile



Table I - Stalluaru Shrb Soluer (IC)									
	Volume	Volume							
Package	mm ³	mm ³							
Thickness	<350	≥350							
<2.5mm	235°C	220°C							
≥2.5mm	220°C	220°C							
Table 2 - Lead (Pb) Free Solder (T _c)									
	Volume	Volume	Volume						
Package	mm ³	mm ³	mm ³						
Thickness	<350	350 - 2000	>2000						
<1.6mm	260°C	260°C	260°C						
1.6 – 2.5mm	260°C	250°C	245°C						
>2.5mm	25000	245°C	24500						

Toble 1 Ctandard CpDb Colder (T.)

Reference JDEC J-STD-020

Powerina Business Worldwide

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 temperatur	re (TL)	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 (tp)** within 5 °	$^{\rm PC}$ 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 T	emperature	6 Minutes Max.	8 Minutes Max.	

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

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