Technical Data **4324**

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

Pb HALOGEN HF FREE RoHS

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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]
FP1105R1-R10-R	100	72	46	81	63	0.35 ± 8.6%	467
FP1105R1-R12-R	120	86		66	50		467
FP1105R1-R15-R	150	109		54	42		467
FP1105R1-R20-R	192	138		42	34		467
FP1105R1-R22-R	226	163		39	28		467

[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.

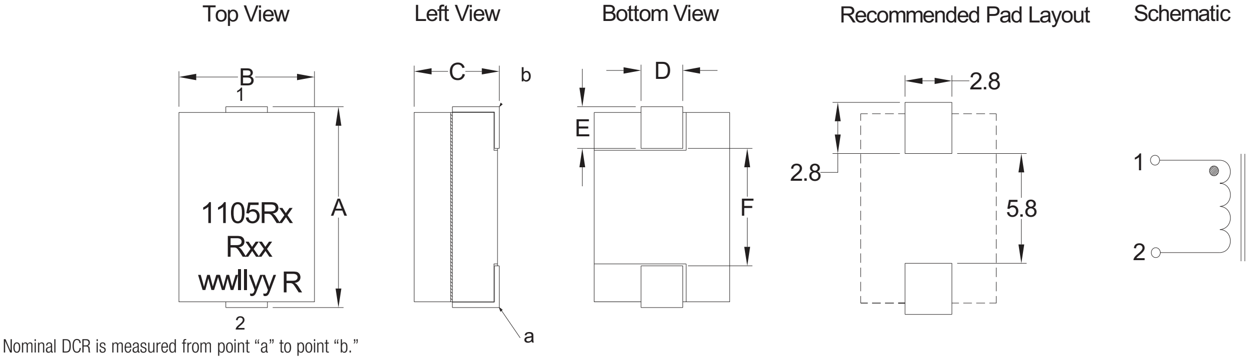
[5] $I_{sat}2$: Peak current for approximately 20% rolloff at +125°C.

[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: FP1105Rx-Rxx-R
- FP1105 = Product code and size
- Rxx= Inductance value in μH, R = decimal point
- Rx is the DCR indicator
- "-R" suffix = RoHS compliant

Dimensions- mm

A = 11.0 Max. **B = 8.0 Max.** **C = 4.9 Max.** **D = 2.4 ± 0.2** **E = 2.3 ± 0.3** **F = 6.2 Typ.**

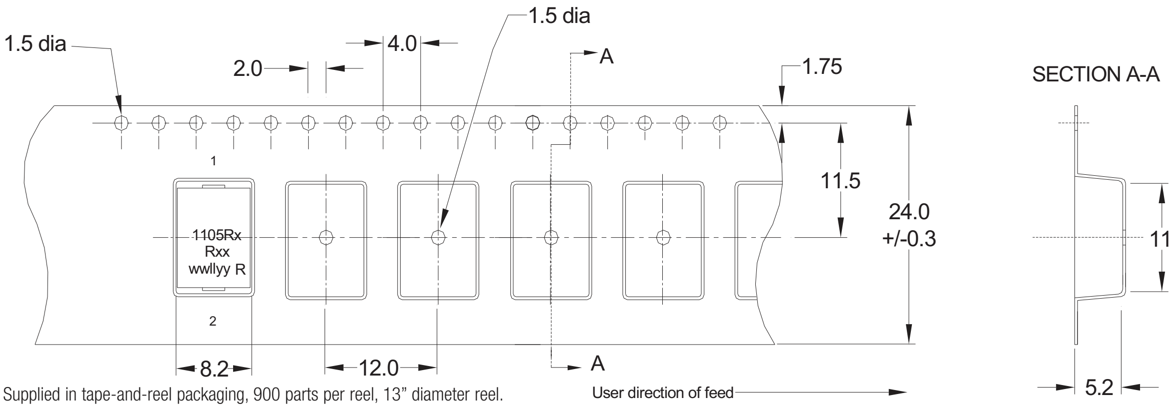


Nominal DCR is measured from point "a" to point "b."

Part Marking: 1105Rx (Rx = DCR indicator) Rxx = inductance value in μH (R = decimal point) wwllyy = date code R = revision level

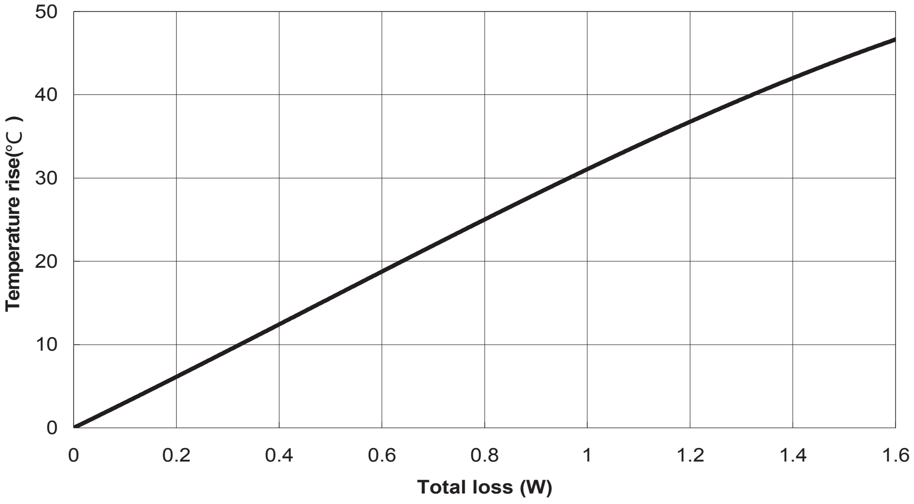
Packaging information - mm

Packaging Information - mm

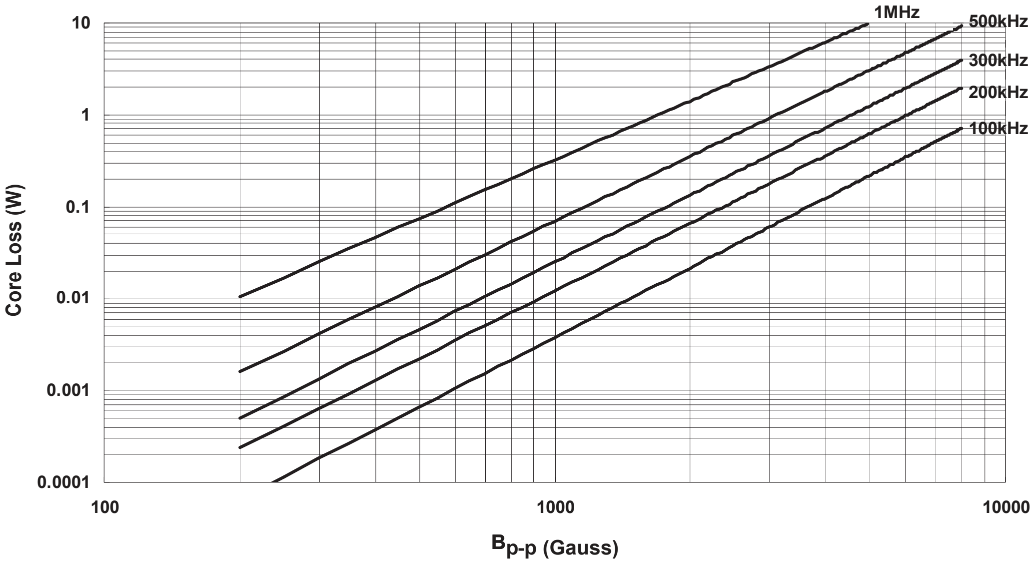


Supplied in tape-and-reel packaging, 900 parts per reel, 13" diameter reel.

Temperature rise vs. total loss

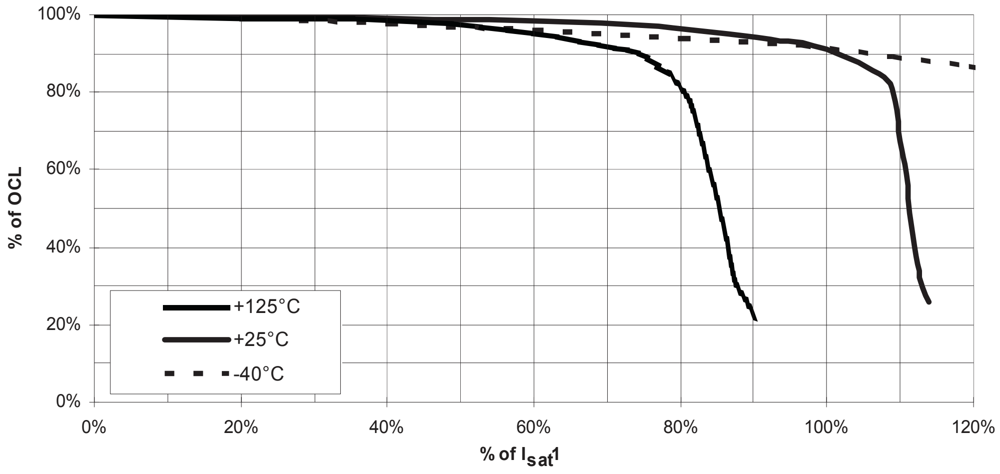


Core Loss vs Bp-p



Inductance characteristics

OCL vs. $I_{sat}1$



Solder Reflow Profile

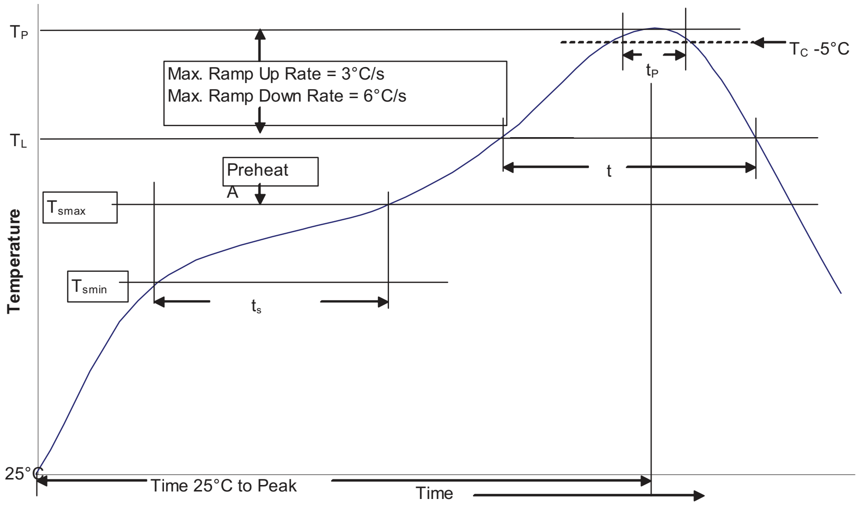


Table 1 - Standard SnPb Solder (T_C)

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-020

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.

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