



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



High Current, High Frequency, Power Inductors

FLAT-PAC™ FP1505 Series



Description

- Halogen Free
- 125°C maximum total operating temperature
- 7.0 x 15.0 x 5.0mm surface mount package
- Ferrite core material
- High current handling capability, low core loss
- Designed for high speed, high current switch mode applications
- Controlled DCR tolerance for sensing circuits
- Inductance range from 100nH to 400nH

- Current range from 24 to 105 amps
- Frequency range up to 1MHz
- RoHS compliant

Applications

- Multi-phase regulators
- Voltage Regulator Module (VRM)
- Desktop and server VRMs and EVRDs
- Data networking and storage systems
- Notebook regulators
- Graphics cards and battery power systems
- Point of load modules
- DCR current sensing

Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (with derated current)
- Solder reflow temperature: J-STD-020D compliant

Packaging

- Supplied in tape-and-reel packaging, 744 parts per reel, 13" diameter reel



Product Specifications

Part Number ⁷	OCL ¹ ± 10% (nH)	FLL ² Min. (nH)	I _{rms} ³ (Amps)	I _{sat} 1 ⁴ (Amps) @25°C	I _{sat} 2 ⁵ (Amps) @125°C	DCR (mΩ) @20°C	K-factor ⁶
FP1505R1-R10-R	100	72	53	105	90	0.47 ± 7%	356.3
FP1505R1-R12-R	120	86		87	75		356.3
FP1505R1-R15-R	150	108		72	60		356.3
FP1505R1-R25-R	250	180		42	32		356.3
FP1505R1-R30-R	300	217		35	26		356.3
FP1505R1-R40-R	400	288		24	19.5		356.3

1 Open Circuit Inductance (OCL) Test Parameters: 100kHz, 1.0V_{rms}, 0.0A_{dc}

2 Full Load Inductance (FLL) Test Parameters: 100kHz, 1.0V_{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 layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part 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.

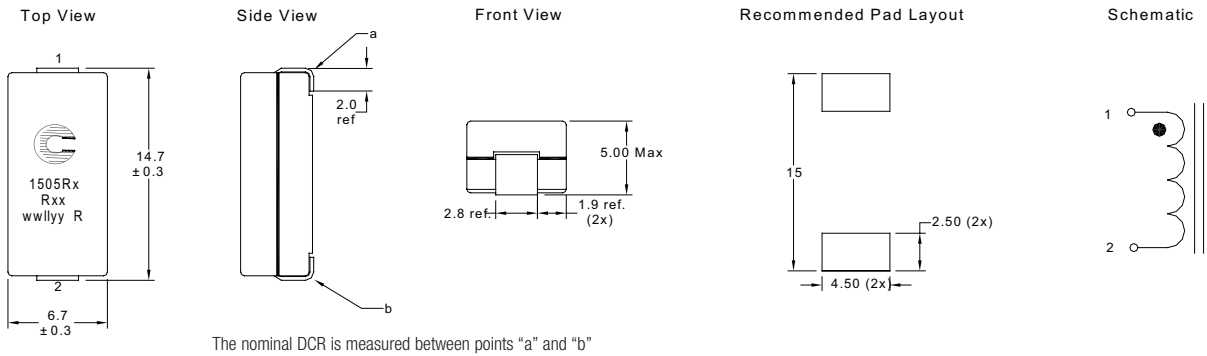
5 I_{sat}2: Peak current for approximately 20% rolloff at +125°C.

6 K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI * 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: FP1505Rx-Rxx-R

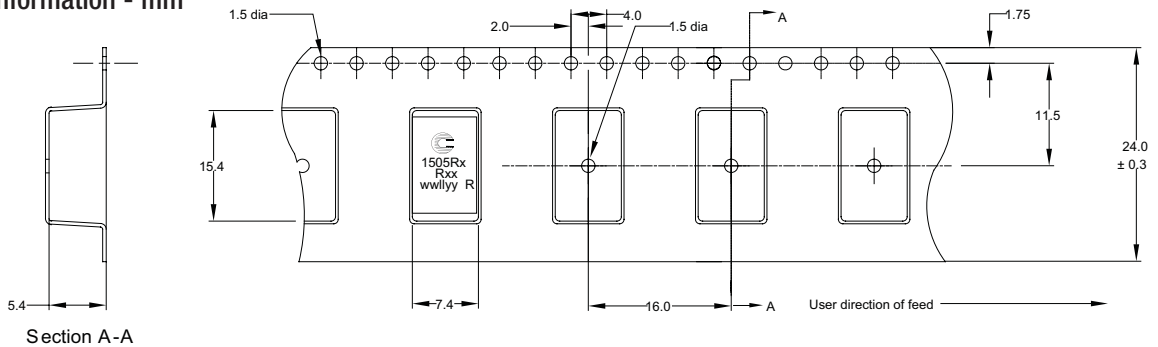
- FP1505 = Product code and size
- Rx= DCR indicator
- Rxx= Inductance value in uH, R = decimal point
- -R suffix = RoHS compliant

Dimensions - mm



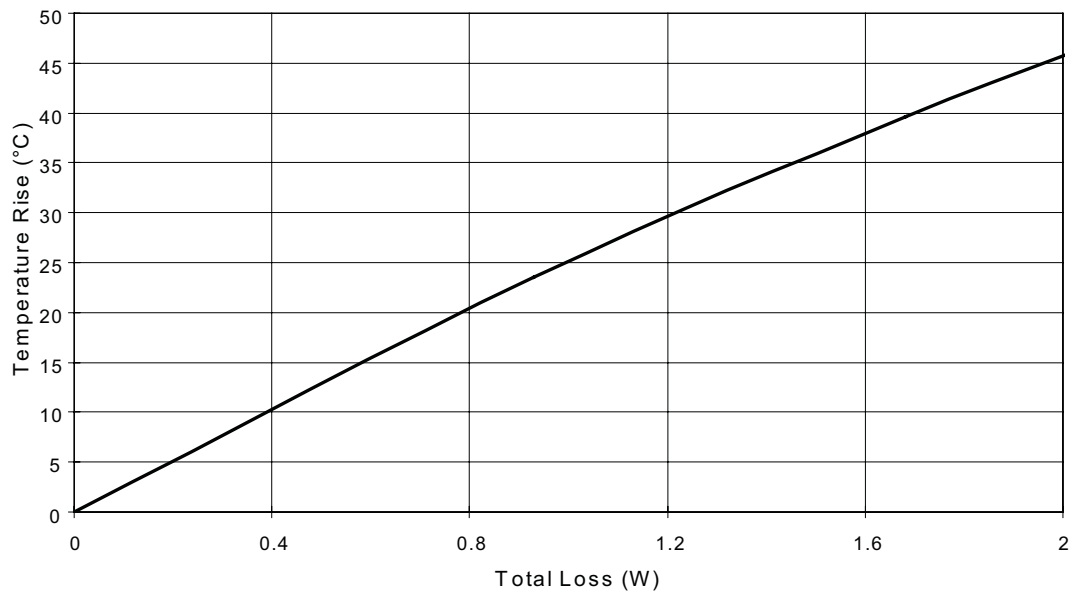
Part Marking: Coiltronics logo 1505Rx Rx = DCR indicator Rxw = Inductance value in μH . (R = Decimal point). wwlyly = Date code R = Revision level

Packaging Information - mm

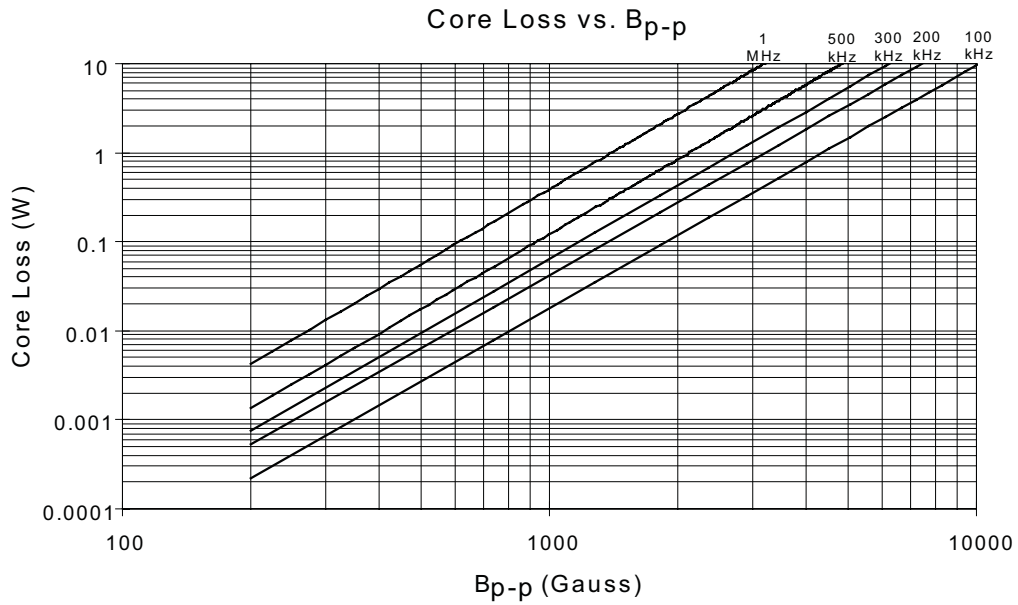


Supplied in tape-and-reel packaging, 744 parts per reel, 13" diameter reel.

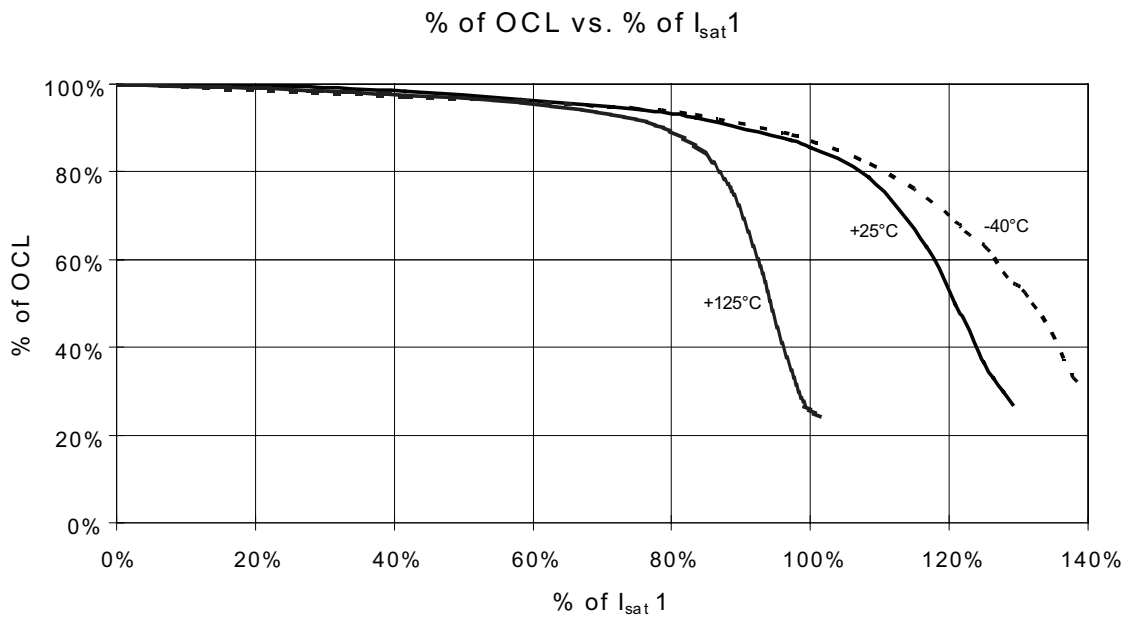
Temperature Rise vs. Total Loss



Core Loss



Inductance Characteristics



Solder Reflow Profile

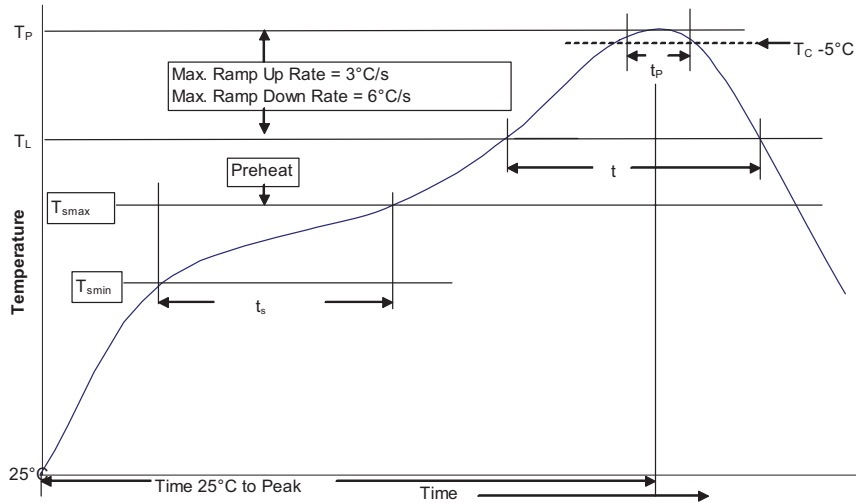


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	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)	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 (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

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