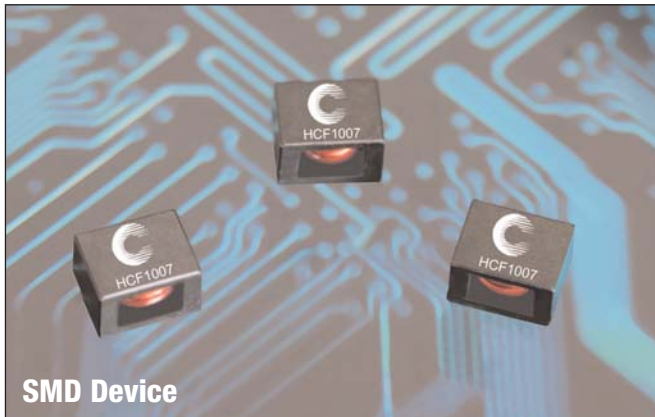


High Current, High Frequency, Power Inductors

HCF1007 Series



Description

- Halogen free
- 125°C maximum total temperature operation
- 10.3 x 8.1 x 6.65mm surface mount package
- Ferrite core material
- Secure 3 terminal mounting
- High current carrying capacity, low core losses
- Controlled DCR tolerance for sensing circuits
- Inductance range from 0.3μH to 10.0μH
- Current range from 5.3 to 48 Amps
- Frequency range up to 1MHz
- RoHS compliant

Applications

- Point-of-load modules
- 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
- DCR current sensing

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

Packaging

- Supplied in tape and reel packaging, 700 parts per 13" diameter reel

Product Specifications

| Part Number ⁷ | OCL ¹ μH ± 20% | FLL ² Min (μH) | I _{rms} ³ Amps | I _{sat} ¹⁴ Amps @25°C | I _{sat} ²⁵ Amps @125°C | DCR mΩ @20°C | K-factor ⁶ |
|--------------------------|------------------------------|------------------------------|---------------------------------------|--|---|-----------------|-----------------------|
| HCF1007-R30-R | 0.30 | 0.21 | 30 | 48 | 35 | 0.90±10% | 279.9 |
| HCF1007-R42-R | 0.42 | 0.30 | 26 | 45 | 36 | 1.30±7% | 186.6 |
| HCF1007-R56-R | 0.56 | 0.40 | 26 | 36 | 28 | 1.30±7% | 186.6 |
| HCF1007-R68-R | 0.68 | 0.49 | 26 | 29 | 23 | 1.30±7% | 186.6 |
| HCF1007-1R0-R | 1.0 | 0.72 | 16 | 26 | 21 | 2.65±6% | 139.9 |
| HCF1007-1R5-R | 1.5 | 1.08 | 13 | 22 | 17 | 4.15±6% | 112.0 |
| HCF1007-2R2-R | 2.2 | 1.57 | 10.7 | 18 | 14 | 6.35±6% | 93.30 |
| HCF1007-3R3-R | 3.3 | 2.37 | 10 | 14.5 | 11 | 7.50±6% | 79.97 |
| HCF1007-4R7-R | 4.7 | 3.38 | 9.4 | 12 | 8.9 | 8.65±6% | 69.97 |
| HCF1007-5R6-R | 5.6 | 4.03 | 9.4 | 9.4 | 7.5 | 8.65±6% | 69.97 |
| HCF1007-6R8-R | 6.8 | 4.90 | 9.4 | 7.8 | 6.1 | 8.65±6% | 69.97 |
| HCF1007-100-R | 10.0 | 7.20 | 9.4 | 5.3 | 4.2 | 8.65±6% | 69.97 |

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 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.

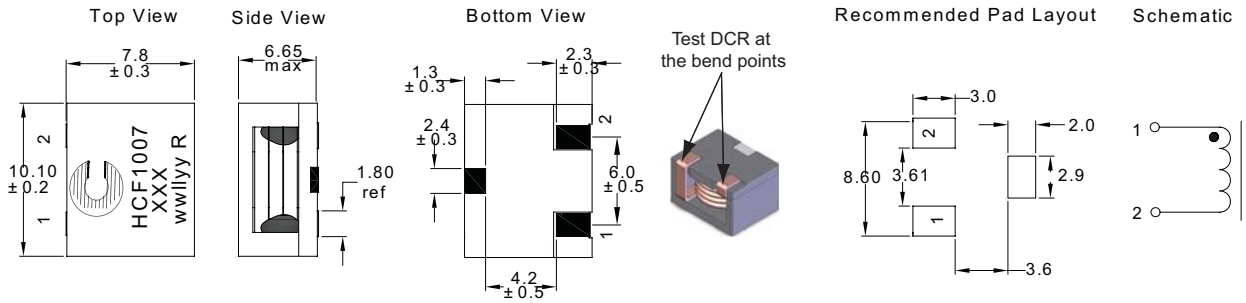
5 I_{sat}²: Peak current for approximately 20% rolloff at +125°C.

6 K-factor: Used to determine B_{p-p} for core loss (see graph). B_{p-p} = K * L * ΔI. B_{p-p}:(Gauss), K: (K-factor from table), L: (Inductance in μH), ΔI (peak-to-peak ripple current in amps).

7 Part Number Definition:HCF1007-xxx-R

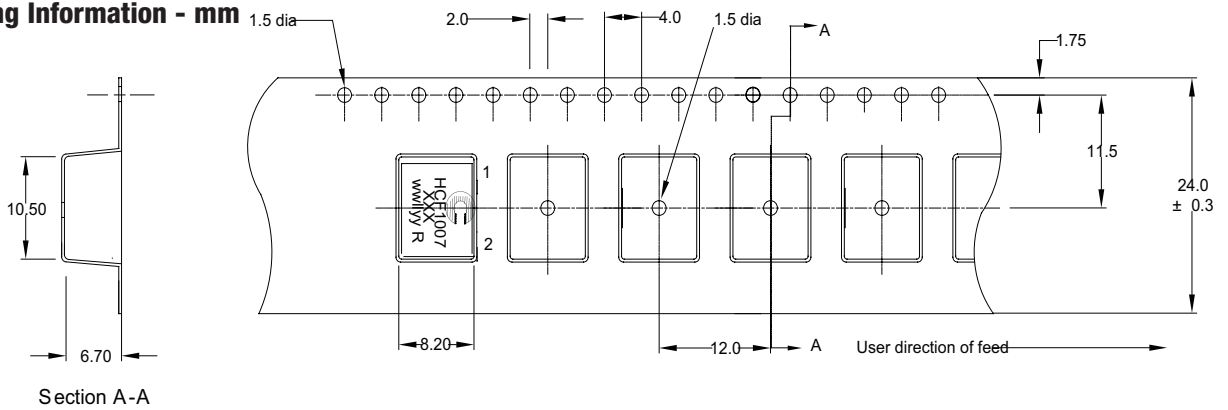
- HCF1007 = Product code and size
- xxx= Inductance value in μH, R = decimal point.
- If no "R" is present then third character =# of zeros
- -R suffix = RoHS compliant

Dimensions - mm



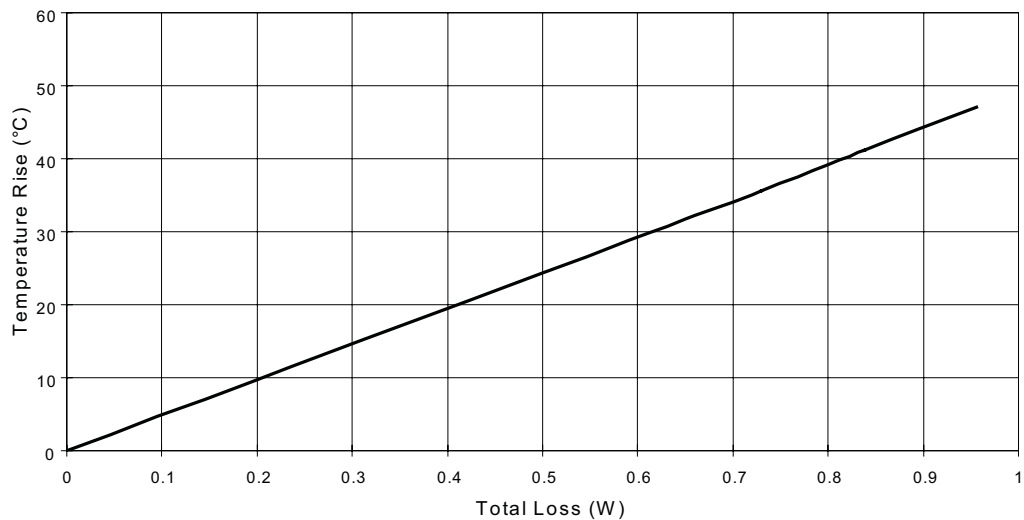
Part Marking: Coiltronics logo HCF1007 xxx = Inductance value in μH . (R = Decimal point). If no "R" is present, then last character is # of zeros wvllly = Date code R = Revision level

Packaging Information - mm



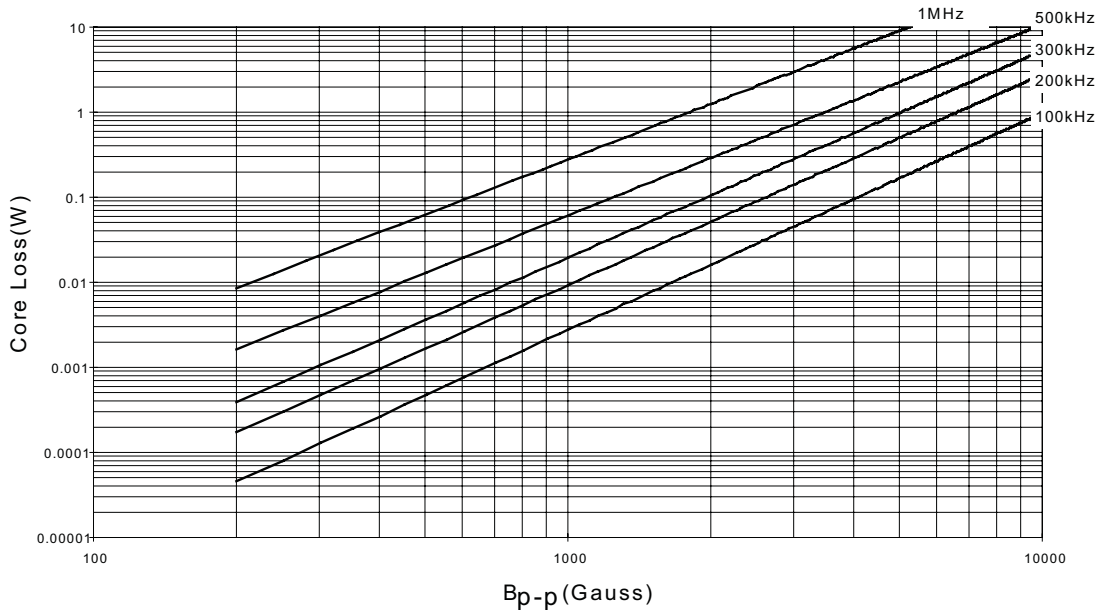
Supplied in tape-and-reel packaging, 700 parts per reel, 13" diameter reel.

Temperature Rise vs. Total Loss



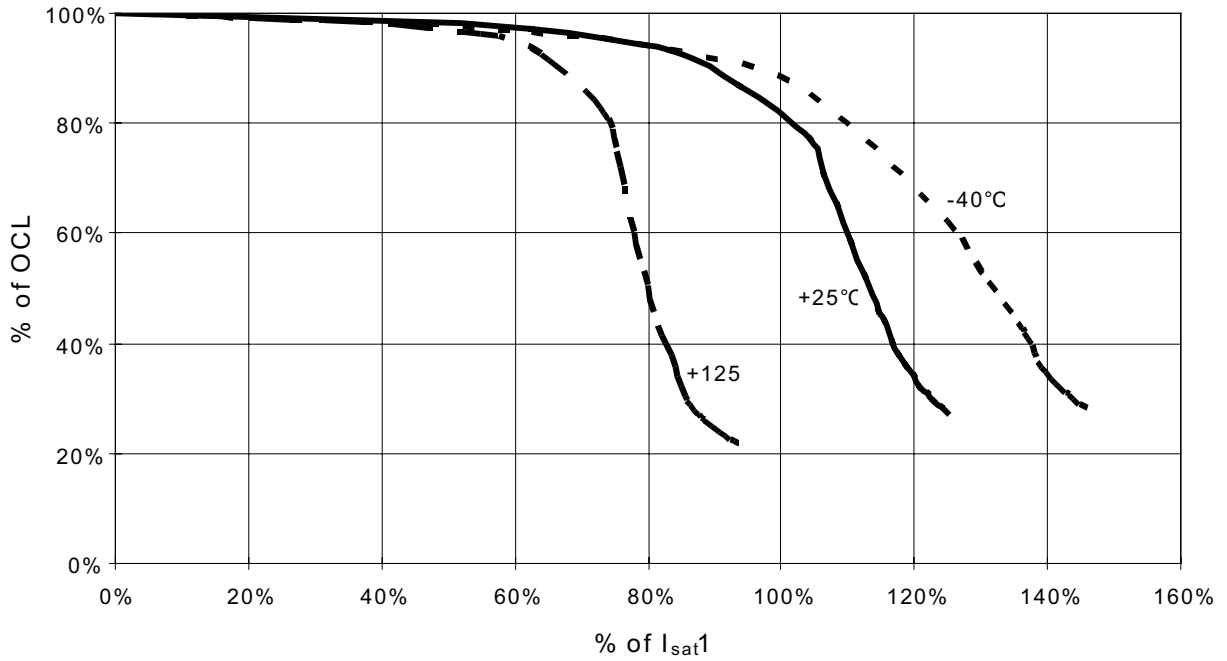
Core Loss

Core Loss vs. B_{p-p}



Inductance Characteristics

% of OCL vs. % of I_{sat1}



Solder Reflow Profile

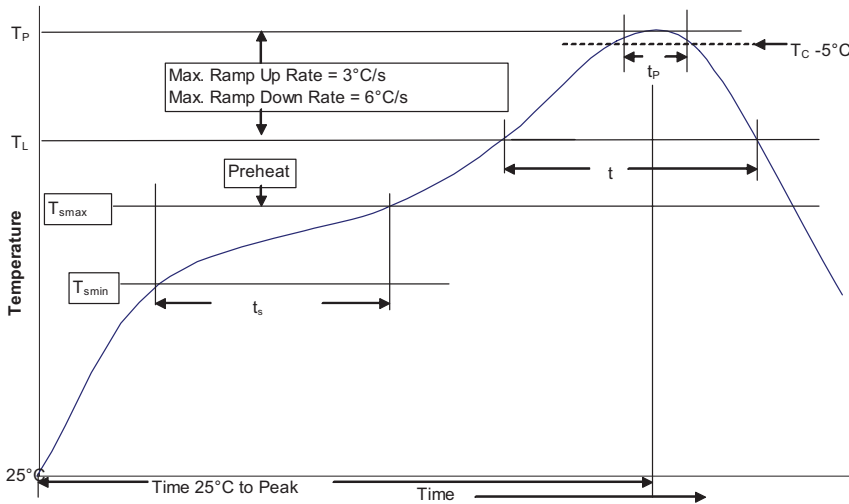


Table 1 - Standard SnPb Solder (T_c)

| 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

The only controlled copy of this Data Sheet is the electronic read-only version located on the Cooper Bussmann Network Drive. All other copies of this document are by definition uncontrolled. This bulletin is intended to clearly present comprehensive product data and provide technical information that will help the end user with design applications. Cooper Bussmann reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Cooper Bussmann also reserves the right to change or update, without notice, any technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

Life Support Policy: Cooper Bussmann does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.

Компания «Океан Электроники» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- При необходимости вся продукция военного и аэрокосмического назначения проходит испытания и сертификацию в лаборатории (по согласованию с заказчиком);
- Поставка специализированных компонентов военного и аэрокосмического уровня качества (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Actel, Aeroflex, Peregrine, VPT, Syfer, Eurofarad, Texas Instruments, MS Kennedy, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Компания «Океан Электроники» является официальным дистрибьютором и эксклюзивным представителем в России одного из крупнейших производителей разъемов военного и аэрокосмического назначения «JONHON», а так же официальным дистрибьютором и эксклюзивным представителем в России производителя высокотехнологичных и надежных решений для передачи СВЧ сигналов «FORSTAR».



JONHON

«JONHON» (основан в 1970 г.)

Разъемы специального, военного и аэрокосмического назначения:

(Применяются в военной, авиационной, аэрокосмической, морской, железнодорожной, горно- и нефтедобывающей отраслях промышленности)

«FORSTAR» (основан в 1998 г.)

ВЧ соединители, коаксиальные кабели,
кабельные сборки и микроволновые компоненты:

(Применяются в телекоммуникациях гражданского и специального назначения, в средствах связи, РЛС, а так же военной, авиационной и аэрокосмической отраслях промышленности).



Телефон: 8 (812) 309-75-97 (многоканальный)

Факс: 8 (812) 320-03-32

Электронная почта: ocean@oceanchips.ru

Web: <http://oceanchips.ru/>

Адрес: 198099, г. Санкт-Петербург, ул. Калинина, д. 2, корп. 4, лит. А