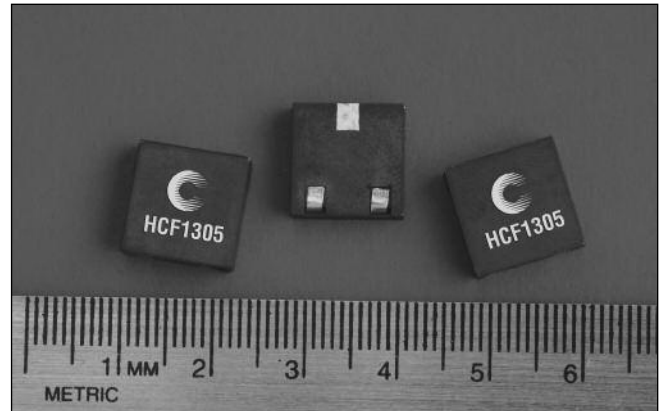


## Description

- 125°C maximum total temperature operation
- 12.5mm x 12.5mm x 5.0mm ferrite core material package
- Low profile surface mount inductors designed for higher speed switch mode applications requiring low voltage and high current
- Design utilizes ferrite core with high DC bias resistance and low core loss
- Inductance range from 0.47µH to 4.7µH
- Current range from 36.0 Amps to 10.4 Amps
- Frequency range 100kHz to 1MHz



## Applications

- Next generation processors
- High current DC-DC converters
- VRM, multi-phase buck regulators
- PC Workstations, Routers, Servers
- Telecom soft switches, Base stations

## 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: +260°C max. for 10 seconds maximum

## Packaging

- Supplied in tape and reel packaging, 600 parts per reel

HIGH CURRENT (HCF1305)

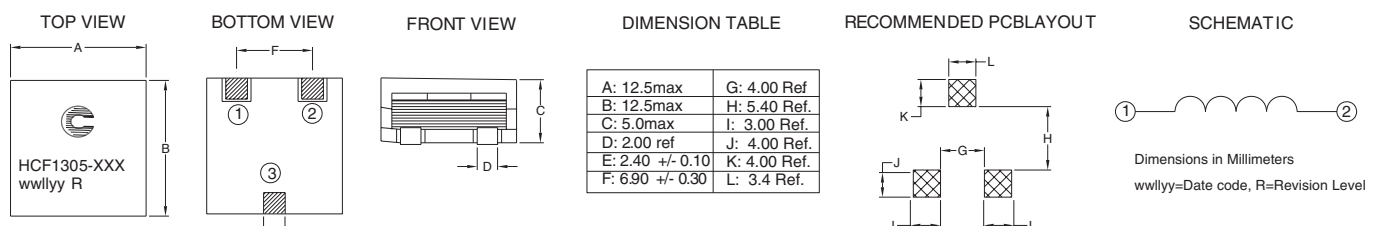
| Part Number   | Rated Inductance (µH) | OCL (1) µH ± 20% | I <sub>rms</sub> (2) Amperes | I <sub>sat</sub> (3) Amperes | I <sub>sat2</sub> (4) Amperes | DCR mΩ@20°C (Typical) | DCR mΩ@20°C (Maximum) | K-factor (5) |
|---------------|-----------------------|------------------|------------------------------|------------------------------|-------------------------------|-----------------------|-----------------------|--------------|
| HCF1305-R47-R | 0.47                  | 0.47             | 32.0                         | 36.0                         | 30.0                          | 0.83                  | 1.00                  | 21           |
| HCF1305-R56-R | 0.56                  | 0.56             | 32.0                         | 30.0                         | 22.5                          | 0.83                  | 1.00                  | 21           |
| HCF1305-1R0-R | 1.00                  | 1.00             | 22.0                         | 24.0                         | 20.0                          | 1.58                  | 1.90                  | 14           |
| HCF1305-1R2-R | 1.20                  | 1.20             | 22.0                         | 20.0                         | 15.0                          | 1.58                  | 1.90                  | 14           |
| HCF1305-1R8-R | 1.80                  | 1.80             | 16.3                         | 18.0                         | 15.0                          | 2.58                  | 3.10                  | 10           |
| HCF1305-2R2-R | 2.20                  | 2.20             | 16.3                         | 15.0                         | 11.2                          | 2.58                  | 3.10                  | 10           |
| HCF1305-3R0-R | 3.00                  | 3.00             | 13.2                         | 14.4                         | 12.0                          | 4.08                  | 4.90                  | 8.3          |
| HCF1305-3R3-R | 3.30                  | 3.30             | 13.2                         | 12.5                         | 9.0                           | 4.08                  | 4.90                  | 8.3          |
| HCF1305-4R0-R | 4.00                  | 4.00             | 10.9                         | 12.0                         | 10.0                          | 6.0                   | 7.2                   | 6.9          |
| HCF1305-4R7-R | 4.70                  | 4.70             | 10.9                         | 10.4                         | 7.5                           | 6.0                   | 7.2                   | 6.9          |

- OCL: Open Circuit Inductance test parameters: 100kHz, 0.1Vrms, 0.0Adc. OCL@-40°C can be lower than OCL@20°C by 15% max.
- I<sub>rms</sub>: DC current for an approximate DT 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.
- I<sub>sat1</sub>: Amperes Peak for approximately 30% rolloff (@25°C)
- I<sub>sat2</sub>: Amperes Peak for approximately 30% rolloff (@125°C)

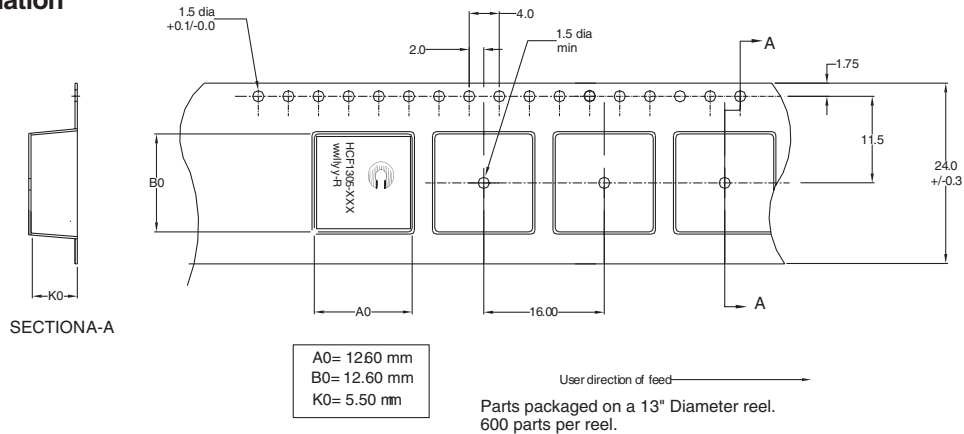
- K-factor: Used to determine B p-p for core loss (see graph). B p-p = K\*L\*ΔI  
B p-p:(mT), K: (K factor from table), L: (Inductance in µH), ΔI (Peak to peak ripple current in Amps).

Part number definition:  
HCF1305-XXX-R  
HCF1305 = Product code and size  
XXX = Inductance value in uH.  
R = Decimal point. If no R is present, third character = #of zeros  
-R suffix indicates RoHS compliant

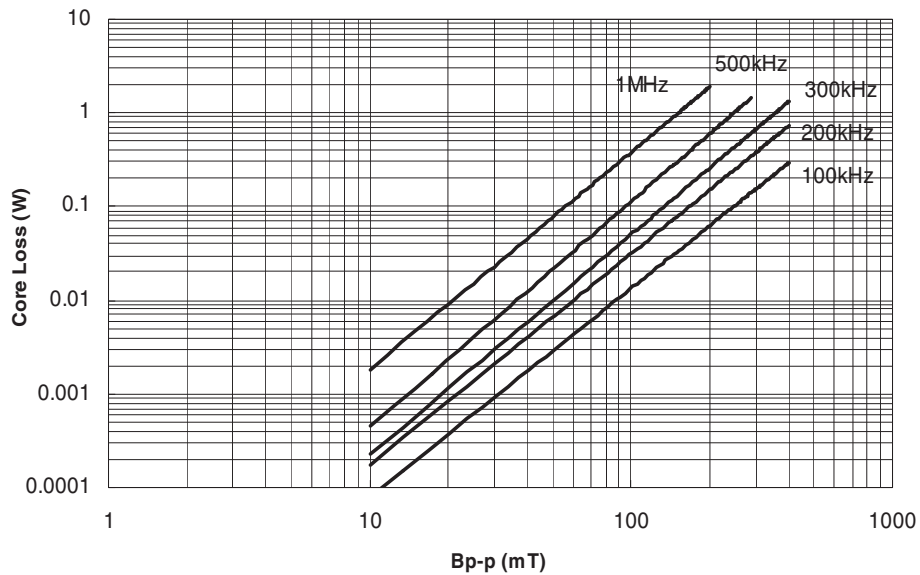
## Mechanical Diagrams



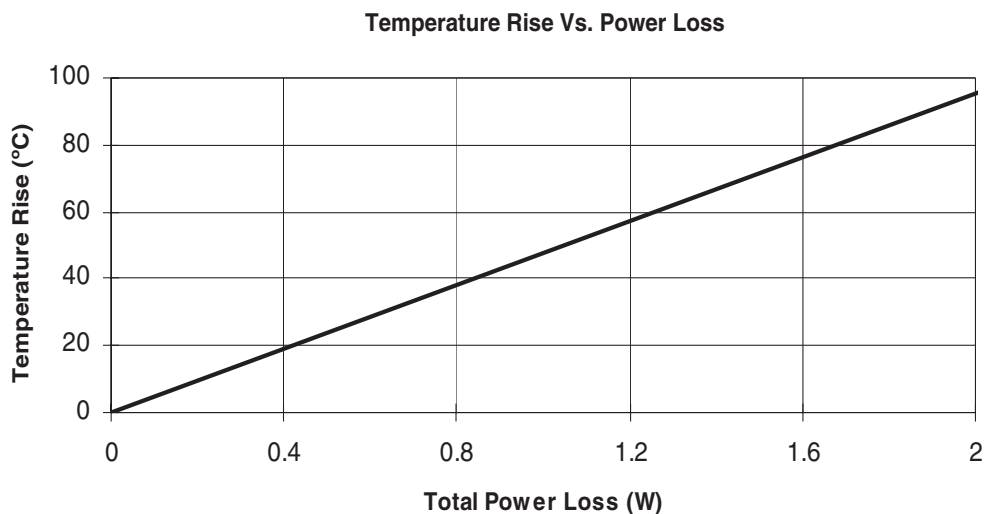
## Packaging Information



## Core Loss



## Temperature Rise vs. Total Loss



## Inductance Characteristics

