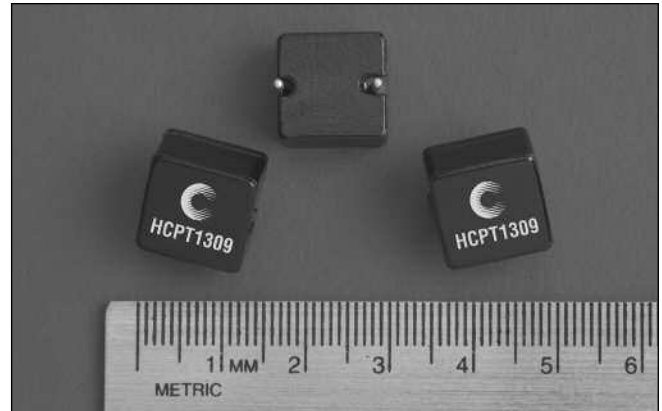


### Description

- 105°C maximum total temperature operation
- 13.2mm x 13.2mm x 9.0mm through hole package
- Core material: Powder Iron
- Inductance range from 0.20µH to 3.3µH
- Current range from 90.0 Amps to 11.4 Amps
- Frequency range up to 1MHz



### Applications

- Next generation processors
- High current DC-DC converters
- VRM, multi-phase buck regulator
- Desktop computers
- Video game power

### Environmental Data

- Storage temperature range: -40°C to +105°C
- Operating temperature range: -40°C to +105°C (range is application specific)
- Solder reflow temperature: +260°C max. for 10 seconds maximum

### Packaging

- Supplied in bulk packaging, 100 parts per tray

| Part Number    | OCL (1)<br>nominal +/-<br>20% (µH) | Irms (2)<br>Amperes | Isat Amperes (3)<br>Peak 20%<br>rolloff @20°C | Isat Amperes (4)<br>Peak 30%<br>rolloff @20°C | DCR (mΩ)<br>nom @20°C | K-factor<br>(5) |
|----------------|------------------------------------|---------------------|---|---|-----------------------|-----------------|
| HCPT1309-R20-R | 0.20                               | 43.1                | 72.2  | 90.0  | 0.426                 | 154.1           |
| HCPT1309-R47-R | 0.49                               | 34.0                | 43.3  | 55.0  | 0.624                 | 92.4            |
| HCPT1309-1R0-R | 0.96                               | 19.4                | 30.9  | 40.0  | 1.90                  | 66.0            |
| HCPT1309-1R5-R | 1.59                               | 13.7                | 24.1  | 30.6  | 3.82                  | 51.4            |
| HCPT1309-2R2-R | 2.27                               | 12.5                | 19.7  | 25.0  | 4.10                  | 42.0            |
| HCPT1309-3R3-R | 3.31                               | 11.4                | 16.7  | 21.0  | 4.80                  | 35.6            |

(1) OCL: Open Circuit Inductance test parameters: 100kHz, 0.1Vrms, 0.0Adc.

(2) Iirms: DC current for an approximate ΔT 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 105°C under worst case operating conditions verified in the end application.

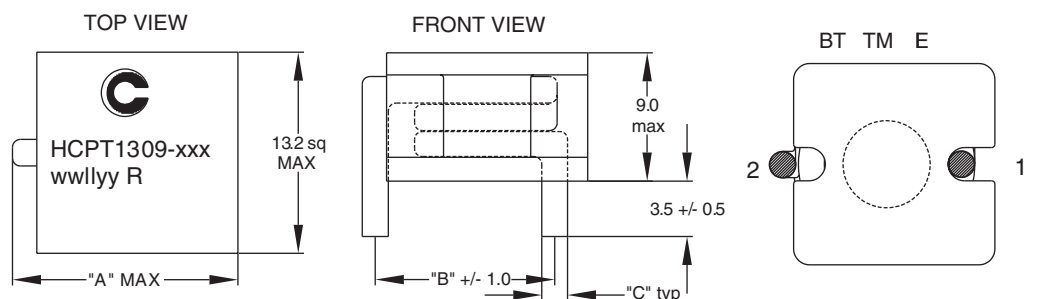
(3) Isat Amperes peak for approximately 20% rolloff (@20°C)

(4) Isat Amperes peak for approximately 30% rolloff (@20°C)

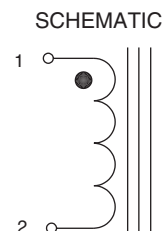
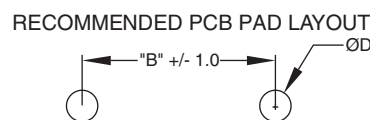
(5) K-factor: Used to determine B p-p for core loss (see graph).

B p-p = K\*L\*ΔI, B p-p: (Gauss), K: (K factor from table), L: (Inductance in uH), ΔI (Peak to peak ripple current in Amps).

### Mechanical Diagrams

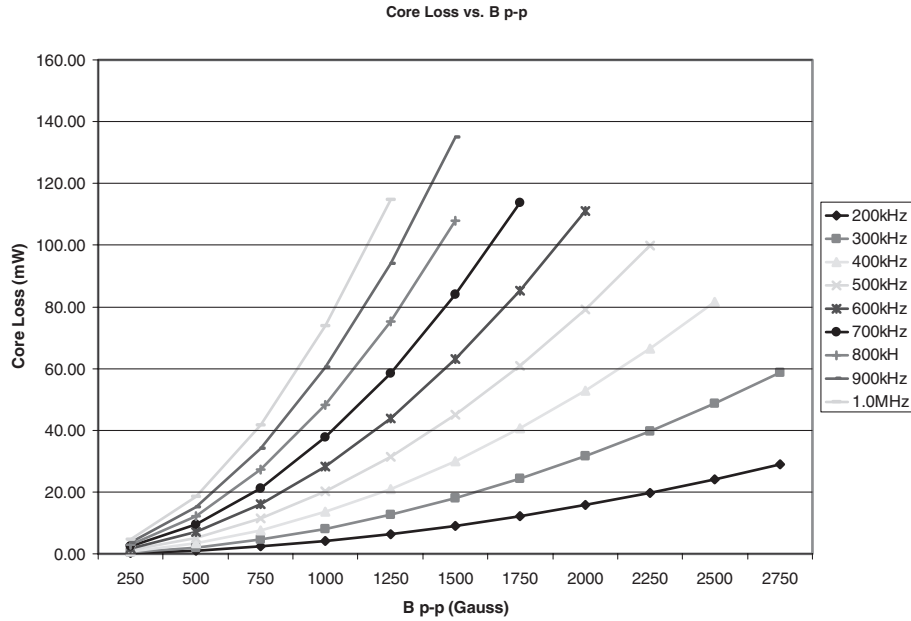


| Part No      | "A"  | "B"  | "C"  | "D"  |
|--------------|------|------|------|------|
| HCPT1309-R20 | 14.0 | 12.2 | 1.63 | 2.13 |
| HCPT1309-R47 | 14.0 | 12.2 | 1.63 | 2.13 |
| HCPT1309-1R0 | 13.7 | 12.0 | 1.29 | 1.6  |
| HCPT1309-1R5 | 13.5 | 11.8 | 1.15 | 1.40 |
| HCPT1309-2R2 | 13.5 | 11.8 | 1.15 | 1.40 |
| HCPT1309-3R3 | 13.5 | 11.8 | 1.15 | 1.40 |

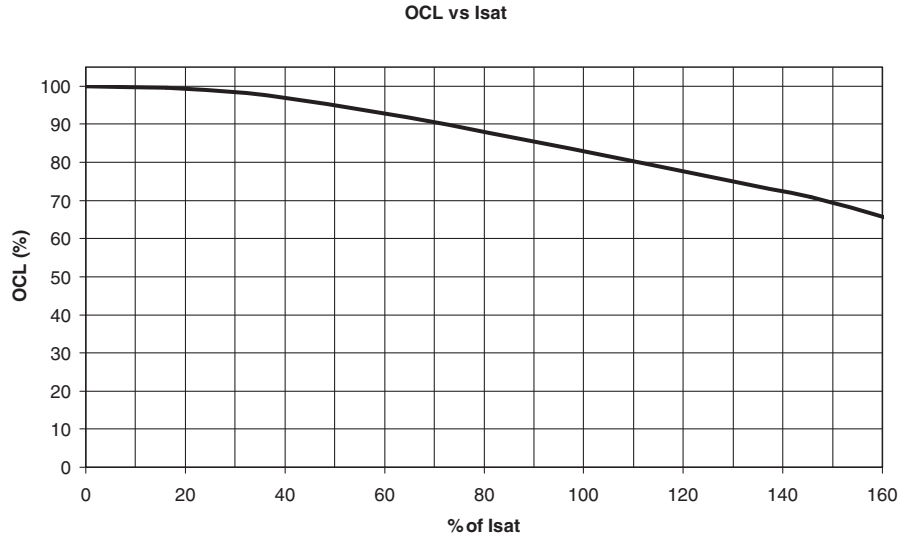


Dimensions are in millimeters.  
wwllyy = Date Code. R = Revision Level.

Core Loss



Inductance Characteristics



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