

HC2LP

Low profile, high current power inductors



Product description

- Compact footprint
- Designed for high density, high current/low voltage applications
- Foil technology that adds higher reliability factor over the traditional magnet wire used for higher frequency circuit designs
- Frequency Range up to 1MHz
- Ferrite core material

Applications

- Distributed power systems DC-DC converters
- General-purpose low voltage supplies
- Computer systems
- Servers
- Point of Load (POL) converters
- Industrial Equipment
- Networking/Telecom power supplies

Environmental data

- Storage temperature range (component): -40°C to +125°C
- Operating temperature range: -40°C to +125°C (ambient + self-temperature rise).
- Solder reflow temperature: J-STD-020D compliant.

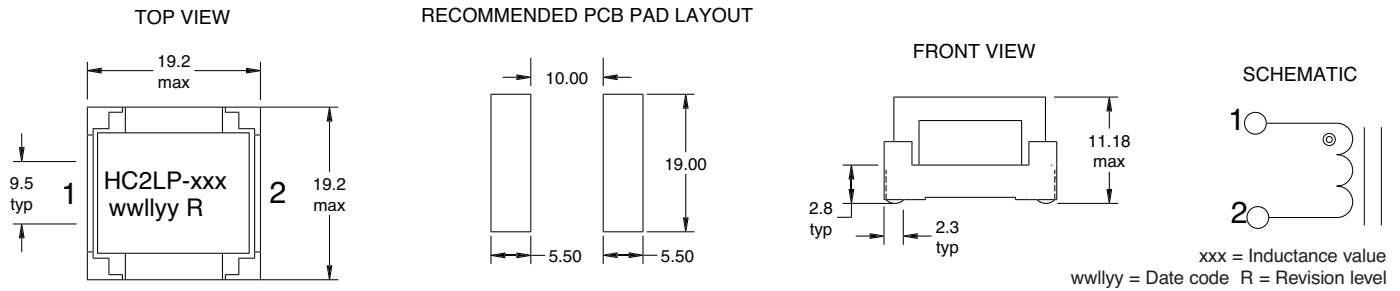


Product specifications

| Part number | OCL ¹ (μH) ±20% | I _{rms} ² amps (approx.) | I _{sat} ³ amps (approx.) | DCR ⁴ (Ω) maximum @ 20°C | Volt-μsec ⁵ (V-μs) |
|-------------|----------------------------|--|--|-------------------------------------|-------------------------------|
| HC2LP-R47-R | .52 | 52.9 | 63.75 | .0006 | 6.87 |
| HC2LP-R68-R | .63 | 52.9 | 50.00 | .0006 | 6.87 |
| HC2LP-1R0-R | 1.15 | 33.0 | 42.50 | .0013 | 10.31 |
| HC2LP-2R2-R | 2.00 | 24.3 | 31.90 | .0023 | 13.75 |
| HC2LP-4R7-R | 4.55 | 17.0 | 21.25 | .0046 | 20.62 |
| HC2LP-6R0-R | 6.00 | 17.0 | 16.50 | .0046 | 20.62 |

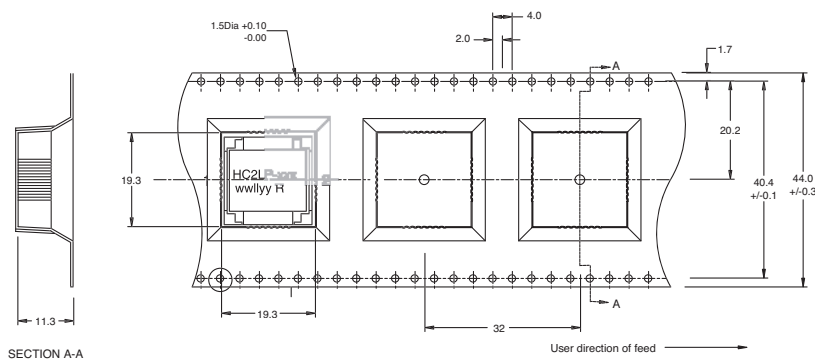
1. Open Circuit Inductance Test Parameters: 300kHz, 0.250 Vrms, 0.0 Adc
2. DC current for an approximate temperature change of 40°C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the 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.
3. Peak current for approximately 30% rolloff.
4. Values @ 20°C
5. Applied Volt-Time product (V-μs) across the inductor. This value represents the applied V-μs at 300kHz necessary to generate a core loss equal to 10% of the total losses for 40°C temperature rise.

Dimensions—mm

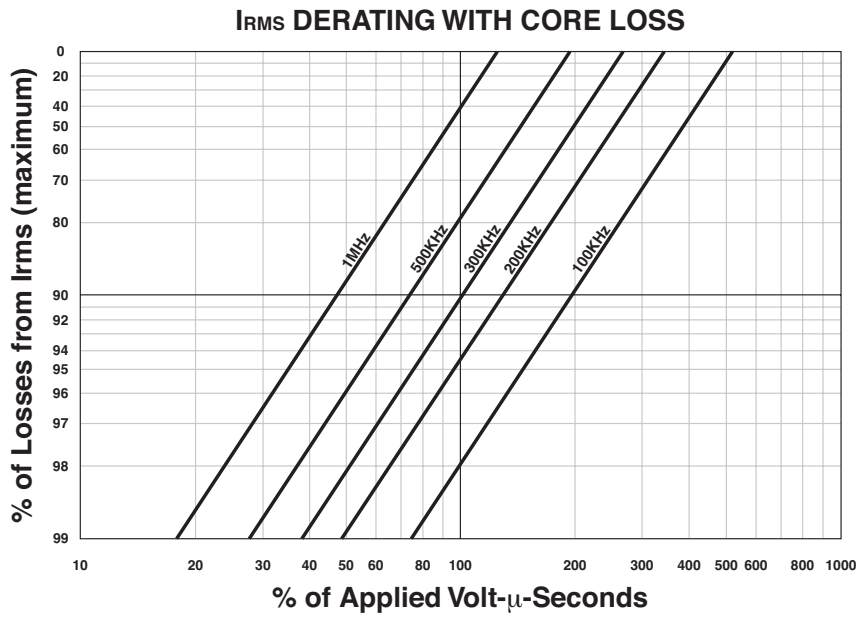


Packaging information (mm)

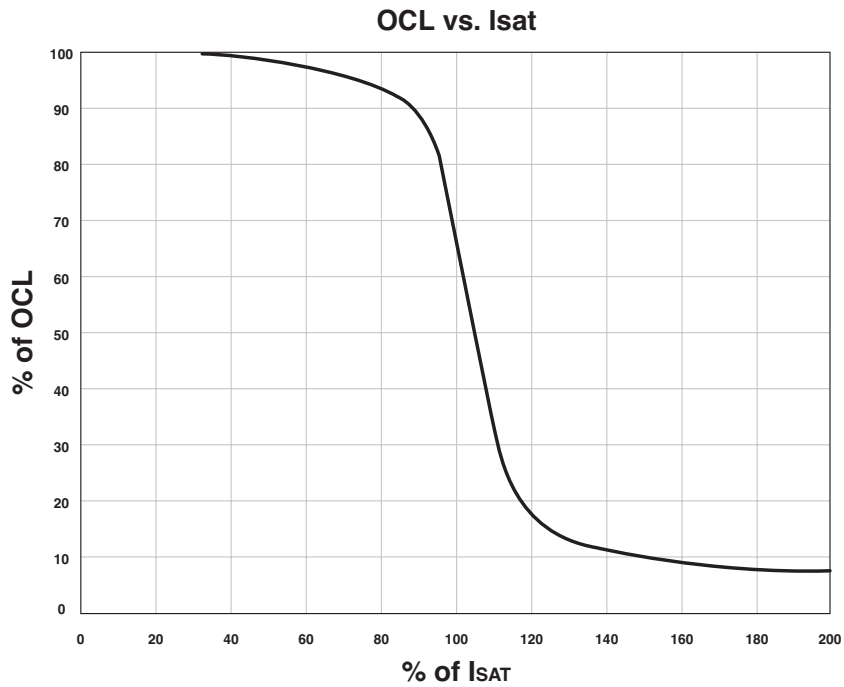
Supplied in tape and reel packaging, 130 parts per 13" reel.



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 |
| ≥2.5mm | 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.

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