HCP0605

High current power inductors



Product features

- High current carrying capacity, high permeability
- Magnetically shielded, low EMI
- Frequency range up to 1 MHz
- 5.3 mm x 6.1 mm footprint surface mount package in a 4.95 mm height
- Iron powder core material
- Halogen free, lead free, RoHS compliant

Applications

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

Environmental data

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

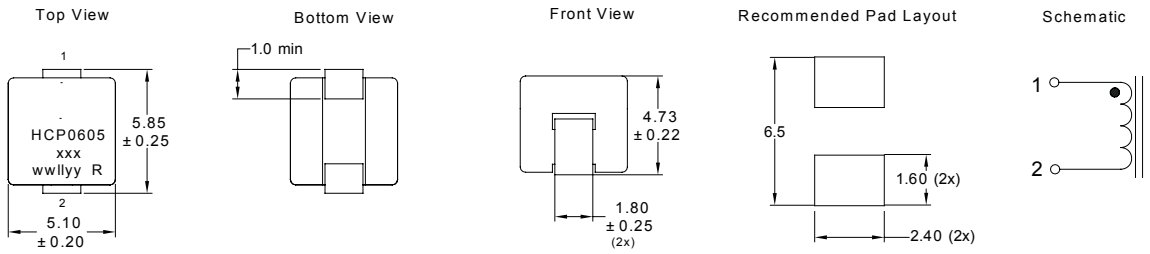
Pb HALOGEN HF FREE RoHS

Powering Business Worldwide

Product Specifications						
Part Number[5]	OCL[1] µH ± 15%	FLL[2] µH Minimum	I_{rms}[3] (A)	I_{sat}[4] (A) @25 °C	DCR mΩ@ 20 °C Maximum	K-factor[4]
HCP0605-R10-R	0.095	0.06	53	20	0.40	120.5

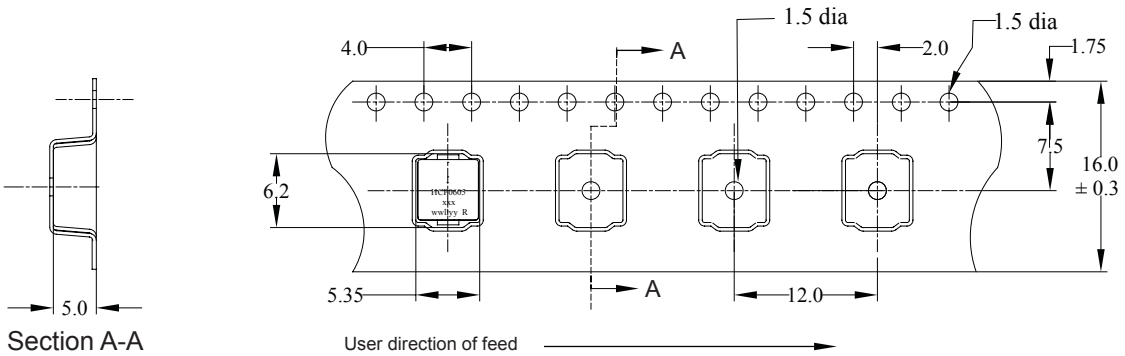
1 Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.10 V_{rms}, 0.0 Adc
2 Full Load Inductance (FLL) Test Parameters: 100 kHz, 0.1 V_{rms}, I_{sat}
3 I_{rms}: DC current for an approximate ΔT rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended the part temperature not exceed +125 °C under worst case operating conditions verified in the end application.
4 I_{sat}: Peak current for approximately 30% rolloff at +25 °C.
5 K-factor: Used to determine B_{p-p} for core loss (see graph). $B_{p-p} = K * L * \Delta I$, B_{p-p}: (Gauss), K: (K-factor from table), L: (inductance in µH), ΔI (peak-to-peak ripple current in amps).
6 Part Number Definition: HCP0605-xxx-R
- HCP0605 = Product code and size
- xxx= Inductance value in µH, R = decimal point.
- "-R" suffix = RoHS compliant

Dimensions - mm



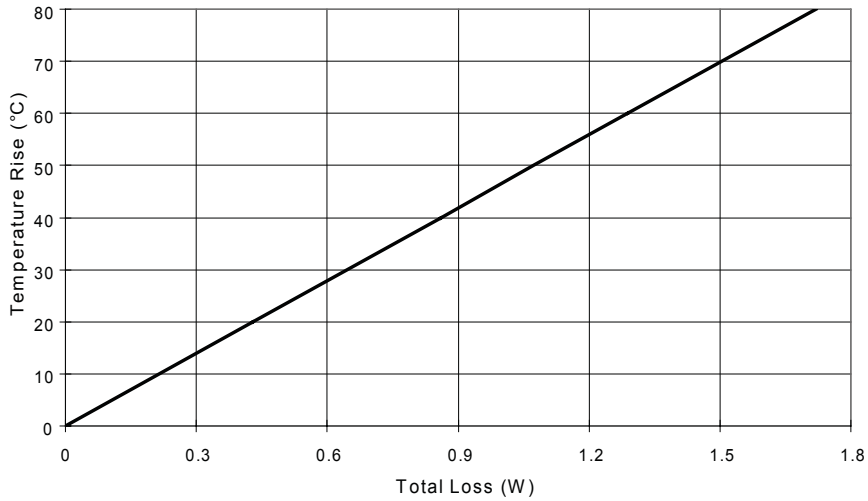
Part Marking: HCP0605 xxx = Inductance value in uH, (R = Decimal point) wwllyy = Date code R = Revision level

Packaging information - mm

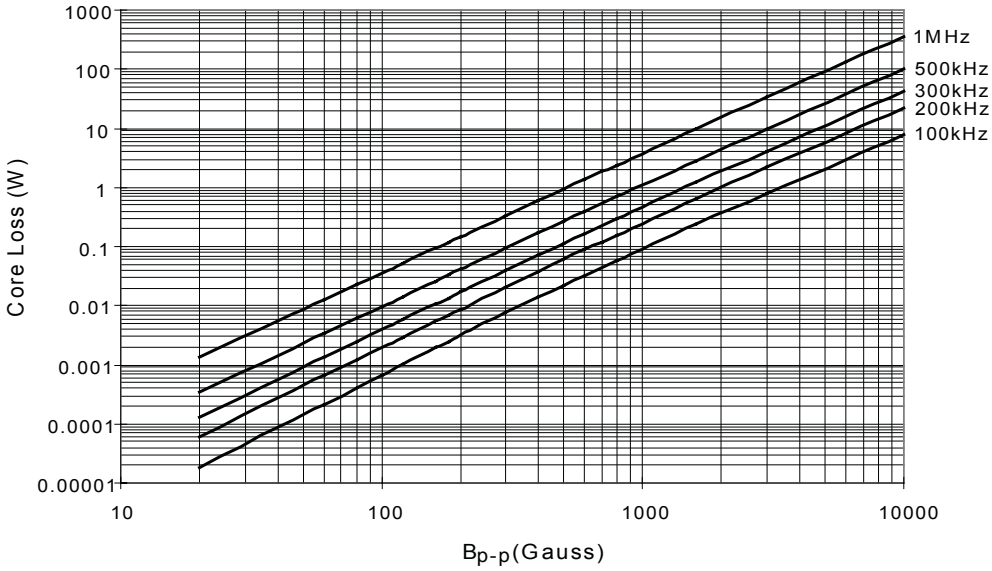


Supplied in tape-and-reel packaging, 1000 parts per reel, 13" diameter reel.

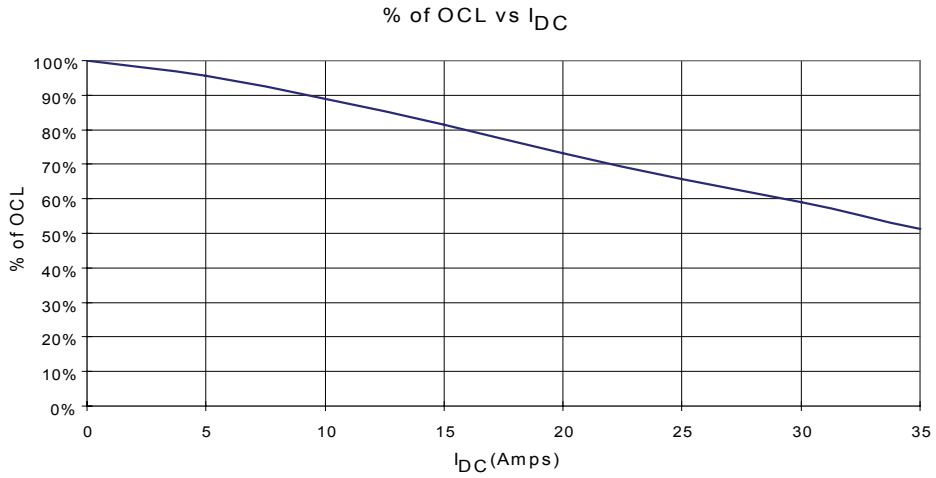
Temperature rise vs. total loss



Core loss vs Bp-p



Inductance characteristics



Solder Reflow Profile

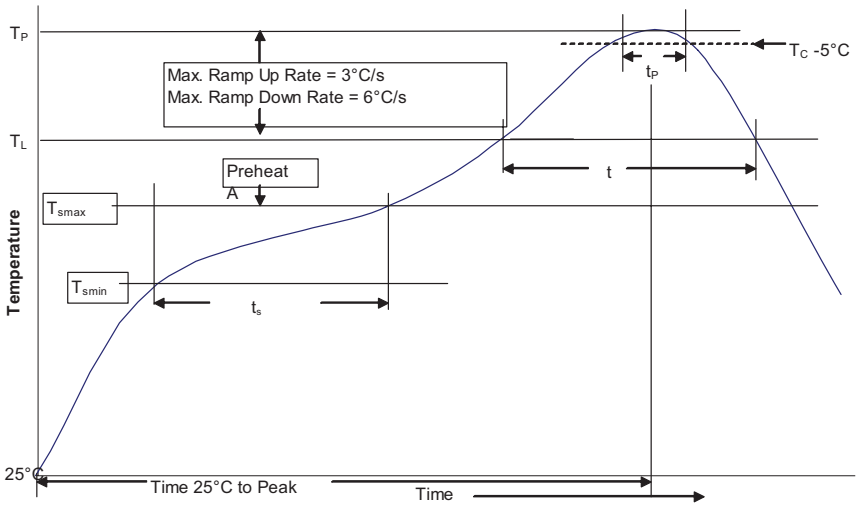


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ ≥350
<2.5mm	235°C	220°C
≥2.5mm	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm³ <350	Volume mm³ 350 - 2000	Volume mm³ >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-020

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) Time at liquidous (t_L)		183°C 60-150 Seconds	217°C 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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