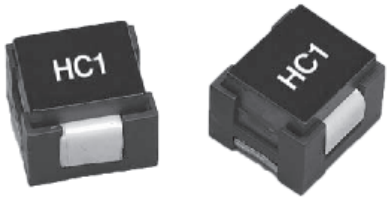
HC1

High current inductor



Applications

- Distributed power systems DC-DC converters
- General-purpose low voltage supplies
- Computer systems
- Servers
- Industrial Equipment
- Data networking and storage systems

Product description

- Designed for high current, low voltage applications
- Low DCR, high efficiency
- Foil construction for higher frequency circuit designs
- Frequency range 1kHz to 1MHz
- Ferrite core material

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

RoHS

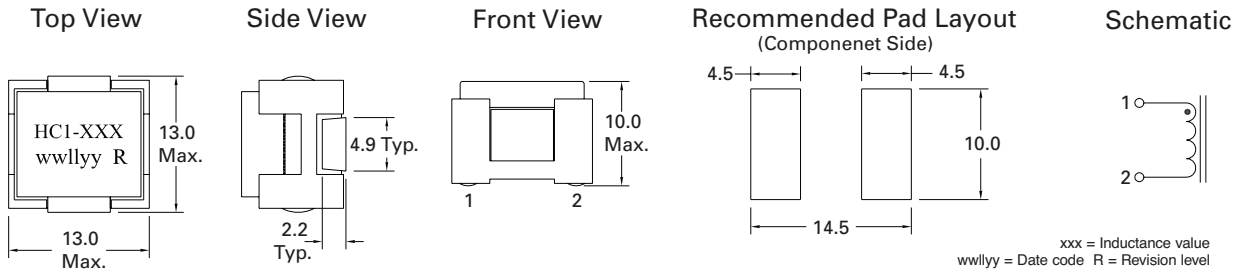
Powering Business Worldwide

Product specifications

Part number	OCL[1] (µH) ±15%	I_{rms}[2] amps (approx.)	I_{sat}[3] amps (approx.)	DCR (Ω) maximum @ 20°C	Volt-µsec[4] (V µs) ref.
HC1-R22-R	0.218	51.42	40.5	0.00036	1.83
HC1-R30-R	0.291	51.42	31.8	0.00036	1.83
HC1-R57-R	0.572	37.83	33.4	0.00068	3.66
HC1-R87-R	0.866	28.01	31.0	0.00123	5.49
HC1-1R0-R	1.12	28.01	25.4	0.00123	5.49
HC1-1R7-R	1.66	22.30	22.2	0.0020	7.33
HC1-2R3-R	2.29	22.30	16.7	0.0020	7.33
HC1-3R6-R	3.59	16.76	13.4	0.0035	9.16
HC1-5R1-R	5.15	12.79	11.2	0.0057	10.99
HC1-7R8-R	7.85	12.79	6.7	0.0057	10.99
HC1-100-R	10.5	12.79	5.3	0.0057	10.99

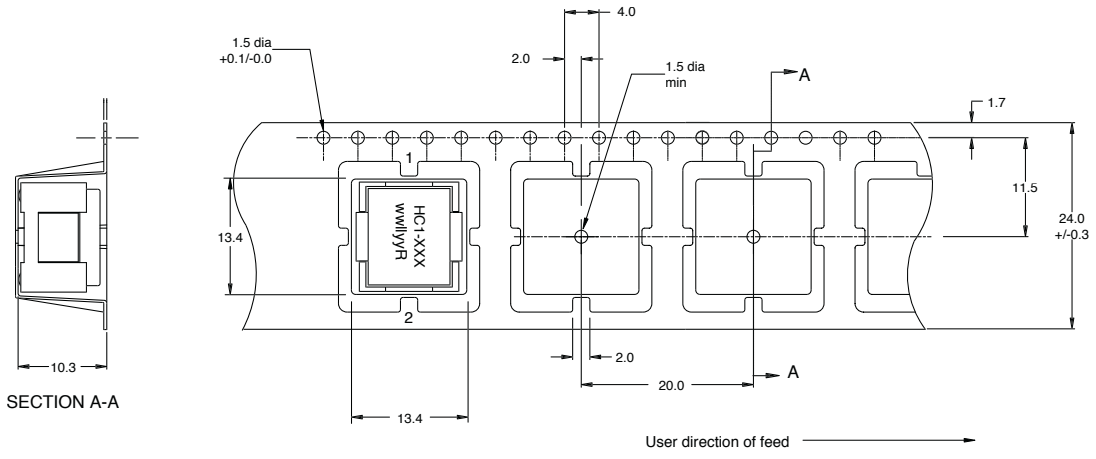
1. OCL (Open Circuit Inductance) Test parameters: 300kHz, .25V_{rms}, 0.0Adc & I_{sat}.
2. I_{rms} Amps for approximately ΔT of 40°C. DC current for an approximate ΔT of 40°C without core loss. Derating is necessary for AC currents. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
3. I_{sat} Amps Peak for approximately 30% rolloff @ 20°C.
4. Applied Volt-Time product (V-µs) across the inductor. This value represents the applied V-µs at 200kHz necessary to generate a core loss equal to 10% of the total losses for 40°C temperature rise. See Core Loss Graph.
5. Part number definition - HC1-xxx-R:
   HC1 = Product code and size
   -xxx = Inductance value
   R = Decimal point (if no "R" is present, last character equals number of zeros)
   -R Suffix = RoHS compliant

Dimensions–mm

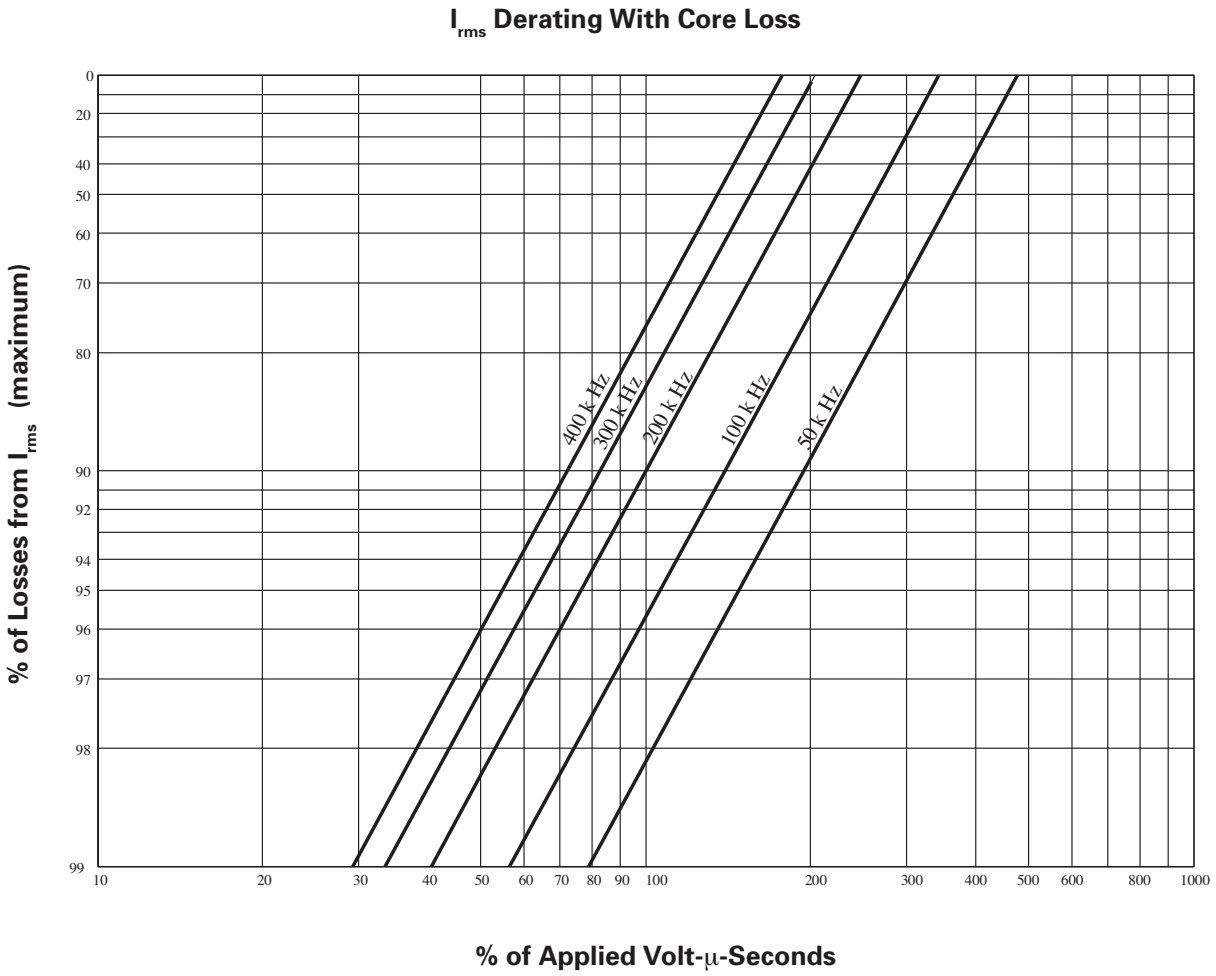


Packaging information (mm)

Supplied in tape and reel packaging, 250 parts per reel, 13" diameter reel.

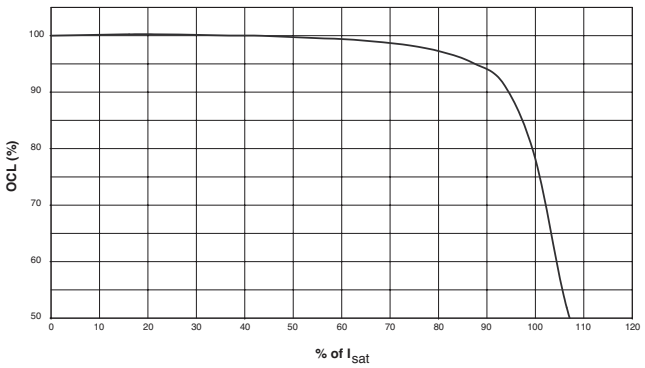


Core loss

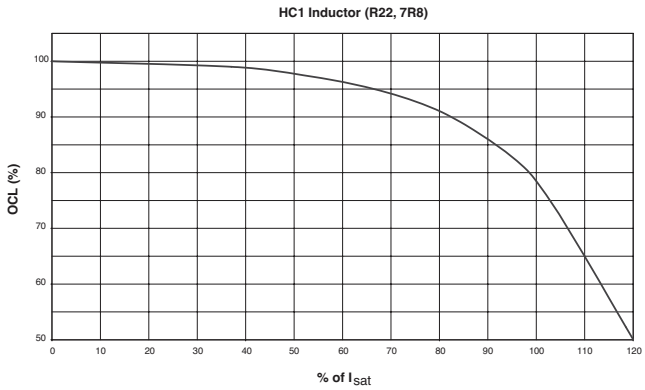

I_{rms} Derating With Core Loss
% of Losses from I_{rms} (maximum)
0
20
40
50
60
70
80
90
92
94
95
96
97
98
99
400 k Hz
300 k Hz
200 k Hz
100 k Hz
50 k Hz
10
20
30
40
50
60
70
80
90
100
200
300
400
500
600
800
1000
% of Applied Volt-μ-Seconds

Inductance characteristics

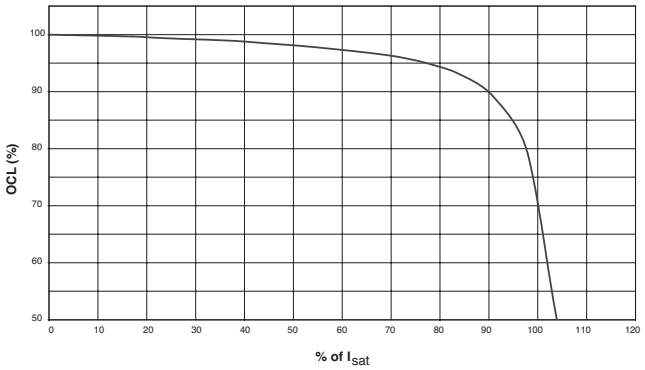
HC1 Inductor (R87)



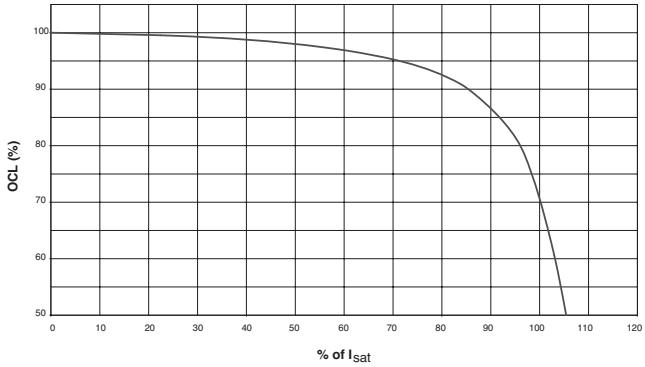
HC1 Inductor (R22, 7R8)



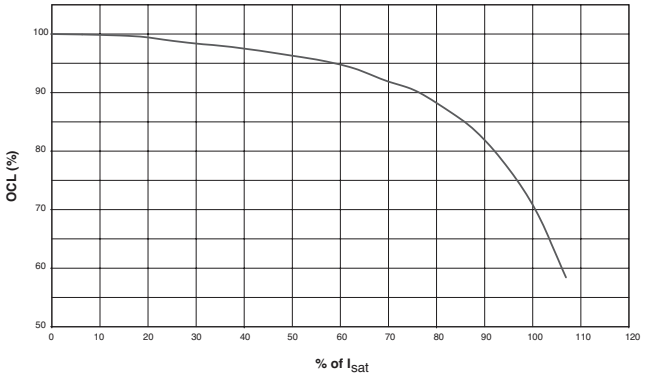
HC1 Inductor (1R7)



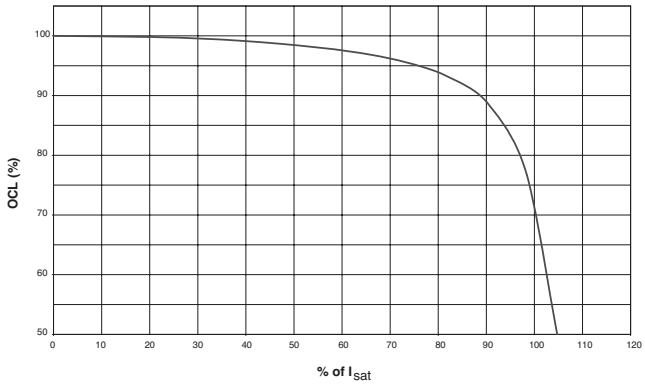
HC1 Inductor (R57, 2R3, 3R6, 5R1)



HC1 Inductor (R30, 100)



HC1 Inductor (1R0)



Solder reflow profile

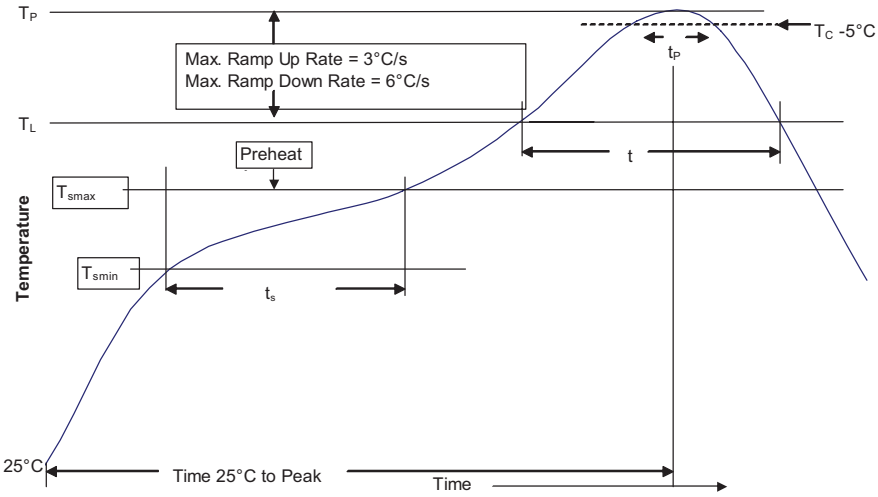


Table 1 - Standard SnPb Solder (T_C)

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-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) 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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