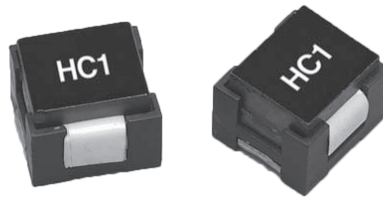


# HC1

## High current inductor



### 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

### Applications

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

### 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

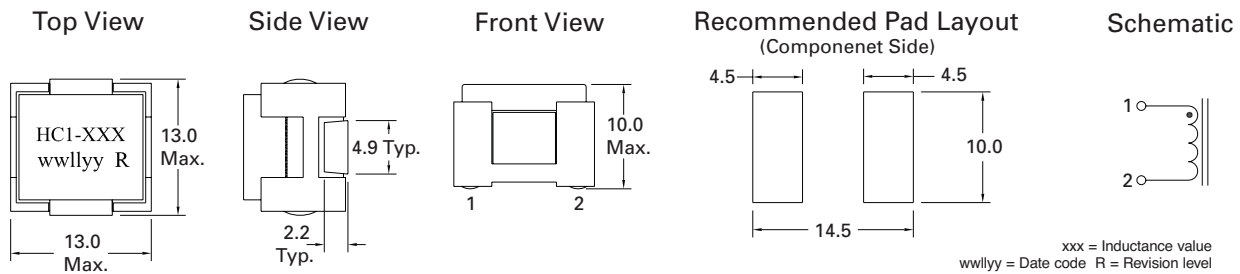


**Product specifications**

Part number	OC <sup>1</sup> (μH) ±15%	I <sub>rms</sub> <sup>2</sup> amps (approx.)	I <sub>sat</sub> <sup>3</sup> amps (approx.)	DCR (Ω) maximum @ 20°C	Volt-μsec <sup>4</sup> (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

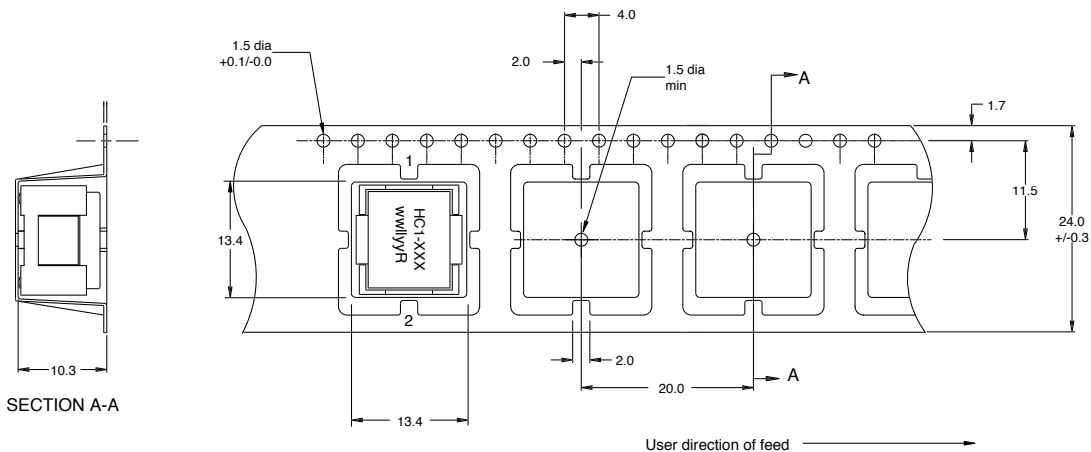
1. OCL (Open Circuit Inductance) Test parameters: 300kHz, .25V<sub>rms</sub>, 0.0Adc & I<sub>sat</sub>
2. I<sub>rms</sub> Amps for approximately ΔT of 40°C. DC current for an approximate ΔT of 40°C without core loss. Derating is necessary for AC currents. It is recommended that the temperature of the part not exceed 125°C under worst case operating conditions verified in the end application.
3. I<sub>sat</sub> 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**



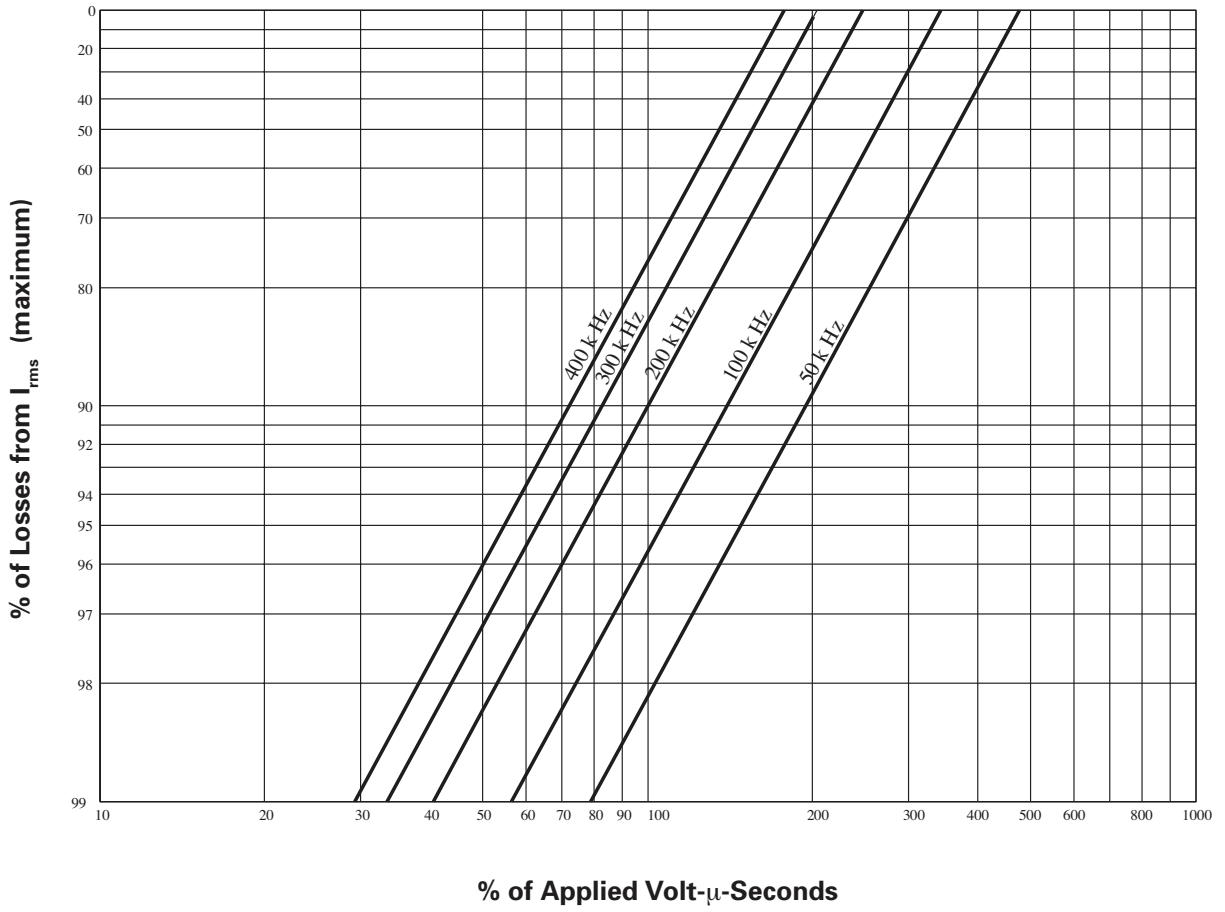
**Packaging information (mm)**

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

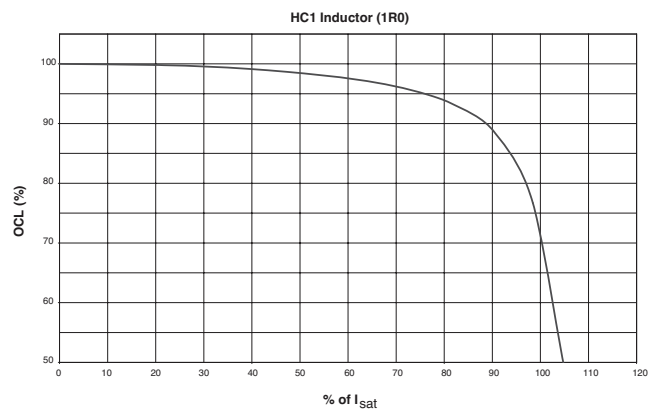
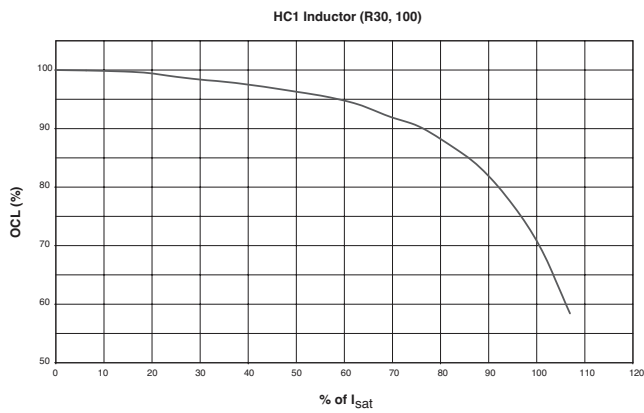
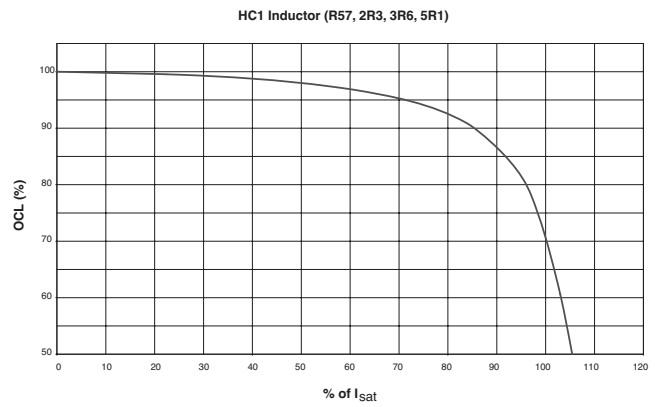
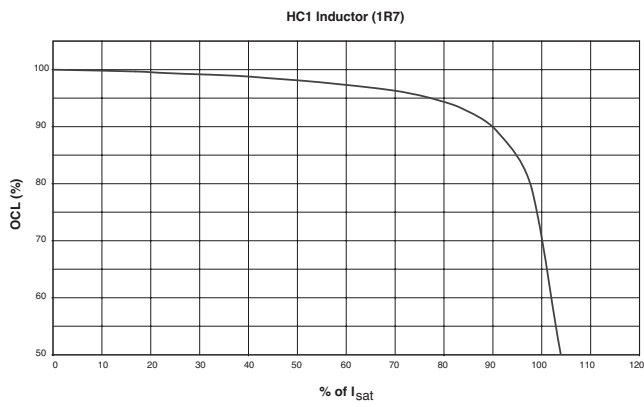
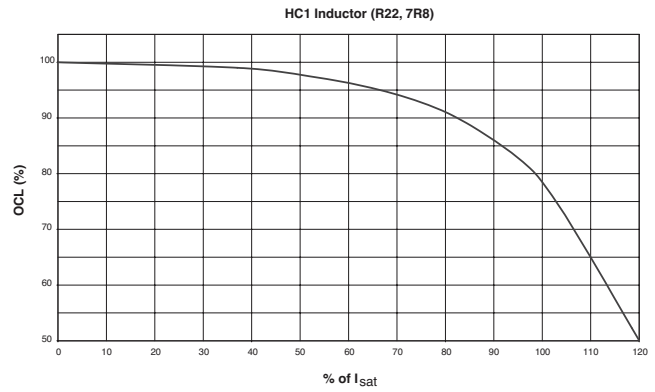
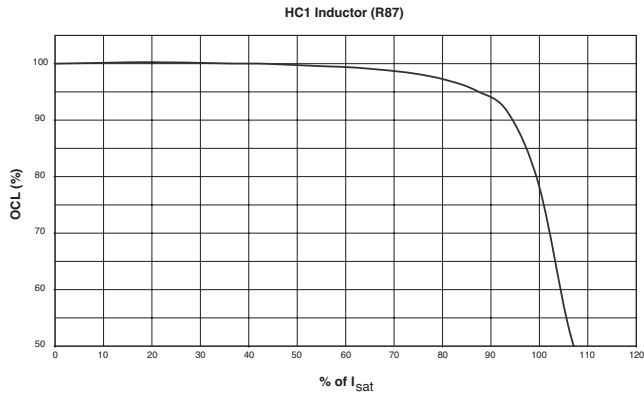


Core loss

$I_{rms}$  Derating With Core Loss



Inductance characteristics



Solder reflow profile

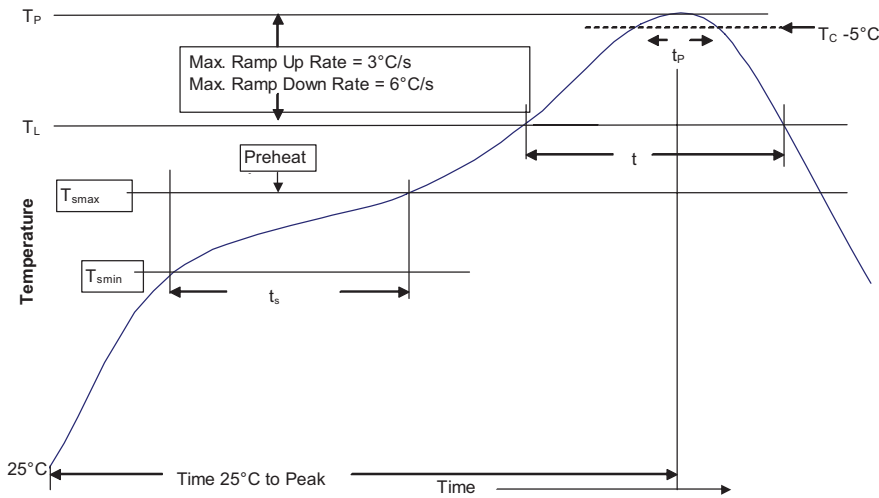


Table 1 - Standard SnPb Solder ( $T_C$ )

Package Thickness	Volume mm <sup>3</sup> <350	Volume mm <sup>3</sup> ≥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 <sup>3</sup> <350	Volume mm <sup>3</sup> 350 - 2000	Volume mm <sup>3</sup> >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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