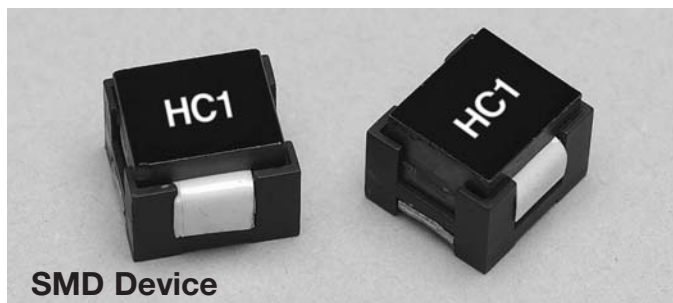


# High Current Inductor

Single Winding, HC1



**SMD Device**

## Description:

- 125°C Maximum total operating temperature
- Designed for high current, low voltage applications
- Low DCR, high efficiency
- Foil construction for higher frequency circuit designs
- Suited for IR and vapor reflow solder
- Frequency range 1kHz to 1MHz
- Ferrite core material

## Applications

- Next generation microprocessors
- High current DC-DC converters
- Computers

RoHS  
2002/95/EC

## Environmental Data

- Storage temperature range: -40°C to +125°C
- Operating temperature range: -40°C to +125°C (range is application specific).
- Solder reflow temperature: +260°C maximum for 10 seconds maximum.

## Packaging

- Units supplied in tape and reel packaging, 250 parts on 13" diameter reel.

## Product Specifications

| Part Number | Rated Inductance $\mu\text{H}$ | OCL <sup>1)</sup><br>$\pm 15\% \mu\text{H}$ | $I_{\text{rms}}$ <sup>2)</sup><br>Amps (Approx.) | $I_{\text{sat}}$ <sup>3)</sup><br>Amps (Approx.) | DCR ( $\Omega$ )<br>Max. @ 20°C | Volt- $\mu\text{Sec}$ <sup>4)</sup><br>(V $\mu\text{S}$ ) (ref.) |
|-------------|--------------------------------|---------------------------------------------|--------------------------------------------------|--------------------------------------------------|---------------------------------|------------------------------------------------------------------|
| HC1-R22-R   | 0.22                           | 0.218                                       | 51.42                                            | 40.5                                             | 0.00036                         | 1.83                                                             |
| HC1-R30-R   | 0.30                           | 0.291                                       | 51.42                                            | 31.8                                             | 0.00036                         | 1.83                                                             |
| HC1-R57-R   | 0.57                           | 0.572                                       | 37.83                                            | 33.4                                             | 0.00068                         | 3.66                                                             |
| HC1-R87-R   | 0.87                           | 0.866                                       | 28.01                                            | 31.0                                             | 0.00123                         | 5.49                                                             |
| HC1-1R0-R   | 1.0                            | 1.12                                        | 28.01                                            | 25.4                                             | 0.00123                         | 5.49                                                             |
| HC1-1R7-R   | 1.7                            | 1.66                                        | 22.30                                            | 22.2                                             | 0.0020                          | 7.33                                                             |
| HC1-2R3-R   | 2.3                            | 2.29                                        | 22.30                                            | 16.7                                             | 0.0020                          | 7.33                                                             |
| HC1-3R6-R   | 3.6                            | 3.59                                        | 16.76                                            | 13.4                                             | 0.0035                          | 9.16                                                             |
| HC1-5R1-R   | 5.1                            | 5.15                                        | 12.79                                            | 11.2                                             | 0.0057                          | 10.99                                                            |
| HC1-7R8-R   | 7.8                            | 7.85                                        | 12.79                                            | 6.7                                              | 0.0057                          | 10.99                                                            |
| HC1-100-R   | 10                             | 10.5                                        | 12.79                                            | 5.3                                              | 0.0057                          | 10.99                                                            |

1) OCL (Open Circuit Inductance) Test parameters: 300kHz, .25V<sub>rms</sub>, 0.0Adc &  $I_{\text{sat}}$ .

2)  $I_{\text{rms}}$  Amps for approximately  $\Delta T$  of 40°C. DC current for an approximate  $\Delta T$  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)  $I_{\text{sat}}$  Amps Peak for approximately 30% rolloff @ 20°C

4) Applied Volt-Time product (V- $\mu\text{S}$ ) across the inductor. This value represents the applied V- $\mu\text{S}$  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, third character = number of zeros)
- -R Suffix = RoHS compliant

## Dimensions - mm

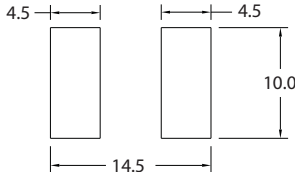
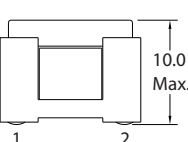
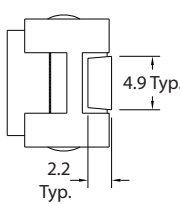
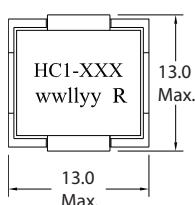
Top View

Side View

Front View

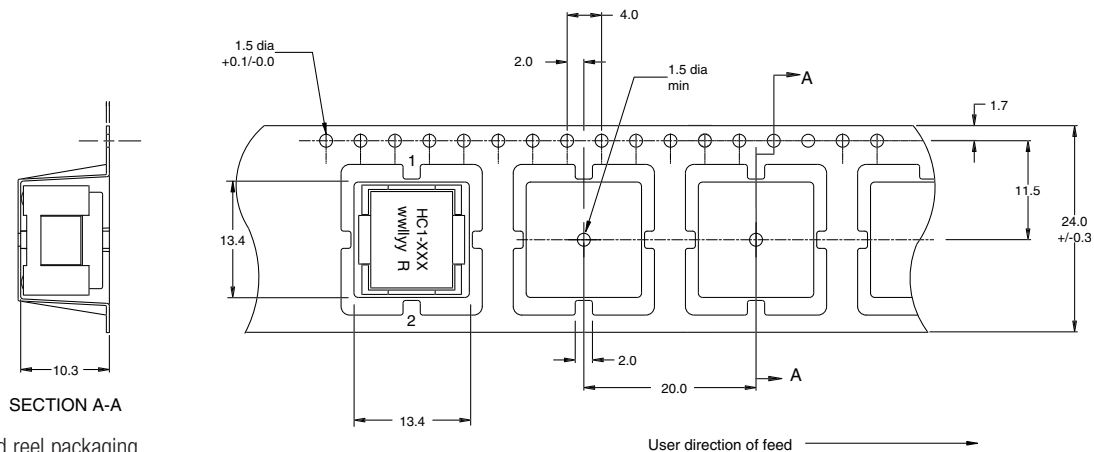
Recommended Pad Layout  
(Component Side)

Schematic



xxx = Inductance value  
wwlllyy = Date code R = Revision level

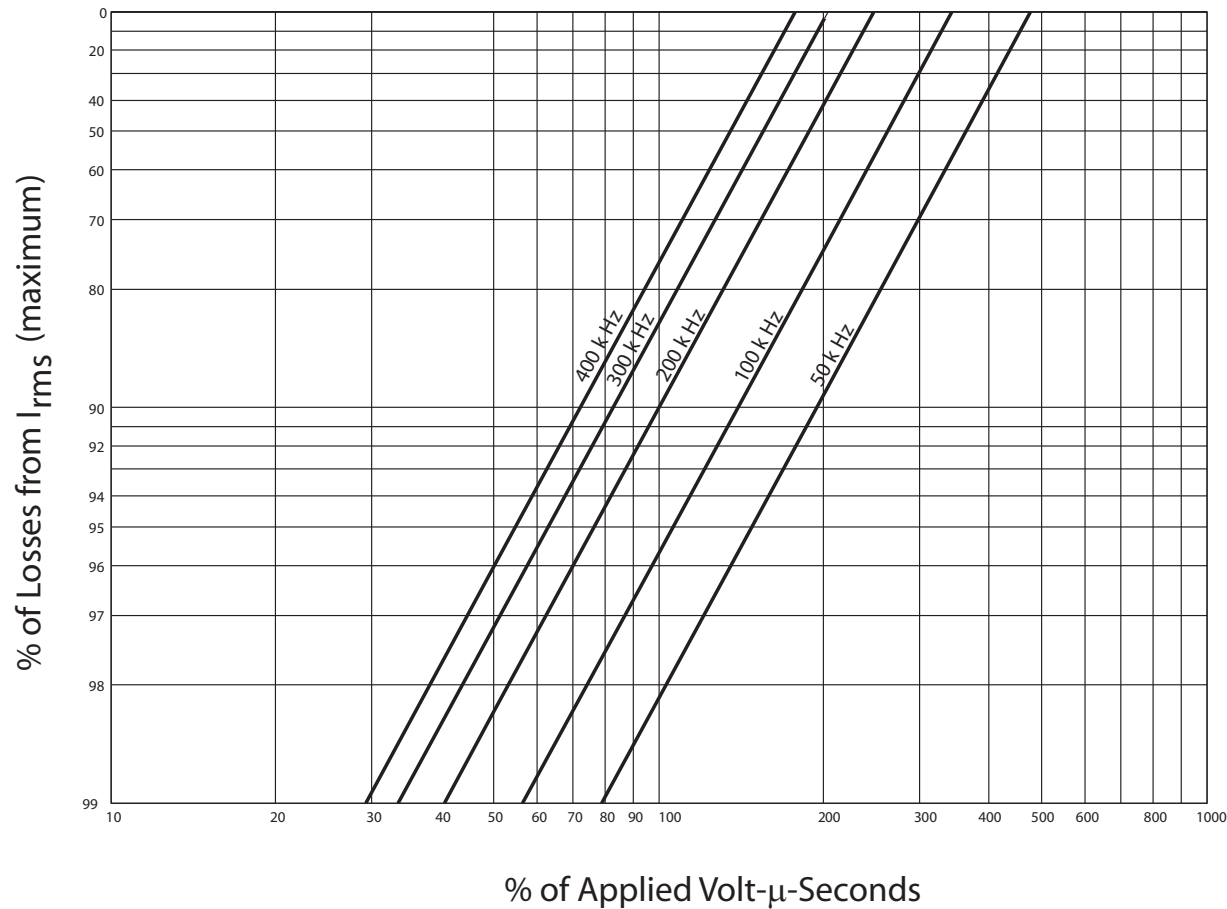
Packaging Information - mm



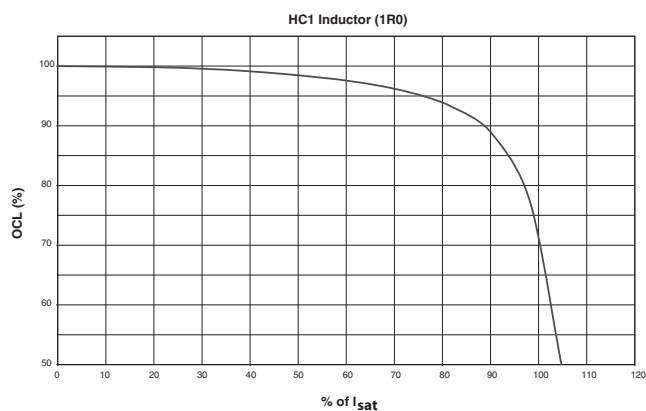
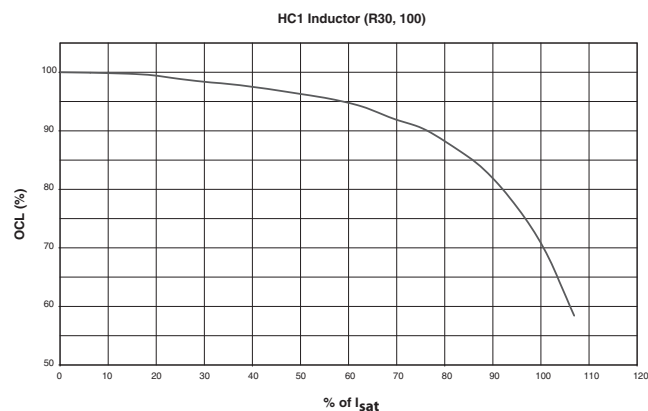
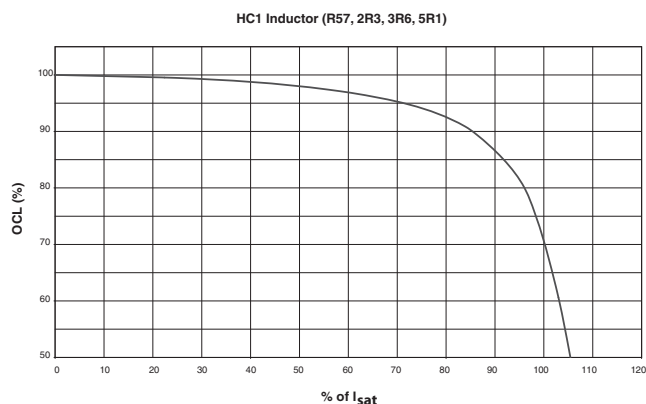
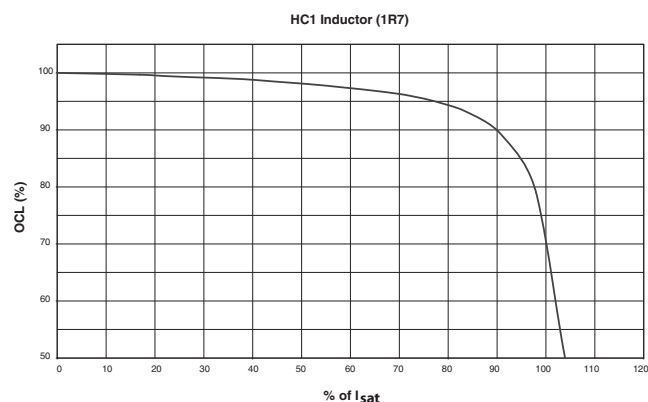
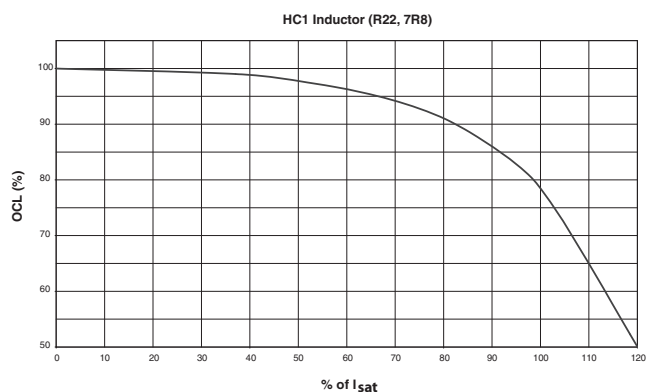
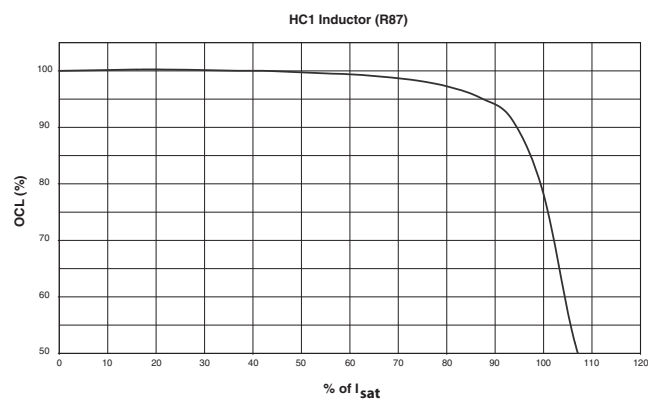
Supplied in tape and reel packaging,  
250 parts per reel, 13" diameter reel.

Core Loss

$I_{rms}$  Derating With Core Loss



# Inductance Characteristics



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