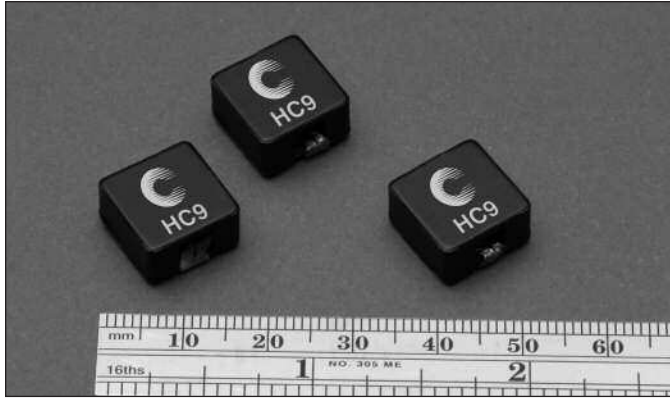


# HC9 Series

## High Current 9 Power Inductors



### Description

- 155°C maximum total operating temperature
- Surface mount inductors designed for higher speed switch mode applications requiring lower inductance, low voltage and high current

- Design utilizes high temperature powder iron material with a non-organic binder to eliminate thermal aging
- Inductance Range from 0.2µH to 47.0µH
- Current Range from 3.65 amps to 95.0 amps
- Frequency Range 1kHz to 500kHz



### Applications

- Next generation processors
- High current DC-DC converters
- VRM, multi-phase buck regulator
- PC, workstations, routers, servers

### Environmental Data

- Storage temperature range: -40°C to +155°C
- Operating temperature range: -40°C to +155°C (range is application specific)
- Solder reflow temperature: +260°C max for 10 seconds maximum

### Packaging

- Supplied in tape and reel packaging, 450 parts per reel

Part Number	Rated Inductance µH	OCL <sup>(1)</sup> Nominal +/-15% µH	I <sub>rms</sub> <sup>(2)</sup> Amps (Typ.)	I <sub>sat</sub> <sup>(3)</sup> Amps 20% rolloff	I <sub>sat</sub> <sup>(4)</sup> Amps 30% rolloff	DCR (mΩ) max. @ 20°C	Volts <sup>(5)</sup> µSec (VµS)
HC9-R20-R	0.20	0.218	46.7	65	95	0.50	2.87
HC9-R47-R	0.47	0.544	33.7	40	57	0.88	4.78
HC9-1R0-R	1.0	1.04	23.7	28	41	1.87	6.70
HC9-1R5-R	1.5	1.70	21.0	22	32	2.27	8.46
HC9-2R2-R	2.2	2.53	17.2	18	26	3.37	10.4
HC9-3R3-R	3.3	3.52	14.3	15	22	4.87	12.4
HC9-4R3-R	4.3	4.67	13.0	13.2	19.1	5.90	14.4
HC9-6R8-R	6.8	7.45	10.3	11.4	15.1	9.40	18.1
HC9-100-R	10.0	10.9	8.50	8.6	12.5	14.0	22.0
HC9-220-R	22.0	22.4	6.30	6.0	8.7	25.7	31.5
HC9-330-R	33.0	34.5	4.42	4.8	7.0	48.8	37.3
HC9-470-R	47.0	49.2	3.65	3.9	5.7	72.3	44.8

1) Test Parameters: 100kHz, 1.0V<sub>rms</sub>

2) I<sub>rms</sub> amps for approximately ΔT of 40°C without core loss.

Derating is necessary for AC currents. Pad layout, trace thickness and width, airflow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed 155°C under worst case conditions verified in the end application.

3) Peak current for approximately 20% rolloff @20°C

4) Peak current for approximately 30% rolloff @20°C

5) Applied Volt-Time product (V-µS) across the inductor. This value represents the applied V-µS at operating frequency necessary to generate additional core loss which contributes to the 40°C temperature rise. De-rating of the I<sub>rms</sub> is required to prevent excessive temperature rise. The 100% VµS rating is equivalent to a ripple current I<sub>p-p</sub> of 20% of I<sub>sat</sub> (30% rolloff option).

Part number definition:

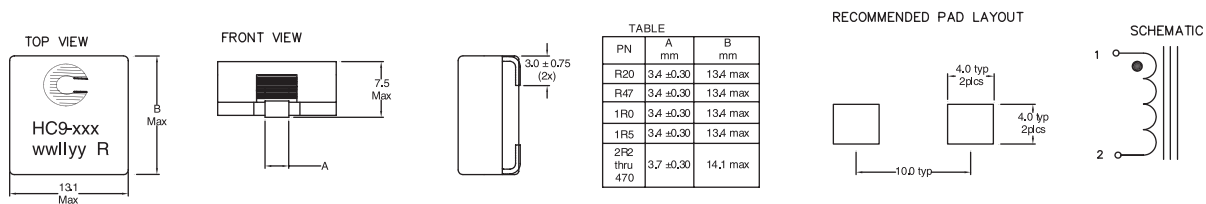
First 3 characters = Product code and size.

Last 3 characters = Inductance in µH. R = decimal point.

If no R is present third character = # of zeros.

-R suffix = RoHS compliant

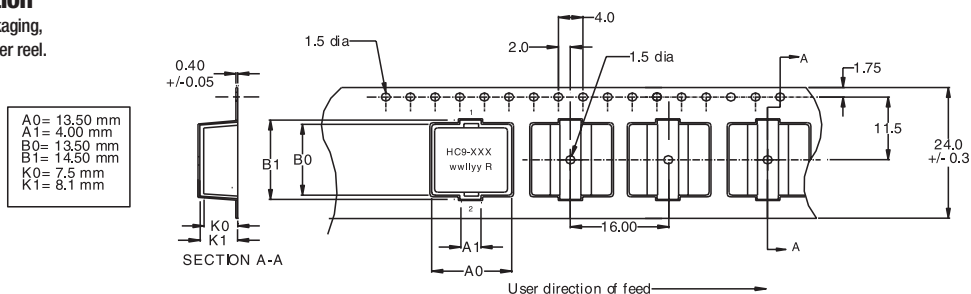
## Dimensions - mm



All dimensions +/-0.2 mm unless otherwise specified.  
wwllyy = Date Code, R = Revision Level

## Packaging Information

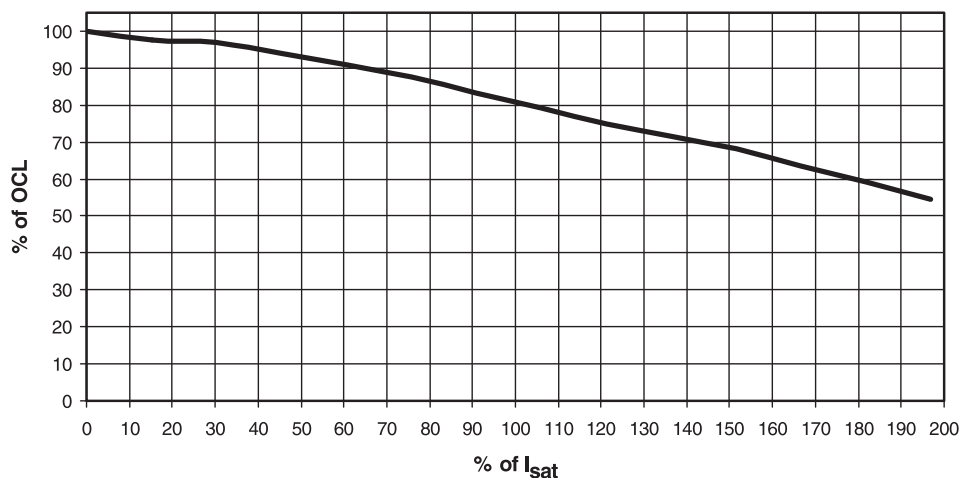
Supplied in tape and reel packaging,  
450 parts per reel, 13" diameter reel.



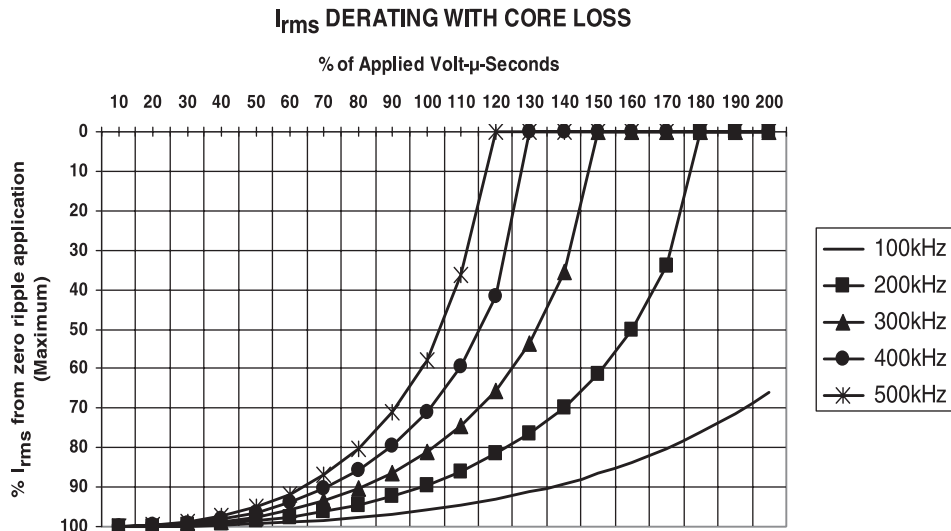
Dimensions in Millimeters

## Rolloff

OCL vs  $I_{sat}$



## Core Loss



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