

### Description

- 155°C maximum total temperature operation
- 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 0.22 uH to 4.81 uH
- Current range from 35.8 to 9.8 Amps
- Frequency range 1kHz to 500kHz



### Applications

- Next generation microprocessors
- High current DC-DC converters
- VRM, multi-phase buck regulator
- PC, Workstations, Routers
- Telecom soft switches, Base Stations

### Environmental Data

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

### Packaging

- Supplied in tape and reel packaging, 610 parts per reel

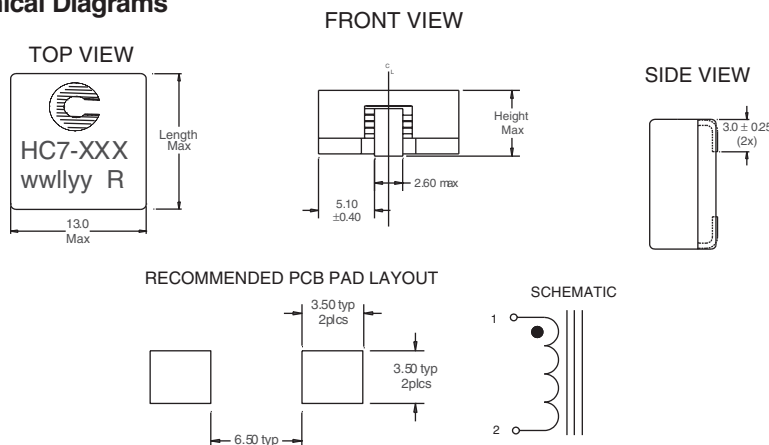
Part Number	Rated Inductance $\mu\text{H}$	OCL (1) nominal $\pm 20\%$ $\mu\text{H}$	I <sub>rms</sub> (2) Amperes (Typ.)	Isat (3) Amperes 15% rolloff	Isat (4) Amperes 30% rolloff	DCR (m $\Omega$ ) max. @ 20°C	Volts (5) $\mu\text{Sec}$ (V $\mu\text{S}$ )
HC7-R20-R	.20	0.220	35.80	45.8	86.5	0.67	2.27
HC7-R47-R	.47	0.534	23.40	27.5	51.9	1.60	3.83
HC7-1R0-R	1.0	1.05	20.30	19.6	37.1	2.10	5.36
HC7-1R5-R	1.5	1.73	14.20	15.3	28.8	4.30	6.90
HC7-2R2-R	2.2	2.58	13.00	12.5	23.6	5.20	8.40
HC7-3R9-R	3.9	3.61	10.40	10.6	20.0	7.90	10.0
HC7-4R7-R	4.7	4.81	9.80	9.2	17.3	9.00	12.6

- 1) Test Parameters: 100KHz, 1.0Vrms
  - 2) I<sub>rms</sub> Amperes for approximately  $\Delta T$  of 40°C above 85°C ambient
  - 3) Isat Amperes Peak for approximately 15% rolloff (@20°C)
  - 4) Isat Amperes Peak for approximately 30% rolloff (@20°C)
  - 5) Applied Volt-Time product (V- $\mu\text{S}$ ) across the inductor. This value represents the applied V- $\mu\text{S}$  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% V- $\mu\text{S}$  rating is equivalent to a ripple current I<sub>p-p</sub> of 20% of Isat (30% rolloff option).
- It is recommended that the temperature of the part not exceed 155°C under worst case operating conditions verified in the end application.

Units supplied in tape and reel packaging. 13" reels 610 parts per reel. Carrier tape width = 24 mm. Meets EIA standard

Part number definition:  
 HC7-XXX-R  
 HC7 = Product code and size  
 XXX = Inductance value in uH.  
 R = Decimal point. If no R is present, third character = #of zeros  
 -R suffix indicates RoHS compliant

### Mechanical Diagrams



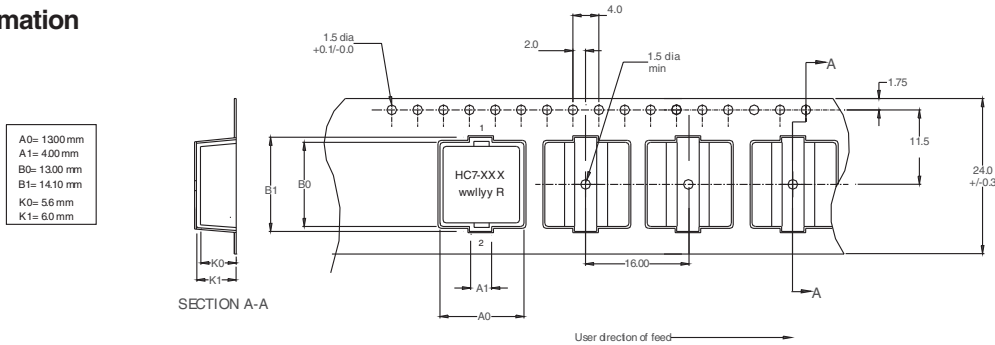
### Maximum Dimension

Part Number	Height mm	Length mm
HC7-R20-R	6.0	14.25
HC7-R47-R	5.5	13.8
HC7-1R0-R	5.5	13.8
HC7-1R5-R	5.5	13.8
HC7-2R2-R	5.5	13.8
HC7-3R9-R	5.5	13.8
HC7-4R7-R	5.5	13.8

Dimensions in Millimeters.  
 All dimensions I+/- 0.2 mm unless otherwise specified.  
 All soldering surfaces are coplanar within 0.15 mm.

wwllyy = Date code R = Revision level

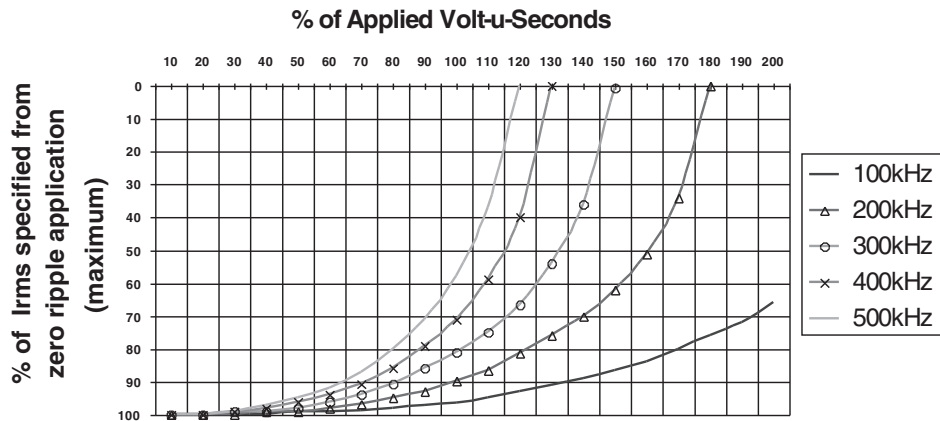
**Packaging Information**



Dimensions in Millimeters

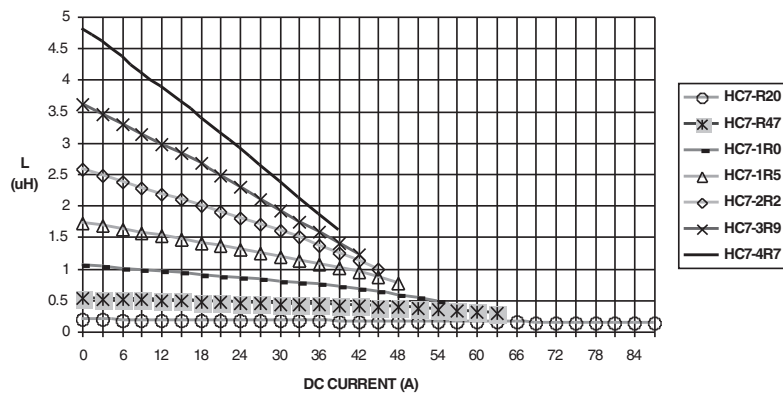
**Core Loss**

**Irms DERATING WITH CORE LOSS**



**Inductance Characteristics**

**Inductance vs. Idc**



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