

## 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)
- Infrared reflow temperature: +260°C for 10 seconds maximum



## Packaging

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

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

1) Test Parameters: 100KHz, 1.0Vrms

2) Irms 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- $\mu$ s) across the inductor. This value represents the applied V- $\mu$ s at operating frequency necessary to generate additional core loss which contributes to the 40°C temperature rise. De-rating of the Irms is required to prevent excessive temperature rise. The 100% V- $\mu$ 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:

First 3 characters = Product code and size.

Last 3 characters = Inductance in  $\mu$ H. R = decimal point.

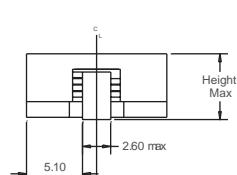
If no R is present third character = # of zeros.

wwllyy = (Date Code)

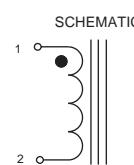
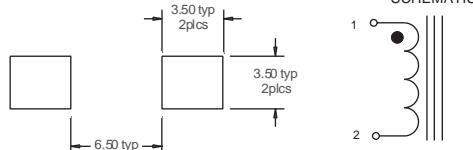
R = (Revision level)

## Mechanical Diagrams

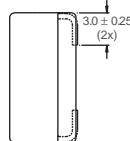
FRONT VIEW



RECOMMENDED PCB PAD LAYOUT



SIDE VIEW



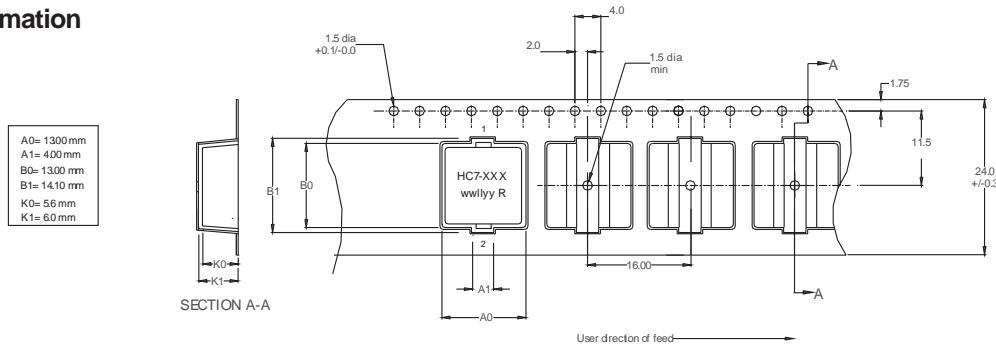
## Maximum Dimension

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

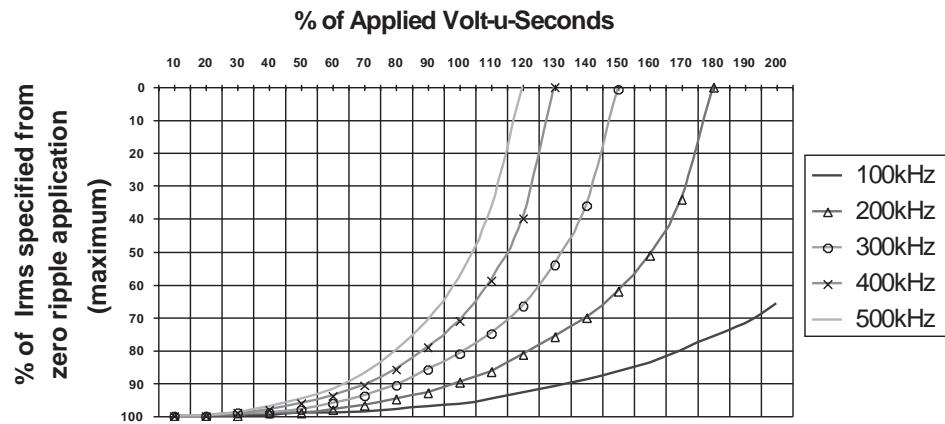
Dimensions in Millimeters.

All dimensions  $\pm$  0.2 mm unless otherwise specified.

All soldering surfaces are coplanar within 0.15 mm.

**Packaging Information**


Dimensions in Millimeters

**I<sub>rms</sub> DERATING WITH CORE LOSS**

**Inductance vs. I<sub>dc</sub>**
