

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

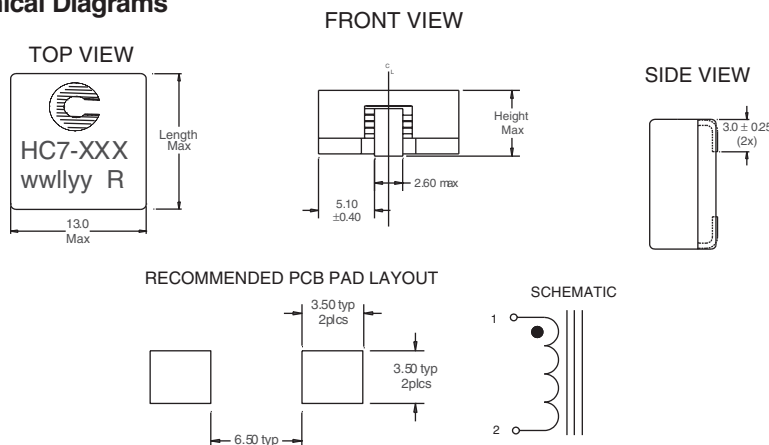
Part Number	Rated Inductance μH	OCL (1) nominal $\pm 20\%$ μH	I _{rms} (2) Amperes (Typ.)	I _{sat} (3) Amperes 15% rolloff	I _{sat} (4) Amperes 30% rolloff	DCR (m Ω) max. @ 20°C	Volts (5) μSec (V μS)
HC7-R20-R	.20	0.220	35.80	45.8	86.5	0.67	2.27
HC7-R47-R	.47	0.534	23.40	27.5	51.9	1.60	3.83
HC7-1R0-R	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_{rms} Amperes for approximately ΔT of 40°C above 85°C ambient
- 3) I_{sat} Amperes Peak for approximately 15% rolloff (@20°C)
- 4) I_{sat} Amperes Peak 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_{rms} is required to prevent excessive temperature rise. The 100% V- μS rating is equivalent to a ripple current I_{p-p} of 20% of I_{sat} (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



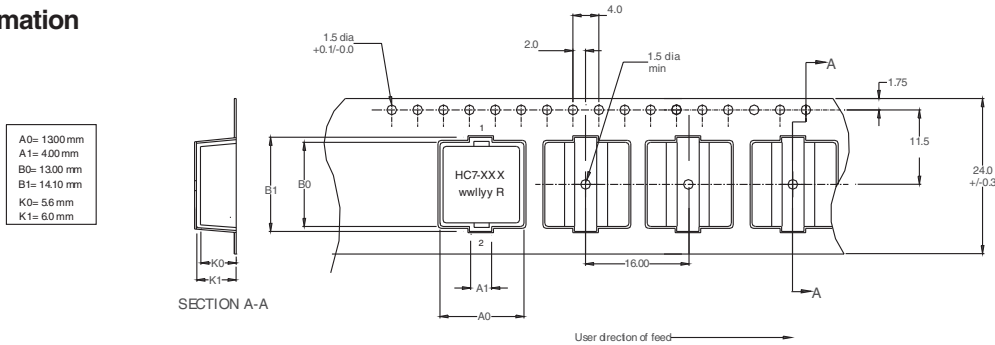
Maximum Dimension

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.

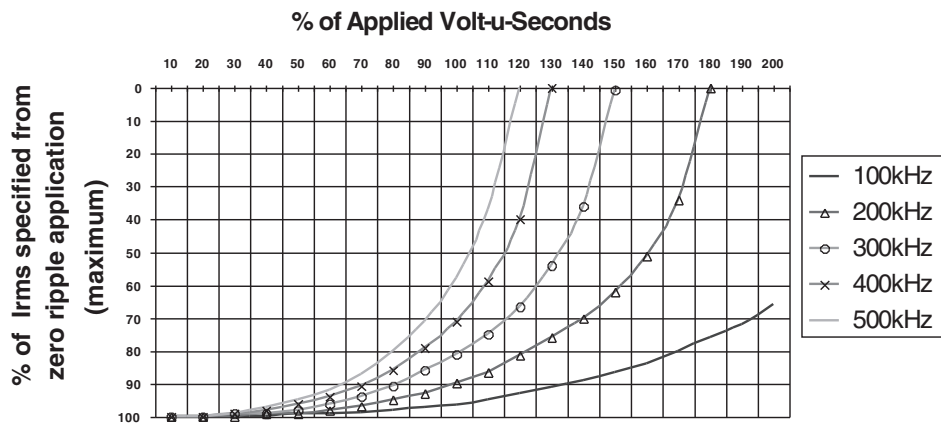
wwllyy = Date code R = Revision level

Packaging Information



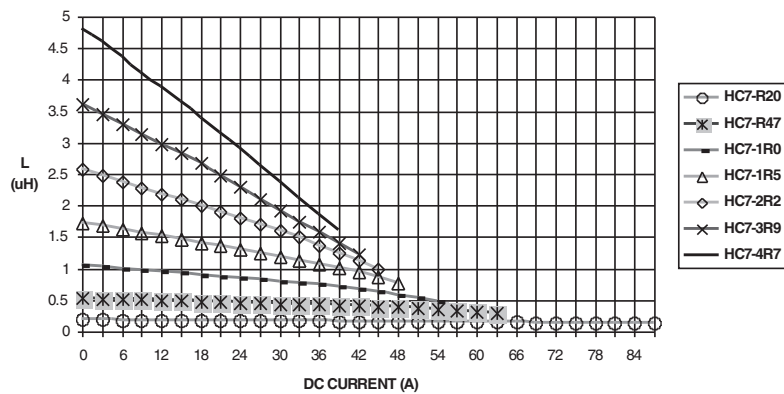
Core Loss

Irms DERATING WITH CORE LOSS



Inductance Characteristics

Inductance vs. Idc



This bulletin is intended to present product design solutions and technical information that will help the end user with design applications. Cooper Electronic Technologies reserves the right, without notice, to change design or construction of any products and to discontinue or limit distribution of any products. Cooper Electronic Technologies also reserves the right to change or update, without notice, any technical information contained in this bulletin. Once a product has been selected, it should be tested by the user in all possible applications.

Life Support Policy: Cooper Electronic Technologies does not authorize the use of any of its products for use in life support devices or systems without the express written approval of an officer of the Company. Life support systems are devices which support or sustain life, and whose failure to perform, when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in significant injury to the user.