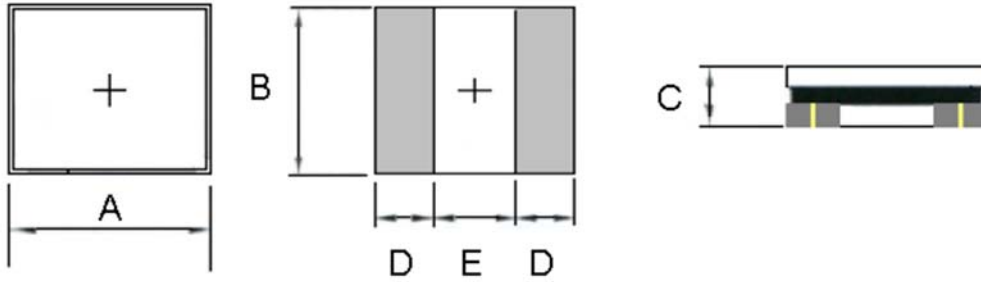


FEATRLRES

- This specification applies Low Profile Power Inductors.
- 100% Lead(Pb) & Halogen-Free and RoHS compliant.

CONFIGLRATIONS & DIMENSIONS (unit in mm)



Type	A	B	C	D	E
HNRH252010	2.5 -0.1/+0.2	2.0 -0.1/+0.2	1.0max.	0.85 ref.	0.80 ref.

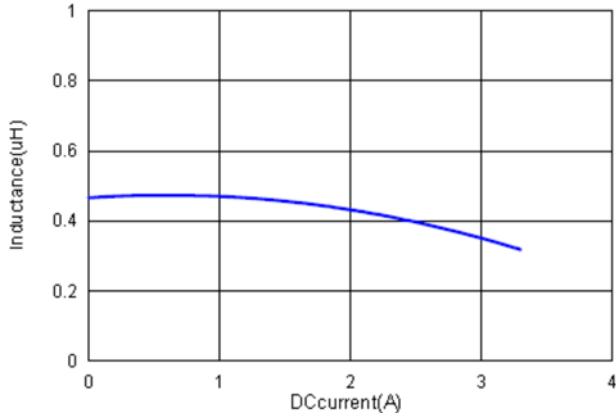
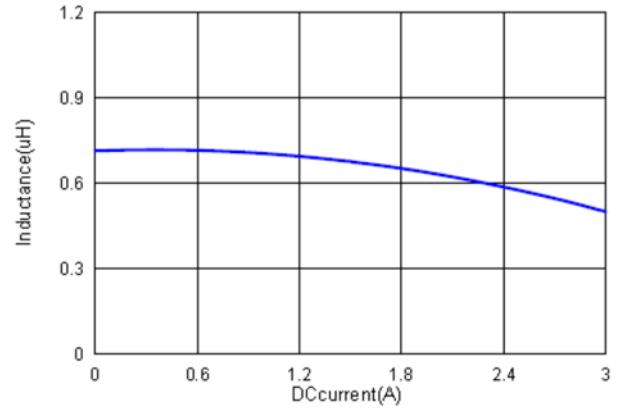
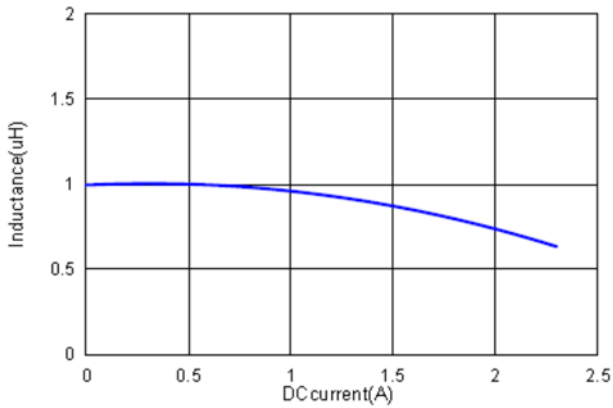
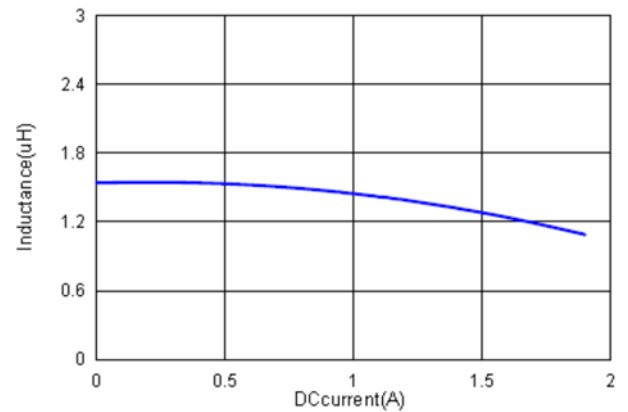
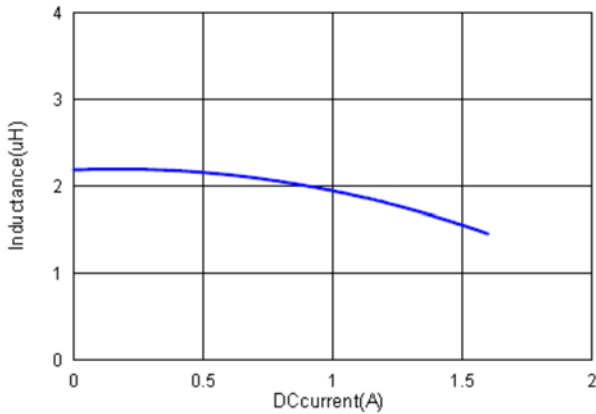
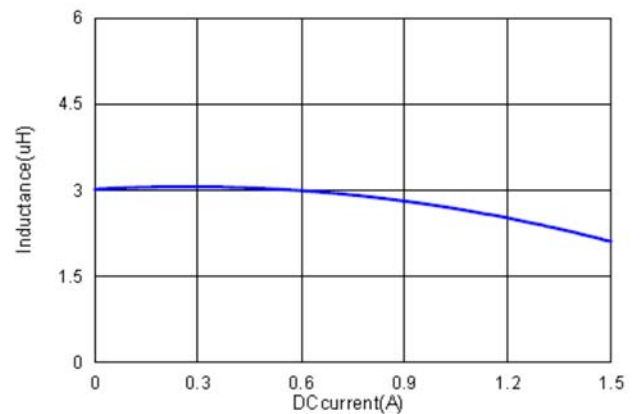
ELECTRICAL CHARACTERISTICS

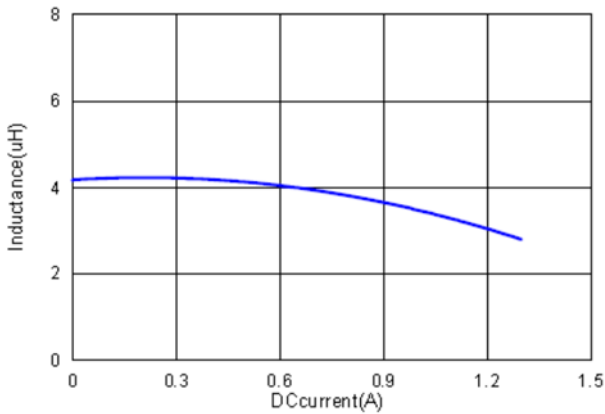
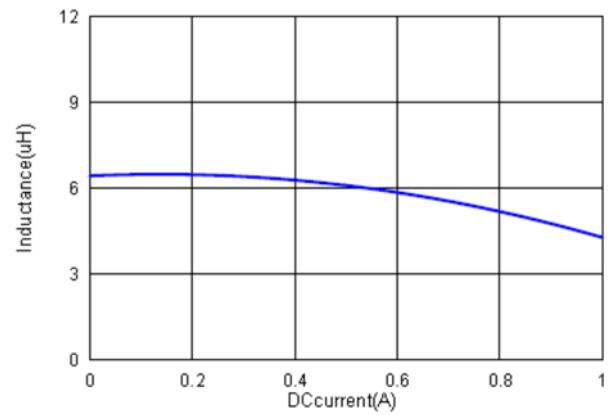
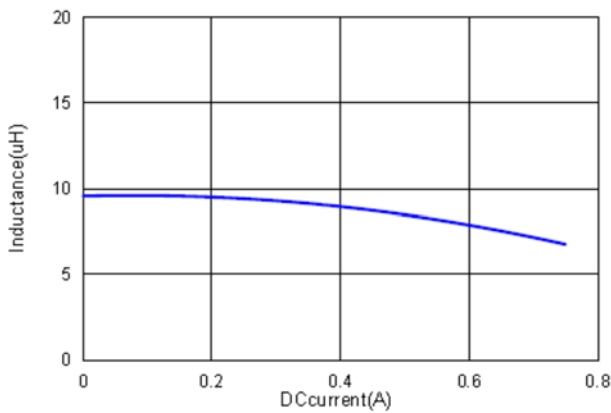
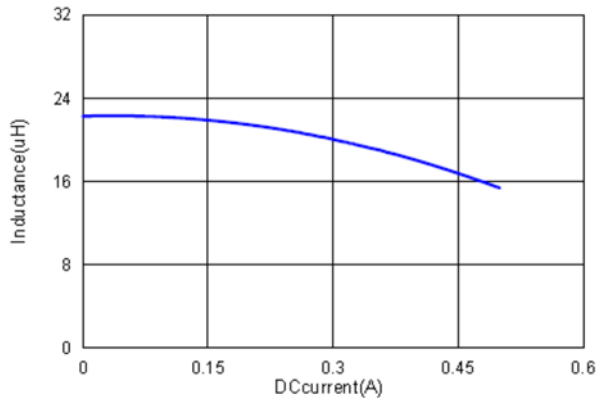
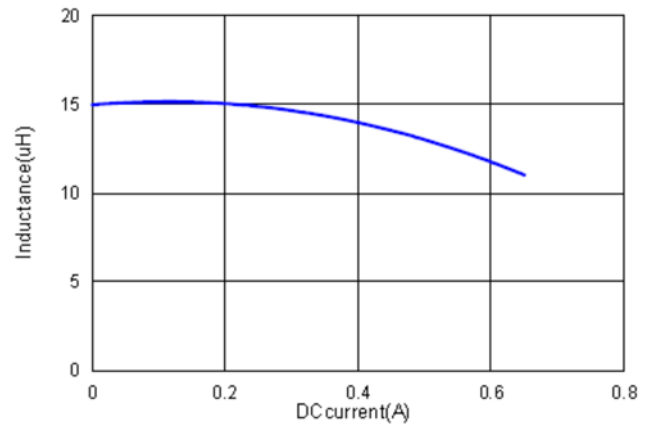
Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) ±20%	I sat (A)typ.	I sat (A)max.	I rms (A)typ.	I rms (A)max.
HNRH252010-R47Y	0.47	±30%	0.1V/1M	0.030	2.85	2.57	2.80	2.50
HNRH252010-R68Y	0.68	±30%	0.1V/1M	0.039	2.70	2.45	2.45	2.20
HNRH252010-1R0Y	1.0	±30%	0.1V/1M	0.055	2.45	2.05	2.20	1.80
HNRH252010-1R5Y	1.5	±30%	0.1V/1M	0.090	1.80	1.70	1.70	1.55
HNRH252010-2R2M	2.2	±20%	0.1V/1M	0.114	1.60	1.55	1.55	1.40
HNRH252010-3R3M	3.3	±20%	0.1V/1M	0.170	1.30	1.10	1.25	1.10
HNRH252010-4R7M	4.7	±20%	0.1V/1M	0.250	1.10	0.95	1.05	0.92
HNRH252010-6R8M	6.8	±20%	0.1V/1M	0.370	0.95	0.80	0.85	0.76
HNRH252010-100M	10	±20%	0.1V/1M	0.470	0.75	0.65	0.75	0.67
HNRH252010-150M	15	±20%	0.1V/1M	0.750	0.55	0.45	0.55	0.50
HNRH252010-220M	22	±20%	0.1V/1M	1.120	0.50	0.40	0.50	0.45

Note:

I_{sat} : Based on inductance change ($\Delta L/L_0 : \leq -30\%$) @ ambient temp. 25°C

I_{rms} : Based on temperature rise ($\Delta T : 40^\circ\text{C}$ typ.)

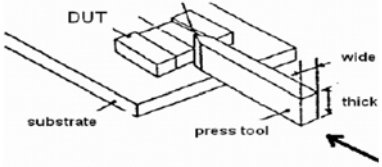
TYPICALELECTRICALCHARACTERISTICS:
HNRH252010BF-R47Y

HNRH252010BF-R68Y

HNRH252010BF-1R0Y

HNRH252010BF-1R5Y

HNRH252010BF-2R2M

HNRH252010BF-3R3M

HNRH252010BF-4R7M
HNRH252010BF-6R8M


HNRH252010BF-100M

HNRH252010BF-150M

HNRH252010BF-220M


Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125°C (Including self - temperature rise)	
Storage temperature	1. -10~+40°C, 50~60%RH (Product with taping) 2. -40~+125°C (on board)	
Electrical Performance Test		
Inductance	Refer to standard electrical characteristics list.	HP4284A, CH11025, CH3302, CH1320, CH1320S LCR Meter.
DCR		CH16502, Agilent33420A Micro-Ohm Meter.

Saturation Current (Isat)	Approximately $\Delta L30\%$	Saturation DC Current (Isat) will cause L0 to drop $\Delta L(\%)$															
Heat Rated Current (Irms)	Approximately $\Delta T40^{\circ}\text{C}$	Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^{\circ}\text{C})$. 1. Applied the allowed DC current 2. Temperature measured by digital surface thermometer															
Reliability Test																	
Life Test		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature : $125\pm 2^{\circ}\text{C}$ (Inductor) Applied current : rated current Duration : 1000 \pm 12hrs Measured at room temperature after placing for 24 \pm 2 hrs															
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) Humidity : $85\pm 2 \times \text{R.H.}$, Temperature : $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 \pm 2 hrs															
Moisture Resistance	Appearance : No damage. Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles 1. Baked at 50°C for 25hrs, measured at room temperature after placing for 4 hrs. 2. Raise temperature to $65\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to $65\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs, keep at 25°C for 2 hrs then keep at -10°C for 3 hrs 4. Keep at 25°C 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs.															
Thermal shock		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Condition for 1 cycle Step1 : $-40\pm 2^{\circ}\text{C}$ 30 \pm 5min Step2 : $25\pm 2^{\circ}\text{C}$ ≤ 0.5 min Step3 : $125\pm 2^{\circ}\text{C}$ 30 \pm 5min Number of cycles : 500 Measured at room temperature after placing for 24 \pm 2 hrs															
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude: 1.52mm $\pm 10\%$ Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).															
Bending		Shall be mounted on a FR4 substrate of the following dimensions: ≥ 0805 inch(2012mm): 40x100x1.2mm < 0805 inch(2012mm): 40x100x0.8mm Bending depth: ≥ 0805 inch(2012mm): 1.2mm < 0805 inch(2012mm): 0.8mm duration of 10 sec.															
Shock	Appearance : No damage. Impedance : within $\pm 15\%$ of initial value Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value	<table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (Vi)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
Type	Peak value (g's)	Normal duration (D) (ms)	Wave form	Velocity change (Vi)ft/sec													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Solder ability	More than 95% of the terminal electrode should be covered with solder.	Preheat: 150°C , 60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: $245\pm 5^{\circ}\text{C}$ Flux for lead free: Rosin, 9.5% Dip time: 4 \pm 1sec Depth: completely cover the termination															
Resistance to Soldering Heat		Depth: completely cover the termination <table border="1"> <thead> <tr> <th>Temperature($^{\circ}\text{C}$)</th> <th>Time(s)</th> <th>Temperature ramp/immersion and emersion rate</th> <th>Number of heat cycles</th> </tr> </thead> <tbody> <tr> <td>260 ± 5 (solder temp)</td> <td>10 ± 1</td> <td>25mm/s ± 6 mm/s</td> <td>1</td> </tr> </tbody> </table>	Temperature($^{\circ}\text{C}$)	Time(s)	Temperature ramp/immersion and emersion rate	Number of heat cycles	260 ± 5 (solder temp)	10 ± 1	25mm/s ± 6 mm/s	1							
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260 ± 5 (solder temp)	10 ± 1	25mm/s ± 6 mm/s	1														

<p>Terminal Strength</p>	<p>Appearance : No damage. Impedance : within $\pm 15\%$ of initial value Inductance : within $\pm 10\%$ of initial value Q : Shall not exceed the specification value. RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value e</p>	<p>Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020D Classification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force ($>0.805:1\text{kg}$, $\leq 0.805:0.5\text{kg}$) to the side of a device being tested. This force shall be applied for 60 ± 1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.</p> 
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Note : When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.