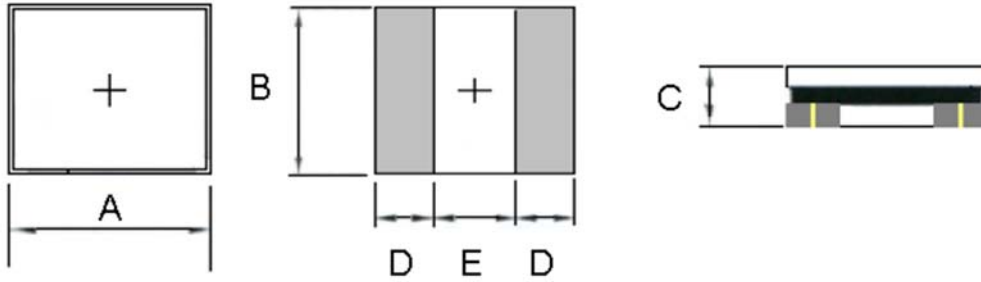


## FEATRLRES

- 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
HNRH252012	2.5 -0.1/+0.2	2.0 -0.1/+0.2	1.2max.	0.85 ref.	0.80 ref.

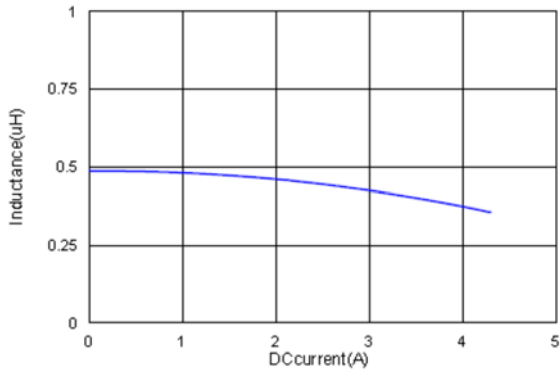
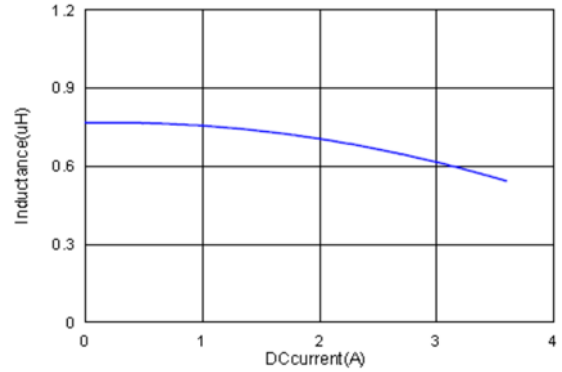
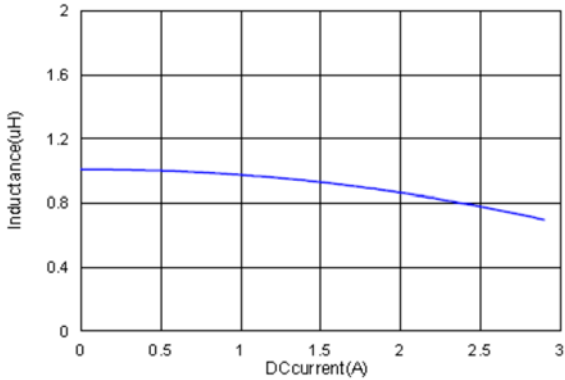
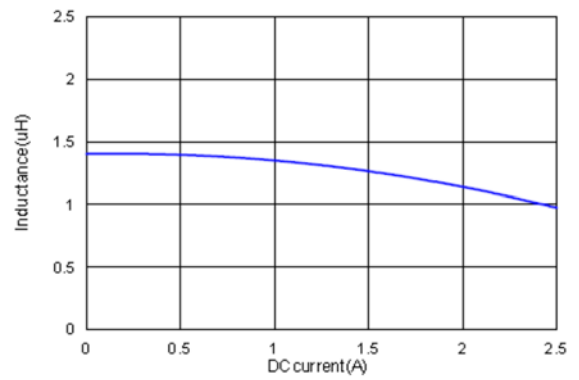
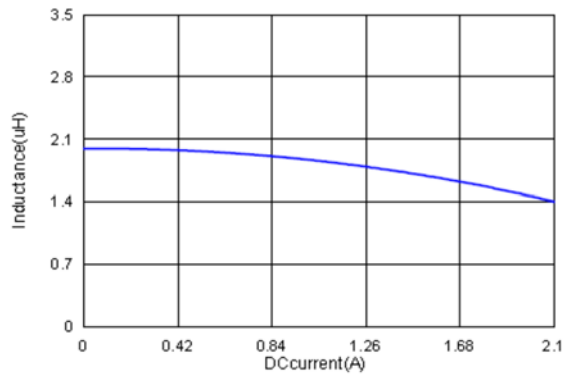
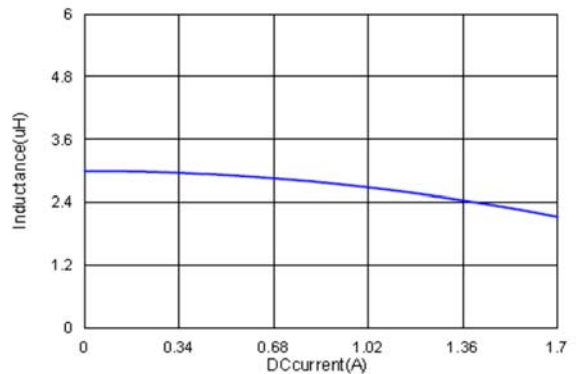
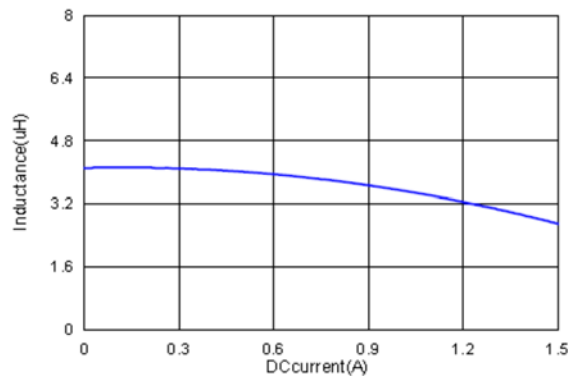
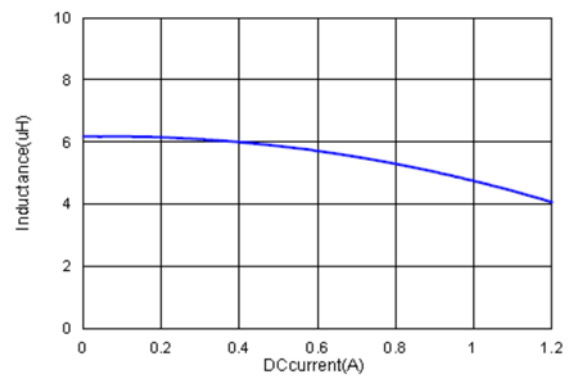
## ELECTRICAL CHARACTERISTICS

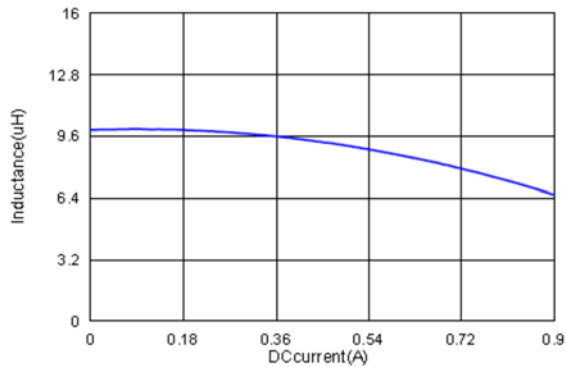
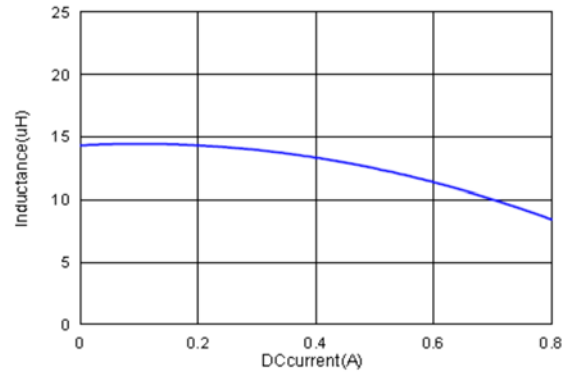
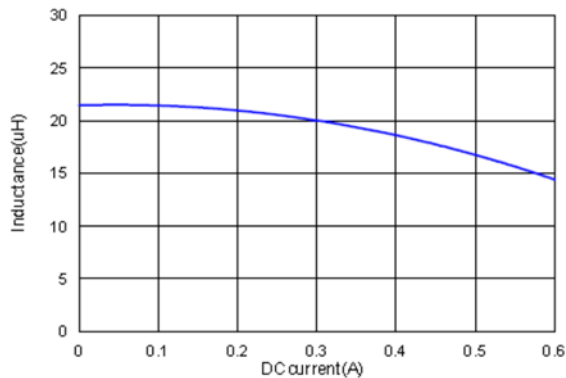
Part Number	Inductance (uH)	Tolerance (%)	Test Frequency (Hz)	DCR (Ω) ±20%	I sat (A)typ.	I sat (A)max.	I rms (A)typ.	I rms (A)max.
HNRH252012-R47Y	0.47	±30%	0.1V/1M	0.028	4.00	3.60	3.70	3.35
HNRH252012-R68M	0.68	±20%	0.1V/1M	0.036	3.00	2.70	3.30	3.00
HNRH252012-1R0Y	1.0	±30%	0.1V/1M	0.049	2.70	2.45	2.60	2.30
HNRH252012-1R5Y	1.5	±30%	0.1V/1M	0.063	2.30	2.05	2.20	1.95
HNRH252012-2R2M	2.2	±20%	0.1V/1M	0.080	2.15	1.95	1.85	1.65
HNRH252012-3R3M	3.3	±20%	0.1V/1M	0.120	1.70	1.50	1.45	1.30
HNRH252012-4R7M	4.7	±20%	0.1V/1M	0.176	1.50	1.35	1.20	1.05
HNRH252012-6R8M	6.8	±20%	0.1V/1M	0.250	1.15	1.00	1.00	0.90
HNRH252012-100M	10	±20%	0.1V/1M	0.410	0.85	0.75	0.75	0.65
HNRH252012-150M	15	±20%	0.1V/1M	0.540	0.63	0.56	0.60	0.54
HNRH252012-220M	22	±20%	0.1V/1M	0.850	0.56	0.50	0.50	0.45

Note:

I<sub>sat</sub> : Based on inductance change ( $\Delta L/L_0 : \leq -30\%$ ) @ ambient temp. 25°C

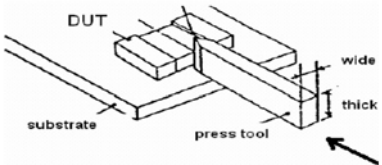
I<sub>rms</sub> : Based on temperature rise ( $\Delta T : 40^\circ\text{C}$  typ.)

**TYPICALELECTRICALCHARACTERISTICS:**
**HNRH252012-R47**

**HNRH252012-R68**

**HNRH252012-1R0**

**HNRH252012-1R5**

**HNRH252012-2R2**

**HNRH252012-3R3**

**HNRH252012-4R7**

**HNRH252012-6R8**


**HNRH252012-100**

**HNRH252012-150**

**HNRH252012-220**


## 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)	
<b>Electrical Performance Test</b>		
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°C	Heat Rated Current (Irms) will cause the coil temperature rise $\Delta$ T(°C). 1. Applied the allowed DC current 2. Temperature measured by digital surface thermometer
<b>Reliability Test</b>		
Life Test	Appearance : No damage.	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles) Temperature : 125 $\pm$ 2°C (Inductor) Applied current : rated current Duration : 1000 $\pm$ 12hrs Measured at room temperature after placing for 24 $\pm$ 2 hrs
Load Humidity	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) Humidity : 85 $\pm$ 2 * R.H, Temperature : 85°C $\pm$ 2°C Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 $\pm$ 2 hrs

Moisture Resistance		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±2°C 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25°C in 2.5hrs. 3. Raise temperature to 65±2°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±2°C 30±5min Step2 : 25±2°C ≤0.5min Step3 : 125±2°C 30±5min Number of cycles : 500 Measured at room temperature after placing for 24±2 hrs															
Vibration		Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes Equipment : Vibration checker Total Amplitude:1.52mm±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±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±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 (V)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 (V)ft/sec	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3
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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±5°C Flux for lead free: Rosin. 9.5% Dip time: 4±1sec Depth: completely cover the termination															
Resistance to Soldering Heat		Depth: completely cover the termination <table border="1"> <thead> <tr> <th>Temperature(°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(°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							
Temperature(°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														
Terminal Strength	Appearance : No damage. Impedance : within±15% of initial value Inductance : within±10% of initial value Q : Shall not exceed the specification value. RDC : within ±15% of initial value and shall not exceed the specification value e	Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles With the component mounted on a PCB with the device to be tested, apply a force(>0805:1kg , <=0805:0.5kg)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. 															

Note : When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.