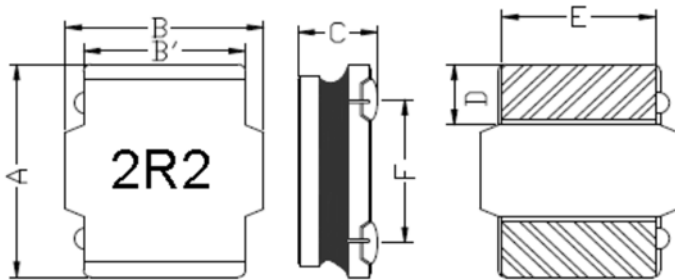


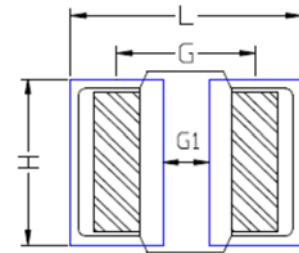
FEATRLRES

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

CONFIGLRATIONS & DIMENSIONS (unit in mm)



Recommended Land pattern



Type	A	B	B'	C	D	E	F	L	G	G1	H
HNR6045NF	6.0±0.3	6.0±0.3	4.8±0.2	4.2±0.3	1.7±0.3	4.5±0.3	4.25±0.3	6.5	4.25	1.8min	4.8

Note:

1. The above PCB layout reference only.
2. Recommend solder paste thickness at 0.12mm and above.

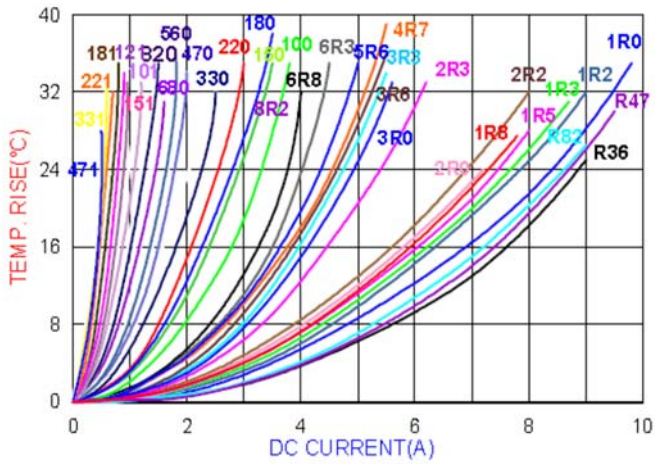
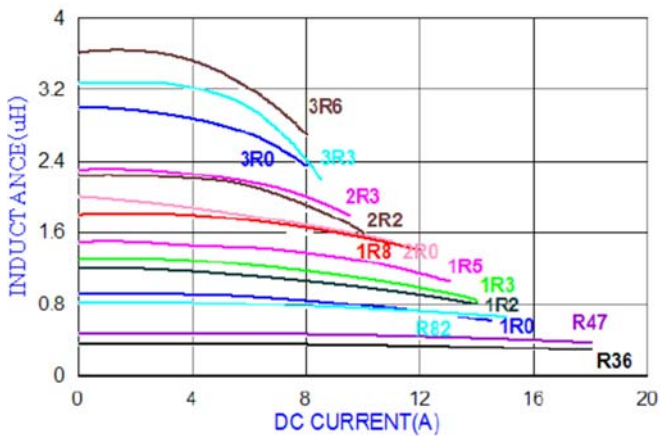
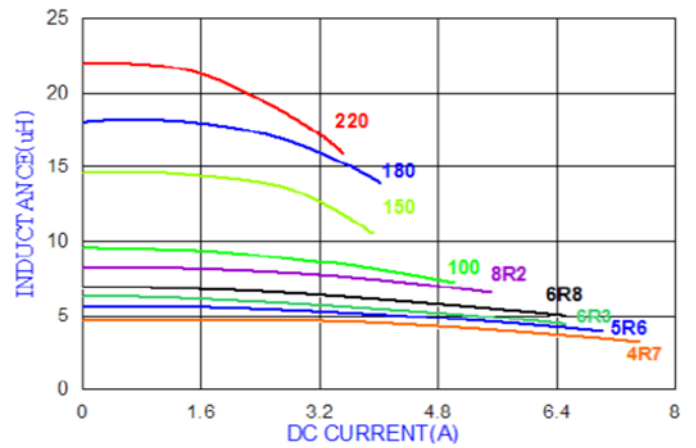
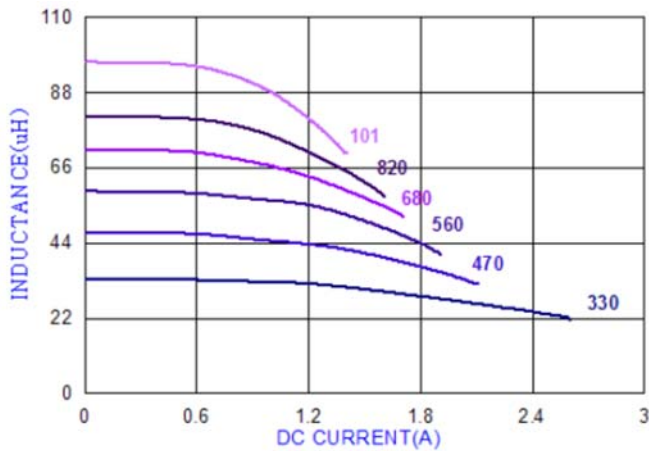
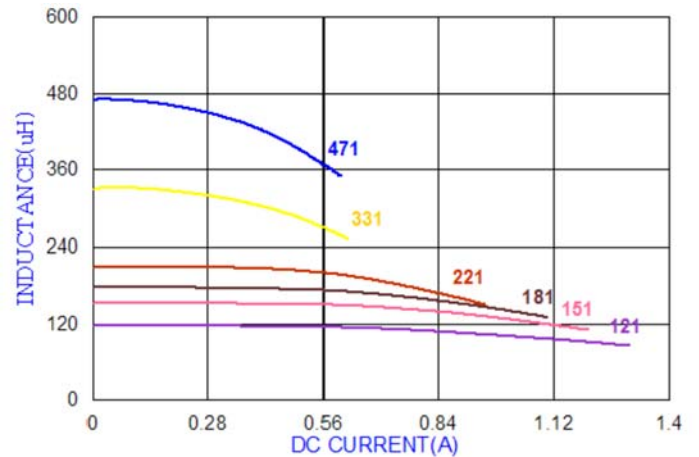
ELECTRICAL CHARACTERISTICS

Part Number	Inductance L0 (uH) @ 0 A	Tolerance		Rated current						DCR (mΩ) @25°C ±20%.
				Temperature current		Saturation current		DCR		
				I rms (A)		I sat (A)				
K	L	M	Y	Typ	Max	Typ	Max			
HNR6045NF-R36	0.36	/	/	±20%	±30%	9.00	8.50	18.00	16.50	4.80
HNR6045NF-R47	0.47	/	/	±20%	±30%	8.60	8.00	17.00	16.00	6.80
HNR6045NF-R82	0.82	/	/	±20%	±30%	8.20	7.50	14.50	13.50	8.50
HNR6045NF-1R0	1.00	/	/	±20%	±30%	8.00	7.30	13.50	12.50	10.0
HNR6045NF-1R2	1.20	/	/	±20%	±30%	7.50	7.00	12.50	11.50	10.5
HNR6045NF-1R3	1.30	/	/	±20%	±30%	7.50	7.00	12.50	11.50	10.5
HNR6045NF-1R5	1.50	/	/	±20%	±30%	7.00	6.60	12.00	11.00	11.7
HNR6045NF-1R8	1.80	/	/	±20%	±30%	6.80	6.20	11.00	10.00	12.0
HNR6045NF-2R0	2.00	/	/	±20%	±30%	6.50	5.80	10.50	9.50	13.5
HNR6045NF-2R2	2.20	/	/	±20%	±30%	6.00	5.30	9.50	8.55	15.0
HNR6045NF-2R3	2.30	/	/	±20%	±30%	5.80	5.00	9.30	8.20	16.0
HNR6045NF-3R0	3.00	/	/	±20%	±30%	5.20	4.60	8.00	7.50	20.0

HNR6045NF-3R3	3.30	/	/	±20%	±30%	5.00	4.50	7.80	7.30	21.0
HNR6045NF-3R6	3.60	/	/	±20%	±30%	4.90	4.30	7.40	6.90	22.5
HNR6045NF-4R7	4.70	/	±15%	±20%	±30%	4.50	4.00	6.80	6.20	26.0
HNR6045NF-5R6	5.60	/	±15%	±20%	±30%	4.10	3.70	6.40	5.70	31.0
HNR6045NF-6R3	6.30	/	±15%	±20%	±30%	3.80	3.50	5.90	5.30	33.0
HNR6045NF-6R8	6.80	/	±15%	±20%	±30%	3.60	3.30	5.70	5.15	34.0
HNR6045NF-8R2	8.20	/	±15%	±20%	±30%	3.40	2.90	5.10	4.50	46.0
HNR6045NF-100	10.0	±10%	±15%	±20%	±30%	3.20	2.60	4.60	4.20	52.0
HNR6045NF-150	15.0	±10%	±15%	±20%	±30%	2.80	2.20	3.80	3.30	71.0
HNR6045NF-180	18.0	±10%	±15%	±20%	±30%	2.60	2.10	3.40	2.90	80.0
HNR6045NF-220	22.0	±10%	±15%	±20%	±30%	2.30	1.90	3.30	2.70	96.0
HNR6045NF-330	33.0	±10%	±15%	±20%	±30%	1.80	1.50	2.50	2.10	145
HNR6045NF-470	47.0	±10%	±15%	±20%	±30%	1.60	1.20	2.00	1.75	200
HNR6045NF-560	56.0	±10%	±15%	±20%	±30%	1.40	1.00	1.80	1.65	230
HNR6045NF-680	68.0	±10%	±15%	±20%	±30%	1.10	0.92	1.60	1.52	305
HNR6045NF-820	82.0	±10%	±15%	±20%	±30%	0.98	0.88	1.50	1.40	365
HNR6045NF-101	100	±10%	±15%	±20%	±30%	0.92	0.82	1.33	1.25	456
HNR6045NF-121	120	±10%	±15%	±20%	±30%	0.85	0.79	1.20	1.10	500
HNR6045NF-151	150	±10%	±15%	±20%	±30%	0.75	0.70	1.10	1.00	626
HNR6045NF-181	180	±10%	±15%	±20%	±30%	0.68	0.60	1.00	0.90	745
HNR6045NF-221	220	±10%	±15%	±20%	±30%	0.60	0.50	0.88	0.77	900
HNR6045NF-331	330	±10%	±15%	±20%	±30%	0.55	0.45	0.60	0.55	1400
HNR6045NF-471	470	±10%	±15%	±20%	±30%	0.40	0.35	0.50	0.45	2050

Note:

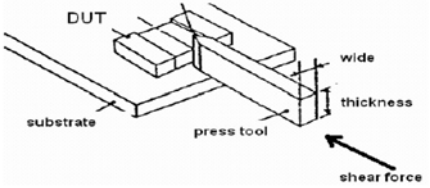
- All test data referenced to 25°C ambient , Ls:100KHz/1V.
- Testing Instrument : HP4284A,CH11025,CH3302,CH1320 ,CH1320S LCR METER / Rdc:CH502BC MICRO OHMMETER.
- Heat Rated Current (Irms) will cause the coil temperature rise approximately Δt of 40°C.
- Saturation Current (Isat) will cause LO to drop approximately 30%.
- The part temperature (ambient + temp rise) should not exceed 125°C under worst case operating conditions.Circuit design,component,PCB trace size and thickness,airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
- Special inquiries besides the above common used types can be met on your requirement.

TYPICALELECTRICALCHARACTERISTICS:
HNR6045NF-Series

HNR6020NF(0.6uH~3.6uH)

HNR6020NF(4.7uH~22uH)

HNR6020NF(33uH~100uH)

HNR6020NF(120uH~470uH)


Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125℃ (Including self - temperature rise)	
Storage temperature	1. -10~+40℃,50~60%RH (Product with taping) 2. -40~+125℃ (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	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) Temperature : 125 $\pm 2^{\circ}\text{C}$ (Inductor) Applied current : rated current Duration : 1000 ± 12 hrs Measured at room temperature after placing for 24 ± 2 hrs
Load Humidity		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) Humidity : 85 ± 2 % R.H, Temperature : 85 $\pm 2^{\circ}\text{C}$ Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24 ± 2 hrs
Moisture Resistance		Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles) 1. Baked at50 $^{\circ}\text{C}$ 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 $^{\circ}\text{C}$ 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 $^{\circ}\text{C}$ in 2.5hrs,keep at 25 $^{\circ}\text{C}$ for 2 hrs then keep at -10 $^{\circ}\text{C}$ for 3 hrs 4. Keep at 25 $^{\circ}\text{C}$ 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 ± 5 min Step2 : 25 $\pm 2^{\circ}\text{C}$ ≤ 0.5 min Step3 : 125 $\pm 2^{\circ}\text{C}$ 30 ± 5 min 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 $\pm 10\%$ 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
Solder ability		More than 95% of the terminal electrode should be covered with solder. Preheat: 150 $^{\circ}\text{C}$,60sec. Solder: Sn96.5% Ag3% Cu0.5% Temperature: 245 $\pm 5^{\circ}\text{C}$ ◦ Flux for lead free: Rosin. 9.5% ◦ Dip time: 4 ± 1 sec ◦

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

		Depth: completely cover the termination								
Resistance to Soldering Heat		Depth: completely cover the termination <table border="1" data-bbox="1023 277 1453 394"> <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-020Classification 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.