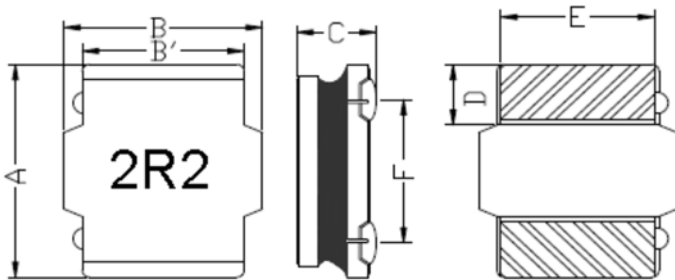


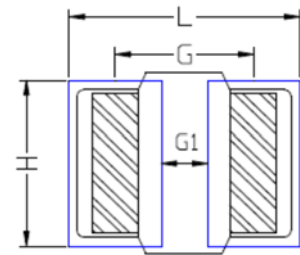
FEATRLRES

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

CONFIGLRATIONS & DIMENSIONS (unit in mm)



Recommended Land pattern



Type	L (uH)	A	B	B'	C	D	E	F	L	G	H	G1
HNR8040NF	≤10 uH	8.0±0.3	8.0±0.3	6.3±0.2	3.9±0.3	2.0±0.3	6.0±0.3	5.5±0.3	8.5	5.5	6.3	2.5
	>10 uH				3.7±0.3							

Note:

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

ELECTRICAL CHARACTERISTICS

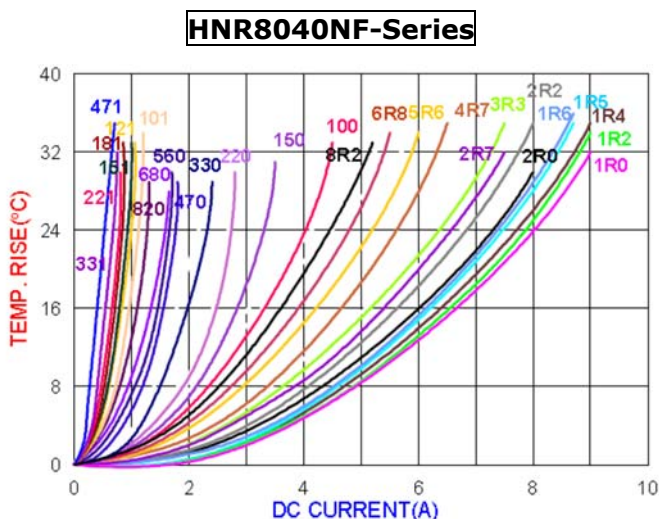
Part Number	Inductance L ₀ (uH) @ 0 A	Tolerance				Rated current				DCR (mΩ) @25°C ±20%.
						Tempetature current I _{rms} (A)		Saturation current I _{sat} (A)		
		K	L	M	Y	Typ	Max	Typ	Max	
HNR8040NF-1R0	1.00	/	/	±20%	±30%	8.50	8.00	13.80	13.00	8.2
HNR8040NF-1R4	1.40	/	/	±20%	±30%	8.20	7.80	11.80	11.20	10.0
HNR8040NF-1R5	1.50	/	/	±20%	±30%	8.00	7.70	11.50	11.00	10.0
HNR8040NF-2R2	2.20	/	/	±20%	±30%	7.40	6.90	9.80	9.20	11.5
HNR8040NF-3R3	3.30	/	/	±20%	±30%	6.60	6.20	8.00	7.50	15.0
HNR8040NF-4R7	4.70	/	±15%	±20%	±30%	5.80	5.30	6.70	6.00	19.5
HNR8040NF-5R6	5.60	/	±15%	±20%	±30%	5.40	5.20	6.20	5.80	22.0
HNR8040NF-6R8	6.80	/	±15%	±20%	±30%	5.10	5.00	5.60	5.10	25.0
HNR8040NF-100	10.0	±10%	±15%	±20%	±30%	4.60	4.20	5.00	4.30	33.0
HNR8040NF-150	15.0	±10%	±15%	±20%	±30%	3.60	3.20	4.00	3.60	50.0
HNR8040NF-220	22.0	±10%	±15%	±20%	±30%	2.90	2.45	3.10	2.80	73.0

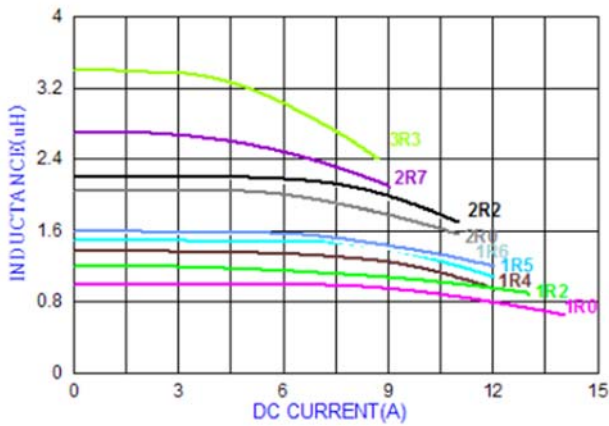
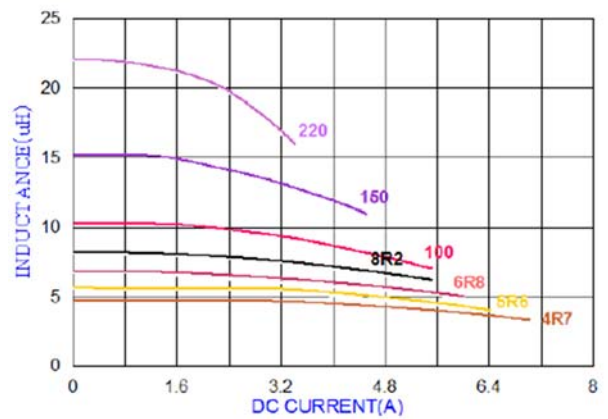
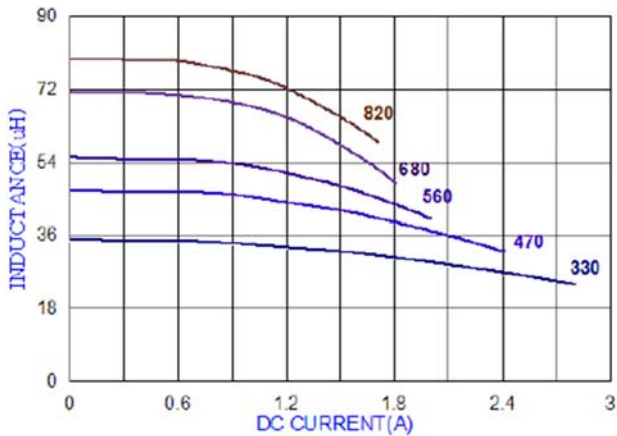
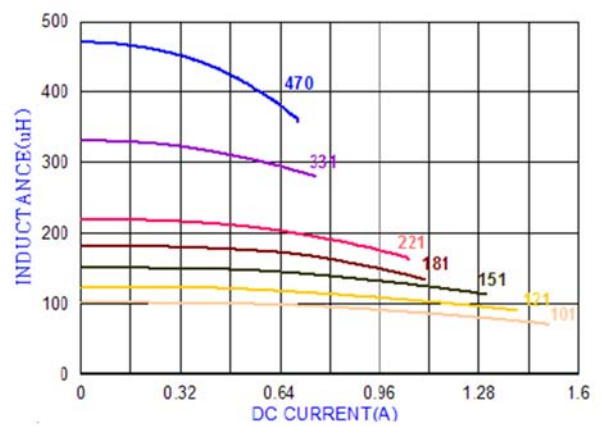
HNR8040NF-330	33.0	±10%	±15%	±20%	±30%	2.30	2.10	2.60	2.10	100
HNR8040NF-470	47.0	±10%	±15%	±20%	±30%	2.00	1.70	2.20	1.90	135
HNR8040NF-560	56.0	±10%	±15%	±20%	±30%	1.75	1.60	1.90	1.60	160
HNR8040NF-680	68.0	±10%	±15%	±20%	±30%	1.65	1.50	1.75	1.50	205
HNR8040NF-820	82.0	±10%	±15%	±20%	±30%	1.40	1.30	1.60	1.40	230
HNR8040NF-101	100	±10%	±15%	±20%	±30%	1.20	1.10	1.45	1.20	300
HNR8040NF-121	120	±10%	±15%	±20%	±30%	1.10	1.00	1.30	1.10	350
HNR8040NF-151	150	±10%	±15%	±20%	±30%	0.98	0.90	1.20	1.03	410
HNR8040NF-181	180	±10%	±15%	±20%	±30%	0.91	0.83	1.04	0.94	490
HNR8040NF-221	220	±10%	±15%	±20%	±30%	0.85	0.76	0.99	0.90	610

Note:

- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Testing Instrument : HP4284A,CH11025,CH3302,CH1320 ,CH1320S LCR METER / Rdc:CH502BC MICRO OHMMETER.
- 3.Heat Rated Current (Irms) will cause the coil temperature rise approximately Δt of 40°C.
- 4.Saturation Current (Isat) will cause L0 to drop approximately 30%.
- 5.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.
- 6.Special inquiries besides the above common used types can be met on your requirement.

TYPICAL ELECTRICAL CHARACTERISTICS:

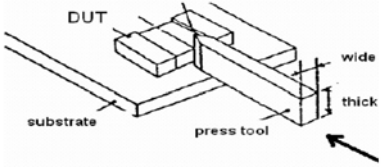


HNR8040NF (1.0uH~3.3uH)

HNR8040NF (4.7uH~22uH)

HNR8040NF (33uH~82uH)

HNR8040NF (100uH~470uH)


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 Δ L30%	Saturation DC Current (Isat) will cause L0 to drop Δ L(%)
Heat Rated Current (Irms)	Approximately Δ T40°C	Heat Rated Current (Irms) will cause the coil temperature rise Δ T(°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±2°C (Inductor) Applied current : rated current Duration : 1000±12hrs 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°C±2°C Duration : 1000hrs Min. with 100% rated current Measured at room temperature after placing for 24±2 hrs															
Moisture Resistance	Appearance : No damage. 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	Preconditioning: Run through IR reflow for 2 times.(IPC/JEDEC J-STD-020DClassification Reflow Profiles Profiles 1. Baked at50°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" data-bbox="1018 1272 1455 1406"> <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±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" data-bbox="1018 1585 1455 1697"> <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														

<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.