

1. Features of SPNR4213A Series :

- Miniature SMD Shielded Power Inductor in a 4.2*4.2mm foot print.
- Low profile : 1.35mm max. height.
- Operating frequency of up to 5.0 MHz.
- Ideal for portable device, Pad, E-reader and high density DC to DC Converter.
- Inductance Range: 0.33uH to 10.0 uH , custom values are welcomed.
- Operating Temperature Range: -40°C to + 125°C.
- T & R Qtys: 4500 pcs , 13" Reel with plastic tape 12mm wide and 8mm pocket spacing.
- RoHs & HF Compliant.

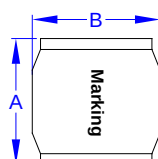


2. Electrical Characteristics of SPNR4213A Series:

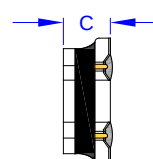
ITG Part Number	OCL ¹ (uH) ±20%	DCR (mΩ) Typ.@25°C	DCR (mΩ) Max.@25°C	Isat1 ² (Amp.) Typ.	Isat2 ² (Amp.) Max.	Irms1 ³ (Amp.) Typ.	Irms2 ³ (Amp.) Max.
SPNR4213A-R33MHF	0.33	25.00	32.00	11.50	10.30	4.50	4.00
SPNR4213A-R47MHF	0.47	32.00	41.00	10.00	9.10	4.30	3.80
SPNR4213A-R68MHF	0.68	32.50	41.00	5.80	5.20	4.30	3.80
SPNR4213A-1R0MHF	1.00	47.00	59.00	6.50	5.70	3.70	3.20
SPNR4213A-1R2MHF	1.20	55.50	64.00	6.30	5.60	3.20	2.80
SPNR4213A-1R5MHF	1.50	64.00	72.00	6.00	5.00	3.10	2.60
SPNR4213A-2R2MHF	2.20	74.50	82.00	5.00	4.50	2.80	2.50
SPNR4213A-3R3MHF	3.30	110.00	125.00	3.20	2.50	2.40	2.00
SPNR4213A-4R7MHF	4.70	152.00	168.00	2.30	1.90	2.00	1.75
SPNR4213A-6R8MHF	6.80	196.00	226.00	2.00	1.60	1.80	1.55
SPNR4213A-100MHF	10.00	305.50	337.00	1.85	1.55	1.40	1.20
SPNR4213A-220MHF	22.00	628.00	690.00	1.25	1.05	1.00	0.85

3. Mechanical Dimension of SPNR4213A Series (Unit:mm):

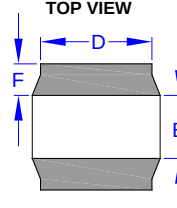
A	B	C	D	E	F
±0.20	±0.20	(Max.)	±0.30	±0.30	±0.30
4.00	4.00	1.35	3.50	1.40	1.30



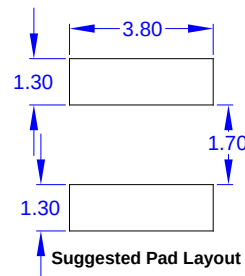
TOP VIEW



SIDE VIEW



BOTTOM VIEW



Suggested Pad Layout

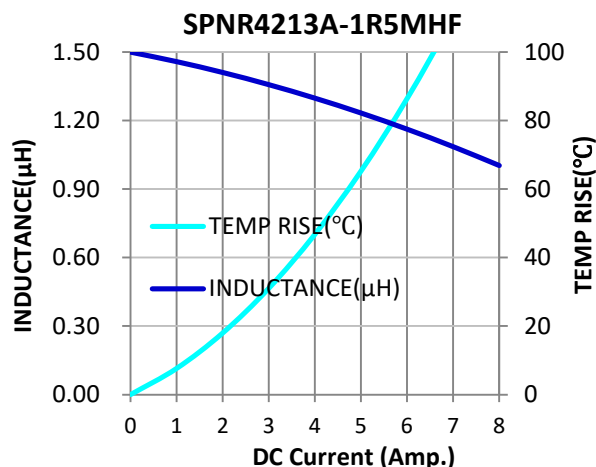
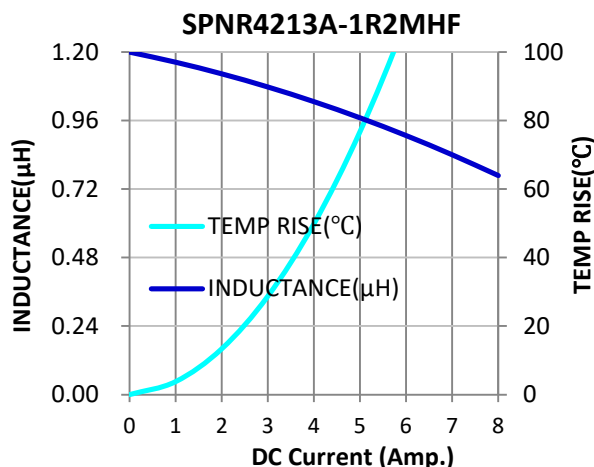
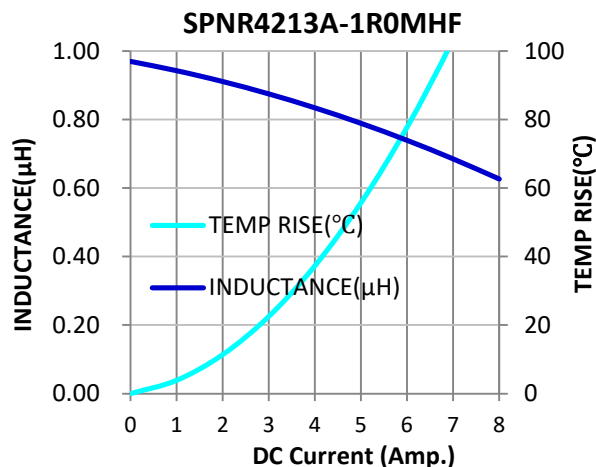
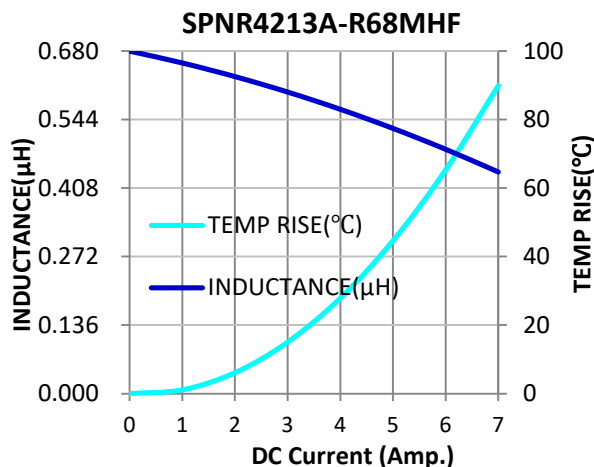
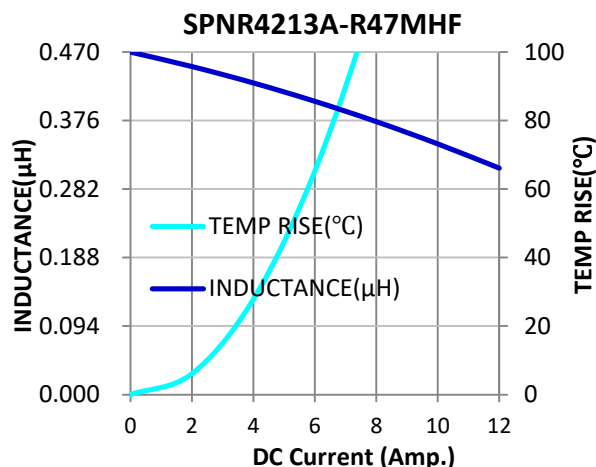
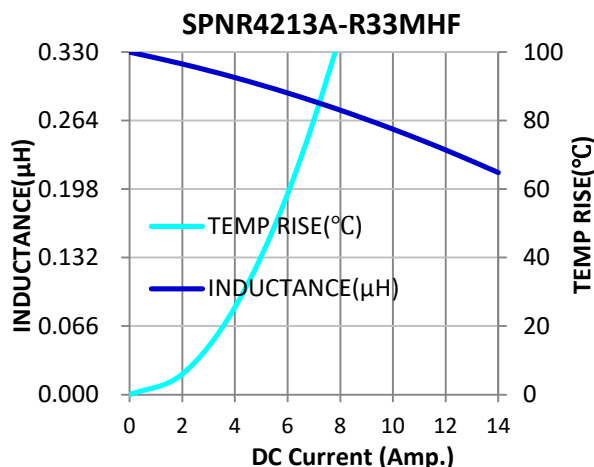
Notes:

- 1>. Test condition: 1MHz, 1.0Vrms, 0 Amp. at 25°C.
- 2>. Isat1: DC current that will cause inductance to drops approximately by 30% (typical).
Isat2: DC current recommended for applications with design margin.
- 3>. Irms1: DC current for an approximate temperature rise of 40 °C without core loss.
Irms2: DC current recommended for applications with design margin.
- 4>. L@Isat & L@Irms are measured at 100KHz, 1.0V.

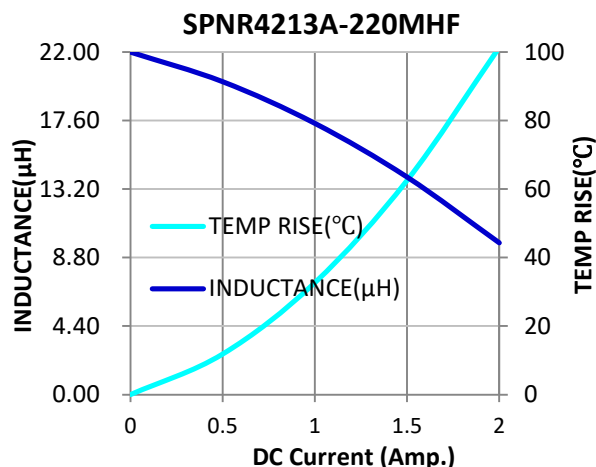
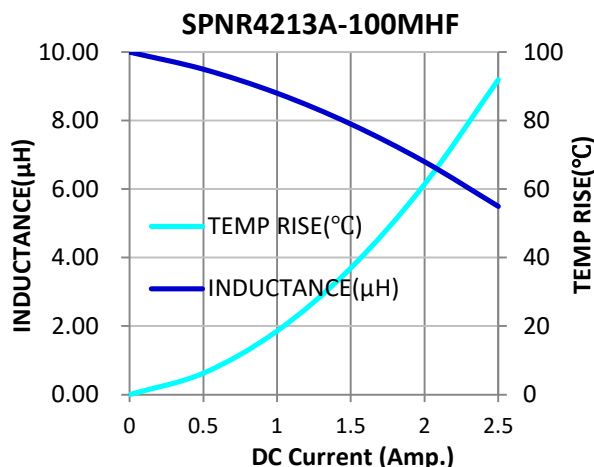
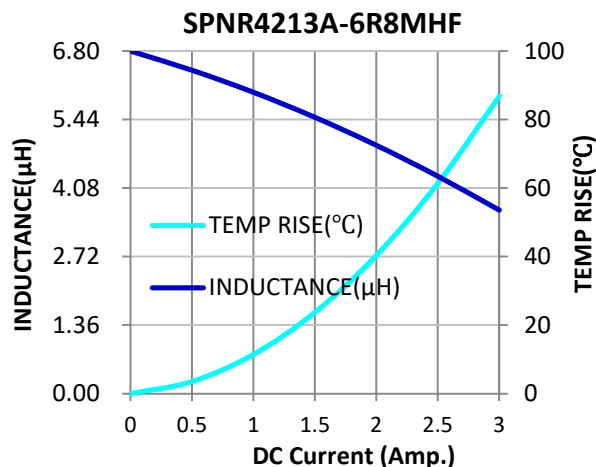
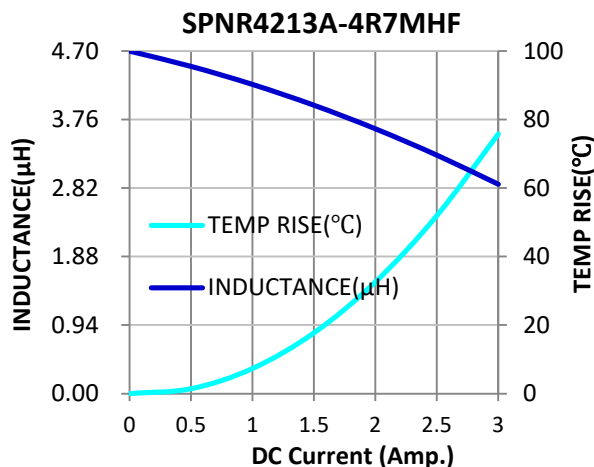
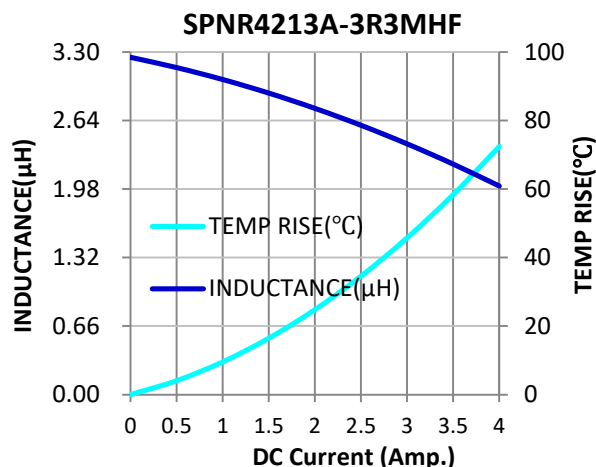
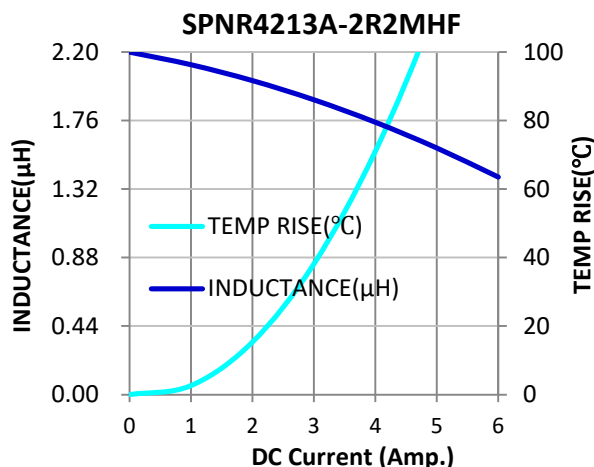


Third Angle Projection:

4. Inductance vs. Temperature Rise Characteristics of SPNR4213A Series:

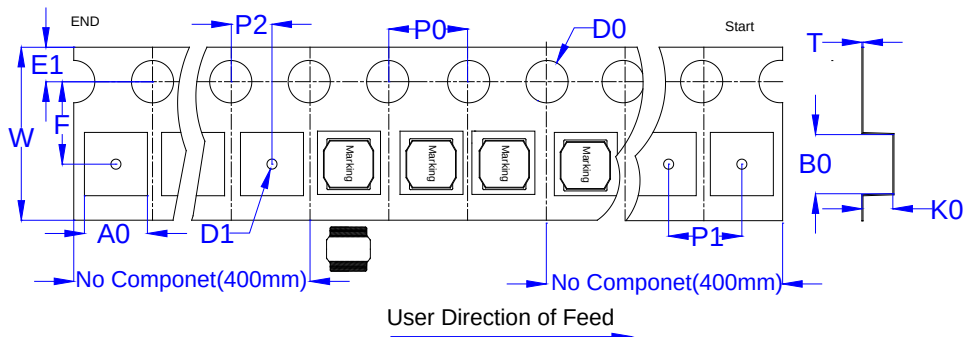


4. Inductance vs. Temperature Rise Characteristics of SPNR4213A Series:



5. PACKAGE SPECIFICATION.(UNIT:mm):

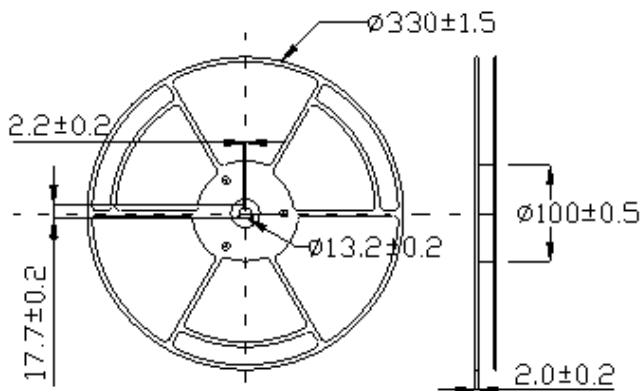
(1).ENCAPSULATION MODE:



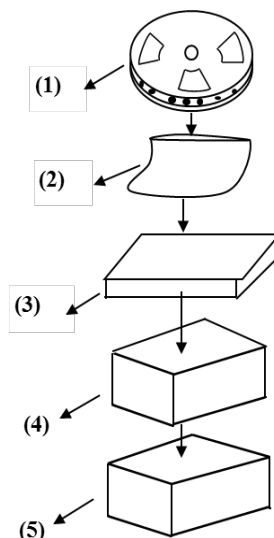
(2).DIMENSION(mm):

W	A0	B0	K0	P1	P0	P2	D0	D1	F	E1	T
12+0.3/-0.1	4.30±0.10	4.30±0.10	1.40±0.10	8.0±0.10	4.0±0.10	2.0±0.10	1.5+0.10/-0	1.5+0.10/-0	5.5±0.10	1.75±0.10	0.30±0.10

(3).REEL SIZE:



(4).PACKAGE MODE:



(5).PACKAGING LIST:

No.	Packing Part	Dimension (mm)	Material	Quantity
1	Reel	330	Plastic	4500Pcs / Reel
2	Bag	450 X 360 X 0.075	Plastic	1Reel / Bag
3	Small Box	340 X 335 X 45	Paper	2Bag / Small Box
4	Middle Box	356 X 350 X 226	Paper	4Small Boxes / Middle Box
5	Outer Box	378 X 362 X 252	Paper	1Middle Box / Outer Box

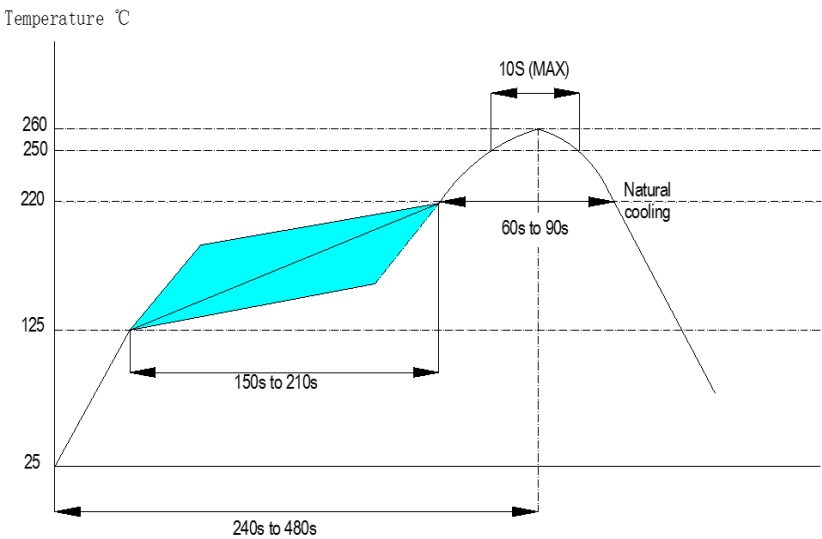
(6).WEIGHT: N.W: 0.075g/pcs TOTAL 2.70Kg(APPROX), G.W: TOTAL 6.20Kg(APPROX).

(7).Storage conditions: -40°C~85°C ,75%RH (Max.).

6.RELIABILITY TEST:

TEST ITEMS	SPECIFICATIONS	TEST METHOD AND REMARKS
Solderability	The electrodes shall be at least 95% covered with new solder coating	According to J-STD-002 Method D category 3 1. Soldering temperature: 260±5℃ 2. Solder: 99.3%Sn/0.7%Cu 3. Flux:Rosin 4. Immersion time: 5 ± 1Sec
Resistance to Soldering Heat	1. Appearance : No damage 2. Inductance change: within ±10% of initial value	According to MIL-STD-202 Method 210F 1. Preheat temperature:150℃ 2. Preheat time:1min 3. Solder temperature:260±5℃ 4. Dipping time:10±1Sec 5. Measured at room temperature after placing for 24hours
Humidity resistance	1. Appearance: No damage 2. All Electrical and mechanical parameters within tolerance	According to IEC68-2-3 Method Ca 1. Temp. : 40±2℃ 2. Humidity: 93+2/-3 % RH 3. Test time: 500 ± 2H 4. The component should be stabilized at normal condition for 24 Hours before test
High temperature resistance	1. Appearance: No damage 2. All Electrical and mechanical parameters within tolerance	According to IEC68-2-2 Method B(Bd) or MIL-STD-202 Method 108A 1. Temperature: 125 ± 3℃ 2. Test time: 500 +24H / -0H 3. The component should be stabilized at normal condition for 24hours before test
Low Temperature resistance	1. Appearance: No damage 2. All Electrical and mechanical parameters within tolerance	According to IEC68-2-1 Method A(Ad) or JESD22-A119A 1. Temperature: -40 ± 3℃ 2. Test time: 500 +24H / -0H 3. The component should be stabilized at normal condition for 24hours before test
Temperature cycles	1. Appearance: No damage 2. All Electrical and mechanical parameters within tolerance	According to IEC68-2-14 Method N(Nb) or JESD22-A104C 1. Low-temp: -40±3℃ duration 30min 2. room -temp: 25±2℃ duration 3H 3. High-temp: 125±3℃ duration 30min 4. room-temp: 25±2℃ duration 3H 5. Number of cycle: 10 cycles 6. The component should be stabilized at normal condition for 24hours before test

Soldering Reflow Chart

Stage	Precaution	Recommended temperature profile
Reflow soldering	Temperature profile can be referenced after confirming of adhesion , temperature of resistance to soldering heat , component size , soldering etc. sufficient . Note: please refer to the latest IPC/JEDEC J-STD-020: "Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices"	 Temperature °C 260 250 220 125 25 10s (MAX) 60s to 90s Natural cooling 150s to 210s 240s to 480s