LOW PROFILE POWER INDUCTORS

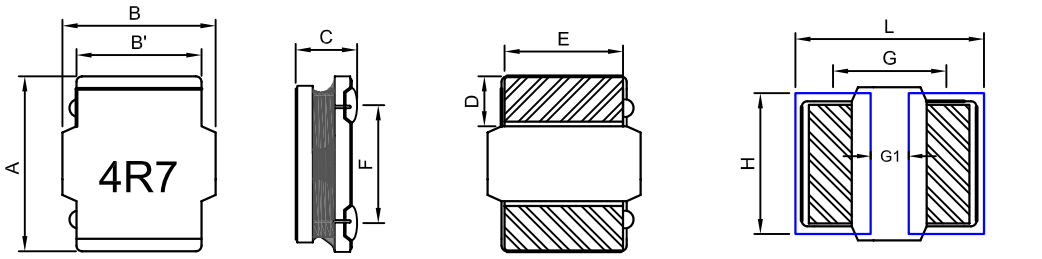
SPS6045N SERIES

1. PART NO. EXPRESSION :

S P S 6 0 4 5 N 4 R 7 M F
(a) (b) (c) (d) (e)(f)

(a) Series code
(b) Dimension code
(c) Material code
(d) Inductance code : 4R7 = 4.7 μH
(e) Tolerance code : M=±20%,Y=±30%
(f) F : RoHS Compliant

2. CONFIGURATION & DIMENSIONS :



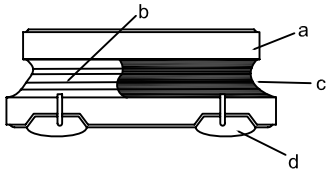
Recommendend Land pattern

Unit:m/m

A	B	B'	C	D	E	F	L	G	G1	H
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 Ref	4.25 Ref	1.80 Min	4.8 Ref

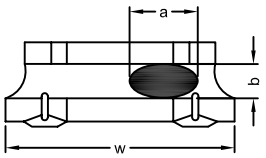
3. MATERIALS :

(a) Core
(b) Wire
(c) Coating
(d) Solder



Void appearance tolerance Limit

Size of voids occurring to coating resin is specified below.



Exposed wire tolerance limit of coating resin part on product side.

Size of exposed wire occurring to coating resin is specified below.

1. Width direction（dimension a）: Acceptable when a≦w/2
   Nonconforming when a＞w/2
2. Length direction（dimension b）: Dimension b is not specified.
3. The total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, and is acceptable.

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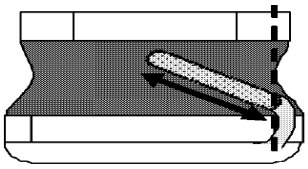
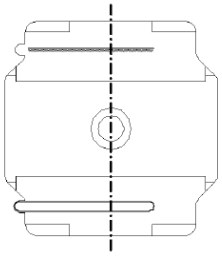
External appearance criterion for exposed wire

Exposed end of the winding wire at the secondary side should be 3mm and below.



Electrode appearance criterion for exposed wire



Only top side of wire is exposed.
(regardless of whole tope side of wire exposed)

Conforming

Wire is soldered insufficiently and less than half of outer diameter is covered with solder.

Less than 1/2 of joint side length.
(More than 1/2 is selected as defect)

4. GENERAL SPECIFICATION :

(a) All test data referenced to 25℃ ambient , Ls:1MHz/1V.

(b) Heat Rated Current (Irms) will cause the coil temperature rise approximately Δt of 40℃ (keep 1min.).

(c) Saturation Current (Isat) will cause L0 to drop 30% typical. (keep quickly).

(d) The part temperature (ambient + temp rise) should not exceed 125℃under worst case operating conditions.

(e) Operating temperature : -40~+125°C

f) Storage Condition (Component in its packaging)

i) Temperature: -10°C to 40°C

ii) Humidity: 60%

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5. ELECTRICAL CHARACTERISTICS :

Part Number	Inductance (μH)	Rated current				DCR (mΩ) @25℃ ±20%
		Tempetature current I rms (A)		Saturation current I sat (A)		
		Typ	Max	Typ	Max	
SPS6045N1R0YF	1.0±30%	8.0	7..3	13.5	12.50	10.0
SPS6045N1R2YF	1.2±30%	7.5	7.0	12.5	11.50	10.5
SPS6045N1R3YF	1.3±30%	7.5	7.0	12.5	11.50	10.5
SPS6045N1R5YF	1.5±30%	7.0	6.6	12.00	11.00	11.7
SPS6045N2R0YF	2.0±30%	6.5	5.8	10.50	9.50	13.5
SPS6045N2R2YF	2.2±30%	6.0	5.3	9.50	8.55	15.0
SPS6045N2R3YF	2.3±30%	5.8	5.0	9.30	8.20	16..0
SPS6045N3R3YF	3.3±30%	5.0	4.5	7.80	7.30	21.0
SPS6045N3R6YF	3.6±30%	4.9	4.3	7.40	6.90	22.5
SPS6045N4R7MF	4.7±20%	4.5	4.0	6.80	6.20	26.0
SPS6045N5R6MF	5.6±20%	4.1	3.7	6.40	5.70	31.0
SPS6045N6R3MF	6.3±20%	3.8	3.5	5.90	5.30	33.0
SPS6045N6R8MF	6.8±20%	3.6	3.3	5.70	5.15	34.0
SPS6045N100MF	10±20%	3.2	2.6	4.60	4.20	52.0
SPS6045N150MF	15±20%	2.8	2.2	3.80	3.30	71.0
SPS6045N220MF	22±20%	2.3	1.9	3.30	2.70	96.0
SPS6045N330MF	33±20%	1.8	1.5	2.50	2.10	145
SPS6045N470MF	47±20%	1.6	1.2	2.00	1.75	200
SPS6045N560MF	56±20%	1.4	1.0	1.80	1.65	230
SPS6045N680MF	68±20%	1.1	0.92	1.60	1.52	305
SPS6045N820MF	82±20%	0.98	0.88	1.50	1.40	365
SPS6045N101MF	100±20%	0.92	0.82	1.33	1.25	456
SPS6045N121MF	120±20%	0.85	0.79	1.20	1.10	500
SPS6045N151MF	150±20%	0.75	0.70	1.10	1.00	626
SPS6045N181MF	180±20%	0.68	0.60	1.00	0.90	745
SPS6045N221MF	220±20%	0.60	0.50	0.88	0.77	900
SPS6045N331MF	330±20%	0.55	0.45	0.60	0.55	1400
SPS6045N471MF	470±20%	0.40	0.35	0.50	0.45	2050

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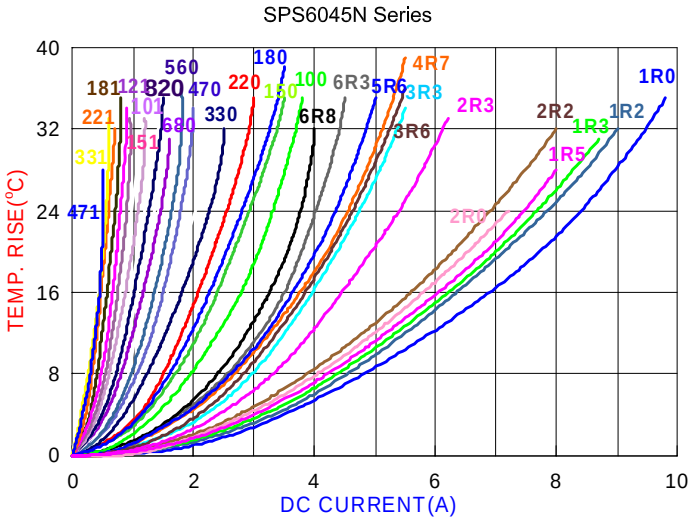
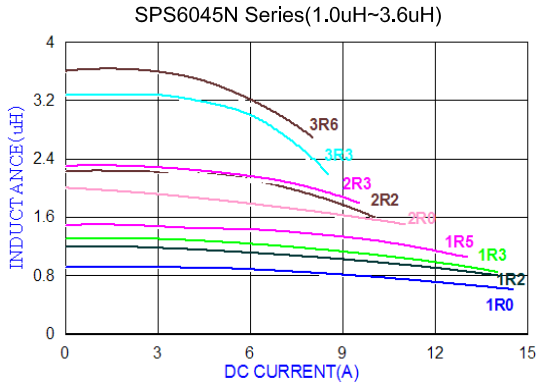
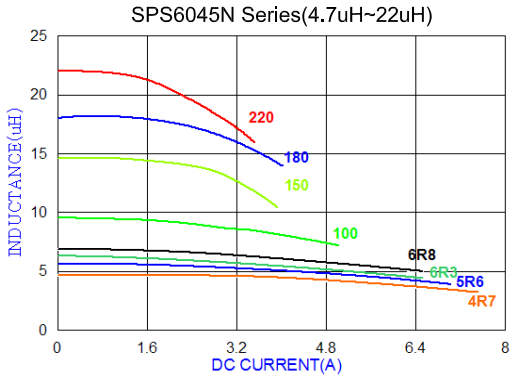
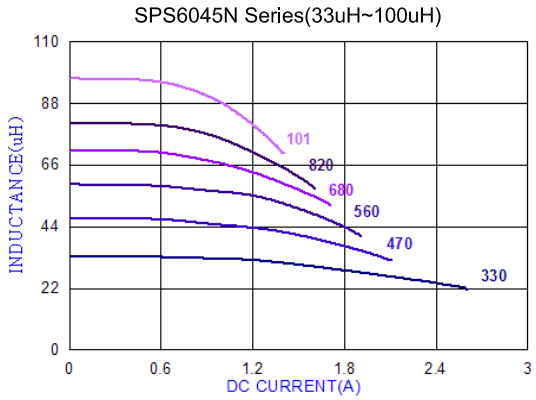
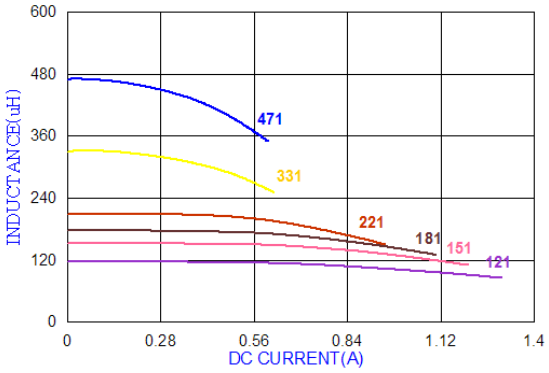
6. CHARACTERISTIC CURVES :











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7. SOLDERING AND MOUNTING :

7-1. Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

7-1.1 Solder Re-flow :

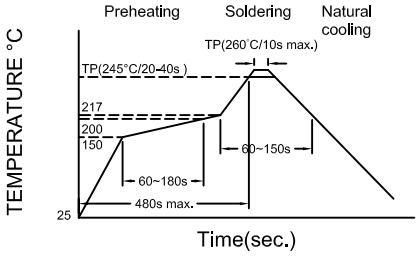
Recommended temperature profiles for re-flow soldering in Figure 1.

7-1.2 Soldering Iron :

Products attachment with soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

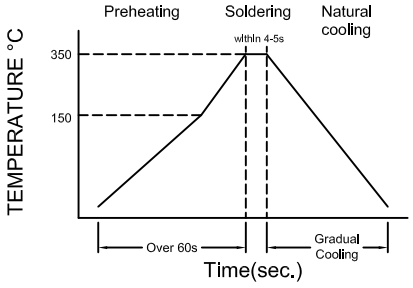
Note :

a) Preheat circuit and products to 150°C.
b) 355°C tip temperature (max)
c) Never contact the ceramic with the iron tip
d) 1.0mm tip diameter (max)
e) Use a 20 watt soldering iron with tip diameter of 1.0mm
f) Limit soldering time to 4-5 secs.



Reflow times: 3 times Max.

Fig.1



Iron Soldering times: 1 times Max.

Fig.2

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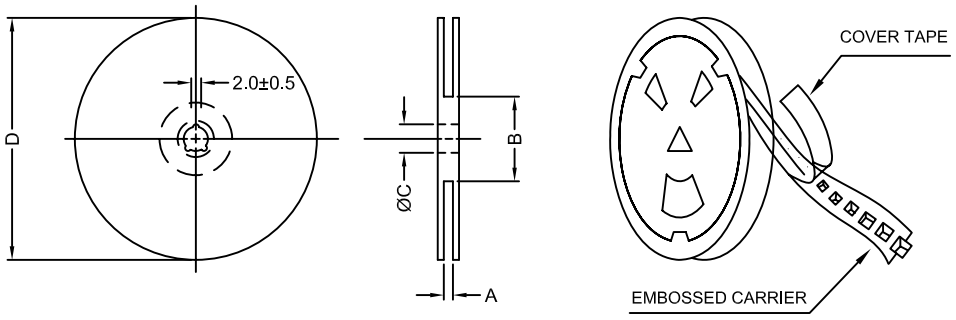
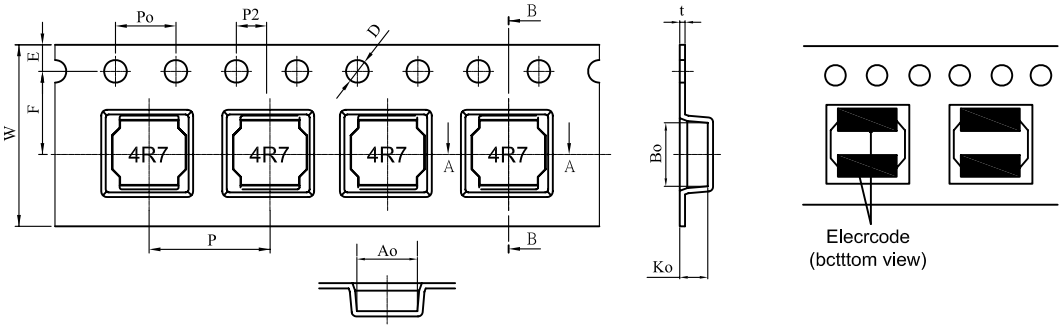
8. PACKAGING INFORMATION :

8-1. Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
13" x 16mm	16.5±0.5	80±2.0	13.5±0.5	330±3.0

8-2 Tape Dimension



Series	Ao(mm)	Bo(mm)	Ko(mm)	P(mm)	W(mm)	t(mm)	E(mm)	F(mm)	D(mm)	P0(mm)	P2(mm)
SPS6045T	6.4± 0.1	6.4± 0.1	4.7± 0.1	12.0± 0.1	16.0± 0.3	0.4± 0.1	1.75± 0.1	7.5± 0.1	1.5± 0.1	4.0± 0.1	2.0± 0.1

8-3 Packaging Quantity

Size	SPS6045T
Reel	1000
Inner Box	2000
Carton	8000

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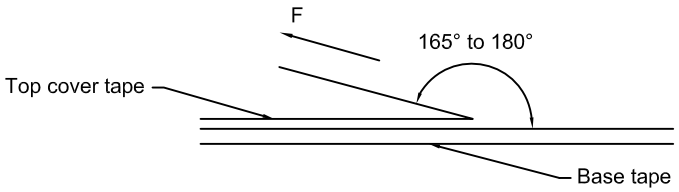
8-4. Tearing Off Force



The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions. (referenced ANSI/EIA-481-C-2003 of 4.11 standard)

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)
5~35	45~85	860~1060	300

Application Notice

1. Storage Conditions :
   To maintain the solderabililty of terminal electrodes :
   a) Temperature and humidity conditions : Less than 40°C and 60% RH.
   b) Recommended products should be used within 12 months from the time of delivery.
   c) The packaging material should be kept where no chlorine or sulfur exists in the air.

2. Transportation :
   a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
   b) The use of tweezers or vacuum pick up is strongly recommended for individual components.
   c) Bulk handling should ensure that abrasion and mechanical shock are minimized.

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