

Version record

Ver.	Description of change	Owner	Release Date
0		Dora Chou	2017.07.04

Declaration of RoHS

有害物質不使用聲明：達方電子股份有限公司-線圈元件事業部 (Coils& Telecom Components B.D., Darfon Electronics Corp.) 在此保證所生產之電子元件(SPN /SPM / SPI/SPS)相符於歐盟『有毒物質禁用指令』(RoHS, 2011/65/EU)、中國RoHs及REACH 1st至 16th版要求。

Ordering code(Example)

① ② ③ ④ ⑤ ⑥  
SPS 7070 XXX X XX X

① Product Code

② Size (LxW, mm)

③ Inductance :

R22=0.22μH    2R2=2.2μH

④ Tolerance

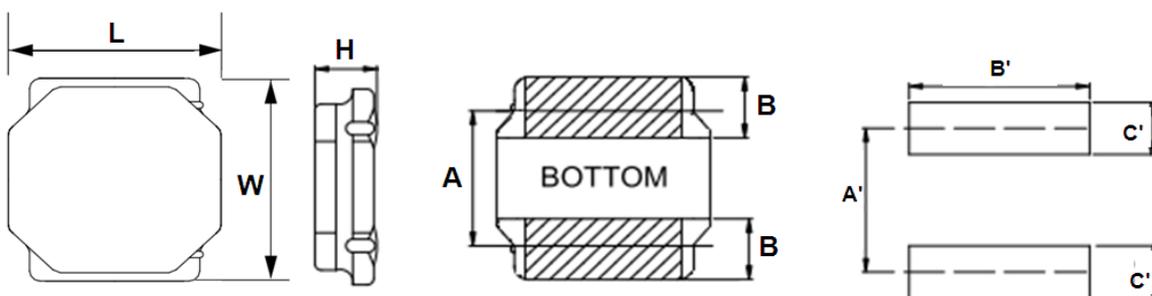
M= ± 20%, T= ± 25%, N= ± 30%

⑤ Material Type

⑥ Thickness (mm)

Code	Thick	Code	Thick	Code	Thick	Code	Thick
3	0.3	A	1.0	H	2.0	P	4.5
4	0.4	B	1.1	I	2.4	Q	5.0
5	0.5	C	1.2	J	2.5	R	6.0
6	0.6	D	1.4	K	2.8	S	6.5
7	0.7	E	1.5	L	3.0	T	2.6
8	0.8	F	1.6	M	3.5	U	7.0
9	0.9	G	1.8	N	4.0	V	9.0

1. Mechanical dimensions (mm)



Recommended Land Patterns

Code	L	W	H	A	B	A'	B'	C'
Dimensions	3.0 ± 0.2	3.0 ± 0.2	1.2 Max	1.9 ± 0.2	0.9 ± 0.2	2.2	2.7	0.8

## 2. Electrical specification

Darfon No.	Inductance L (uH)	Tolerance	DC Resistance (mΩ)		Heat Rating Current DC Amps. I <sub>dc</sub> (A)		Saturation Current DC Amps. I <sub>sat</sub> (A)		Marking
			Typ.	Max.	Typ.	Max.	Typ.	Max.	
SPS3030R33MPCC	0.33	± 20%	17.0	20.0	6.40	5.50	8.70	6.40	—
SPS3030R47MPCC	0.47	± 20%	23.0	27.0	5.50	4.70	7.50	6.30	—
SPS30301R0MPCC	1.0	± 20%	43.0	50.0	3.90	3.30	5.10	4.30	—
SPS30301R5MPCC	1.5	± 20%	64.0	74.0	3.00	2.50	4.10	3.40	—
SPS30302R2MPCC	2.2	± 20%	97.0	112.0	2.40	2.10	3.60	2.80	—
SPS30303R3MPCC	3.3	± 20%	145.0	167.0	1.90	1.65	2.70	2.10	—
SPS30304R7MPCC	4.7	± 20%	228.0	263.0	1.55	1.35	2.30	1.80	—

### ■ NOTES

2-1. Test Frequency : 1MHz , 1.0V

2-2. All test data is referenced to 25°C ambient .

2-3. Operating Temperature Range -40°C to + 125°C . (Including self-generated heat)

2-4. I<sub>dc</sub>(I<sub>rms</sub>) : DC current ( A ) that will cause an approximate ΔT of 40°C .

2-5. I<sub>sat</sub> : DC current ( A ) that will cause L to drop approximately 30% .

2-6. The rated current is the DC current value that satisfies both of current value saturation current value and temperature rise current value.

2-7. Test Instrument : Inductance(CH-3302+CH-1320);Rdc(CH 16502)

※ Caution Temperature Rise

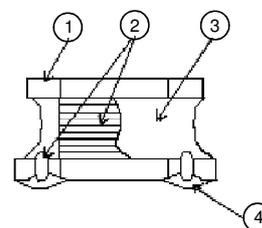
Temperature rise of this inductor depends on the installed board condition.

It shall be confirmed in the actual end product that temperature rise of inductor is within operation temperature.

2-8. Weight=0.04 ± 0.02 g

## 3. Material list

Item	Description	Material	Safety No.	Manufactures
1	Core	Iron Powder DF-1030-2		Darfon
2	Wire	Polyurethane copper wire 180°C	E143312	Elektrisola
3	Coating resin	Epoxy resin, containing ferrite powder DF-915		Darfon
4	Solder	Sn		Shenmao

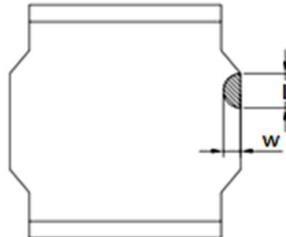


### 4. Appearance definition

#### 4-1. Core chipping:

The appearance standard of the chipping size in top side, of bottom side ferrite core is following dimension.

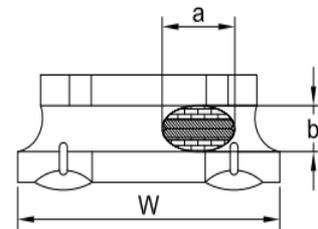
L	W
0.6mm Max	0.6mm Max



#### 4-2 Void appearance tolerance limit

Size of voids occurring to coating resin is specified below.

- 1) Width direction(i.e. a) : Acceptable when  $a \leq w/2$   
Nonconforming when  $a > w/2$
- 2) Length direction(i.e. b) : Dimension b is not specified.
- 3) When total area of voids (including one exposing coil) occurring to each sides is not greater than 50% of coating resin area, that is acceptable.

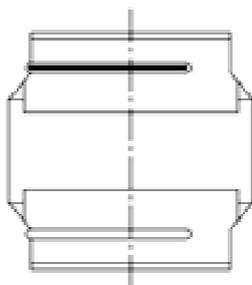


#### 4-3 External appearance criterion for exposed wire

Exposed end of the winding wire at the secondary side should be 2mm and below.



#### 4-4 Electrode appearance criterion for exposed wire



Cross section of wire joint part

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

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



Appearance judgment

less than 1/2 of joint side length is good.

More than 1/2 is selected as defect

## 5. Precaution

### 5-1 Handling

- Keep the products away from all magnets and magnetic objects.
- Be careful not to subject the products to excessive mechanical shocks.
- Please avoid applying impact to the products after mounted on pc board.
- Avoid ultrasonic cleaning

### 5-2 Storage

To prevent deterioration of the solderability of terminal electrodes and/or the packing materials of the products, please store the products under following storage conditions.

Ambient temperature range                      +5°C to 35°C

Humidity    45% to 70% RH .

Even under the ideal storage conditions, solder ability of inductor's electrode deteriorates as time passes, so inductors should be used within 6 months after the delivery time.

## 6. Reliability

### 6-1. Mechanical

Item	Specification & Requirement	Test Method
Solder ability	The surface of terminal immersed shall be minimum of 90% covered with a new coating of solder	Solder heat proof : (1) Preheating : 160 ± 10°C 90s (2) Retention time: 245 ± 5°C for 3 ± 1 sec
Vibration	1) No mechanical damage. 2) Inductance change within±10%.	(1) Frequency : 10Hz to 55Hz to 10Hz in 60 sec as a period (2) Vibration time : period cycled for 2 hours in each of 3 mutual perpendicular directions (3) Amplitude : 1.5mm max.
Terminal strength	No detachment of terminal pin and no breakage of wire	Add static load 4.9N(500gf) to inductor through hole of test board for 10 ± 2 sec

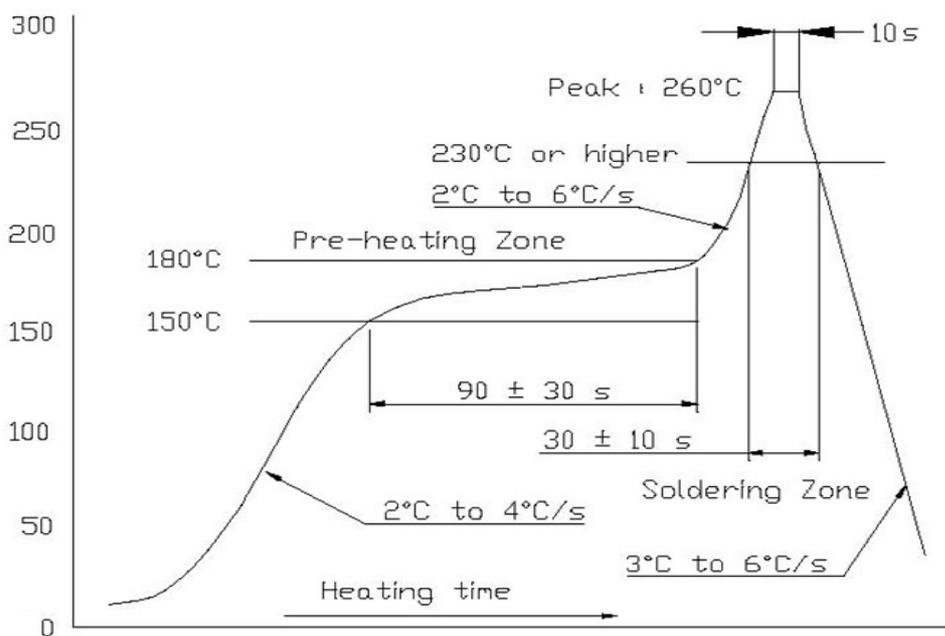
6-2. Endurance

Item	Specification & Requirement	Test Method
Thermal Shock	1) No mechanical damage. 2) Inductance change within±10%.	(1) Repeat 100 cycles as follow : -40°C± 2°C , 30 ± 3 mins →Room temperature , 5 mins →+125°C± 2°C , 30 ± 3 mins →Room temperature , 5 mins (2) Recovery : 48 + 4 / - 0 hours of recovery under the standard condition after the test. (See Note)
High Temperature resistance	1) No mechanical damage. 2) Inductance change within±10%.	(1) Environment condition : 85°C ± 2°C Applied Current : Rated current (2) Duration : 500 + 4 / - 0 hours (See Note)
Humidity resistance	1) No mechanical damage. 2) Inductance change within±10%.	(1) Environment condition : 60°C ± 2°C Humidity : 90~95% Applied Current : Rated current (2) Duration : 500 + 4 / - 0 hours (See Note)
Low Temperature Storage	1) No mechanical damage. 2) Inductance change within±10%.	(1) Store temperature : -40°C ± 2°C (2) Duration : 500 + 4 / - 0 hours
High Temperature Storage	1) No mechanical damage. 2) Inductance change within±10%.	(1) Store temperature :+125°C± 2°C (2) Duration : 500 +4 / - 0 hours

Note :

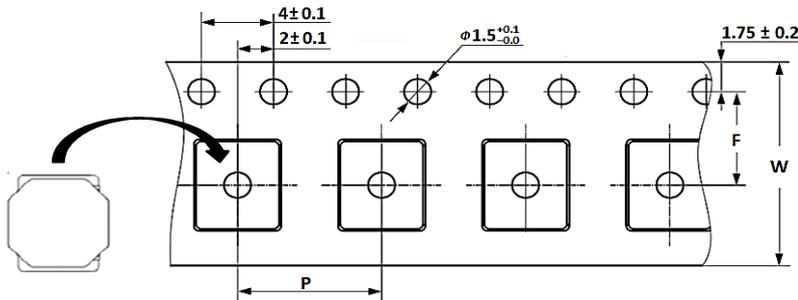
When there are questions concerning measurement result : measurement shall be made after 48 ± 2 hours of recovery under the standard condition.

7. Reflow profile chart (Reference)



### 8. Packaging

#### 8-1 Dimensions

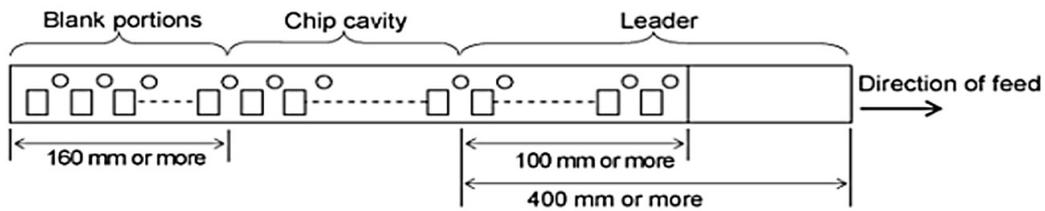


Code	W	P	F
Dimensions	$8.0 \pm 0.1$	$4.0 \pm 0.1$	$3.5 \pm 0.1$

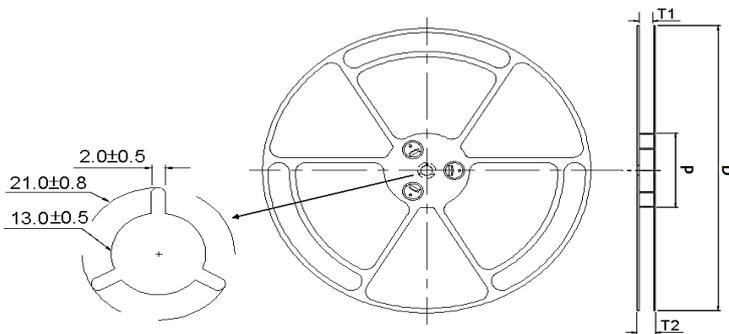
Unit : mm

※Tape採用熱封膠帶

#### 8-2 Direction of rolling



#### 8-3 Reel



T1	T2
$8.4 \pm 0.1$	$12.4 \pm 0.2$
$12.4 \pm 0.1$	$17.0 \pm 0.2$
$16.4 \pm 0.1$	$21.0 \pm 0.2$
$24.4 \pm 0.1$	$28.4 \pm 0.2$

Code	D	P	Quantity(pcs)
Dimensions	$180 \pm 3.0$	$62.0 \pm 1.5$	2000

Unit : mm

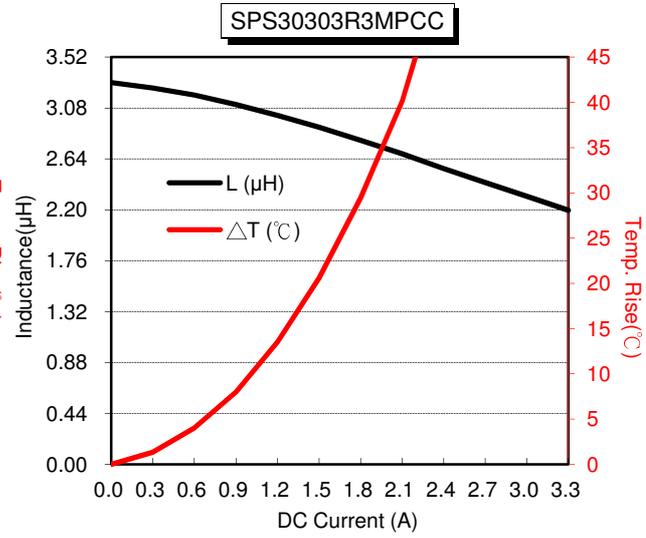
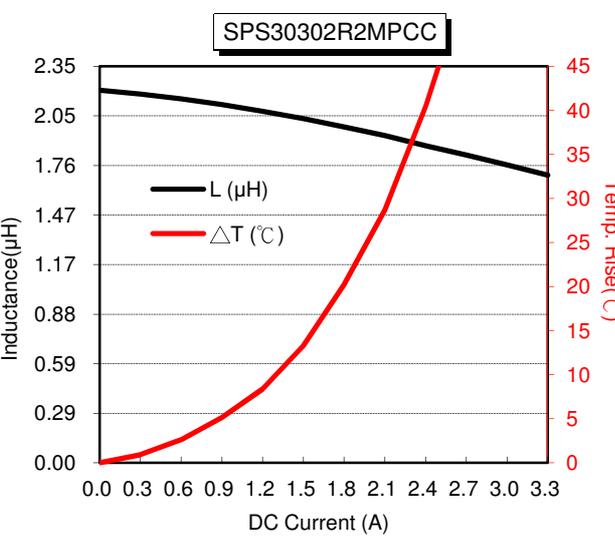
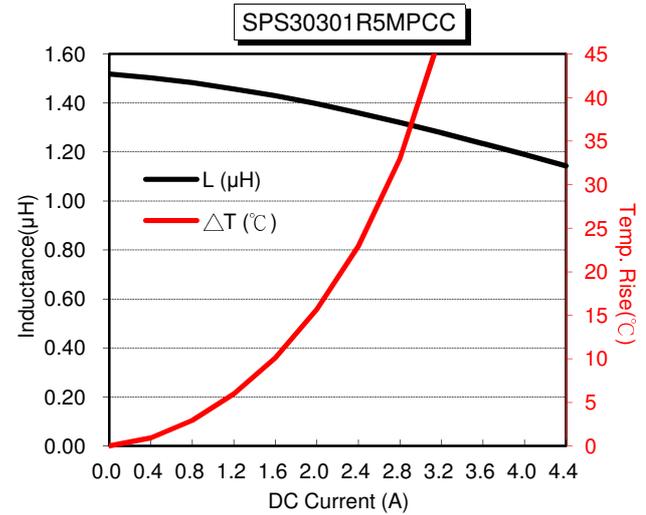
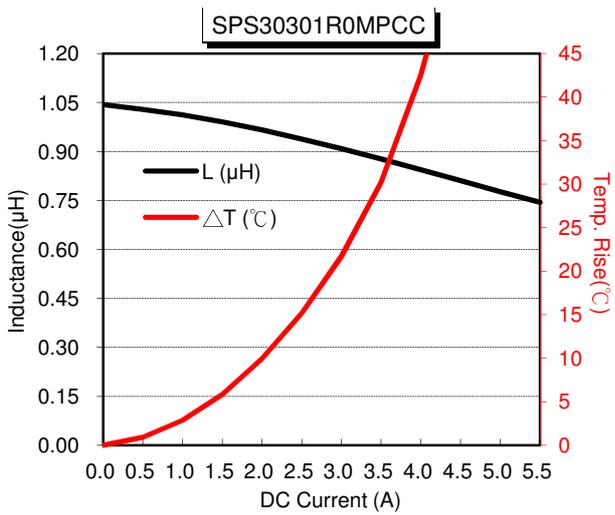
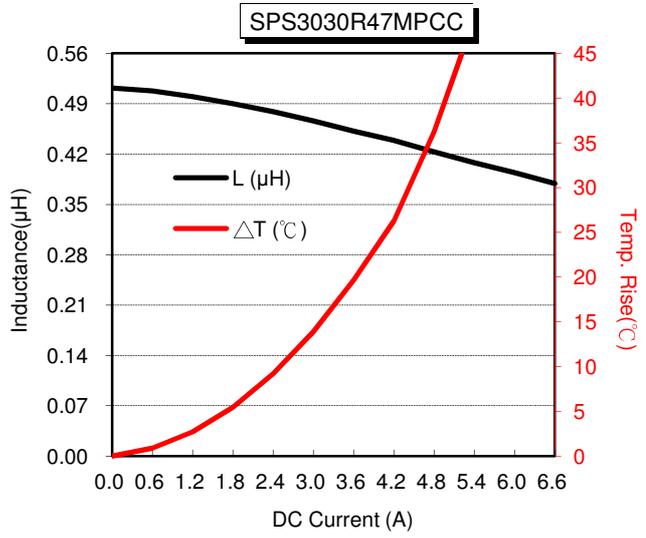
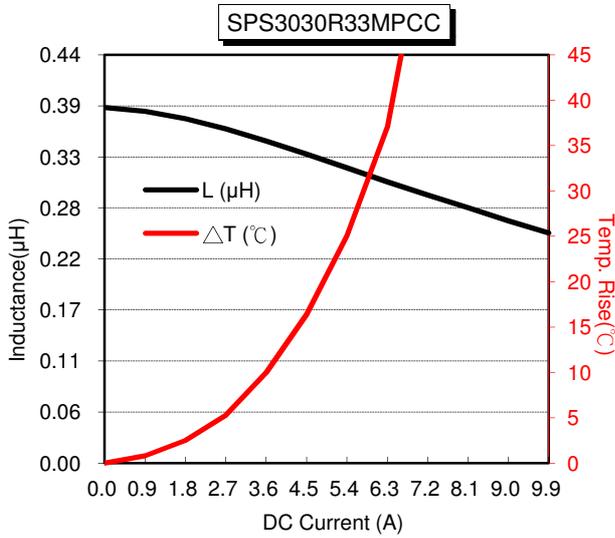
#### 8-4 Peel force of top cover tape



The peel speed : 300 mm/minute

The peel force : 0.1 to 1.3 N

### 9. DC BIAS CHARACTERISTICS



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