SMD Power Inductor – *SPS252010C Series*

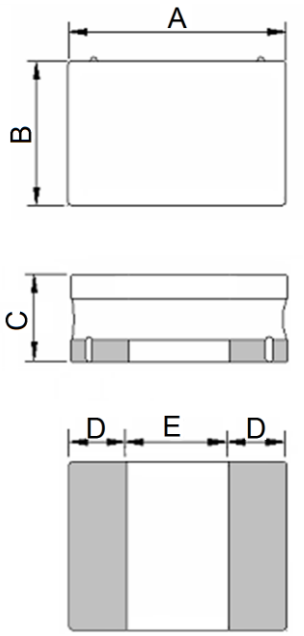
1. Part No. Expression

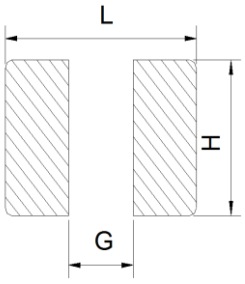
S P S 2 5 2 0 1 0 C R 4 7 Y F

(a) (b) (c) (d) (e) (f)

(a)	Series Code	(d)	Inductance Code
(b)	Dimension Code	(e)	Tolerance Code
(c)	Material Code	(f)	Packaging Code

2. Configuration & Dimensions (Unit: mm)

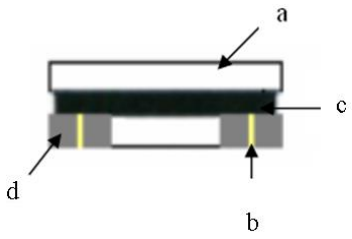




Recommended PCB Pattern

A	B	C	D	E	L	G	H
2.5 +0.2/-0.1	2.0 +0.35/-0.05	1.00 Max.	0.85 Ref.	0.80 Ref.	2.90 Ref.	0.80 Ref.	2.40 Ref.

3. Material List



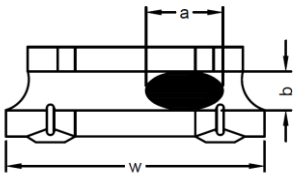
(a) Core

(b) Wire

(c) Glue

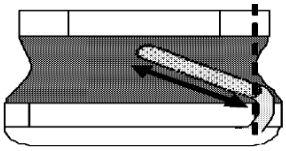
(d) Terminal

Void appearance tolerance limit & size of voids occurring to coating resin is specified below.



Appearance of exposed wire tolerance limit:

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 side is not greater than 50% of coating resin area and is acceptable



External appearance criterion for exposed wire

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

4. General Specification

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)

(b) Storage Temp.: -40°C to +125°C (on board)

(c) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C.

(d) Saturation Current (Isat) will cause L0 to drop 30%.

(e) Storage Condition (Component in its packaging)

i) Temperature: Less than 40°C

ii) Humidity: Less than 60% RH

5. Electrical Characteristics

Part No.	Inductance (μH)	Test Frequency	Irms (A) Typ.	Irms (A) Max.	Isat (A) Typ.	Isat (A) Max.	DCR (Ω) ± 20%
SPS252010CR47YF	0.47	0.1V/1MHz	2.80	2.50	2.85	2.57	0.030
SPS252010CR68YF	0.68	0.1V/1MHz	2.45	2.20	2.70	2.45	0.039
SPS252010C1R0YF	1.00	0.1V/1MHz	2.20	1.80	2.45	2.05	0.055
SPS252010C1R5MF	1.50	0.1V/1MHz	1.70	1.55	1.80	1.70	0.090
SPS252010C2R2MF	2.20	0.1V/1MHz	1.55	1.40	1.60	1.55	0.114
SPS252010C3R3MF	3.30	0.1V/1MHz	1.25	1.10	1.30	1.10	0.170
SPS252010C4R7MF	4.70	0.1V/1MHz	1.05	0.92	1.10	0.95	0.250
SPS252010C6R8MF	6.80	0.1V/1MHz	0.85	0.76	0.95	0.80	0.370
SPS252010C100MF	10.0	0.1V/1MHz	0.75	0.67	0.75	0.65	0.470
SPS252010C150MF	15.0	0.1V/1MHz	0.55	0.50	0.55	0.45	0.750
SPS252010C220MF	22.0	0.1V/1MHz	0.50	0.45	0.50	0.40	1.120

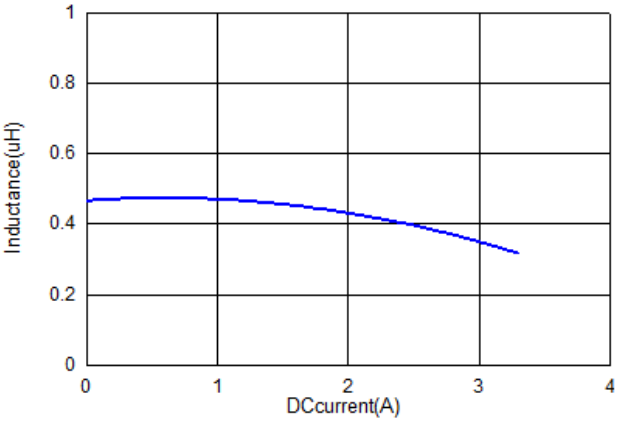
Notes:

(a) Tolerance Code: M = ±20%; Y=±30%.

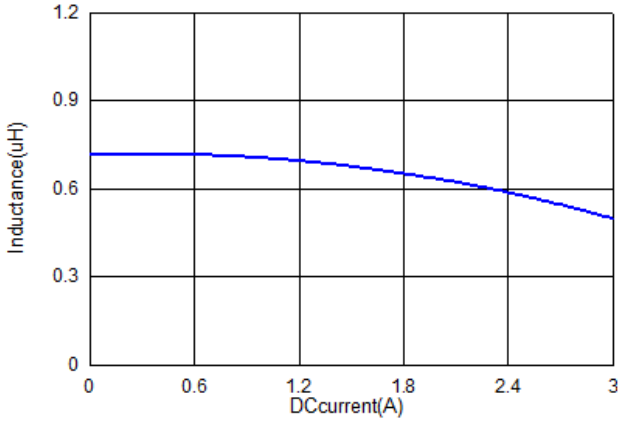
(b) At all times, the current supplied to the product should not exceed Isat Max. value.

6. Characteristics Curves

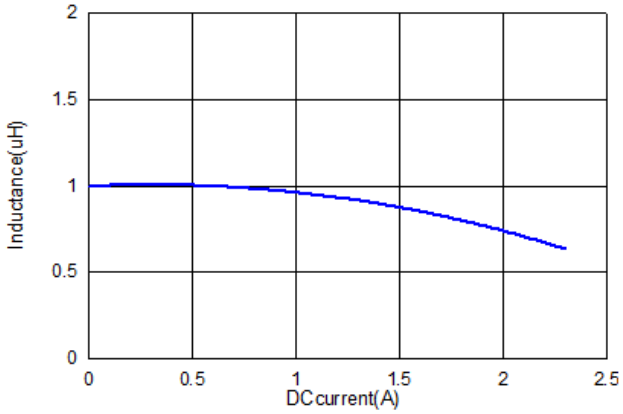
SPS252010CR47YF



SPS252010CR68YF



SPS252010C1R0YF



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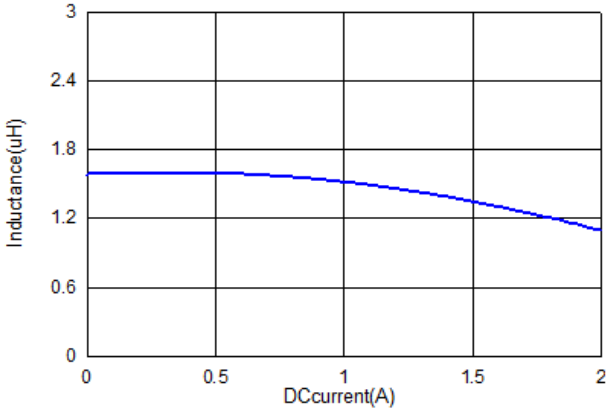

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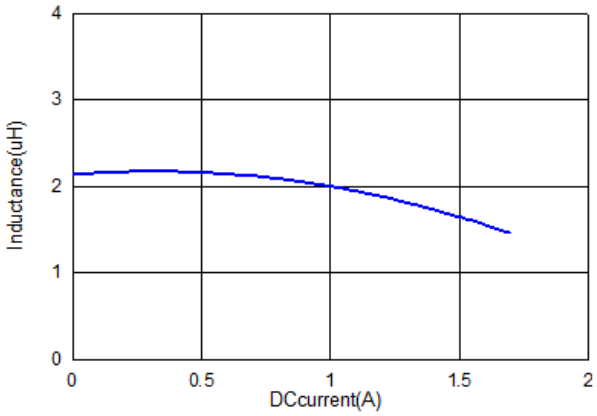
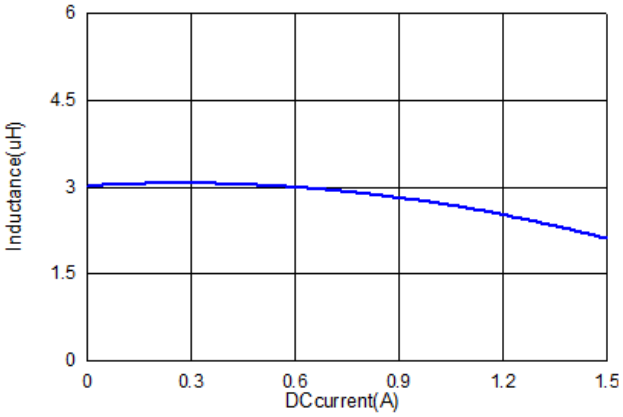
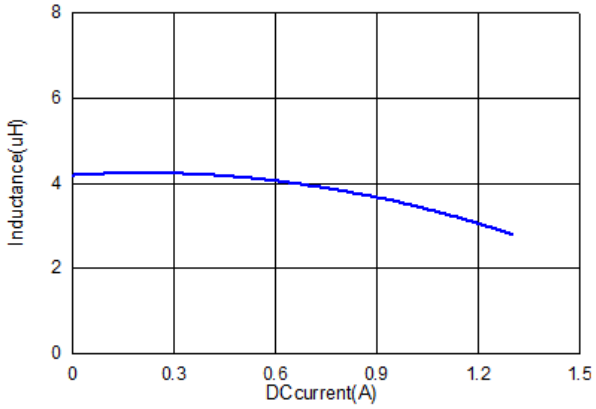


SPS252010C3R3MF



NOTE: Specifications subject to change without notice. Please check our website for latest information.

SPS252010C4R7MF



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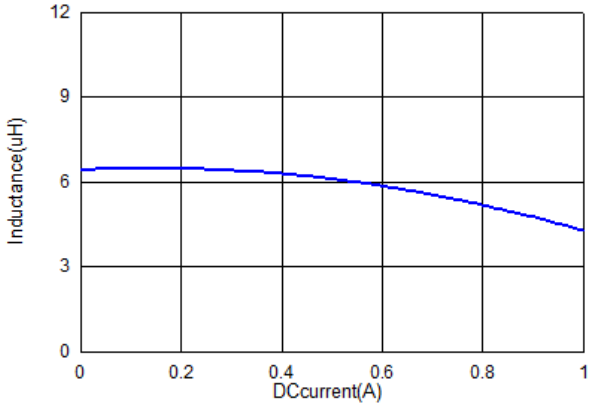
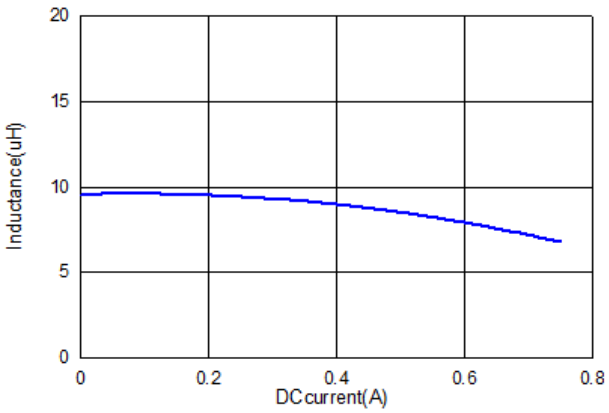
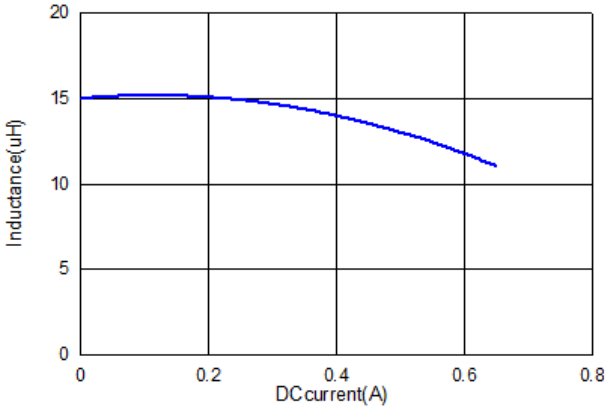


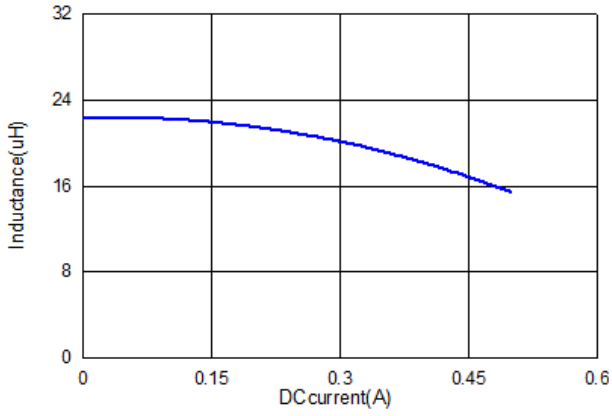
SPS252010C100MF



SPS252010C150MF



SPS252010C220MF



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7. Soldering and Mounting

Mildly activated rosin fluxes are preferred. 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. IR Soldering Reflow

Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

7-2. Iron Reflow

Products attachment with a 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 (Figure 2).

Note:

(a) Preheat circuit and products to 150°C.

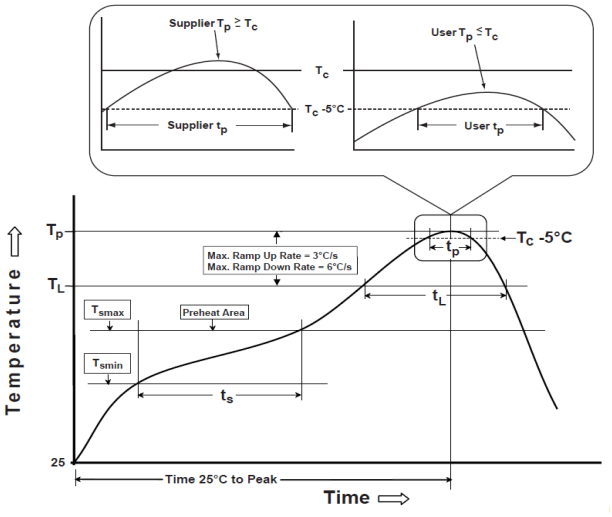
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

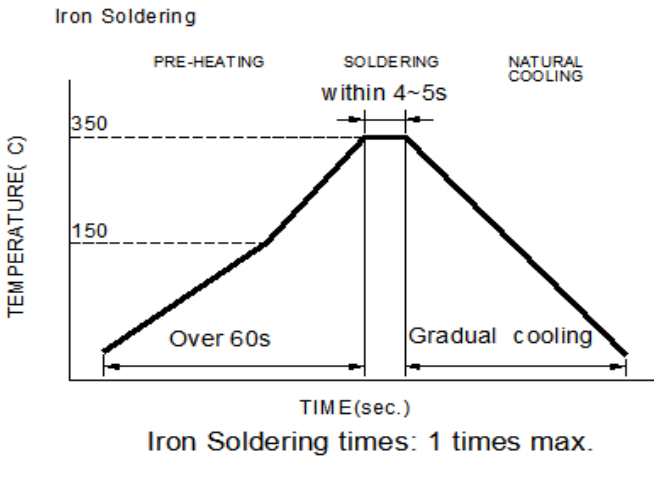
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(f) Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

Table (1.1) Reflow Profiles

Profile Type:	Pb-Free Assembly
Preheat -Temperature Min (T_{smin}) -Temperature Max (T_{smax}) -Time (t_s) from (T_{smin} to T_{smax})	 150°C 200°C 60-120seconds
Ramp-up rate ($T_L$to T_p)	3°C /second max.
Liquids temperature (T_L) Time (t_L) maintained above T_L	217°C 60-150 seconds
Classification temperature (T_c)	See Table (1.2)
Time (t_p) at Tc- 5°C (Tp should be equal to or less than Tc.)	*< 30 seconds
Ramp-down rate (T_p to T_L)	6°C /second max.
Time 25°C to peak temperature	8 minutes max.

Tp: maximum peak package body temperature, **Tc**: the classification temperature.

For user (customer) **Tp** should be equal to or less than **Tc.**

*Tolerance for peak profile temperature (Tp) is defined as a supplier minimum and a user maximum.

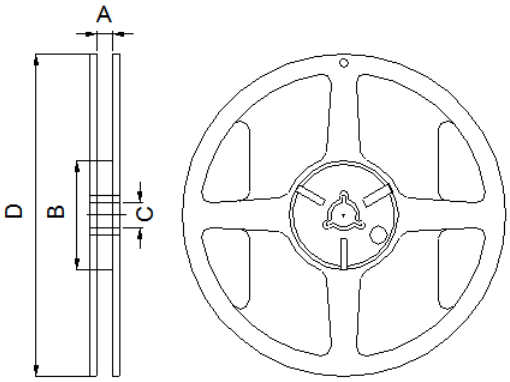
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	Package Thickness	Volume mm^3 <350	Volume mm^3 350-2000	Volume mm^3 >2000
PB-Free Assembly	<1.6mm	260°C	260°C	260°C
	1.6-2.5mm	260°C	250°C	245°C
	≥2.5mm	250°C	245°C	245°C

Reflow is referred to standard IPC/JEDEC J-STD-020E.

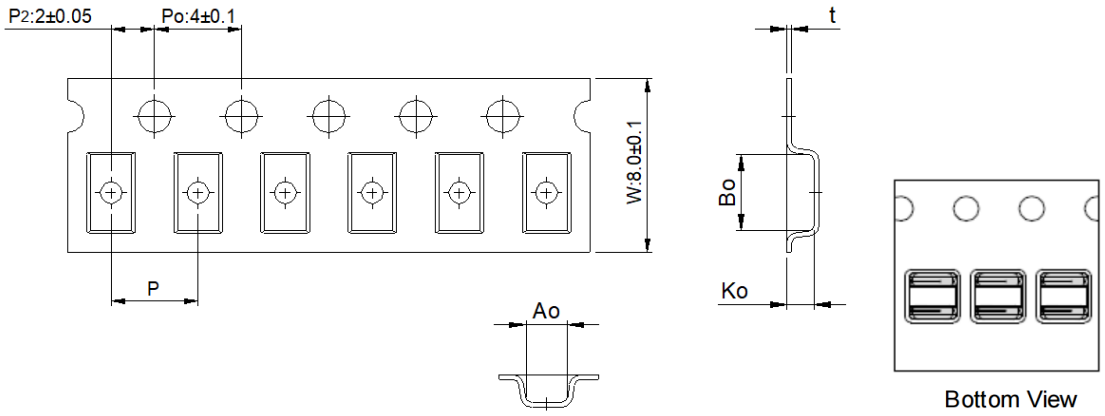
8. Packaging Information

8-1. Reel Dimension



Type	A (mm)	B (mm)	C (mm)	D (mm)
7” x 8mm	8.4 ± 1.0	50 Min.	13.0 ± 0.8	178.0± 2.0

8-2. Tape Dimension



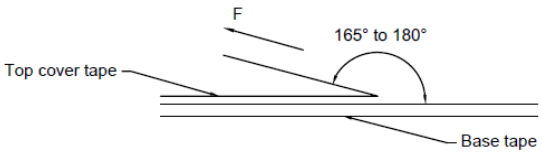
Bo(mm)	Ao(mm)	Ko(mm)	P(mm)	t(mm)
3.10±0.10	2.45±0.10	1.40±0.10	4.00±0.10	0.23±0.05

NOTE: Specifications subject to change without notice. Please check our website for latest information.

8-3. Packaging Quantity

Chip/ Reel	2000

8-4. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

Room Temp. (°C)	Room Humidity (%)	Room atm (hPa)	Tearing Speed (mm/min)
5~35	45~85	860~1060	300±10

Tape Size	8 mm	12 to 56 mm	72 mm or Wider
Tearing Off Force (grams)	10~100	10~130	10~150

Application Notice

1. Storage Conditions

To maintain the solderability of terminal electrodes:

(a) Recommended products should be used within 12 months from the time of delivery.

(b) 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) Vacuum pick up is strongly recommended for individual components.

(c) Bulk handling should ensure that abrasion and mechanical shock are minimized.