Shielded Power Inductor – *SDC1205 Series*

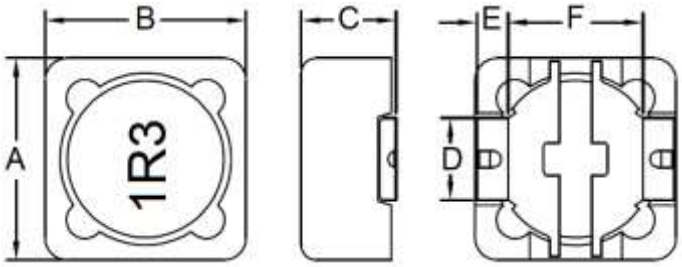
1. Part No. Expression

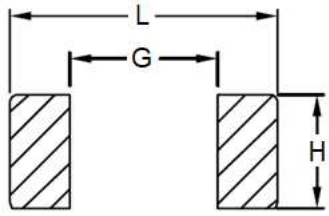
S D C 1 2 0 5 1 R 3 Y F

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

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

2. Configuration & Dimensions (Unit: mm)



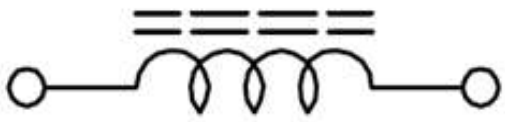


Recommended PCB Layout

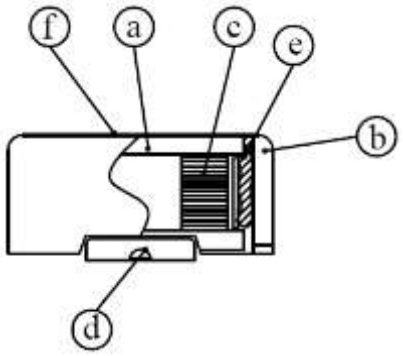
Note: 1. The above PCB layout reference only.
2. Marking: Inductance Code

A	B	C	D	E
12.8 Max	12.8 Max	6.0 Max	5.0 Ref	2.2 Ref
F	G	H	L	-
7.6 Ref	7.0 Ref	5.4 Ref	12.8 Ref	-

3. Schematic



4. Material List



(a) Core
(b) Core
(c) Wire
(d) Clip
(e) Adhesive
(f) Ink

5. General Specifications

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
(b) Storage Temp.: -40°C to +125°C (on board)
(c) All test data referenced to 25°C ambient.
(d) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C.
(e) Saturation Current (Isat) will cause inductance L0 to drop 35% Max.
(f) Rated Current: The lower value of Isat and Irms.
(g) Storage Condition (Component in its packaging)
  i) Temperature: Less than 40°C
  ii) Humidity: Less than 60% RH

6. Electrical Characteristics

Part Number	Inductance (uH) @0A	Test Frequency	DCR (mΩ) Max	IDC (A) Max
SDC12051R3YF	1.3	1V/100KHz	12	8.00
SDC12052R1YF	2.1	1V/100KHz	14	7.00
SDC12053R1YF	3.1	1V/100KHz	17	6.00
SDC12054R4YF	4.4	1V/100KHz	20	5.00

Note:

Tolerance Code: M=±20%, Y=±30%

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

Part Number	Inductance (uH) @0A	Test Frequency	DCR (mΩ) Max	IDC (A) Max
SDC12055R8YF	5.8	1V/100KHz	21	4.40
SDC12057R5YF	7.5	1V/100KHz	24	4.20
SDC1205100MF	10	1V/1KHz	25	4.00
SDC1205120MF	12	1V/1KHz	27	3.50
SDC1205150MF	15	1V/1KHz	30	3.30
SDC1205180MF	18	1V/1KHz	34	3.00
SDC1205220MF	22	1V/1KHz	36	2.80
SDC1205270MF	27	1V/1KHz	51	2.30
SDC1205330MF	33	1V/1KHz	57	2.10
SDC1205390MF	39	1V/1KHz	68	2.00
SDC1205470MF	47	1V/1KHz	75	1.80
SDC1205560MF	56	1V/1KHz	110	1.70
SDC1205680MF	68	1V/1KHz	120	1.50
SDC1205820MF	82	1V/1KHz	140	1.40
SDC1205101MF	100	1V/1KHz	160	1.30
SDC1205121MF	120	1V/1KHz	170	1.10
SDC1205151MF	150	1V/1KHz	230	1.00
SDC1205181MF	180	1V/1KHz	290	0.90
SDC1205221MF	220	1V/1KHz	400	0.80
SDC1205271MF	270	1V/1KHz	460	0.75
SDC1205331MF	330	1V/1KHz	510	0.68
SDC1205391MF	390	1V/1KHz	690	0.65
SDC1205471MF	470	1V/1KHz	770	0.58
SDC1205561MF	560	1V/1KHz	860	0.54
SDC1205681MF	680	1V/1KHz	1200	0.48
SDC1205821MF	820	1V/1KHz	1340	0.43
SDC1205102MF	1000	1V/1KHz	1530	0.40

Note:

Tolerance Code: M=±20%, Y=±30%

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7. Soldering Specification

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-020F).

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.

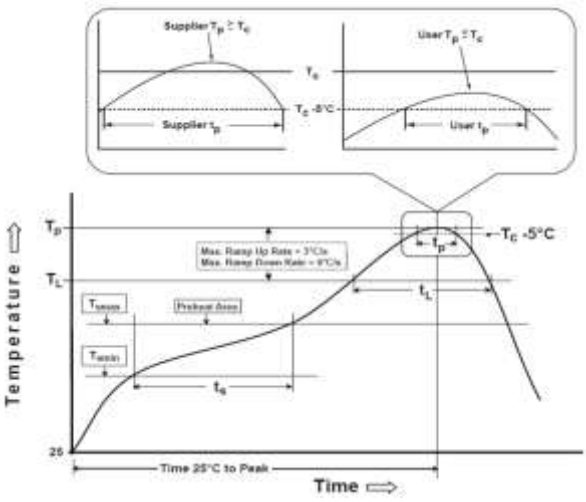
(b) 350°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

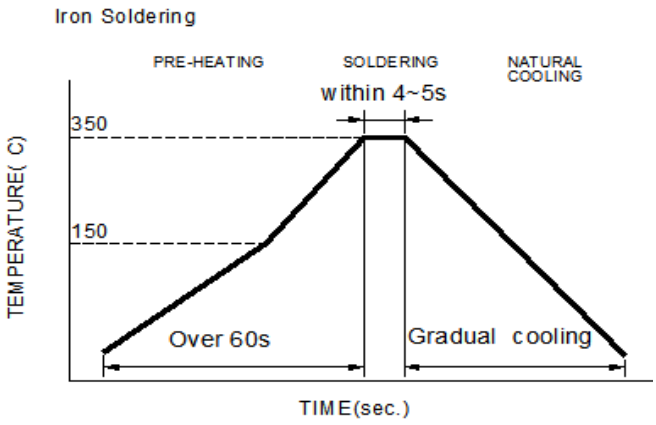
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

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



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Iron Soldering times：1 times max

Figure 2: Iron soldering temperature profiles

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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.**

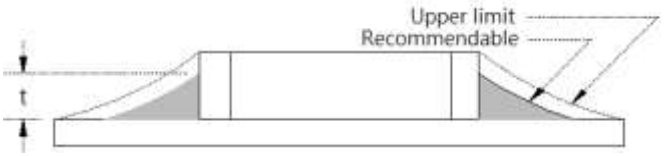
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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-020F.

7-3. Soldering Volume

Accordingly increasing the solder volume, the mechanical stress to product is also increased. Exceeding solder volume may cause the failure of mechanical or electrical performance. Solder shall be used not to be exceeded as shown in the Figure below. Minimum fillet height = soldering thickness + 25% product height.



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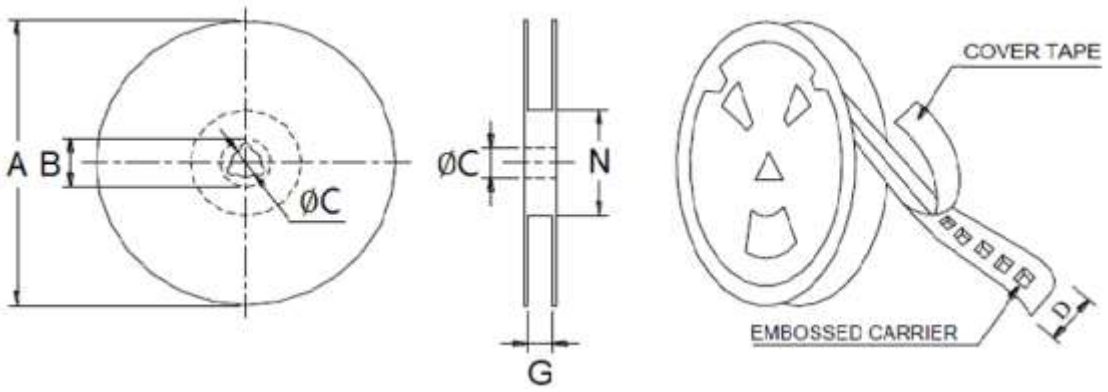
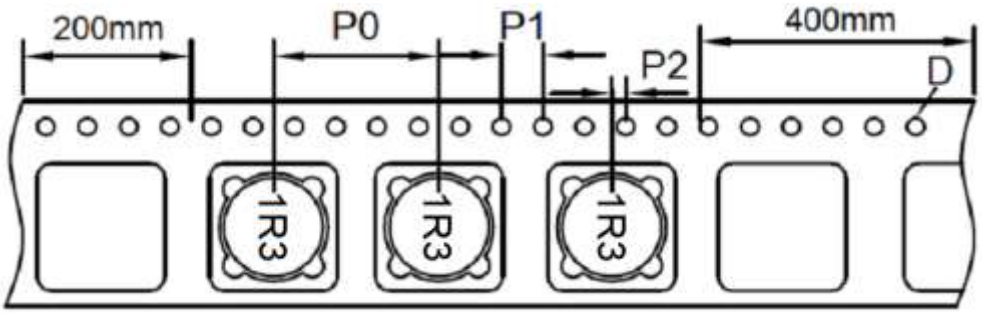
8. Packaging Information

8-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	G	N
13”x24mm	330.0 Ref	21.0 Ref	13.0 Ref	24.0 Ref	24.5 Ref	100.0 Ref

8-2. Tape Dimension (Unit: mm)



P0	P1	P2	D
16.00 Ref	4.00 Ref	2.00±0.10	1.50+0.25/-0.00

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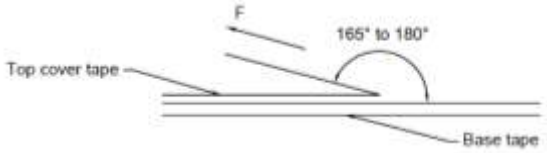
8-3. Packaging Quantity (Unit: Pcs)

INNER : REEL	OUTER : CARTON	
QTY(PCS)	QTY(PCS)	SIZE(cm)
600	2,400	36x35.5x14.3

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) Products meet IPC/JEDEC J-STD-020F standard-MSL, level 1.

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

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