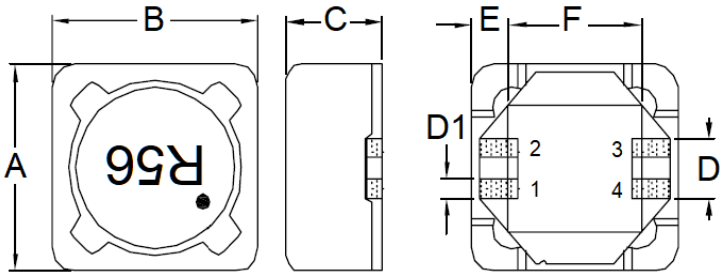
1. Part No. Expression

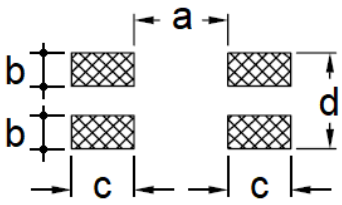
S P B 1 2 0 5 R 5 6 Y Z F

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

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

2. Configuration & Dimensions (Unit: mm)





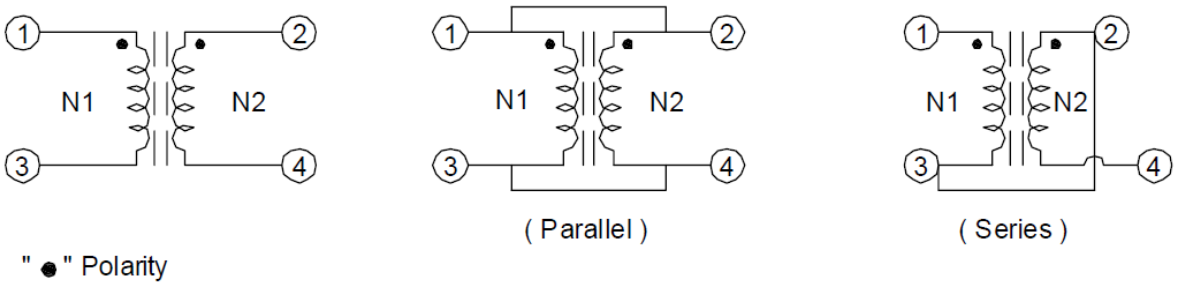
Recommended PCB Layout

Note: 1. The above PCB layout reference only.

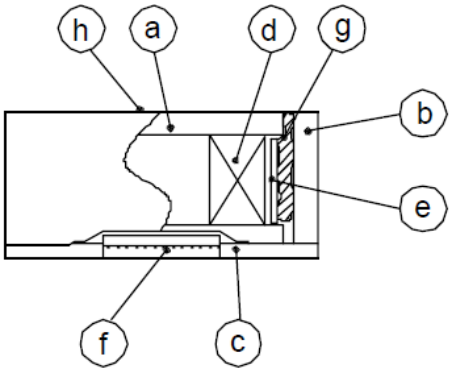
2. Marking: White dot(on pin ① side), Inductance Code

A	B	C	D	D1	E
12.5±0.3	12.5±0.3	6.0 Max	5.0 Ref	1.7 Ref	2.2 Ref
F	a	b	c	d	-
7.6 Ref	7.0 Ref	2.1 Ref	2.8 Ref	5.4 Ref	-

3. Schematic



4. Material List



(a) Core
(b) Core
(c) Base
(d) Wire
(e) Tape
(f) Terminal
(g) Adhesive
(h) Ink

5. General Specifications

(a) Operating Temp.: -40°C to +125°C (including self-temperature rise)
(b) All test data referenced to 25°C ambient.
(c) Heat Rated Current (Irms) will cause the coil temperature rise approximately ΔT of 40°C.
(d) Saturation Current (Isat) will cause inductance L0 to drop approximately 30%.
(e) Rated Current: The lower value of Isat and Irms.
(f) Hi-Pot (N1-N2): 200Vac /3mA /1Sec
(g) Resistance to Solder Heat: 260°C, 10Sec.
(h) Storage Condition (Component in its packaging)
  i) Temperature: -10°C to 40°C
  ii) Humidity: Less than 60% RH

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

6. Electrical Characteristics

Part Number	Inductance (uH) Ref @0.25V/100KHz	Parallel				Series			
		Inductance (uH) Ref	RDC (Ω) Max	Isat (A)	Irms (A)	Inductance (uH) Ref	RDC (Ω) Max	Isat (A)	Irms (A)
SPB1205R56YZF	0.56	0.540	0.0043	25.0	9.50	2.100	0.0160	12.50	5.00
SPB12051R0YZF	1.00	0.984	0.0050	19.0	8.50	3.576	0.0200	9.20	4.60
SPB12051R5YZF	1.50	1.478	0.0060	12.5	8.20	5.912	0.0245	7.00	4.00
SPB12052R2YZF	2.20	2.208	0.0075	12.0	8.00	8.832	0.0290	6.00	3.80
SPB12053R3YZF	3.30	3.084	0.0095	10.2	4.80	12.340	0.0380	5.00	3.20
SPB12054R5YZF	4.50	4.250	0.0105	9.00	4.60	16.510	0.0410	4.50	2.80
SPB12056R8YZF	6.80	6.588	0.0165	7.00	4.30	26.350	0.0640	3.50	2.30
SPB12058R2YZF	8.20	8.048	0.0180	6.50	4.00	32.190	0.0700	3.10	2.00
SPB1205100YZF	10.00	9.654	0.0224	5.70	3.70	38.620	0.0895	2.80	1.80
SPB1205150YZF	15.00	15.350	0.0298	4.70	3.30	61.400	0.1190	2.30	1.65
SPB1205220YZF	22.00	22.360	0.0420	3.65	3.00	89.440	0.1720	1.80	1.52
SPB1205330YZF	33.00	33.740	0.0600	3.10	2.70	135.000	0.2460	1.55	1.30
SPB1205470YZF	47.00	47.470	0.0810	2.60	2.20	189.900	0.3250	1.35	1.10
SPB1205680YZF	68.00	67.910	0.1180	2.20	1.80	271.000	0.4600	1.10	0.80
SPB1205820YZF	82.00	86.890	0.1400	2.00	1.60	347.600	0.5580	1.00	0.75
SPB1205101MZF	100.00	102.700	0.1830	1.75	1.40	410.800	0.7280	0.90	0.50
SPB1205151MZF	150.00	151.100	0.2640	1.50	1.10	604.400	1.0500	0.75	0.45
SPB1205221MZF	220.00	216.800	0.3760	1.20	0.90	867.200	1.4900	0.60	0.38
SPB1205331MZF	330.00	332.600	0.5600	1.00	0.70	1330.000	2.2400	0.48	0.35
SPB1205471MZF	470.00	473.100	0.7740	0.82	0.55	1892.000	3.1000	0.38	0.30
SPB1205681MZF	680.00	679.800	1.1450	0.71	0.45	2719.000	4.5800	0.33	0.27
SPB1205821MZF	820.00	828.000	1.4590	0.63	0.38	3312.000	5.8400	0.31	0.20
SPB1205102MZF	1000.00	975.200	1.6600	0.60	0.28	4032.000	6.6600	0.29	0.18

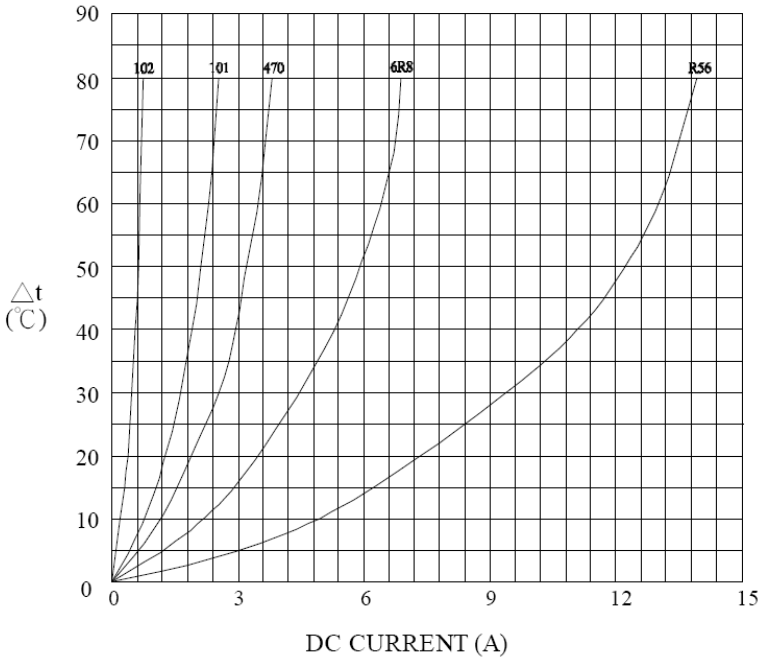
Note:

Tolerance Code: M=±20%, Y=±30%

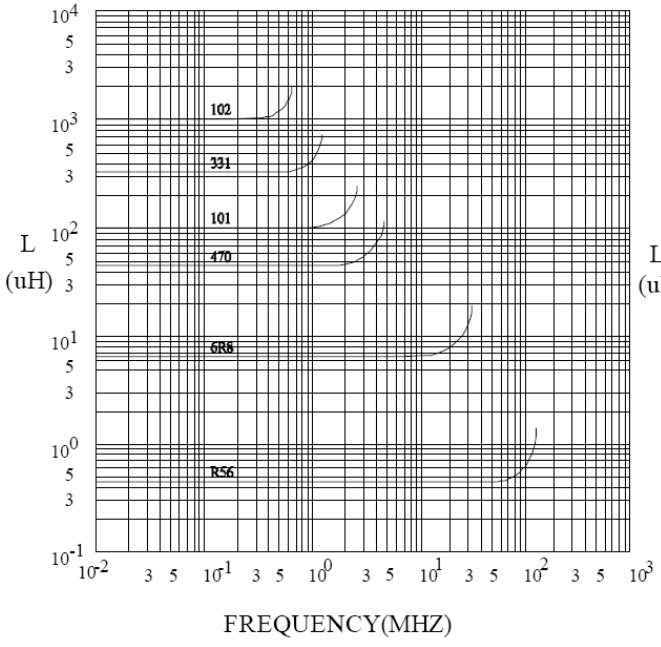
7. Characteristics Curves

7-1. Parallel

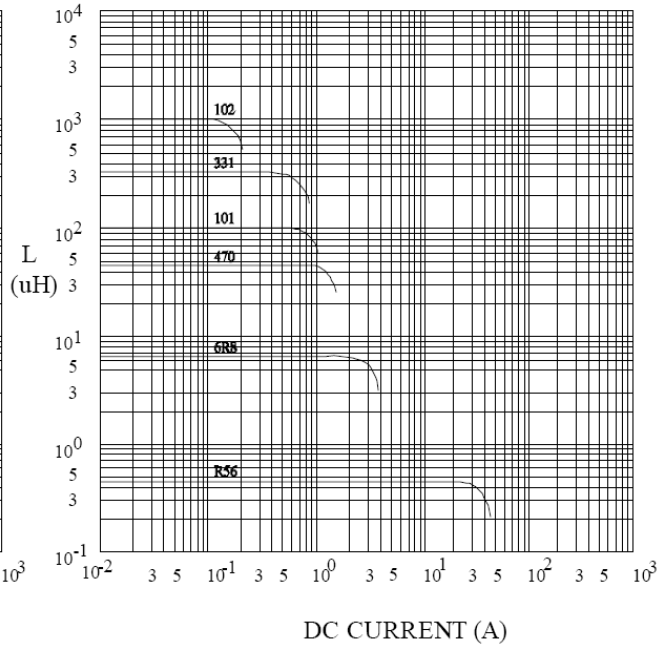
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



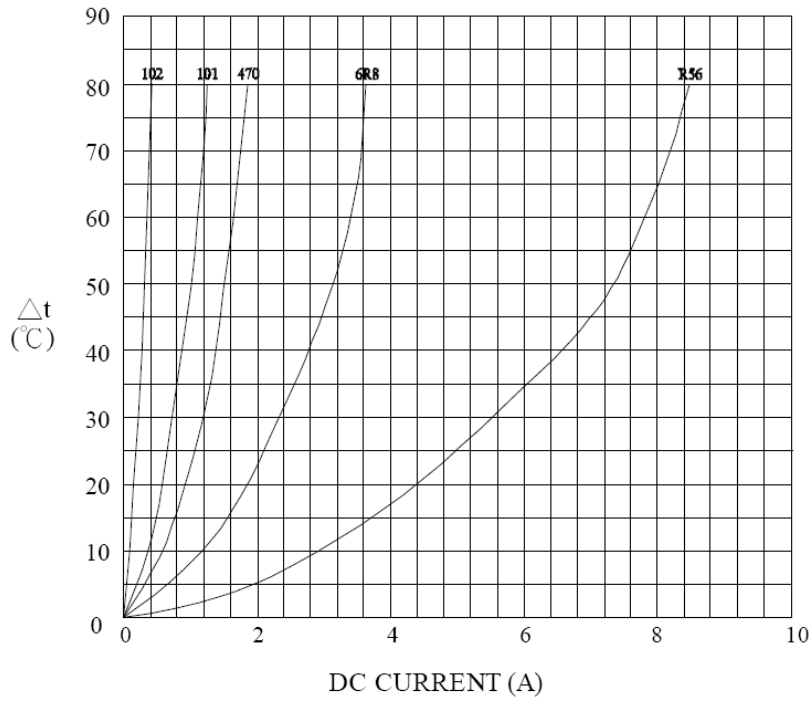
@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



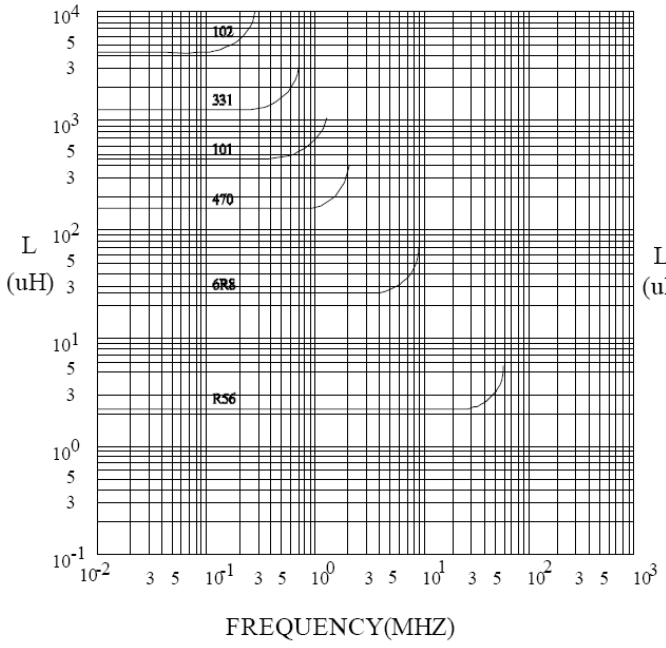
NOTE: Specifications subject to change without notice. Please check our website for latest information.

7-2. Series

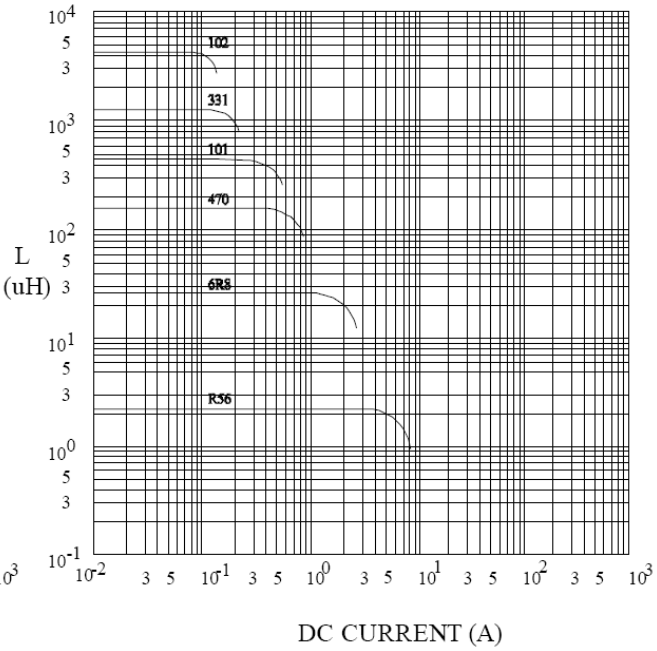
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE



@ INDUCTANCE VS. FREQUENCY RESPONSE CURVE



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE



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

8. 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.

8-1. IR Soldering Reflow

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

8-2. 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.

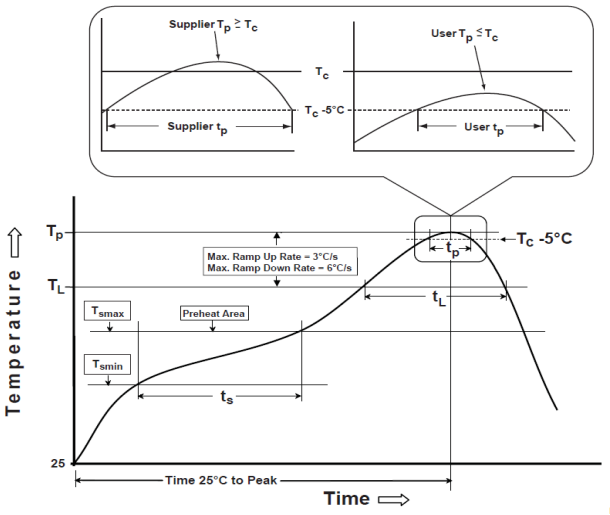
(b) 355°C tip temperature (Max.)

(c) Never contact the ceramic with the iron tip

(d) 1.0mm tip diameter (Max.)

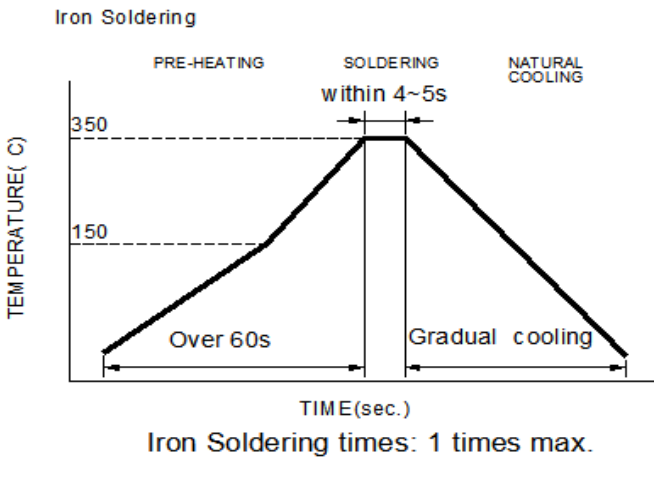
(e) Use a 20 watt soldering iron with tip diameter of 1.0mm

(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

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

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.

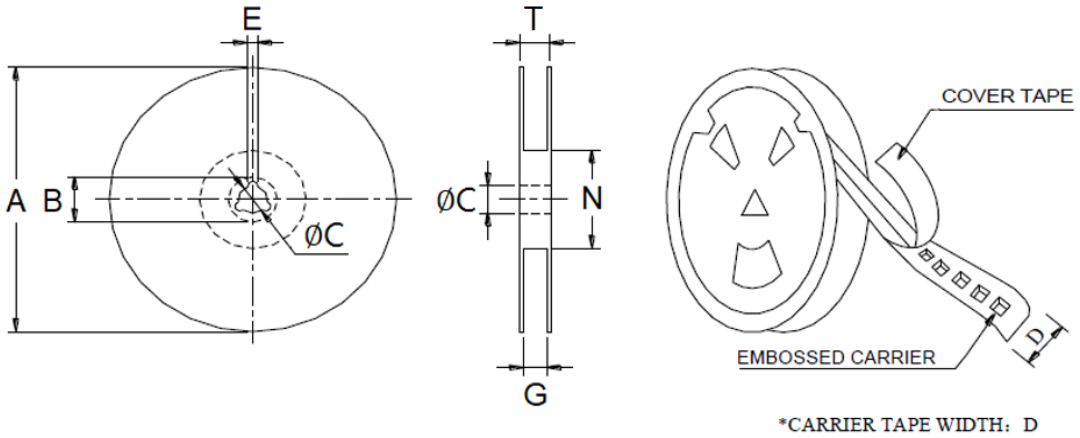
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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.

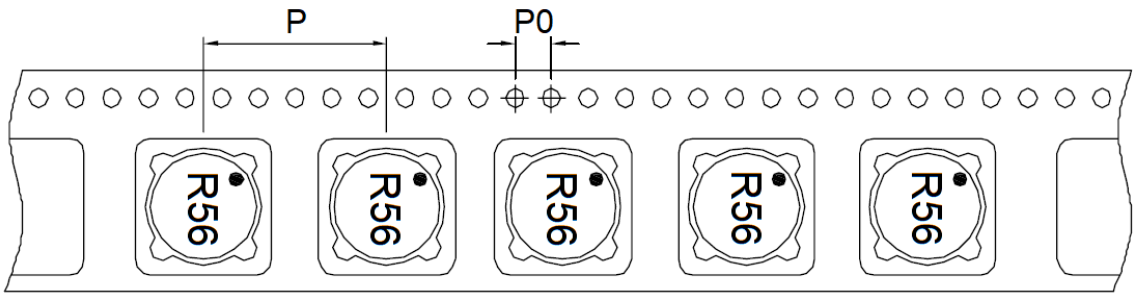
9. Packaging Information

9-1. Reel Dimension (Unit: mm)



Type	A	B	C	D	G	N	T
13”x24mm	330.0 Ref	21.0 Ref	13.0 Ref	24.0 Ref	26.0 Max	50.0 Min	30.4 Ref

9-2. Tape Dimension (Unit: mm)



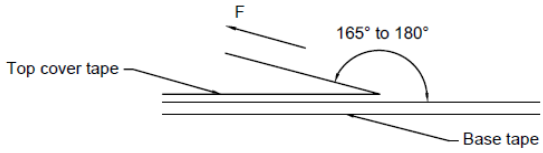
P	P0
16	4

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

9-3. Packaging Quantity (Unit: Pcs)

Inner: Reel			Outer: Carton		
Qty (pcs)	G.W (gw)	Style	Qty (pcs)	G.W (kg)	Size (cm)
600	1,900	13-24	2,400	11.1	38 x 36.5 x21

9-4. 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.