Common Mode Choke – *STB1306 Series*

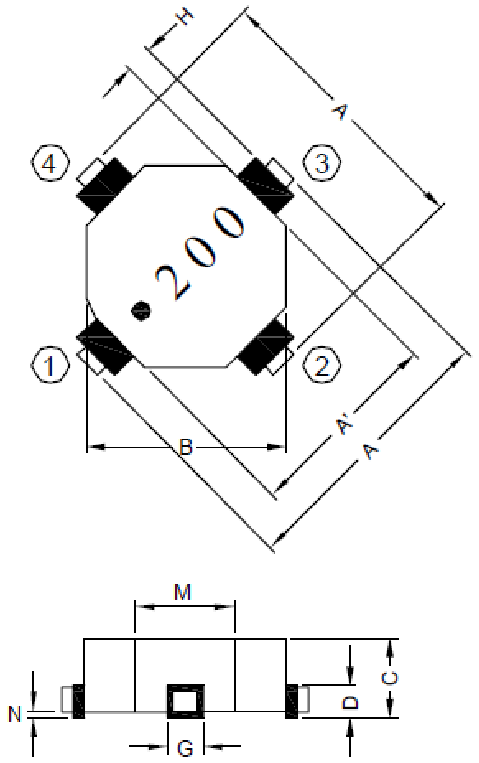
1. Part No. Expression

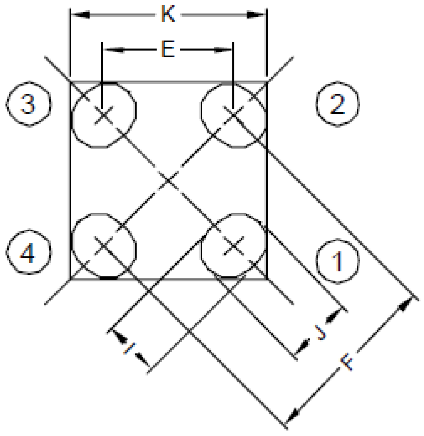
STB 1306 R49 M Z F

(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)





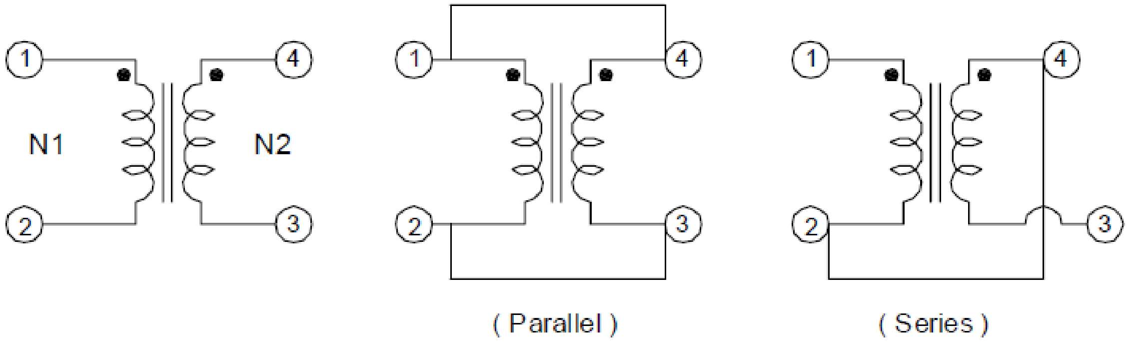
Recommended PCB Layout

Note: 1. The above PCB layout reference only.

2. Marking: Inductance Code (White dot on pin ① side and inductance code)

A	A’	B	C	D	E	F
13.970 Typ	11.430 Typ	11.430 Typ	6.350 Max	3.050 Max	8.840 Typ	12.500 Typ
G	H	I	J	K	M	N
3.550 Max	0.760 Min	3.050 Typ	4.060 Typ	12.500 Typ	4.720 Ref	0.127 Ref

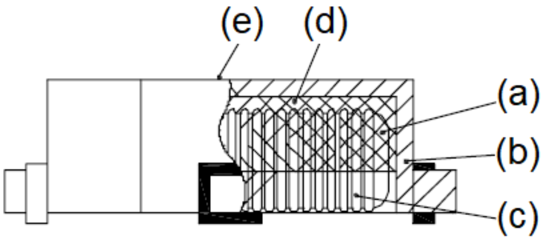
3. Schematic



(Parallel) (Series)

" ● " : Polarity

4. Material List



(a) Core
(b) Base
(c) Wire
(d) Adhesive
(e) Ink

5. General Specifications

- (a) Operating Temp.: -40°C to +85°C (including self-temperature rise)
- (b) Resistance to solder heat: 260° C.10 secs
- (c) Storage Condition (Component in its packaging)
- (d) i) Temperature: -10°C to 40°C
  - ii) Humidity: Less than 60% RH

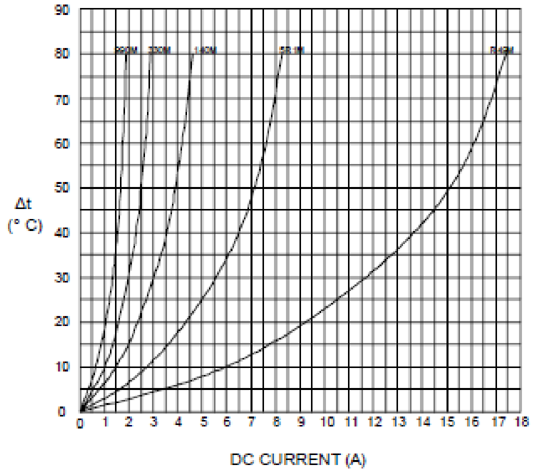
6. Electrical Characteristics

Part Number	Parallel				Series			
	L (uH) @0A ±20%	L_{IDC} (uH) Min	DCR (Ω) Max	IDC (A)	L (uH) @0A ±20%	L_{IDC} (uH) Min	DCR (Ω) Max	IDC (A)
STB1306R49MZF	0.49	0.37	0.0093	7.90	1.95	1.49	0.019	3.95
STB1306R76MZF	0.76	0.56	0.0112	7.20	3.05	2.24	0.023	3.60
STB13061R1MZF	1.10	0.81	0.0166	5.90	4.39	3.24	0.033	2.95
STB13061R9MZF	1.95	1.42	0.0274	4.60	7.81	5.69	0.055	2.30
STB13065R1MZF	5.15	3.56	0.0534	3.30	20.62	14.23	0.107	1.65
STB13067R8MZF	7.81	5.15	0.0653	3.00	31.23	20.61	0.131	1.50
STB13069R8MZF	9.88	6.70	0.0933	2.50	39.53	26.79	0.187	1.25
STB1306140MZF	14.76	9.52	0.1139	2.30	59.05	38.09	0.228	1.15
STB1306200MZF	20.62	13.44	0.1684	1.90	82.47	53.76	0.337	0.95
STB1306250MZF	25.65	17.17	0.2306	1.60	102.60	68.68	0.461	0.80
STB1306330MZF	33.21	22.93	0.3312	1.30	132.86	91.72	0.662	0.65
STB1306480MZF	48.80	32.21	0.4025	1.20	195.20	128.83	0.805	0.60
STB1306670MZF	67.37	43.04	0.4760	1.10	269.50	172.16	0.952	0.55
STB1306990MZF	99.09	69.54	1.1300	0.72	396.38	278.15	2.259	0.36

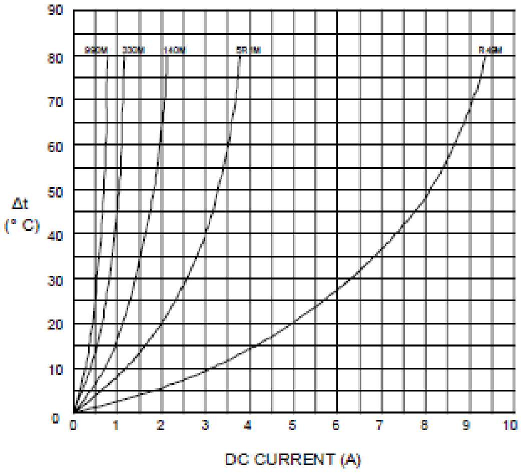
Note:
Test frequency: 0.25V/100KHz
Turns Ratio: 1 : 1
Hi-Pot Test (N1-N2) : 300Vdc 1mA 1SECOND

7. Characteristics Curve

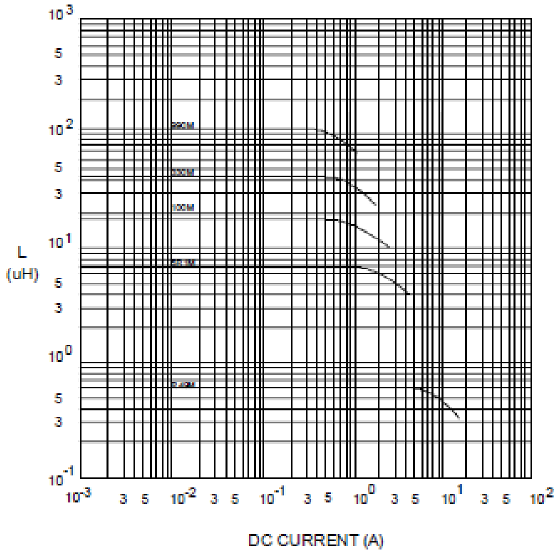
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE (PARA)



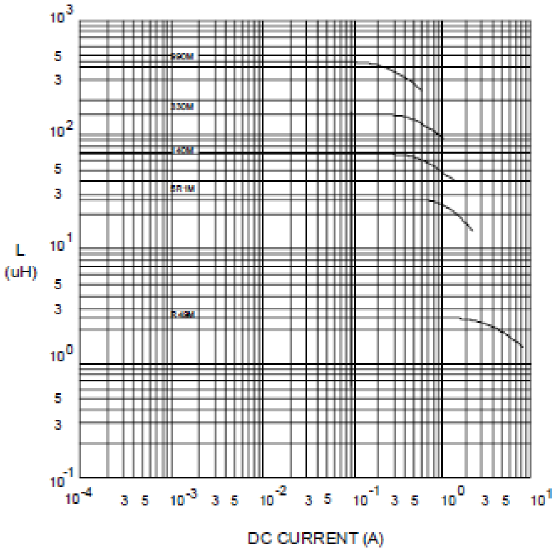
@ TEMP. RISE VS. DC SUPERPOSITION RESPONSE CURVE (SER)



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE (PARA)



@ INDUCTANCE VS. DC SUPERPOSITION RESPONSE CURVE (SER)



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

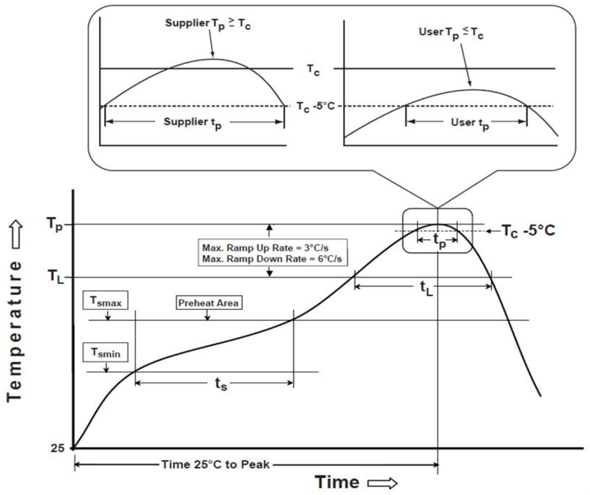
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020F).

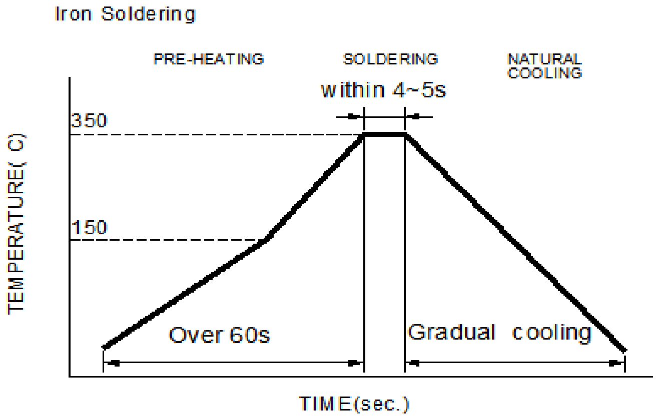
8-2. Iron Reflow

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) 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

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.**

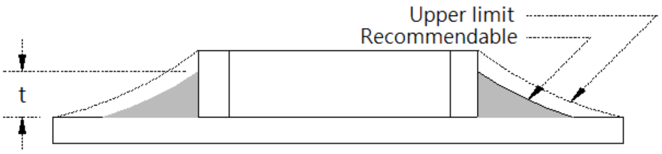
Table (1.2) Package Thickness/Volume and Classification Temperature (T_c)

	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.

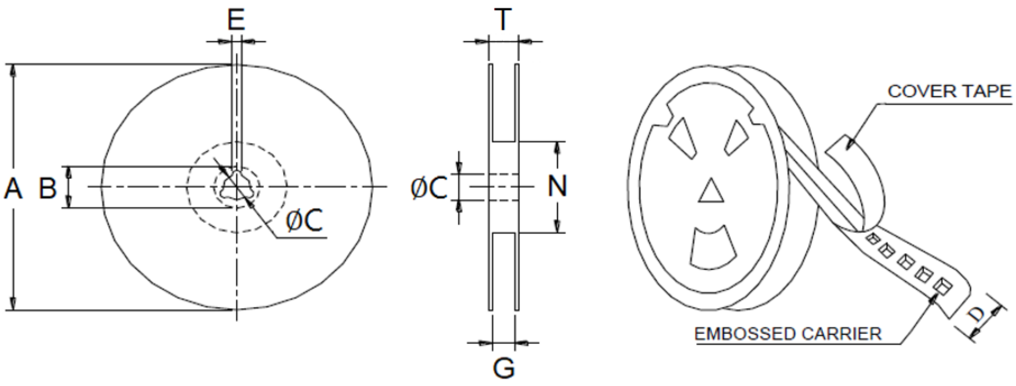
8-3. Soldering Volume

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.



9. Packaging Information

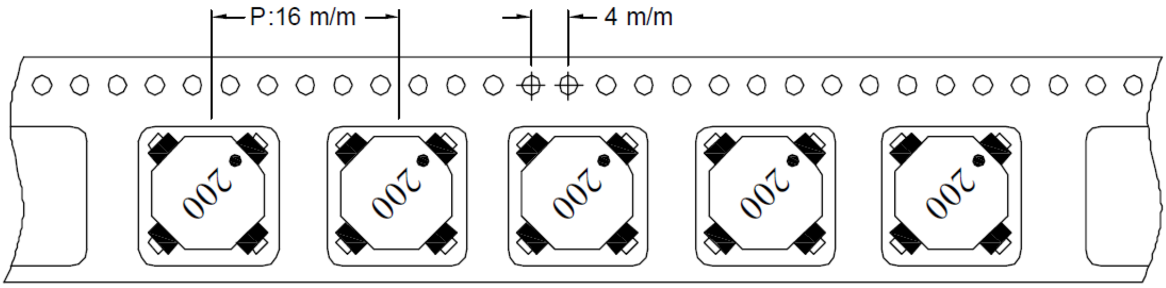
9-1. Reel Dimension (Unit: mm)



*CARRIER TAPE WIDTH: D

Type	A	B	C	D	E	G	N	T
13"x24mm	330.0 Ref	21.0 Ref	13.0 Ref	24.0 Ref	2.0 Ref	26.0 Ref	50.0 Ref	30.4 Ref

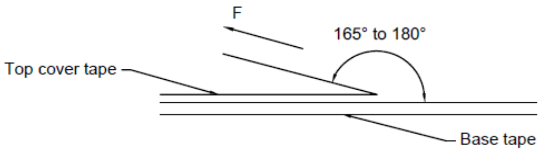
9-2. Tape Dimension (Unit: mm)



9-3. Packaging Quantity (Unit: Pcs)

Inner/Reel			Outer Carton		
QTY(PCS)	G.W.(gw)	STYLE	QTY(PCS)	G.W.(Kg)	STYLE(cm)
600	1900	13-24	2400	11.1	40x40x24

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) 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.