

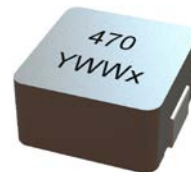


SM5026Q Series



1. Features of SM5026Q series:

- AEC-Q200 Grade 1 Compliant .
- 13.8 x 12.9 mm foot Print, 6.5mm Max. height SMD Power Inductor for high frequency application, Operating frequency up to 5MHz.
- Inductance range from 0.22uH to 33.0uH. Custom values are welcomed.
- High saturation current characteristics by distributed gapped metal dust core.
- Ideal for portable device, Pad, E-reader and high density DC to DC Converter.
- Operating Temperature Range: -55°C to 165°C (ambient + self-temperature rise) .
- T & R Qty: 500 pcs , 13" Reel with Plastic tape 24mm wide and 16mm pocket spacing.
- RoHS and HF compliant.

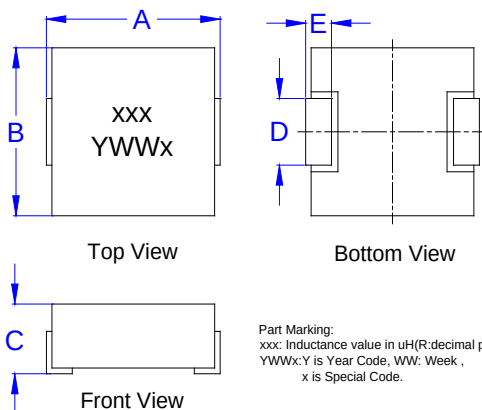


2. Electrical Characteristics of SM5026Q series:

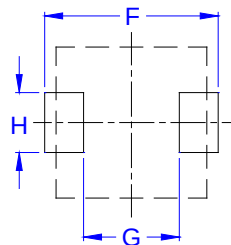
ITG Part Number	OCL (uH) ±20%	DCR (mΩ) Typ. @25°C	DCR (mΩ) Max. @25°C	Saturation Current Isat (A) Typ.	Heat Rating Current Irms (A) Typ.	Dim. D (mm) ± 0.30
SM5026Q-R22MHF	0.22	0.46	0.53	105.00	52.00	3.68
SM5026Q-R33MHF	0.33	0.58	0.67	85.00	47.00	3.68
SM5026Q-R47MHF	0.47	0.73	0.84	65.00	44.00	3.68
SM5026Q-1R0MHF	1.00	1.49	1.71	43.00	28.00	3.68
SM5026Q-1R2MHF	1.20	1.78	2.05	43.00	26.00	3.68
SM5026Q-1R5MHF	1.50	2.00	2.30	35.00	25.00	3.68
SM5026Q-1R8MHF	1.80	2.50	2.90	35.00	23.00	3.68
SM5026Q-2R2MHF	2.20	2.65	3.05	27.00	20.00	3.68
SM5026Q-3R3MHF	3.30	3.55	4.10	24.00	18.00	3.68
SM5026Q-4R7MHF	4.70	6.05	6.95	21.00	15.00	4.80
SM5026Q-5R6MHF	5.60	7.00	8.10	21.00	14.00	4.80
SM5026Q-6R8MHF	6.80	9.00	10.40	19.00	13.00	4.80
SM5026Q-7R8MHF	7.80	10.00	11.50	18.00	12.50	4.80
SM5026Q-8R2MHF	8.20	10.00	11.50	17.00	12.50	4.80
SM5026Q-100MHF	10.00	14.55	16.80	17.00	10.00	4.80
SM5026Q-120MHF	12.00	16.50	19.00	14.00	9.00	4.80
SM5026Q-150MHF	15.00	20.50	23.50	14.00	8.00	4.80
SM5026Q-220MHF	22.00	28.70	33.00	9.00	7.00	4.80
SM5026Q-330MHF	33.00	40.20	46.30	8.00	6.00	4.80

3. Mechanical Dimensions (unit: mm):

A ± 0.35	B ± 0.30	C ± 0.20	D ± 0.30	E ± 0.50
13.45	12.60	6.30	See Table	2.00



Pad Dimension	SM5026Q- R22~3R3MHF	SM5026Q- 4R7~560MHF
F	14.50 Typ.	14.50 Typ.
G	8.00 Typ.	8.00 Typ.
H	4.50 Typ.	5.00 Typ.



Recommend PCB Layout

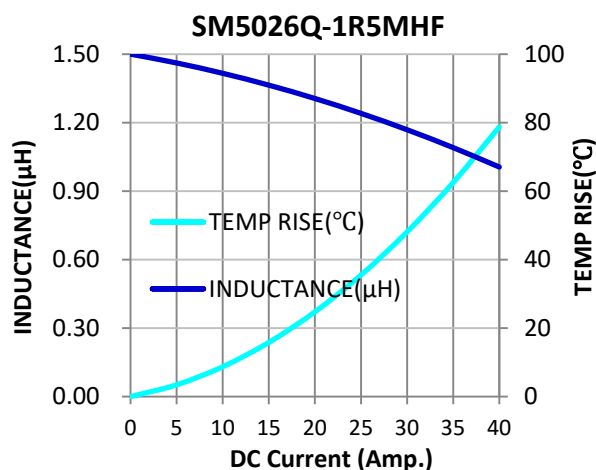
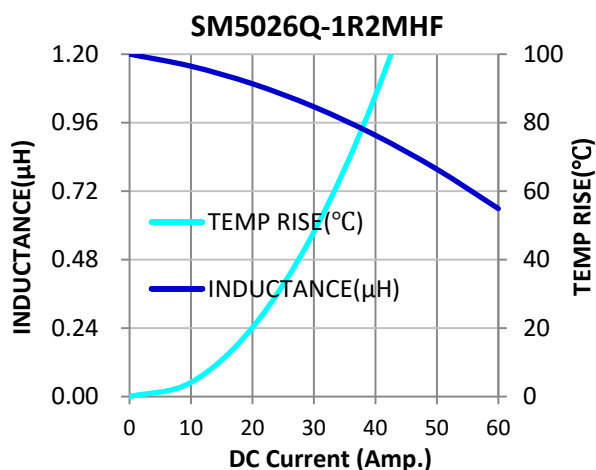
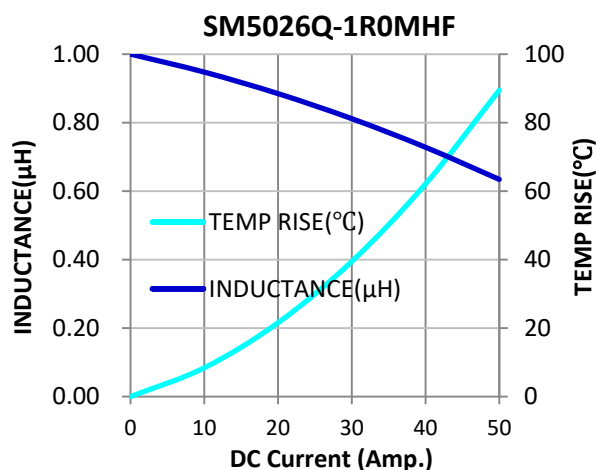
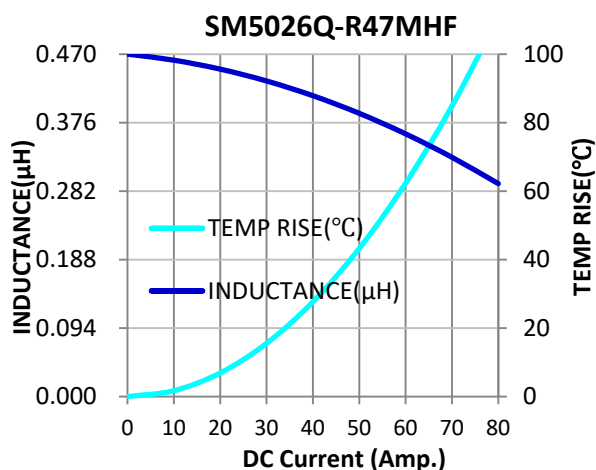
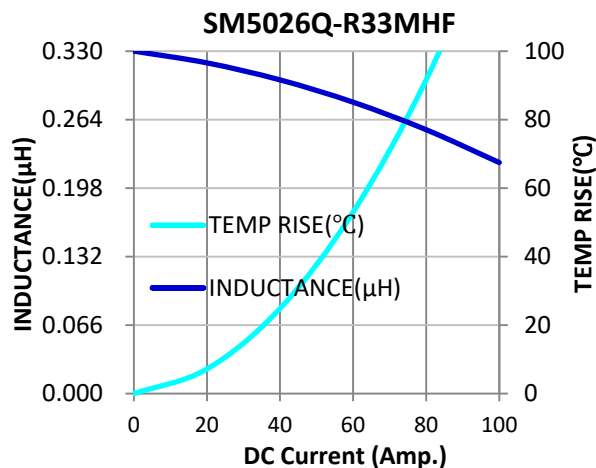
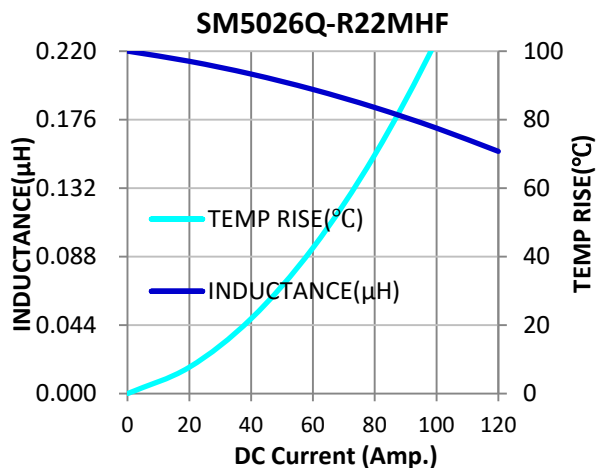
Notes:

1. Test conditions: 100KHz, 1.0V, 25°C ambient temperature .
 2. Isat: DC current that causes inductance to drop 30% (Typ.) from OCL (Ta=25°C).
 3. Irms: DC current for an approximate temperature rise of 40°C without core loss. Derating is necessary for AC currents.
- PCB pad layout, trace thickness and width, air-flow and proximity of other heat generating components will affect the temperature rise. It is recommended the part temperature not exceed 165° C under worst case operating conditions as verified in the end application.

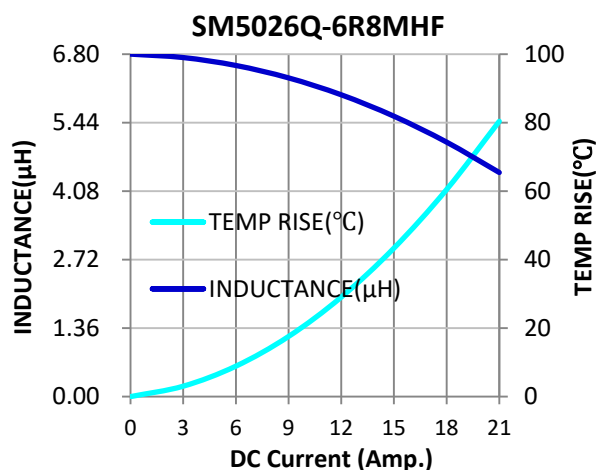
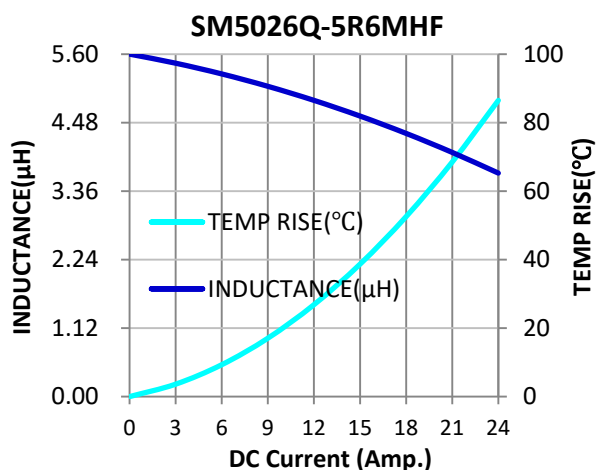
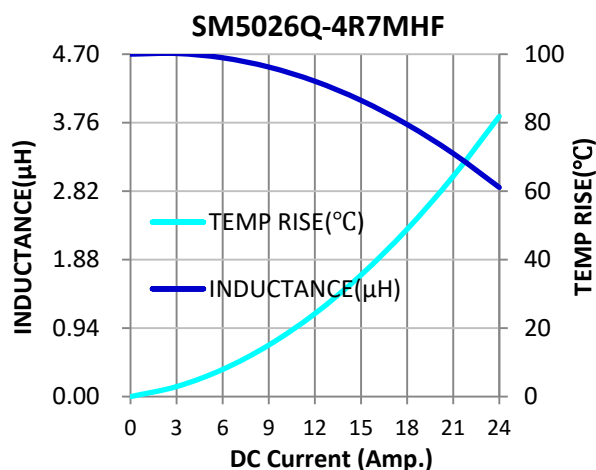
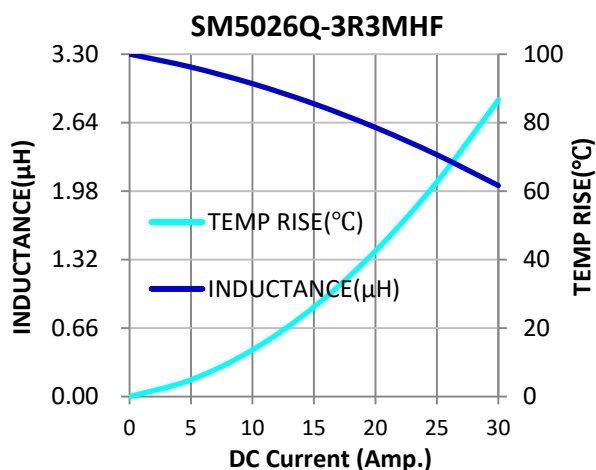
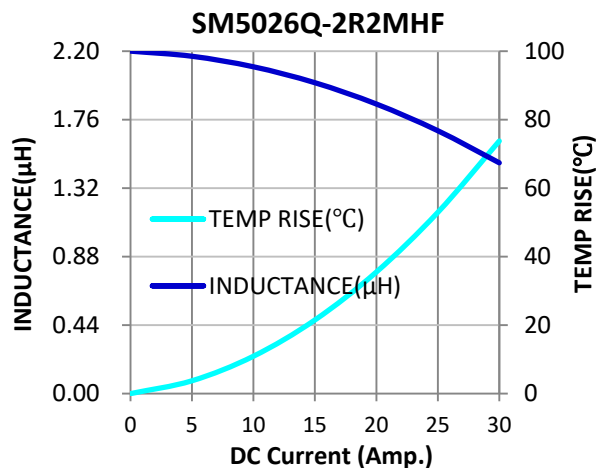
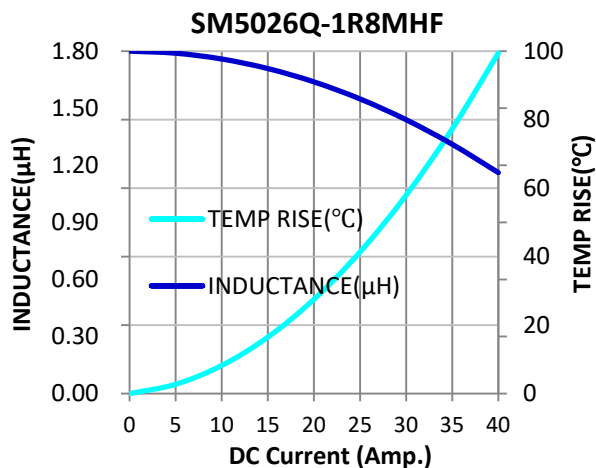
● New York 1 914 347 2474 ● Taipei 886 2 2698 8669 ● Kaohsiung 886 7 350 2275
 ● Japan 81 568 85 2830 ● Shenzhen 86 755 8418 6263 ● Shanghai 86 21 5424 5141 ● Hong Kong 852 9688 9767
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*Due to continuous product improvement, all specifications are subject to change without prior notice. Kindly contact an ITG field application engineer or a sales representative prior to purchase.

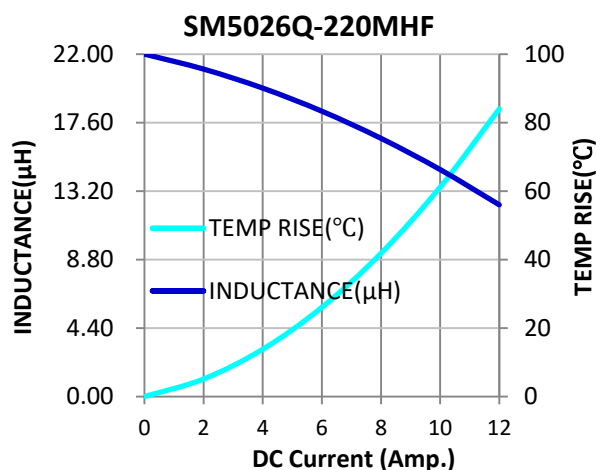
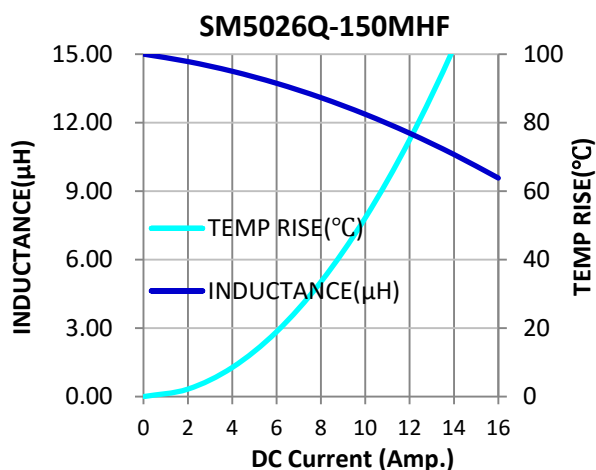
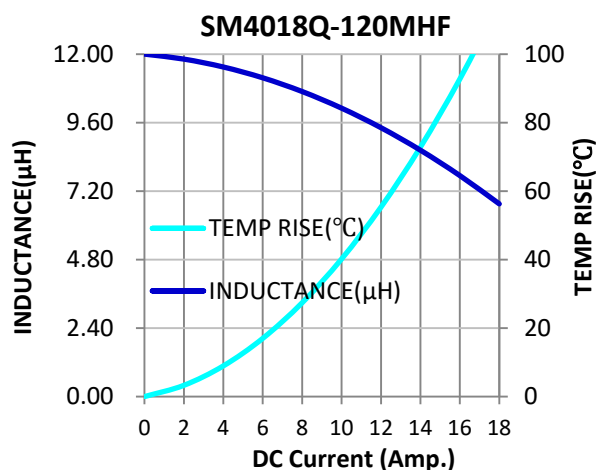
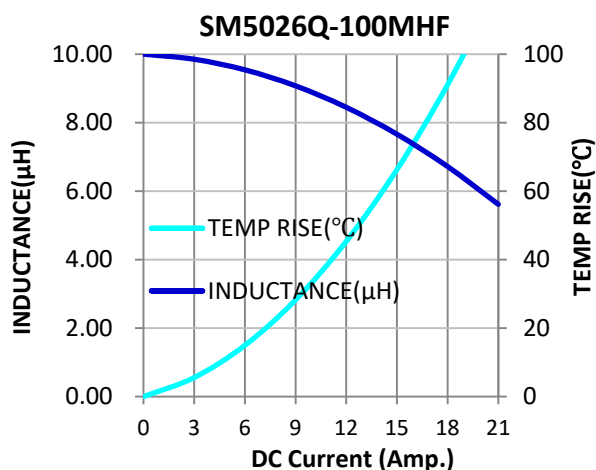
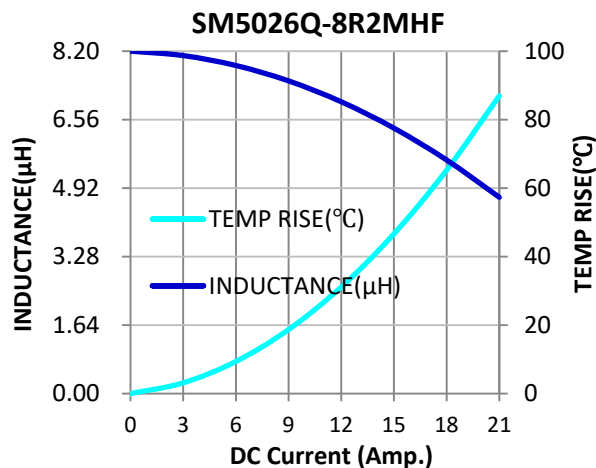
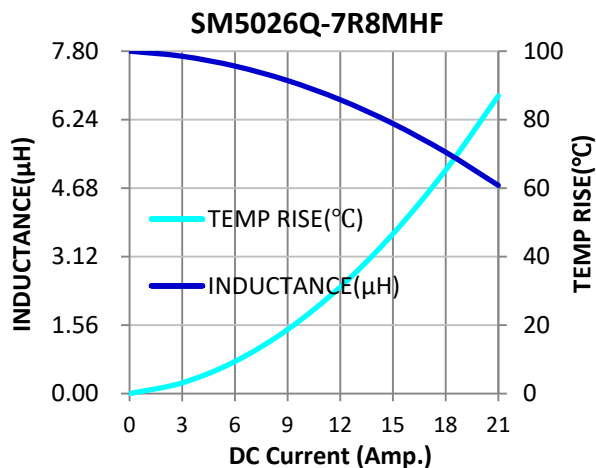
4. Inductance vs. Temperature Rise Characteristics of SM5026Q Series:



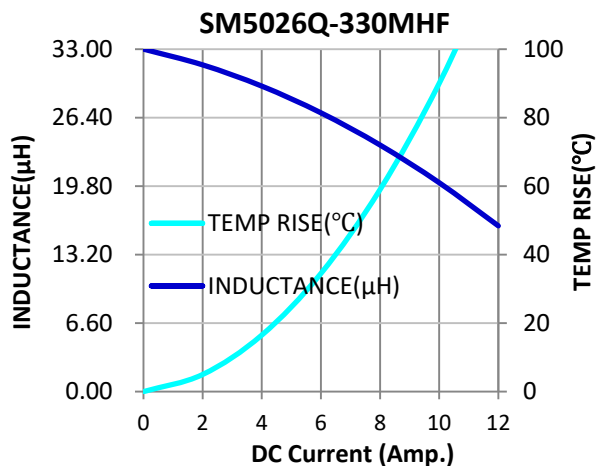
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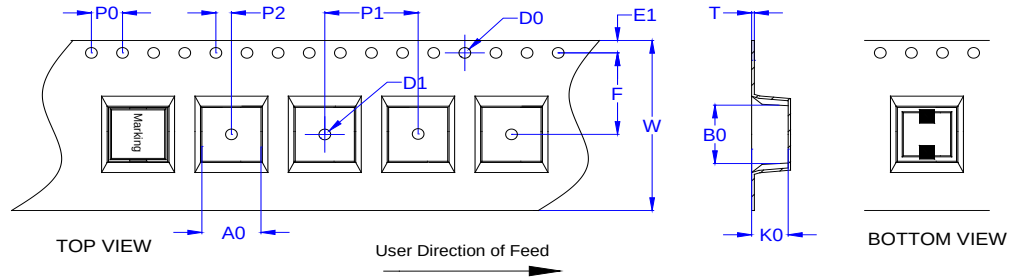


4. Inductance vs. Temperature Rise Characteristics of SM5026Q Series:



5. PACKAGE SPECIFICATION.(UNIT:mm):

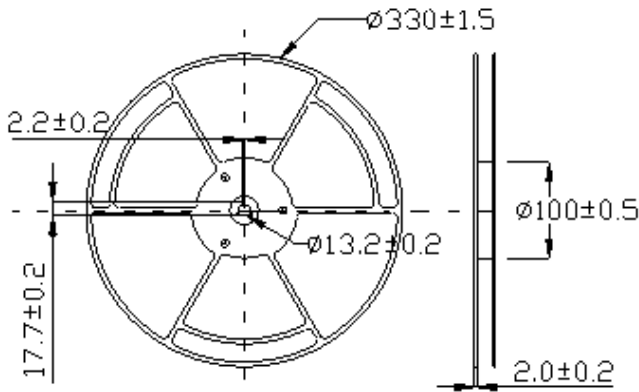
(1).ENCAPSOLATION MODE:



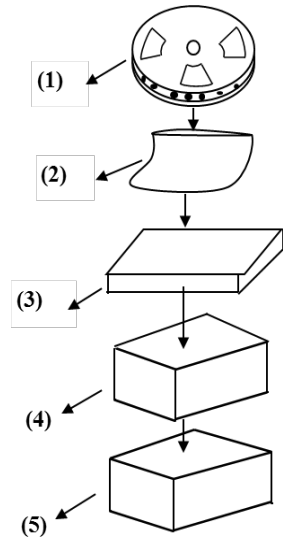
(2).DIMENSION(mm):

W	A0	B0	K0	P1	P0	P2	D0	D1	F	E1	T
24.0±0.30	13.4±0.10	14.4±0.10	6.90±0.10	16.0±0.10	4.0±0.10	2.0±0.10	1.5±0.10	1.5+0.10/-0	11.5±0.10	1.75±0.10	0.50±0.05

(3).REEL SIZE:



(4).PACKAGE MODE:



(5).PACKAGING LIST:

No.	Packing Part	Dimension (mm)	Material	Quantity
1	Reel	330	Plastic	500Pcs / Reel
2	Bag	450 X 360 X 0.075	Plastic	1Reel / Bag
3	Small Box	340 X 335 X 45	Paper	1Bag / Small Box
4	Middle Box	356 X 350 X 226	Paper	4Small Boxes / Middle Box
5	Outer Box	378 X 362 X 252	Paper	1Middle Box / Outer Box

(6).WEIGHT: N.W: 6.28 g/pcs (APPROX), TOTAL 12.56 Kg(APPROX),G.W:TOTAL 16.06Kg (APPROX).

(7).Storage conditions: -40°C~85°C ,75%RH (Max.).

6.RELIABILITY TEST:

6.1 Mechanical Reliability		
Item	Specification and Requirement	Test Method
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	Solder heat proof: 1.Precondition: 8 hours steam aging 2.Retention time: 255 ± 5 °C for 5 ± 0.5 seconds
Vibration	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1.Vibration frequency:(10 Hz to 2000 Hz) 2.Vibration time:Each four hours (12 times) in X, Y, Z direction: 12 hours in total 3.Amplitude: 1mm or 10 G
Shock	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	1.Peak value: 100 G 2.Duration of pulse: 6ms 3.Waveform: Half-sine Shocks; 3 times in X, Y, Z direction, 9 times in total
6.2 Endurance Reliability		
Thermal Shock	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1.Repeat 1000 cycles as follow: (-55 ± 2 °C; 30 ± 3 min) → (+165 ± 2 °C, 30 ± 3 min) change over time of temperature: ≤ 10 s 2.Recovery: 24 + 4 / -0 hours of recovery under the standard condition after the test.
High Temperature & Humidity	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	85°C85%RH , Duration:240+4/-0 hours
Operational Life	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	1.Rated current (Idc) Environment condition: 85 °C 2.Duration: 1000 + 4 / -0 hours
Low Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: -55 ± 2 °C,1000 + 4 / -0 hours
High Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	Store temperature: +165 ± 2 °C,1000 + 4 / -0 hours

Soldering Reflow Chart

Solder Reflow Profile:

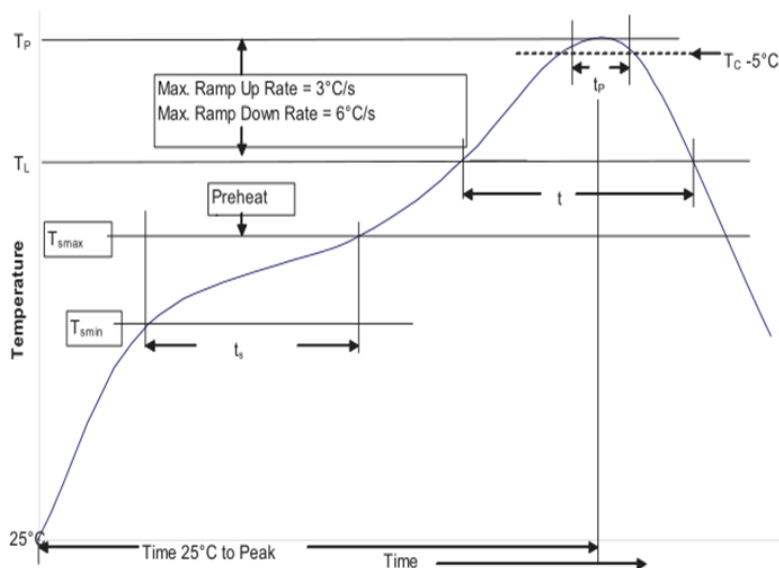


Table 1 - Standard SnPb Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 ≥ 350
<2.5mm	235°C	220°C
$\geq 2.5\text{mm}$	220°C	220°C

Table 2 - Lead (Pb) Free Solder (T_C)

Package Thickness	Volume mm^3 <350	Volume mm^3 350 - 2000	Volume mm^3 >2000
<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

Reference JEDEC J-STD-020E:

Profile Feature	Standard SnPb Solder	Lead (Pb) Free Solder
Preheat and Soak		
• Temperature min. (T_{smin})	100°C	150°C
• Temperature max. (T_{smax})	150°C	200°C
• Time (T_{smin} to T_{smax}) (t_s)	60-120 Seconds	60-120 Seconds
Average ramp up rate T_{smax} to T_P	3°C/ Second Max.	3°C/ Second Max.
Liquidous temperature (T_L)	183°C	217°C
Time at liquidous (t_L)	60-150 Seconds	60-150 Seconds
Peak package body temperature (T_P)*	Table 1	Table 2
Time (t_p)** within 5 °C of the specified classification temperature (T_C)	20 Seconds**	30 Seconds**
Average ramp-down rate (T_P to T_{smax})	6°C/ Second Max.	6°C/ Second Max.
Time 25°C to Peak Temperature	6 Minutes Max.	8 Minutes Max.

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

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