

SMF1611B Series



1. Features of SMF1611B series:

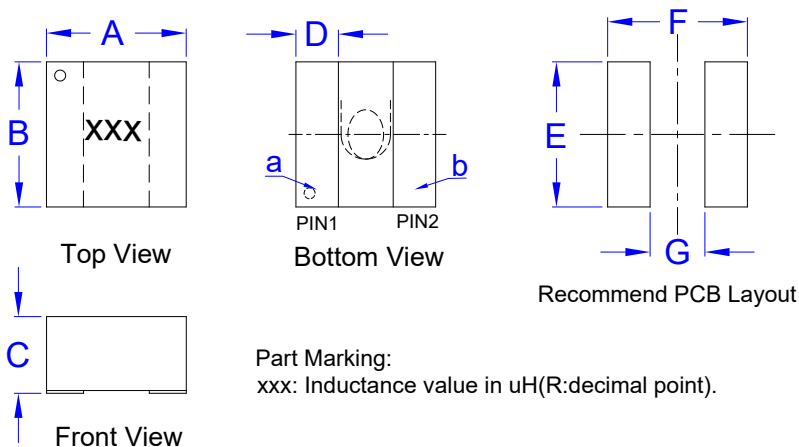
- 4.30 x 4.30 mm foot Print, 3.00mm Max. height SMD Molded Inductor for high frequency application, Operating frequency up to 5MHz.
- Inductance range from 0.10uH to 6.80uH. Custom values are welcomed.
- High saturation current characteristics by distributed gapped metal dust core.
- Ideal for portable device, Pad, E-reader and high density DC to DC Converter.
- Operating Temperature Range: -55°C to 125°C (ambient + self-temperature rise) .
- T & R Qtys: 2000 pcs , 13" Reel and Plastic tape: 12mm wide, 8mm pocket spacing.



2. Electrical Characteristics of SMF1611B series:

ITG Part Number	Inductance(OCL) ¹ (uH) ± 20%	DCR(a~b) ² (mΩ) Typ. @25°C	DCR(a~b) ² (mΩ) Max. @25°C	Saturation Current Isat ³ (A) Typ. @25°C	Heat Rating Current Irms ⁴ (A) Typ. @25°C
SMF1611B-R10MHF	0.10	1.20	1.45	45.00	35.00
SMF1611B-R12MHF	0.12	1.20	1.45	40.00	35.00
SMF1611B-R22MHF	0.22	2.00	2.40	29.00	27.20
SMF1611B-R33MHF	0.33	2.50	3.00	25.00	23.50
SMF1611B-R47MHF	0.47	3.15	3.80	21.00	21.00
SMF1611B-R68MHF	0.68	4.40	5.20	19.00	17.80
SMF1611B-1R0MHF	1.00	6.00	7.20	11.60	15.00
SMF1611B-1R5MHF	1.50	8.75	10.50	8.80	12.00
SMF1611B-2R2MHF	2.20	14.00	17.00	7.00	9.50
SMF1611B-3R3MHF	3.30	18.00	21.80	7.50	8.80
SMF1611B-4R7MHF	4.70	31.00	38.00	5.80	6.60
SMF1611B-6R8MHF	6.80	47.00	56.50	5.00	5.20

3. Mechanical Dimensions of SMF1611B series (unit: mm):



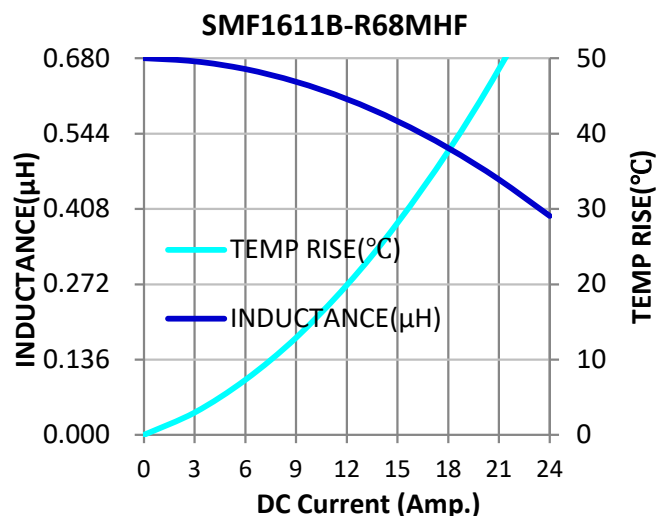
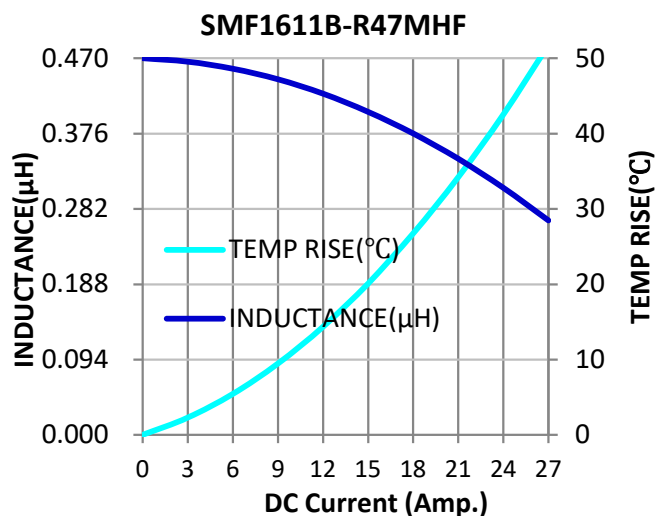
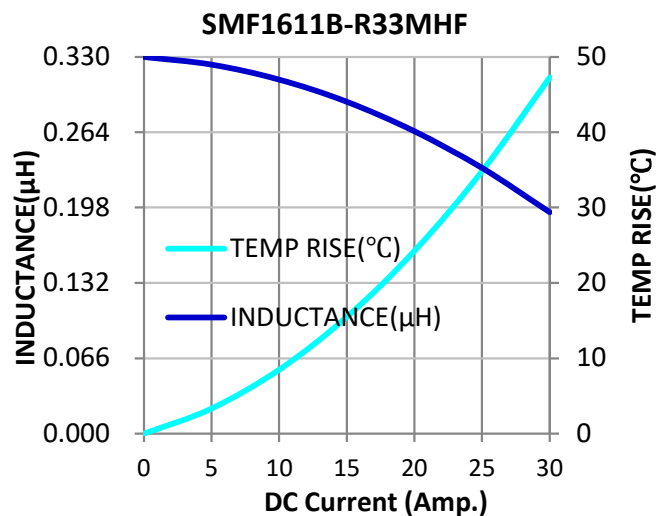
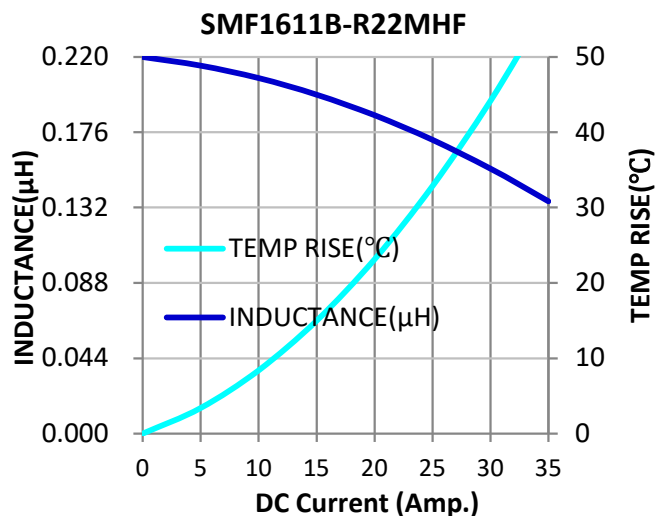
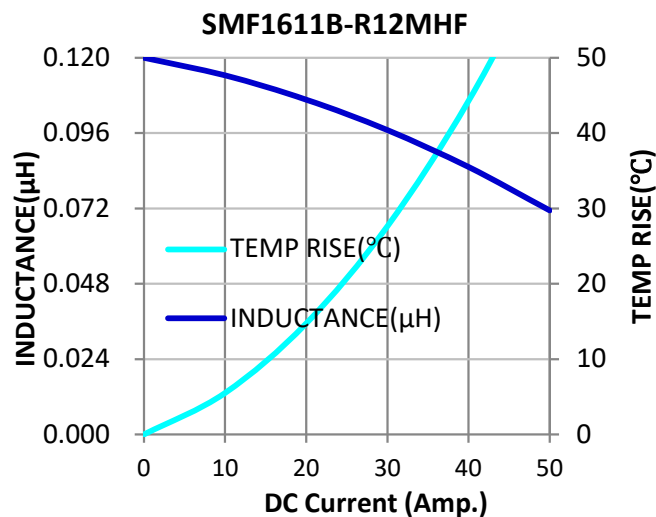
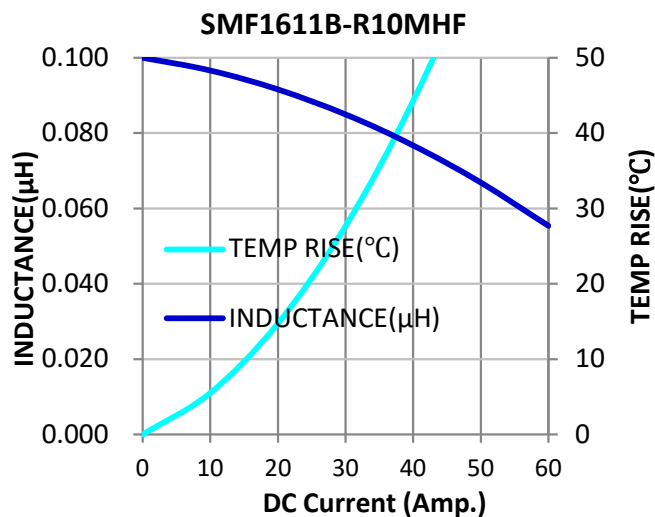
Pad Dimension	SMF1611B
E	4.50 Typ.
F	4.50 Typ.
G	1.50 Typ.

Type	A	B	C	D
SMF1611B	4.10 ± 0.20	4.10 ± 0.20	3.00 Max.	1.20 ± 0.20

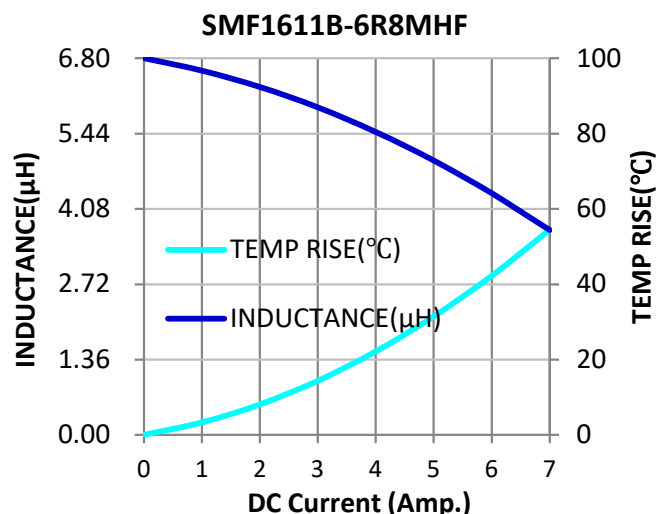
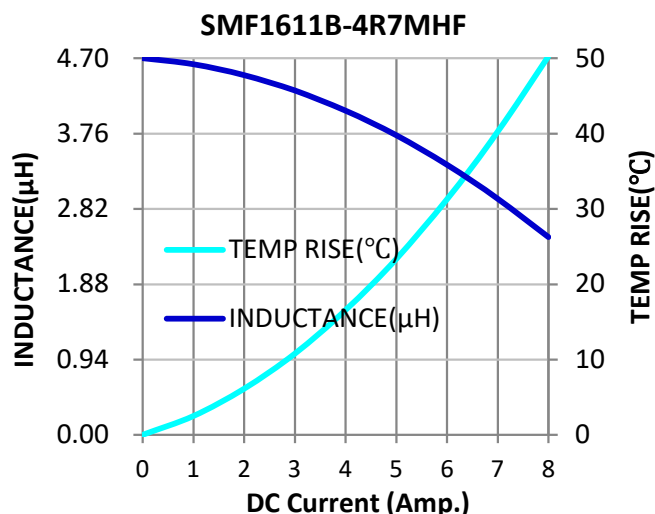
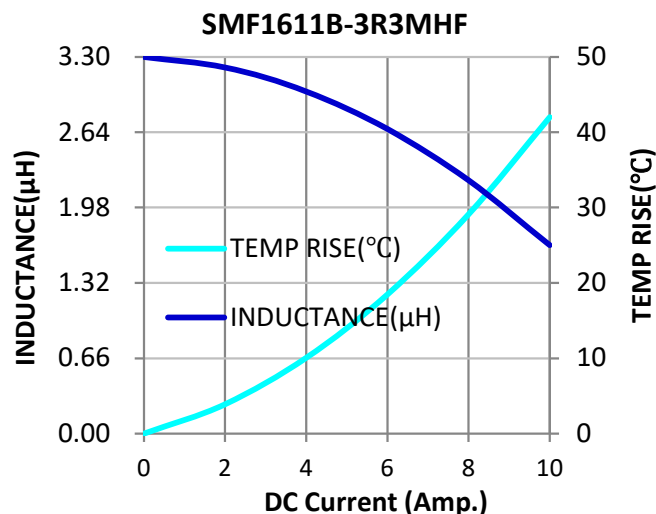
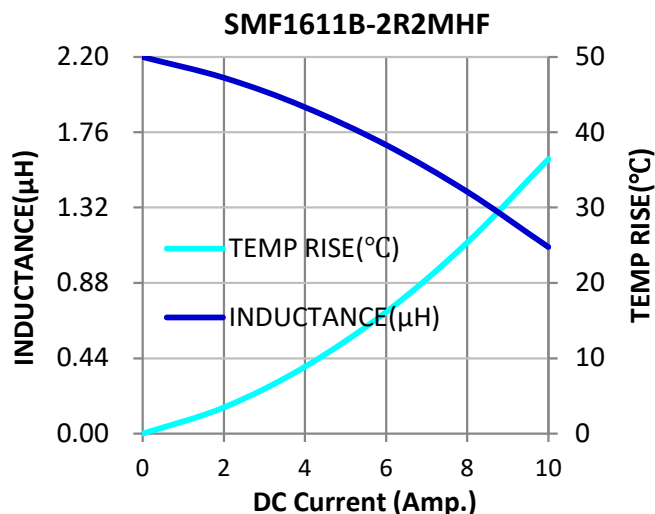
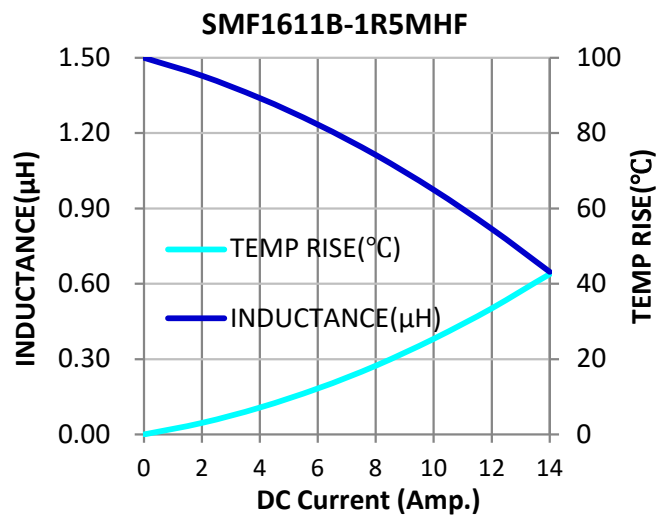
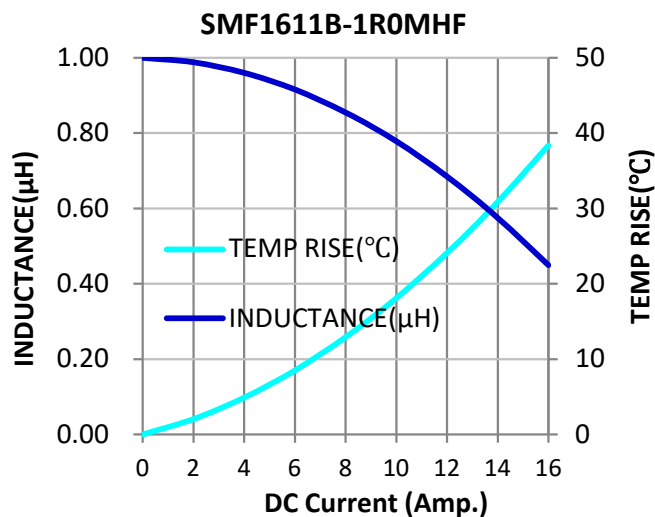
Notes:

1. Test conditions: 1MHz, 1.0V, 25°C ambient temperature .
2. The nominal DCR is measured from point "a" to point "b" as shown above in the mechanical drawing (Ta=25°C).
3. Isat: DC current that causes inductance to drop 30% (Typ.) from OCL (Ta=25°C).
4. 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 125°C under worst case operating conditions as verified in the end application.

4. Inductance vs. Current vs. Temperature Rise Characteristics of SMF1611B Series:

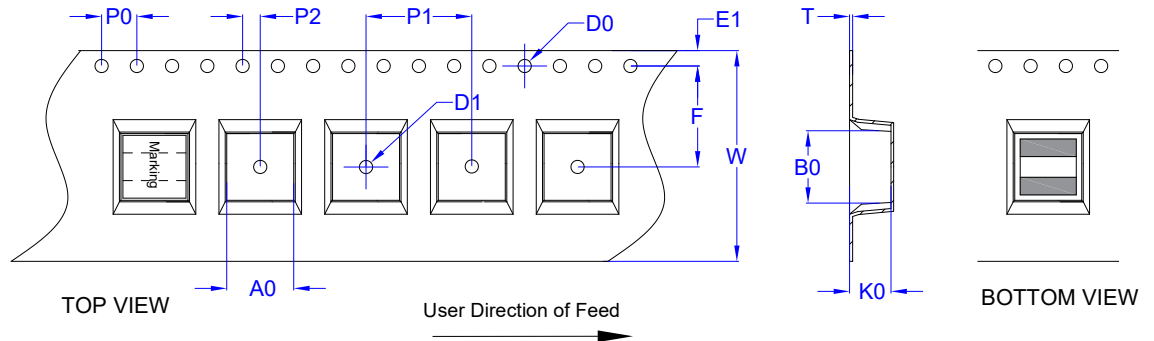


4. Inductance vs. Current vs. Temperature Rise Characteristics of SMF1611B Series:



5. PACKAGE SPECIFICATION.(UNIT:mm):

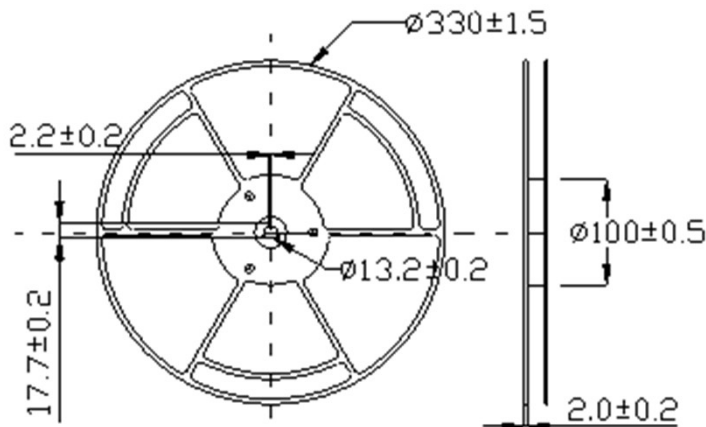
(1).ENCAPSOLATION MODE:



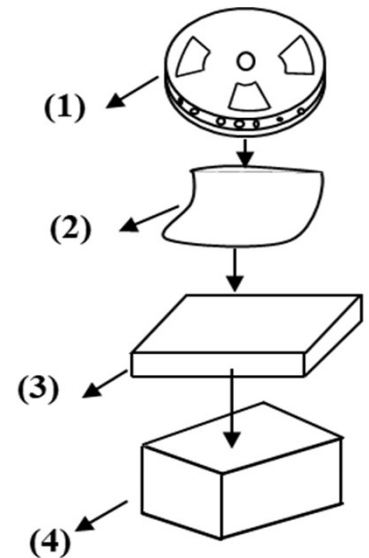
(2).DIMENSION(mm):

W	A0	B0	K0	P1	P0	P2	D0	D1	F	E1	T
12.0±0.30	4.5±0.10	4.5±0.10	3.30±0.15	8.0±0.10	4.0±0.10	2.0±0.10	1.5+0.10/-0	1.5±0.10	5.5±0.10	1.75±0.10	0.35±0.10

(3).REEL SIZE:



(4).PACKAGE MODE:



(5).PACKAGING LIST:

No.	Packing Part	Dimension (mm)	Material	Quantity
1	Reel	330	Plastic	2000PCS / Reel
2	Bag	450 X 360 X 0.075	Plastic	1Reel / Bag
3	Pizza Box	340 X 335 X 45	Paper	2Bag / Pizza Box
4	Outer Box	356 X 350 X 226	Paper	4Pizza Box / Outer Box

(6).WEIGHT: N.W: 0.31 g/pc (APPROX), TOTAL 4.96 Kg(APPROX), G.W:TOTAL 9.96Kg (APPROX).

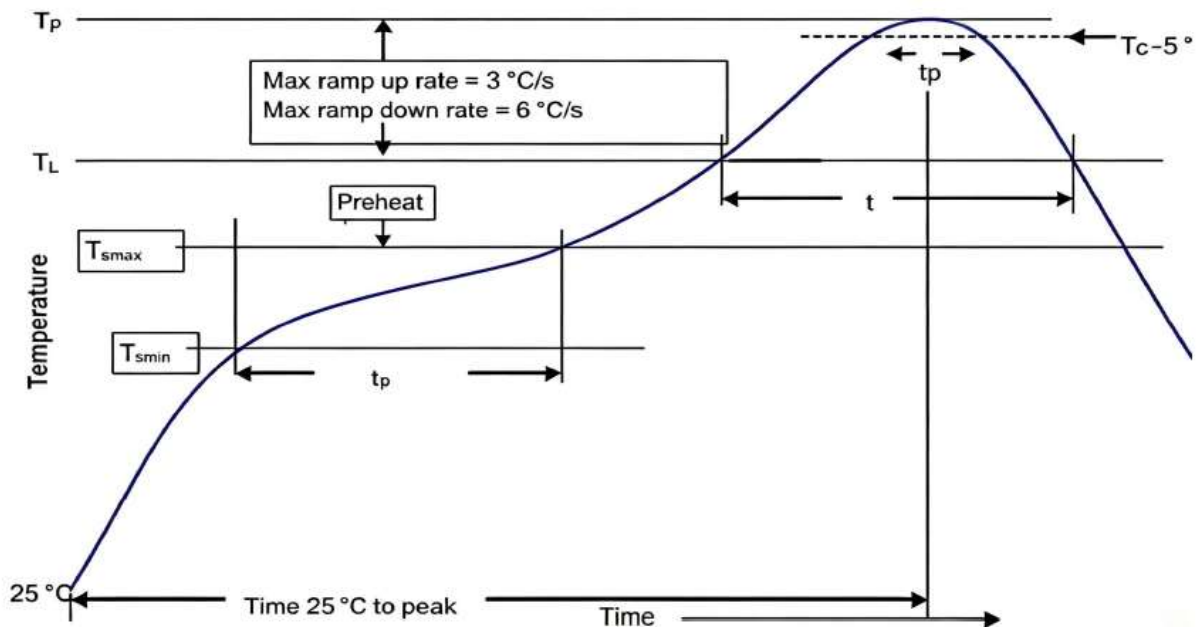
(7).Storage conditions: 20°C~35°C ,75%RH (Max.).

6.RELIABILITY TEST:

6.1 Mechanical Reliability		
Item	Specification and Requirement	Test Method and Remarks
Solderability	The surface of terminal immersed shall be minimum of 95% covered with a new coating of solder	According to J-STD-002 Method D category 3 1. Preheating: 160 ± 10 °C 2.Solder: 99.3%Sn/0.7%Cu , Flux: Rosin 3. Retention time: 255 ± 5 °C for 5 ± 0.5 seconds
Resistance to Soldering Heat	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	According to MIL-STD-202 Method 210 condition J 1.Solder: 99.3%Sn/0.7%Cu 2.Reflow Peak 235 ± 5 °C (30 ± 5 s)/Time above 183 °C ($90 \sim 120$ s)
Vibration	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	According to MIL-STD-202 Method 204 5g's for 20 minutes, 12 cycles each of 3 orientations. Note: Use 8"X5" PCB, .031" thick, 7 secure points on one long side and 2 secure points at corners of opposite sides. Parts mounted within 2" from any secure point. Test from 10-2000 Hz.
Shock	Inductance change: Within $\pm 10\%$ Without mechanical damage such as break	According to MIL-STD-202 Method 213 1. Peak value: 100 G 2. Duration of pulse: 11ms 3. 3 times in each positive and negative direction of 3 mutual perpendicular directions.
6.2 Endurance Reliability		
Thermal Shock	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	According to IEC68-2-14 Method N(Nb) 1. Repeat 100 cycles as follow: (-55 ± 2 °C; 30 ± 3 min) → (Room temp., 5 min) → ($+125 \pm 2$ °C, 30 ± 3 min) → (Room temp., 1 min) 2. Recovery: $48 + 4 / -0$ hours of recovery under the standard condition after the test.
High Temperature & Humidity	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	According to MIL-STD-202 Method 103 240 hours 85 °C/ 85% RH. Unpowered. Measurement at 24 ± 4 hours after test conclusion.
Low Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	According to IEC68-2-1 Method A(Ad) Store temperature: -55 ± 2 °C, $1000 + 4 / -0$ hours
High Temperature Store	Inductance change: Within $\pm 10\%$ Without distinct damage in appearance	According to MIL-STD-202 Method 108 Store temperature: $+125 \pm 2$ °C, $1000 + 4 / -0$ hours

Soldering Reflow Chart

Recommended Reflow Soldering Temperature Profile



Note: Please refer to the latest IPC/JEDEC J-STD-020: Moisture/Reflow Sensitivity Classification for Nonhermetic Solid State Surface Mount Devices

Reference: J-STD-020 Profile Features

preheat and soak	Temperature min.(T _{smin})	150°C
	Temperature max.(T _{smax})	200°C
	Time(T _{smin} to T _{smax})(ts)	60-120seconds
Ramp up rate TL to Tp		3°C/second max
Liquidous temperature (TL)		217°C
Time(t) maintained above TL		60-150 seconds
Time(tp)*within 5°C of the specified classification temperature(Tc)		10 second
Ramp-down rate (Tp to TL)		6°C/second max
Time 25°C to peak temperature		8 minutes max
Peak package body temperature (Tp)		Not exceed theClassification temp (Tc)

Classification Temperature (Tc) for Lead (Pb)-free Reflow

Package thickness	Volume mm ³ <350	Volume mm ³ 350-2000	Volume mm ³ >2000
< 1.6 mm	260°C	260°C	260°C
1.6 mm - 2.5 mm	260°C	250°C	245°C
> 2.5 mm	250°C	245°C	245°C

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