MORE® CHANCE | 茂昌电子

CUSTOMER :	STD
PRODUCTS :	SHIELDED SMD Power Inductor
PART NO :	MCSHU Series
CUST P/ NO :	
DATE :	2025.04.16
SALES DEP :	
E-MAIL :	

VERSION :	REV.A
CHANGE PROJECT :	-
BEFORE :	-
AFTER :	-
CHANGE DATE :	-
CUSTOMER SIGNATURE :	-

APPROVAL BY :	*CHECK BY :*	*DRAWN BY :*
Honey Wei	***Leo Wang***	***May Gao***

CHANGE HISTORY

Ver	Revision Items	Before Revision	After Revision	Date
Rev.A	-	-	-	2025.04.16

MCSHU Series

- *SHIELDED SMD POWER INDUCTOR*
- *Operating Temperature up tp -40 ℃ ~ 125 ℃*
- *High Current up to 50 A*
- *Low DCR down to 0.16mOhms*
- *Environmental Lead free*
- *Environmental RoHS2.0 compliant*
- *Environmental halogen free*
- *Storage Temperature ：-40 ℃ ~ +85 ℃*
- *Packaging 13"Reel ,Plastic tape:16.0 ~ 24.0mm wide*

FEATURES

- Ferrite based with lower core loss
- Frerrite High Bs material.
- Accurate&low DCR design
- The pad surface design is directly completed by the U Typ Clip.
- Low thickness by1.5 turn loop design.

Applications

- Multi-phase and Vcore regulators.
- Server and desktop VRMs and EVRDs.
- Data networking and storage systems.
- Graphics cards and battery power systems.
- Buck Converter,VRMs.

PRODUCT IDENTIFICATION

MC	SHU	04445	Z	R10	L	R16
①	②	③	④	⑤	⑥	⑦

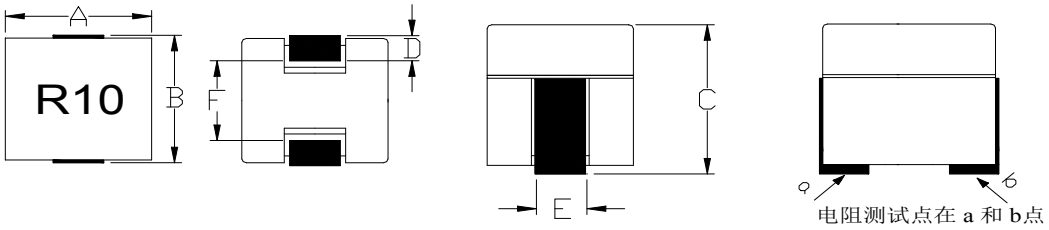
① Brand & Product classification
② Product Series NO.(SHU：SMD Power Inductors.)
③ External Dimensions.(04445：L:4.0 × W:4.0 × H:4.5) [mm]
④ Separator code.
⑤ Nominal Inductance

Example	Nominal Value
R22	0.22uH
1R0	1.0uH
100	10uH
101	100uH
70NH	70nH

⑥ Inductance Tolerance.(L：±15% ; M：±20% ; N：±30%)
⑦ Nominal DC Resistance.(R16：0.16mΩ)

Mechanical & Dimensions

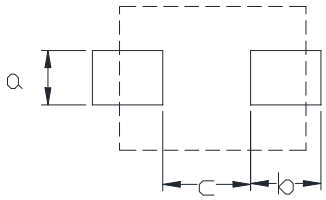
(Unit: mm)



Code	Dimensions
A	4.0 Max
B	4.0 Max
C	4.5 Max
D	0.7±0.2
E	1.3±0.3
F	2.6±0.5

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	1.6 Ref
b	1.0 Ref
c	2.3 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-rms[4] (Amps)Typs	
MCSHU04445Z55NHMR16	55±20%	0.16±15%	31.0	25.0	29.0	
MCSHU04445Z65NHMR16	65±20%	0.16±15%	25.0	20.0	29.0	
MCSHU04445ZR10MR16	100±20%	0.16±15%	16.0	13.0	29.0	

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃

2.The nominal DCR is measured at 20℃ ambient temperature.

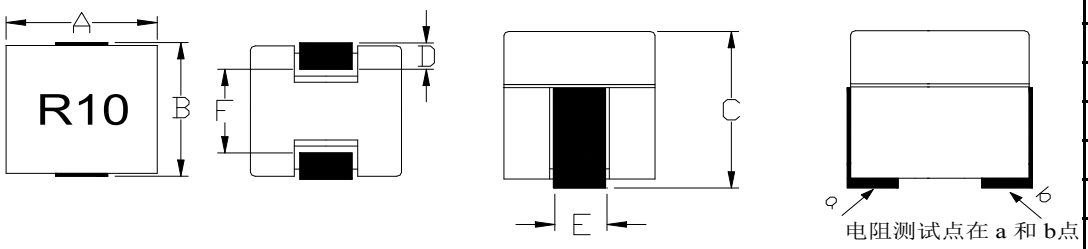
3.1The I-sat that will cause initial inductance value approximately 20% rolloff at 25℃

3.2The I-sat that will cause initial inductance value approximately 20% rolloff at 100℃

4.The I-rms that will cause temperature rise approximate 40°C without core loss.

Mechanical & Dimensions

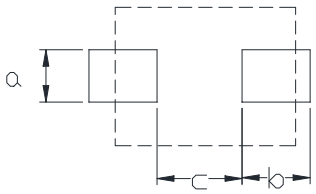
(Unit: mm)



Code	Dimensions
A	5.2 Max
B	5.2 Max
C	6.5 Max
D	0.7±0.2
E	2.0±0.3
F	3.6±0.5

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	2.3 Ref
b	1.0 Ref
c	3.5 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-rms[4] (Amps)Typs	
MCSHU05565Z80NHMR22	80±15%	0.22±10%	50.0	40.0	34.0	
MCSHU05565ZR10MR25	100±20%	0.25±20%	40.0	30.0	50.0	
MCSHU05565ZR11MR25	110±20%	0.25±20%	40.0	30.0	50.0	

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃

2.The nominal DCR is measured at 20℃ ambient temperature.

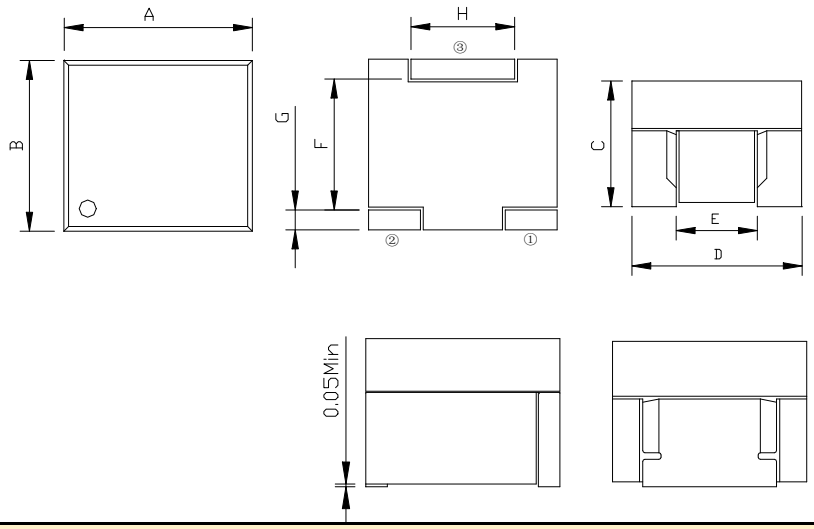
3.1The I-sat that will cause initial inductance value approximately 20% rolloff at 25℃

3.2The I-sat that will cause initial inductance value approximately 20% rolloff at 100℃

4.The I-rms that will cause temperature rise approximate 40°C without core loss.

Mechanical & Dimensions

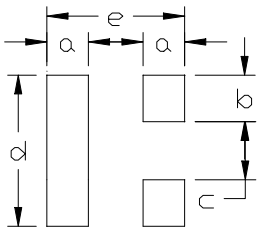
(Unit: mm)



Code	Dimensions
A	6.2±0.2
B	6.2±0.2
C	5.15±0.2
D	6.1±0.3
E	2.6±0.3
F	5.2±0.3
G	0.45±0.2
H	3.5±0.2

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	0.8 Ref
b	2.05 Ref
c	2.3 Ref
d	6.4 Ref
e	6.7 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-rms[4] (Amps)Typs	
MCSHU65ZR20LR40Z2T	200±15%	0.40±0.05	25.0	23, ≧140nH	23.0	

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃,test point is Pin1-2.

2.The nominal DCR is measured at 20℃ ambient temperature ,test point is Pin1-2.

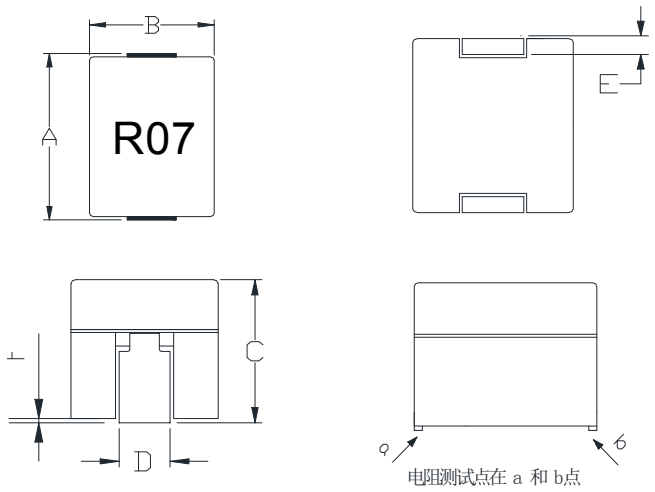
3.1The I-sat that will cause initial inductance value approximately 20% rolloff at 25℃ ,test point is Pin1-2.

3.2The I-sat that will cause rolloff nominal inductance value at 100℃ ,test point is Pin1-2.

4.The I-rms that will cause temperature rise approximate 40°C without core loss ,test point is Pin1-2.

Mechanical & Dimensions

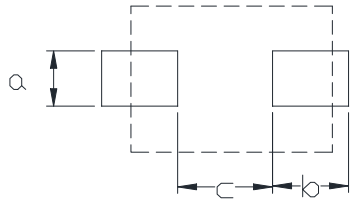
(Unit: mm)



Code	Dimensions
A	9.7 Max
B	6.6 Max
C	10.0 Max
D	2.15 Ref
E	1.5 Ref
F	0.3 Ref

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	3.0 Ref
b	3.0 Ref
c	5.9 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-rms[4] (Amps)Typs	
MCSHU09610Z70NHLR145	70±15%	0.145±10%	124.0	115.0	78.0	
MCSHU09610ZR10LR145	100±15%	0.145±10%	95.0	82.0	78.0	
MCSHU09610ZR12LR145	120±15%	0.145±10%	78.0	67.0	78.0	

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃

2.The nominal DCR is measured at 20℃ ambient temperature.

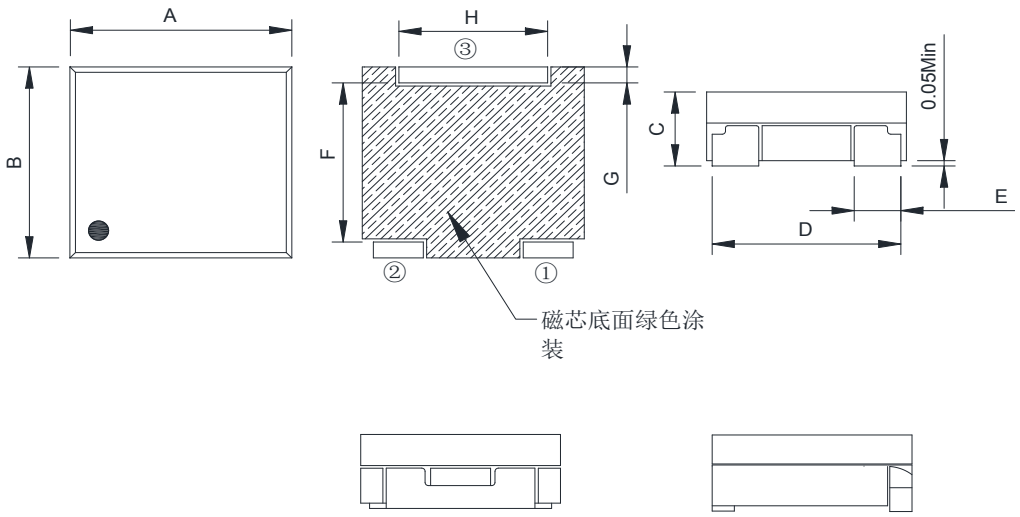
3.1The I-sat that will cause initial inductance value approximately 20% rolloff at 25℃

3.2The I-sat that will cause initial inductance value approximately 20% rolloff at 100℃

4.The I-rms that will cause temperature rise approximate 40°C without core loss.

Mechanical & Dimensions

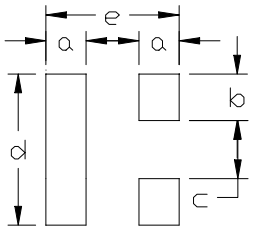
(Unit: mm)



Code	Dimensions
A	10.0 Max
B	10.0 Max
C	3.3 Max
D	8.5±0.3
E	2.6±0.3
F	8.7±0.5
G	0.5±0.2
H	7.3±0.3

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	1.25 Ref
b	3.2 Ref
c	2.6 Ref
d	7.8 Ref
e	10.5 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-rms[4] (Amps)Typs	
MCSHU101033ZR22LR45Z2T	220±15%	0.45±15%	36.0	28.0	30.0	

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃,test point is Pin1-2.

2.The nominal DCR is measured at 20℃ ambient temperature ,test point is Pin1-2.

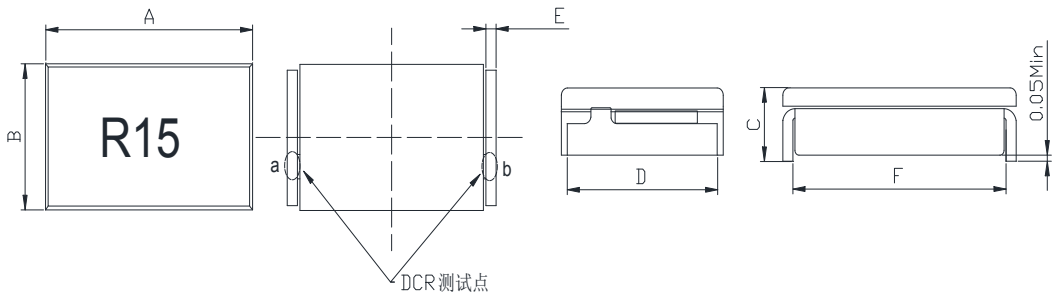
3.1The I-sat that will cause initial inductance value approximately 20% rolloff at 25℃ ,test point is Pin1-2.

3.2The I-sat that will cause initial inductance value approximately 20% rolloff at 100℃ ,test point is Pin1-2.

4.The I-rms that will cause temperature rise approximate 40°C without core loss ,test point is Pin1-2.

Mechanical & Dimensions

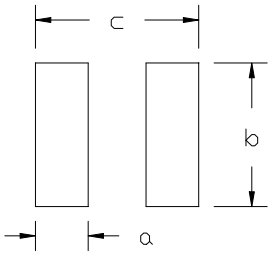
(Unit: mm)



Code	Dimensions
A	13.5 Max
B	8.5 Max
C	2.9 Max
D	8.0±0.3
E	0.5±0.2
F	12.2±0.3

Recommend Land Pattern Dimensions

(Unit: mm)



Code	Dimensions
a	0.8 Ref
b	8.3 Ref
c	13.8 Ref

Electrical Characteristics

Part Number	Inductance[1] (nH)	DCR[2] (mΩ)	I-sat[3.1] (Amps)Max	I-sat[3.2] (Amps)Max	I-sat[3.3] (Amps)Max	I-rms[4] (Amps)Typs
MCSHU138503ZR15LR45	140±15%	0.45±15%	50,≧110nH	45,≧110nH	42,≧110nH	30.0

Note:

1.Inductance is measured at 100 KHz and 1.0 Vrms at 25℃.

2.The nominal DCR is measured at 20℃ ambient temperature.

3.1The I-sat that will cause rolloff nominal inductance value at 25℃.

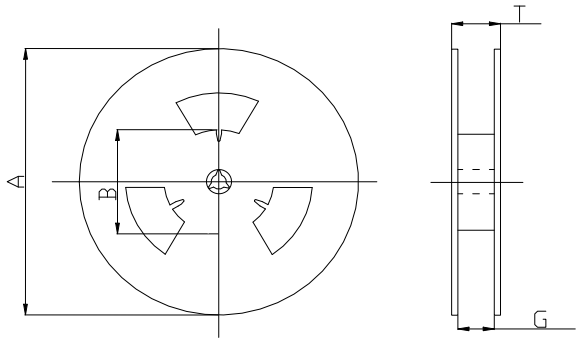
3.2The I-sat that will cause rolloff nominal inductance value at 85℃.

3.3The I-sat that will cause rolloff nominal inductance value at 115℃.

4.The I-rms that will cause temperature rise approximate 40°C without core loss.

Packaging

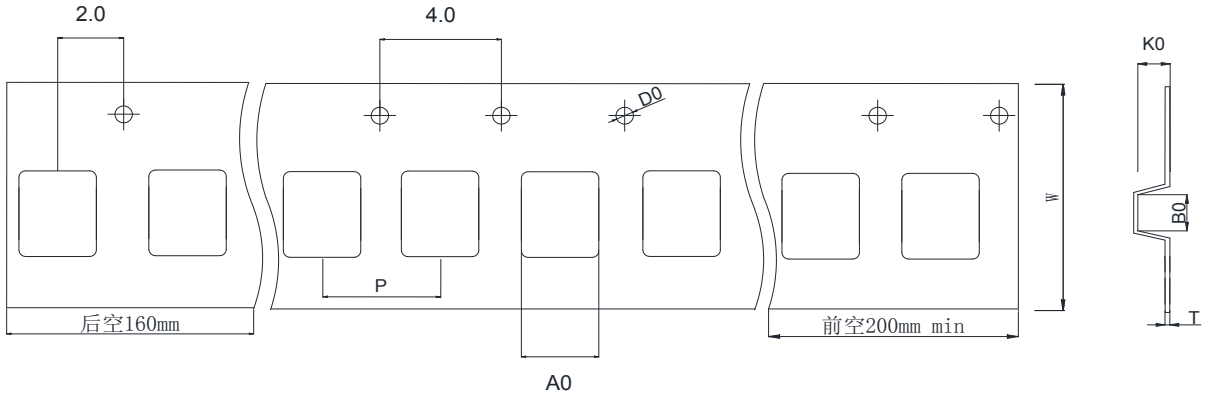
Reel Dimension:



P/N	Type	A(mm)	B(mm)	G(mm)	T(mm)	Chip/Reel
MCSHU04445	13" x 16mm	330	100	16.5	20.7	1,500
MCSHU05565	13" x 16mm	330	100	16.5	20.7	600
MCSHU65-2T	13" x 16mm	330	100	16.5	20.7	800
MCSHU09610(R145)	13" x 24mm	330	100	24.5	28.7	500
MCSHU101033-2T	13" x 24mm	330	100	24.5	28.7	1,200
MCSHU138503	13" x 24mm	330	100	24.5	28.7	1,200

Packaging

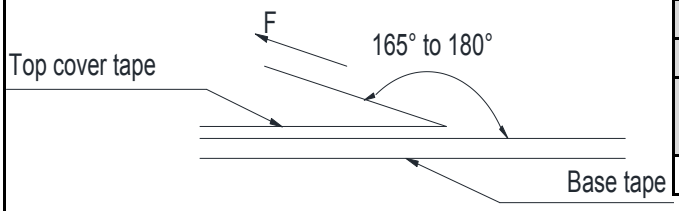
Tape Dimension:



P/N	Ao	Bo	Ko	P	W					
MCSHU04445	4.2±0.1	4.6±0.1	4.7±0.1	8.0±0.1	16.0±0.3					
MCSHU05565	5.4±0.1	5.6±0.1	6.7±0.1	12.0±0.1	16.0±0.3					
MCSHU65-2T	6.8±0.1	6.8±0.1	5.7±0.1	12.0±0.1	16.0±0.3					
MCSHU09610(R145)	10.4±0.1	10.4±0.1	3.5±0.1	12.0±0.1	24.0±0.3					
MCSHU101033-2T	10.4±0.1	10.4±0.1	3.5±0.1	16.0±0.1	24.0±0.3					
MCSHU138503	13.6±0.1	8.7±0.1	3.3±0.1	16.0±0.1	24.0±0.3					

Packaging

Tearing Off Force:



The force tearing off cobe tape is 10 to 130 g.f in the arrow direction under the following conditions			
Room Temp (℃)	Room Humidity (%)	Room atrn (hPa)	Teaming Speed (mm/min)
5~35	45~85	860~1060	300

※Storage Conditions

1. Temperature and humidity conditions: -40℃ ~ +85℃ and 70% RH.
2. Recommended products should be used within 6 months form the time of delivery.
3. The packaging material should be kept where no chlorine or sulfur exists in the air.

※Transportation

1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

Recommended Soldering Conditions

Figure 1. Re-flow Soldering

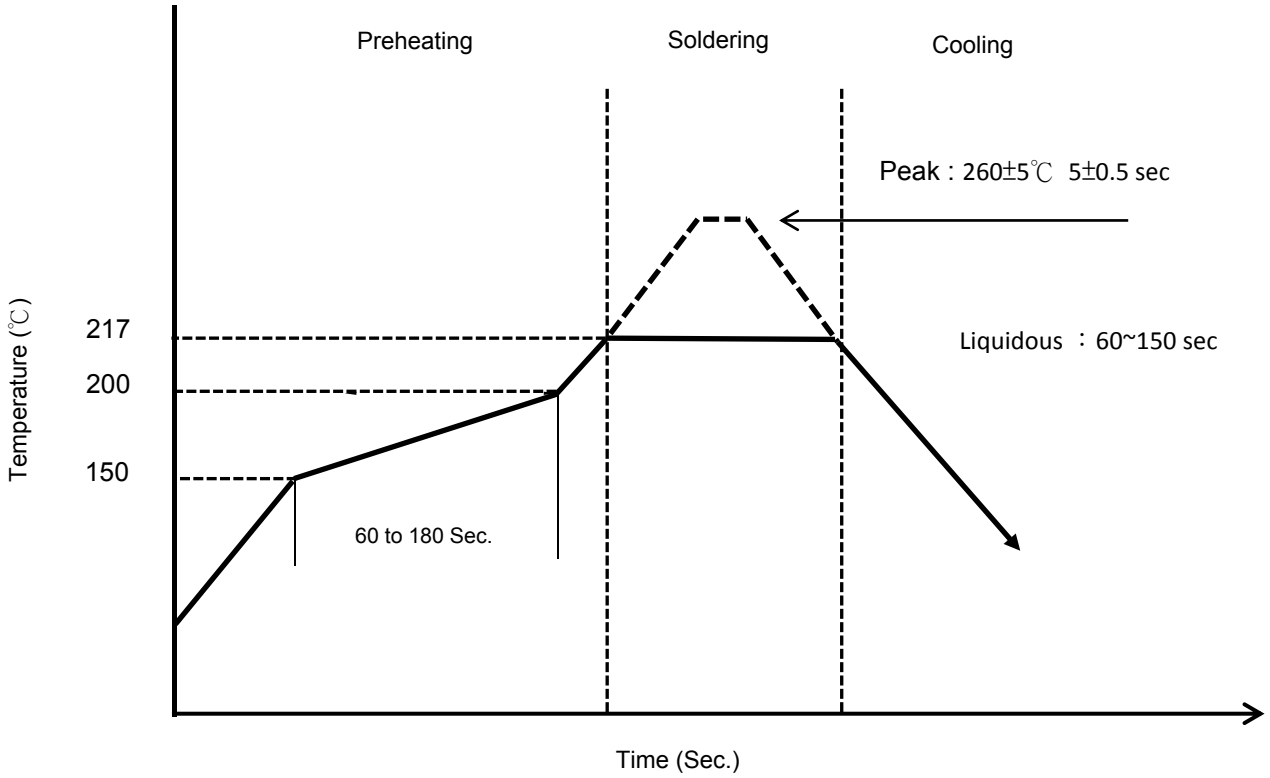
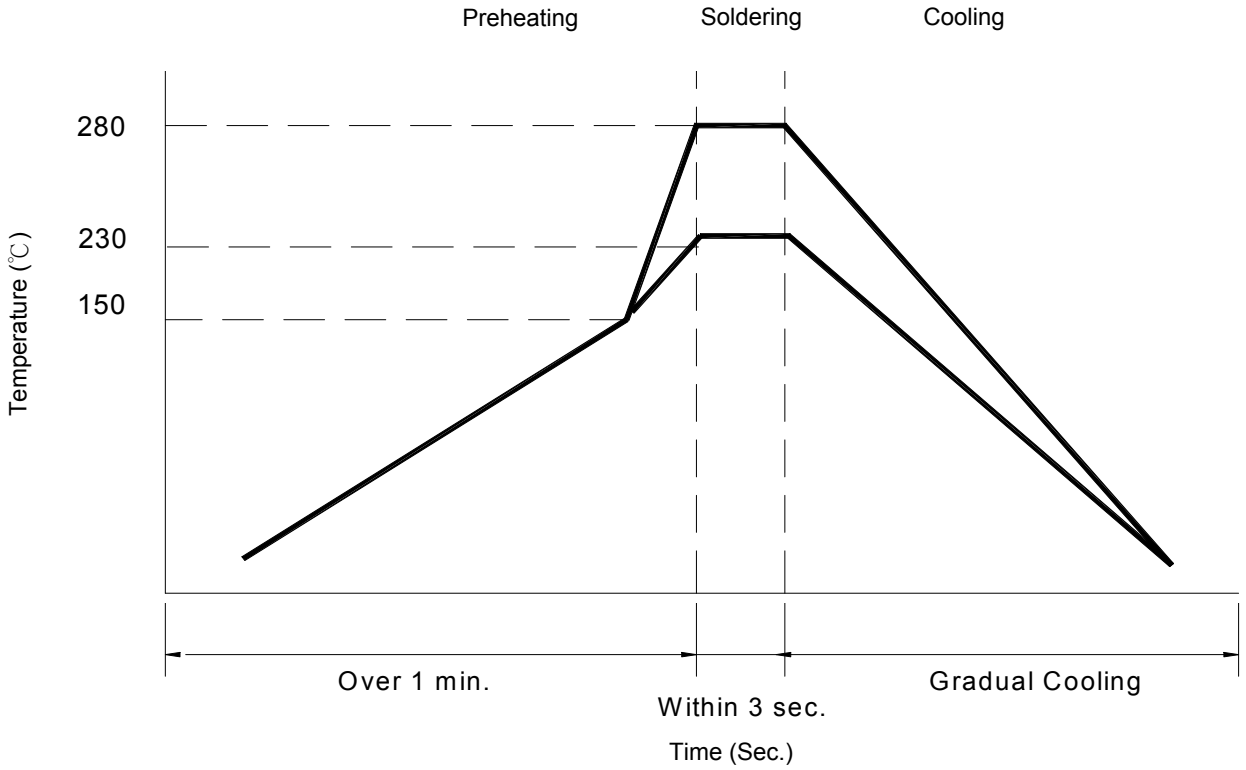
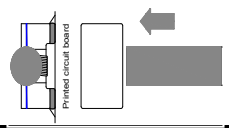


Figure 2. Hand Soldering



Reliability and Testing Conditions

Item	Specification	Conditions
Operating temperature range	-40℃ ~ +125℃ (Including self-temperature rise)	
Storage temperature and humidity range	-40°C ~ +85°C , 70% RH Max	
Solderability	More than 90% of the terminal electrode should be covered with solder.	- Preheat: 150 ℃, 60 sec - Solder: Sn96.5%-Ag3%-Cu0.5% - Temperature: 245±5℃ - Flux for lead free: Rosin 9.5% - Dip time: 4±1 sec - Depth: completely cover the termination
Resistance to Soldering Heat	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	- Solder technique simulation: SMD - Temperature (°C): 260 ± 5 (solder temp) - Time (s): 10 ± 1 - Temperature ramp / immersion and emersion rate: 25 mm/s ± 6 mm/s - Number of heat cycles: 1
Resistance to High Temperature	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	500 hrs. at 125°C±5°C Unpowered. Measurement at 24±4 hours after test conclusion.
Resistance to Low Temperature	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	500 hrs. at -40°C±5°C. Unpowered. Measurement at 24±4 hours after test conclusion.
Resistance to Humidity	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 500 hours in 40±2℃ and 90 to 95% humidity , and 2 hour drying under normal condition.
Thermal shock	Inductance within ±20% of initial value. No disconnection or short circuit. The appearance shall not break.	After 100 cycles of following condition. Step / Temperature (℃) / Times (min.) 1 / -40±5℃ / 30 2 / Room Temperature / Within 3 3 / 125±5℃ / 30 4 / Room Temperature / Within 3
Vibration Test	Inductance within ±10% of initial value and appearance shall not break.	After vibration for 1hour, In each of three orientations at sweep vibration (10~55~10Hz) with 1.52mm P-P Amplitudes.
Terminal strength	The terminal electrode and the ferrite must not be damaged	Solder a chip to test substrate, and then laterally apply a load 10N in the arrow direction, Duration :5s 
Drop Test	Inductance within ±20% of initial value. The appearance shall not break.	Drop 3 times on a concrete floor from a height of 75cm by inimum packing