

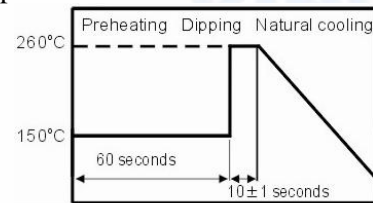


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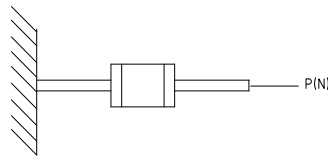
RELIABILITY TEST - FBM□/FLM□/HLM□ SERIES

ITEM	SPECIFICATION	TEST CONDITION
Soldering heat resistance	The chip shall not be cracks . More than 75% of terminal electrode shall be covered with solder. Impedance: within±20% of the initial value. Inductance: within±10% of the initial value.	Preheat: 150°C ,60 seconds Solder: Sn/Ag/Cu Solder:temperature:260±5°C Flux: Rosin Dip time:10±1 seconds

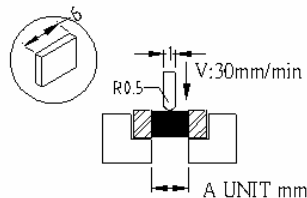


solderability	More than 90% of the terminal electrode shall be covered with new solder.	
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Terminal strength	The terminal electrode and the ferrite shall not be damaged by the forces applied on the right conditions.	SIZE CODE	P(kgf)	TIME(S)
		201209	0.6	30±5
		201212	0.8	30±5
		321611	1.0	30±5
		322513	1.0	30±5
		451616	1.0	30±5
		453215	1.5	30±5



Bending strength	The ferrite shall not be damaged by the forces applied on the right conditions.	SIZE CODE	A(mm)	P(kgf)
		160808	1.0	0.5
		201209	1.4	1.0
		201212	1.4	1.2
		321611	2.0	2.0
		322513	2.0	2.0
		451616	2.5	2.5
		453215	2.7	2.5



※All the data listed in this catalogue are for reference only, King Core reserves the right to alter or revise the specifications without prior notification.



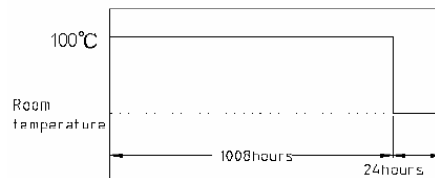
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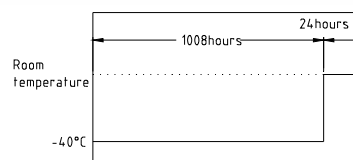
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ITEM	SPECIFICATION	TEST CONDITION
High temperature resistance	Appearance: Ferrite shall not be damaged. Impedance : Within $\pm 20\%$ of the initial value. Inductance : Within $\pm 10\%$ of the initial value. Q: Within $\pm 30\%$ of the initial value. This test procedure was according to JESD22-A103-A	Temperature: 100°C Testing time: 1008 hours. Measurement: After placing for 24 hours min.



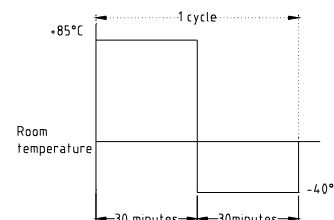
Low temperature storage life test	Appearance: cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Impedance: Within $\pm 20\%$ of the initial value. Inductance: Within $\pm 10\%$ of the initial value. Q: Within $\pm 30\%$ of the initial value.	Temperature: -40°C Testing time: 1008 hours. Measurement: After placing for 24 hours min
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Humidity resistance	Appearance: Ferrite shall not be damaged. Impedance: Within $\pm 20\%$ of the initial value. Inductance: Within $\pm 10\%$ of the initial value. Q: Within $\pm 30\%$ of the initial value. This test procedure was according to MIL-STD-202F method 103D	Humidity: 95%RH Temperature: 60°C Testing time: 1008 hours. Measurement: After placing for 24 hours min.
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Thermal shock	Appearance: Cracking, chipping or any other defects harmful to the characteristics shall not be allowed. Impedance: Within $\pm 20\%$ of the initial value. Inductance: Within $\pm 10\%$ of the initial value. Q: Within $\pm 30\%$ of the initial value. This test procedure was according to MIL-STD-883D method 1010.7	Temperature: -40°C , $+85^{\circ}\text{C}$, kept stabilized for 30 minutes each Cycle: 100 cycles Measurement: After placing for 24 hours min.
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Note

1. Operating Temperature Range: -25°C to $+85^{\circ}\text{C}$
2. Storage Temperature Range: -40°C to $+85^{\circ}\text{C}$ (For products in unopened tape package 0°C to $+40^{\circ}\text{C}$)



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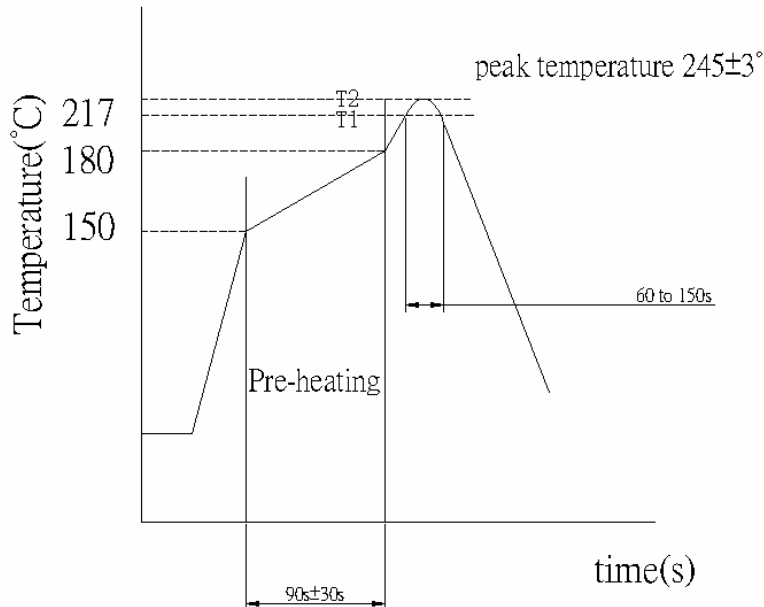
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1. Recommended solderability temperature profile

©Standard soldering profile.



2. Flux, Solder

- Use rosin-based flux
- Don't use high acidic flux with halide content exceeding 0.2(wt)% (chlorine conversion value).
- Use lead-free solder, use Sn-3.0Ag-0.5Cu solder
- Standard thickness of solder paste: 0.12~0.15mm

3. Reworking with soldering iron

The following conditions must be strictly followed when using a soldering iron.

Pre – heating	150°C, 1 minute
Tip temperature	350°C max.
Soldering iron output	30w max.
End of soldering iron	ϕ 3mm max.
Soldering time	3 seconds max.

Note : Do not directly touch the products with the tip of the soldering iron in order to prevent the crack on the products due to the terminal shock.



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4. Cleaning Conditions

Products should be cleaned on the following conditions.

- (1) Cleaning temperature shall be limited to 60°C max.
(40°C max for fluoride and alcohol type cleaner.)
- (2) Ultrasonic cleaning shall comply with the following conditions with avoiding the resonance phenomenon at the mounted products and P.C.B.

Power	: 20 w / liter max.
Frequency	: 28 kHz ~ 40 kHz
Time	: 5 minutes max.
- (3) Cleaner
 - ◎ Alcohol cleaner
 - Isopropyl alcohol (IPA)
 - ◎ Aqueous agent
 - PINE ALPHA ST – 100S
- (4) There shall be no residual flux and residual cleaner after cleaning, extra flux maybe affect the electrical characteristics. In the case of using aqueous agent, products shall be dried completely after rinse with de-ionized water in order to remove the cleaner.
- (5) Other cleaning
Please contact us.



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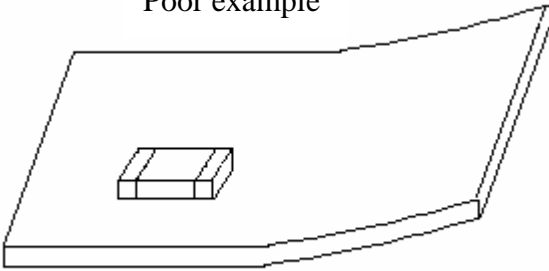
5. Attention regarding P.C.B. bending

The following shall be considered when designing and laying out P.C.B.

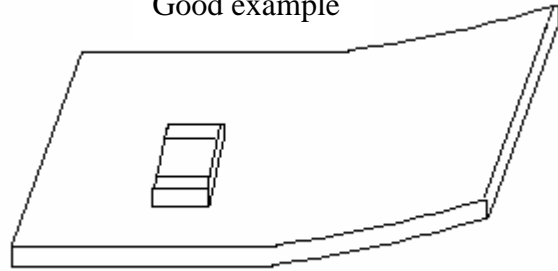
- (1) P.C.B shall be designed so that products are not subjected to the mechanical stress due to warping the board.

[Products direction]

Poor example

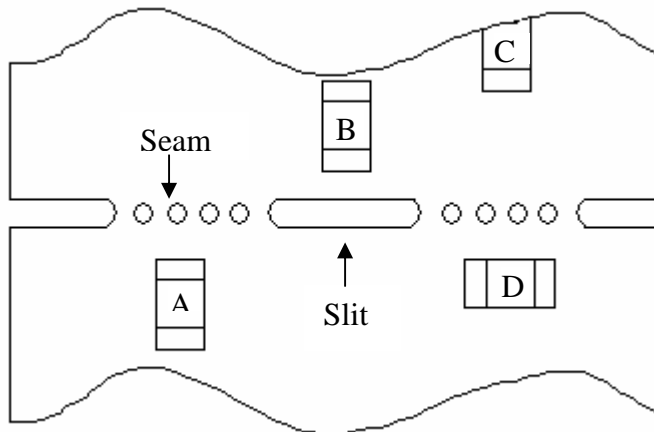


Good example



Products shall be located in the sideways direction to the mechanical stress.

- (2) Products location on P.C.B. separation.



Products shall be located carefully so that products are not subjected to the mechanical stress due to warping the board. Because they may be subjected the mechanical stress in magnitude of $A > C > B \approx D$.



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6. Resin Coating

The electrical characteristics may be changed due to the large cure-stress of the resin to be used for coating/molding products. Some resin contains some impurities or chloride possible to generate chlorine by hydrolysis under some operating condition may cause corrosion of wire of coil, leading to open circuit. So please pay your careful attention in selecting resin to prevent any affection on the product in case of coating/molding the products with the resin. In prior to use, please make the reliability evaluation with the product mounted in your application set.

7. Caution for use

- (1) There is possibility that the inductance value change due to magnetism. Don't use a magnet or a pair of tweezers with magnetism when chip coil are handled. (The tip of the tweezers should be molded with resin or pottery.)
- (2) Sharp material, such as a pair of tweezers, shall not be touched to the winding portion to prevent the breaking of wire.
- (3) Mechanical shock should not be applied to the products mounted on the board to prevent the breaking of the core.

8. Storage and Handling Requirements

(1) Storage period

Products should be used in 6 months from the day of KINGCORE outgoing inspection.
Solderability should be checked if this period is exceeded.

(2) Storage conditions

- Products should be stored in the warehouse on the following conditions.

Temperature : 0 ~ 40°C

Humidity : 30 ~ 70% relative humidity

No rapid change on temperature and humidity

- Don't keep products in corrosive gases such as sulfur, chlorine gas or acid, or it may cause oxidation of electrode, resulting in poor solderability.

- Products should be stored on the palette for the prevention of the influence from humidity, dust and so on.

- Products should be stored in the warehouse without heat shock, vibration, direct sunlight etc.

- Products should be stored under the airtight package condition.

(3) Handling Condition

Care should be taken when transporting or handling product to avoid excessive vibration or mechanical shock.