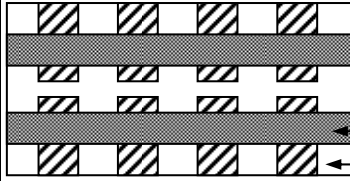


RELIABILITY AND TEST CONDITIONS

NFC Products

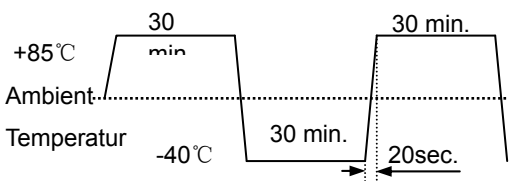
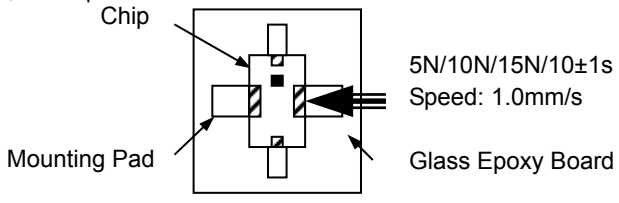
Items	Requirements	Test Methods and Remarks
1. Vibration	① No visible mechanical damage ② Satisfy electrical characteristic	① Solder the FS to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. ② The FS shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz. ③ The frequency range from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).  <p style="text-align: center;">Glass Epoxy Board</p> <p style="text-align: right;">Solder mask Cu pad</p>
2. Dropping	① No visible mechanical damage ② Satisfy electrical characteristic	① Drop FS 10 times on a concrete floor from a height of 22.8 cm for Side3 ② Drop FS 10 times on a concrete floor from a height of 22.8 cm for Edge3-5 ③ Drop FS 10 times on a concrete floor from a height of 22.8 cm for Corner3-5-2 ④ Drop FS 10 times on a concrete floor from a height of 22.8 cm for Corner3-4-6 ⑤ Drop FS 10 times on a concrete floor from a height of 22.8 cm for Edge3-6 ⑥ Drop FS 10 times on a concrete floor from a height of 22.8 cm for Side3 ⑦ Drop FS 10 times on a concrete floor from a height of 38.1 cm for Corner3-4-5 ⑧ Drop FS 10 times on a concrete floor from a height of 38.1 cm for Side3
3. Neutral Salt Spray test (NSS)	① No visible mechanical damage ② Satisfy electrical characteristic	① Temperature: $-35\pm 2^{\circ}\text{C}$ ② PH: 6.5-7.2 ③ Brine Concentration: $5\pm 1\%$ ④ Duration: 48hours
4. Resistance to High Temperature	① No visible mechanical damage ② Satisfy electrical characteristic	① Temperature: $85\pm 2^{\circ}\text{C}$ ② Duration: 168 hours ③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
5. Resistance to Low Temperature	① No visible mechanical damage ② Satisfy electrical characteristic	① Temperature: $-40\pm 2^{\circ}\text{C}$ ② Duration: 168 hours ③ Reflow 2 times ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
6. Damp Heat	① No visible mechanical damage. ② Satisfy electrical characteristic	① Temperature: $60\pm 2^{\circ}\text{C}$ ② Humidity: 90% to 95%RH ③ Duration: 168 hours ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring

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Specifications subject to change without notice. Please check our website for latest information. Revised 2017/03/15

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RELIABILITY AND TEST CONDITIONS

7. Thermal Shock	<ul style="list-style-type: none"> ① No visible mechanical damage ② Satisfy electrical characteristic 	<ul style="list-style-type: none"> ① Temperature and time: -40℃ for 60±3 min → +85℃ for 60±3min ② Transforming interval: Max. 20 sec ③ Tested cycle: 30 cycles ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring. 
8. Moisture Sensitivity Classification	<ul style="list-style-type: none"> ① No visible mechanical damage ② Satisfy electrical characteristic 	<ul style="list-style-type: none"> ① Temperature: 80±2℃ ② Humidity: 80% RH ③ Duration: 120 hours ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring
9. Terminal Strength	<ul style="list-style-type: none"> ① No visible mechanical damage. ② Satisfy electrical characteristic 	<ul style="list-style-type: none"> ① Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using eutectic solder. Then apply a force in the direction of the arrow. ② 5N force for 1005 and 1608 series. ③ 10N force for 2012, 2520 and 3216 series. ④ 15N force for 3225 series and others. ⑤ Keep time: 10±1sec. 
10. Adhesive strength	<ul style="list-style-type: none"> ① No visible mechanical damage. ② Satisfy electrical characteristics 	<ul style="list-style-type: none"> ① Paste the product on the clean glass repetitively ② Test cycle: 5 cycles
11. Loading Under Damp Heat	<ul style="list-style-type: none"> ① No visible mechanical damage. ② Satisfy electrical characteristics 	<ul style="list-style-type: none"> ① Temperature: from 25±2℃ to 55±2℃ in 1.5h, Humidity: 85% to 95% RH ② Temperature: 55±2℃, Humidity: 85% to 95% RH, Duration: 4h ③ Temperature: from 55±2℃ to 25±2℃ in 1.5h, Humidity: 85% to 95% RH ④ Temperature: from 25±2℃ to 55±2℃ in 1.5h, Humidity: 85% to 95% RH ⑤ Temperature: 55±2℃, Humidity: 85% to 95% RH, Duration: 4h ⑥ Temperature: from 55±2℃ to 25±2℃ in 1.5h, Humidity: 85% to 95% RH ⑦ Temperature: 25±2℃, Humidity: 85% to 95% RH, Duration: 10h ⑧ The chip shall be stabilized at normal condition for 1~2 hours before measuring.

RELIABILITY AND TEST CONDITIONS

Wireless Charging Coil Products

Items	Requirements	Test Methods and Remarks
1 Adhesive strength	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	③ Apply the tensile 30N force progressively on the width and height of winding respectively. The direction of each force is perpendicular to them and parallel to the plate ④ Keep time: 30 \pm 3s
2 Thermal Shock	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	⑨ Temperature and time: -25 \pm 3 $^{\circ}\text{C}$ for 30 \pm 3 min \rightarrow 85 $^{\circ}\text{C}$ for 30 \pm 3min ⑩ Transforming interval: 5 minute <input type="checkbox"/> Tested cycle: 100 cycles <input type="checkbox"/> The chip shall be stabilized at normal condition for 1~2 hours before measuring
3 Resistance to Low Temperature	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	⑤ Temperature: -25 \pm 3 $^{\circ}\text{C}$ ⑥ Duration: 96 $^{\pm 4}$ hours ⑦ The chip shall be stabilized at normal condition for 1~2 hours before measuring
4 Resistance to High Temperature	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	④ Temperature: 85 \pm 2 $^{\circ}\text{C}$ ⑤ Duration: 96 $^{\pm 4}$ hours ⑥ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
5 Damp Heat	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	⑤ Temperature: 60 \pm 2 $^{\circ}\text{C}$ ⑥ Humidity: 90% to 95%RH ⑦ Duration: 96 $^{\pm 4}$ hours ⑧ The chip shall be stabilized at normal condition for 1~2 hours before measuring
6 Package Drop	① No visible mechanical damage. ② Inductance change: Within $\pm 5\%$ ③ DCR change: Within $\pm 10\%$	① Put the production in the carton ② Free fall from 800mm in height ③ Each faces of carton fall one time
7 Solderability	75% or more of electrode area shall be coated by new solder.	① The test samples shall be dipped in flux, and then immersed in molten solder. ② Solder temperature: 320 \pm 5 $^{\circ}\text{C}$ ③ Duration: 5 \pm 1 sec. ④ Solder: Sn/3.0Ag/0.5Cu ⑤ Flux: 25% resin and 75% ethanol in weight ⑥ Immersion depth: all sides of mounting terminal shall be immersed