

# RELIABILITY TEST RESULT

Product name : S-93C86CD0I-I8TxU3

Package type : SNT-8A

| No. | Test item   | Test Condition  | Test Time                | r/n  | Criterion   |
|-----|---|---|--------------------------|------|---|
| 1   | High-temperature operation                              | Ta=125 °C, V=Vopr max.  | 1000 h                   | 0/22 | Satisfies the product standard  |
| 2   | Temperature humidity bias #1                            | Ta=85 °C, RH=85 %, V=Vopr max.  | 1000 h                   | 0/22 | Satisfies the product standard  |
| 3   | Pressure cooker bias #1                                 | Ta=130 °C, RH=85 %, P=2.3×10 <sup>5</sup> Pa<br>V=Vopr max.                   | 96 h                     | 0/22 | Satisfies the product standard  |
| 4   | Storage in high temperature                             | Ta=150 °C   | 1000 h                   | 0/22 | Satisfies the product standard  |
| 5   | Storage in low temperature                              | Ta=-65 °C   | 1000 h                   | 0/22 | Satisfies the product standard  |
| 6   | Write/Erase Cycle                                       | Ta=85 °C, V =Vopr max.  | 1×10 <sup>6</sup> cycles | 0/22 | Satisfies the product standard  |
| 7   | Temperature Cycle (Gas phase) #1                        | Ta=150 °C ⇔ -65 °C<br>15 minutes for each                                     | 500 cycles               | 0/22 | Satisfies the product standard  |
| 8   | Resistance to soldering heat-1<br>(reflow soldering) #2 | T=260 °C ,10 s  | 3 times                  | 0/22 | Satisfies the product standard<br>No abnormality by appearances   |
| 9   | Resistance to soldering heat-2<br>(Soldering Iron) #2   | T=380 °C , 5 s<br>(Soldering iron tip temperature)<br>Object : terminal parts | 2 times                  | 0/22 | Satisfies the product standard<br>No abnormality by appearances   |
| 10  | Solderability #3  | T=245 °C<br>Solder material : Sn-3.0Ag-0.5Cu                                  | 5 s                      | 0/11 | Zero cross time should be less than 3 seconds.<br>Solder should be applied at 95% or more of solderability judgment area. |
| 11  | Whisker - 1<br>(Temperature / Humidity Storage)         | Ta=30 °C, RH=60%  | 4000 h                   | 0/6  | Whisker should be less than 40μm  |
| 12  | Whisker - 2<br>(Temperature Cycling)                    | Ta=85 °C ⇔ -40 °C   | 1500 cycles              | 0/6  | Whisker should be less than 45μm  |
| 13  | Whisker - 3<br>(High Temperature / Humidity Storage)    | Ta=55 °C, RH=85 %   | 4000 h                   | 0/6  | Whisker should be less than 40μm  |
| 14  | Solder Joint Reliability<br>(shear test) #3             | Ta=125 °C ⇔ -40 °C<br>Solder material : Sn-3.0Ag-0.5Cu                        | 2000 cycles              | 0/22 | After temperature cycle test, keep strength for shear stress more than the 50 % of initial mean value.                    |
| 15  | ESD - 1 (Human Body Model)                              | V=±2000 V, C=100 pF, R=1.5 kΩ<br>Ground : V <sub>CC</sub> / GND               | 5 pulses                 | 0/5  | Satisfies the product standard  |
| 16  | ESD - 2 (Charged Device Model)                          | V=±500V charged, discharged   | 1 pulse                  | 0/5  | Satisfies the product standard  |
| 17  | Latch up 1<br>(Pulsed current injection test)           | ±100 mA, V =Vopr max.   | 1 pulse                  | 0/5  | No latch up   |
| 18  | Latch up 2<br>(Vsupply overvoltage test)                | The overvoltage specified when<br>V = Vopr max.                               | 1 pulse                  | 0/5  | No latch up   |

Remark : Vopr max. =Maximum operation voltage

#1,2,3 : Each test designated # is performed after Pre-Treatment finished.

Pre-Treatment consists of High Temperature Storage ,Temperature Humidity Storage and Soldering Heat. (See the table below.)

| Pre Treatment (#1)  |                                |                                      |
|---------------------|--------------------------------|--------------------------------------|
| High Temp. Storage  | Temperature Humidity Storage   | Soldering Heat                       |
| Ta=125 °C<br>t=24 h | Ta=85 °C<br>RH=85 %<br>t=168 h | Reflow 3 times<br>T=260 °C<br>t=10 s |

| Pre Treatment (#2)  |                                |                |
|---------------------|--------------------------------|----------------|
| High Temp. Storage  | Temperature Humidity Storage   | Soldering Heat |
| Ta=125 °C<br>t=24 h | Ta=85 °C<br>RH=85 %<br>t=168 h | —              |

| Pre Treatment (#3) |                                |                |
|--------------------|--------------------------------|----------------|
| High Temp. Storage | Temperature Humidity Storage   | Soldering Heat |
| —                  | Ta=105 °C<br>RH=100 %<br>t=8 h | —              |

**【Reference test】**

|    |                                 |   |            |      |                                |
|----|---------------------------------|---|------------|------|--------------------------------|
| i  | Thermal Shock (Liquid phase) #1 | Ta = 150°C ⇔ -65°C<br>5 minutes for each                          | 100 cycles | 0/22 | Satisfies the product standard |
| ii | ESD (Machine Model)             | V = ±200 V, C = 200 pF, R = 0 Ω<br>Ground : V <sub>CC</sub> / GND | 3 times    | 0/5  | Satisfies the product standard |