

# RELIABILITY TEST RESULT

Product name : S-5742xxxxl-Y3xxU

Package type : TO-92S

| 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 <sup>#1</sup>                           | Ta=85 °C, RH=85 %, V=Vopr max.  | 1000 h      | 0/22 | Satisfies the product standard  |
| 3   | Pressure cooker bias <sup>#1</sup>                                | 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   | Temperature Cycle (Gas phase) <sup>#1</sup>                       | Ta=150 °C ⇔ -65 °C<br>15 minutes for each                                     | 500 cycles  | 0/22 | Satisfies the product standard  |
| 7   | Resistance to soldering heat -1<br>(Soldering Iron) <sup>#2</sup> | 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   |
| 8   | Resistance to soldering heat -2<br>(Flow soldering) <sup>#2</sup> | T=260 °C ,10 s  | 1 time      | 0/22 | Satisfies the product standard<br>No abnormality by appearances   |
| 9   | Solderability <sup>#3</sup>                                       | 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. |
| 10  | Solder Joint Reliability<br>(shear test) <sup>#3</sup>            | 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.                    |
| 11  | Terminal Strength (Pull test)                                     | Pull force : 10N  | 30 s        | 0/11 | Terminal is not taken off   |
| 12  | Terminal Strength (Bending test)                                  | Load : 5N, 90degree Bend a lead   | 2 times     | 0/11 | Terminal is not taken off   |
| 13  | ESD - 1 (Human Body Model)  | V=±2000 V, C=100 pF, R=1.5 kΩ<br>Ground : V <sub>DD</sub> / V <sub>SS</sub>   | 5 pulses    | 0/5  | Satisfies the product standard  |
| 14  | ESD - 2 (Charged Device Model)                                    | V=±500V charged, discharged   | 1 pulse     | 0/5  | Satisfies the product standard  |
| 15  | Latch up 1<br>(Pulsed current injection test)                     | ±100 mA, V =Vopr max.   | 1 pulse     | 0/5  | No latch up   |
| 16  | 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.<br>Storage | Temperature<br>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.<br>Storage | Temperature<br>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.<br>Storage | Temperature<br>Humidity Storage | Soldering Heat |
| —                     | Ta=105 °C<br>RH=100 %<br>t=8 h  | —              |