

**Part Number: 2N7002A**

**Package Type: SOT-23**

## 1. Reliability Test Method And Description:

|                                                  |                   |
|--------------------------------------------------|-------------------|
| Stress Test Item :                               | HTRB              |
| Test Duration (Hours)                            | 1000              |
| Sample Q'ty (Pcs) :                              | 77                |
| Failure Q'ty (Pcs) :                             | 0                 |
| Total Device Hours (Hrs) :                       | 77000             |
| Accelerated Temp (Ta)(°C) :                      | 150               |
| Normal Operation Temp. ( Tu)(°C) :               | 55                |
| Eactivation Energy (Ea) :                        | 0.7               |
| K (Boltzmans Constant ) :                        | 8.617164E-5 eV/°K |
| Chi-Square Constant @confidence level:60% (chi): | 1.833             |
| Chi-Square Constant @confidence level:90%(chi):  | 4.605             |

Acceleration Factor ,Af at Tu list:

|    |       |      |       |       |       |
|----|-------|------|-------|-------|-------|
| Tu | 55°C  | 85°C | 100°C | 125°C | 150°C |
| Af | 259.2 | 32.6 | 13.1  | 3.3   | 1.0   |

## 2. Results(Use Conditions Tu=55°C & confidence level:90%):

|                                         |         |       |
|-----------------------------------------|---------|-------|
| Failure Rate FIT(@Operation Condition): | 115.4   | FIT   |
| Mean Time to Failure (MTTF):            | 8668504 | Hours |
|                                         | 990     | Years |

## 3. MTTF/FIT Calculate Equations:

|                           |                                                |
|---------------------------|------------------------------------------------|
| Af                        | $\exp[(Ea/K) * (1/(Tu+273.15)-1/(Ta+273.15))]$ |
| FIT @ Operation Condition | $Chi * 10^9 / (2 * Hrs * AF)$                  |
| MTTF hours                | $10^9 / FIT$                                   |
| MTTF years                | $10^9 / (FIT * 24 * 365)$                      |

Remark: JSCJ Laboratory reserves the right of final interpretation of this report