

Application Note

DATA RETENTION OF HITACHI HN58C/V1001 1M EEPROM

Revision history:

Rev 1: Document initial

Rev 2: Update activation energy ΔE from 0.8 to 1.1

Below data retention results/curve for Hitachi HN58C/V1001 1M EEPROM are based on **3D PLUS** test results and are calculated by help of the **Arrhenius Rate Law**

1. Data are written into the EEPROM
2. EEPROM passed life time test with test condition: 1000 hours at 125°C
3. Data are read from the EEPROM
4. Calculate the device's data retention

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|----------------------------|------|------|-----|-----|----|----|----|
| Operating Temperature (°C) | 25 | 35 | 45 | 55 | 65 | 75 | 85 |
| Data Retention (years) | 5391 | 1342 | 364 | 107 | 34 | 11 | 4 |

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| $KB \approx 1.380\ 650\ E-23$ $J/K \approx 8.617\ 386\ E-5\ eV/K$ |
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| $\Delta E \approx 1.1\ eV$ (provided by Hitachi) |
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