IC Reliability Test Report

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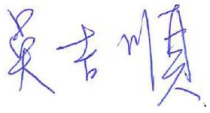
Customer information
Company :
Address :

Purpose
EKTA0200 high temperature operating life time test, for assessing the span of operating life, indicated by FIT or MTBF.

Conclusion
EKTA0200 Reliability Test results : PASS

Approved by :	Check by :	Original by :
		

Contents

1. General information

1.1 Description of Testing Samples

Product No : EKTA0200

1.2 Execute Laboratory

Experiments are executed by QRA department of ELAN and the qualified unit (YTEC).

1.3 Sampling Plan

The sampling plan is LTPD=5%.

1.4 Pass/Fail Judgment

The final conclusion, ‘pass’ or ‘fail’ is judged from the FT test result with LTPD= 5%.

1.5 Test Item

High temperature operating life time test. (HTOL)

1.6 Method

1.HTOL (High Temperature Operation Life Test)

1.1 Sampling plan:

Sample size: 77 EA, based on LTPD= 5%, C= 1 .

1.2 Test Condition:

- Vcc Applied Voltage：**3.6V**
- Environment Temperature : **125°C**
- TD (Duration)：**1000hrs**, Test point at 168, 500, 1000hrs.

2. Test Item Summary

項　　目 Item		取樣 Sample size	測試條件 Test condition	完成日期 Finish date	實驗結果 Test Result
1	High temperature operating life time test.	77	125°C, 1000hrs.	2022/06/27	Pass

3. Test Result

3.1 HTOL Data

項　　目 Item		取樣 Sample size	時間 Duration	不良數 No. of failure	FR (FIT)	MTBF (Hours)
1	High temperature operating life time test.	77	1000	0	3075	325174

3.2 Calculation for test item 1.

Refer to the appendix 1 equation (5)

$$AF_T = \exp [Ea/K * (1/T_o - 1/T_s)] \quad (5)$$

where

T_o = 85°C (358.16K), junction temperature at normal use condition.

T_s = 125°C (398.16K), junction temperature under stress.

E_a =0.7eV, For defects due to particle

k = 8.62×10^{-5} eV/K (the Boltzmann constant).

So the AF_T is 9.7552….

And the predicted total device stressed hours is No * T_H * AF_T

where

No = 77 ea

T_H = 1000 hours

AF_T = 9.7552….

So the predicted total device stressed hours is 751150 (hours)

No device failed (*N* = 0), at confidence level of 90%, P_n = 2.31 for N =0, then,

From the appendix1 equation (7)

$$FR = \frac{P_n(1\text{-}CL,2N+2)}{No * T_H * AF} * 10^9 \quad (7)$$

= $(2.31*10^9) / (375575)$ = 3075 (FIT)

and the MTBF = 1/FR = **325174 (hours)**