3.8V 30F (0820)

[Expected Life Time]

2021.10.01

Formula

Expected life time
= Specified life time(h) × Temperature factor × Voltage factor

1. Temperature factor ; Arrhenius Equation[1] (Double life at each 10℃ decreases)

$$\text{Temperature factor} = 2^{(T0-T1)/10}$$

T0 : Specified temperature (℃)
T1 : Operating temperature (℃)

2. Voltage factor ; Double life at each 0.2V decreases

Reliability Test Report

Confidential

■ Test Type : High Temp. test

■ Test Condition : Temp. +70˚C±2˚C, Voltage. 3.8 V

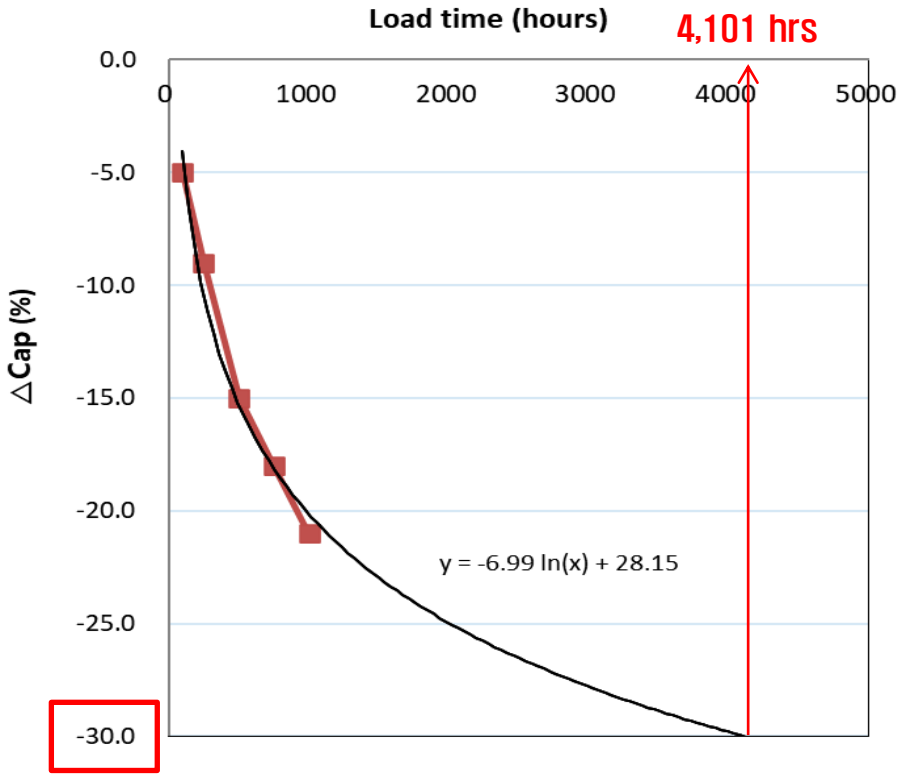
■ Test Result

Time	VEL08203R8306G	
	Capacitance	△Capacitance
0h	31.04F	0%
100h	29.36F	-5%
250h	28.10F	-9%
500h	26.34F	-15%
750h	25.39F	-18%
1000h	24.38F	-21%

Expectation of specified load life time

Confidential

- Specified load temperature (T0) = 65 ℃
- Specified load voltage (V0) = 3.0V



y = a * ln(x) + b	
a	-6.99
b	28.15
y	-30
x	4,101

Specified life time = 4,101 hrs

Expectation of life time

Confidential

	3.2 V	3.4 V	3.6 V	3.8 V
20 ℃				65,616 hours (7.48 years)
30 ℃			65,616 hours (7.48 years)	32.808 hours (3.74 years)
40 ℃		65,616 hours (7.48 years)	32.808 hours (3.74 years)	16,404 hours (1.87 years)
50 ℃	65,616 hours (7.48 years)	32.808 hours (3.74 years)	16,404 hours (1.87 years)	8,202 hours (0.93 years)
60 ℃	32.808 hours (3.74 years)	16,404 hours (1.87 years)	8,202 hours (0.93 years)	4,101 hours (0.46 years)
70 ℃	16,404 hours (1.87 years)	8,202 hours (0.93 years)	4,101 hours (0.46 years)	2,869 hours (0.23 years)