3.0V 10F (1025)

[Expected Life Time]

2015.06.03

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

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■ Test Type : High Temp. test

■ Test Condition : Temp. +65˚C±2˚C, Voltage. 3.0 V

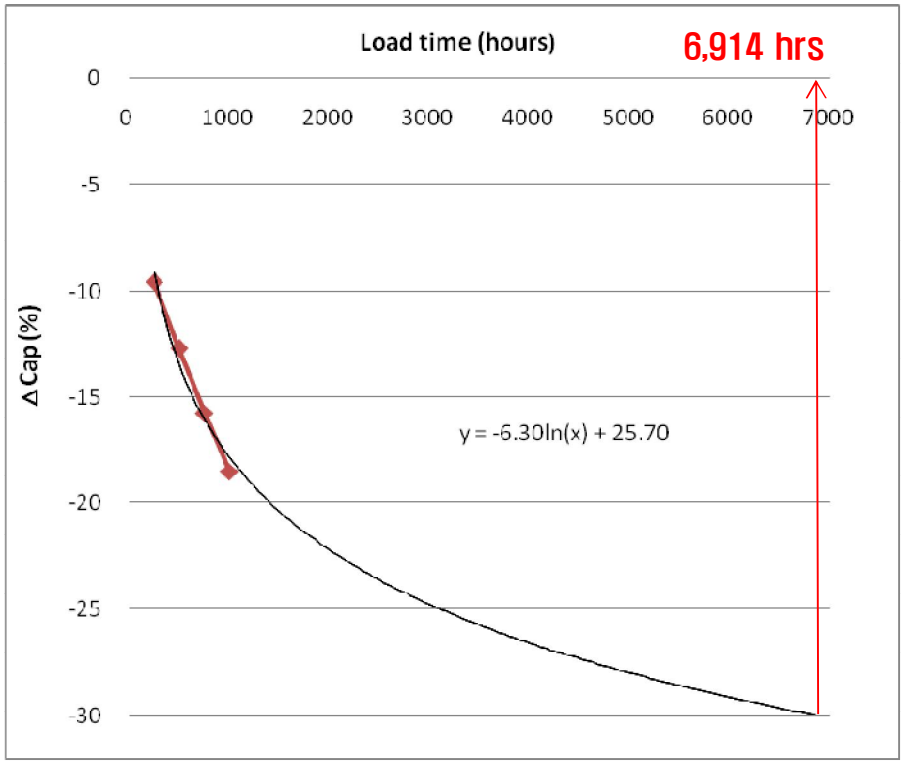
■ Test Result

Division	CAP (F)							
	x1	x2	x3	x4	x5	AVG	MAX	MIN
0	10.68	10.91	10.82	10.75	10.92	10.82	10.92	10.68
250	9.65	9.86	9.70	9.77	9.92	9.78	9.92	9.65
500	9.33	9.53	9.48	9.40	9.48	9.44	9.53	9.33
750	9.00	9.16	9.15	9.06	9.21	9.12	9.21	9.00
1000	8.70	8.89	8.82	8.75	8.91	8.81	8.91	8.70

Division	△ CAP (%)							
	x1	x2	x3	x4	x5	AVG	MAX	MIN
0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	-9.6	-9.6	-10.4	-9.1	-9.2	-9.6	-9.1	-10.4
500	-12.6	-12.6	-12.4	-12.6	-13.2	-12.7	-12.4	-13.2
750	-15.7	-16.0	-15.4	-15.7	-15.7	-15.7	-15.4	-16.0
1000	-18.5	-18.5	-18.5	-18.6	-18.4	-18.5	-18.4	-18.6

Expectation of specified load life time

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



y = a * ln(x) + b	
a	-6.30
b	25.70
y	-30
x	6,914

Specified life time = 6,914 hrs

Expectation of life time

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	2.4 V	2.6 V	2.8 V	3.0 V
25 ℃			221,248 hours (25.26 years)	110,624 hours (12.63 years)
35 ℃		221,248 hours (25.26 years)	110,624 hours (12.63 years)	55,312 hours (6.31 years)
45 ℃	221,248 hours (25.26 years)	110,624 hours (12.63 years)	55,312 hours (6.31 years)	27,656 hours (3.16 years)
55 ℃	110,624 hours (12.63 years)	55,312 hours (6.31 years)	27,656 hours (3.16 years)	13,828 hours (1.58 years)
65 ℃	55,312 hours (6.31 years)	27,656 hours (3.16 years)	13,828 hours (1.58 years)	6,914 hours (0.79 years)
75 ℃	27,656 hours (3.16 years)	13,828 hours (1.58 years)	6,914 hours (0.79 years)	3,457 hours (0.40 years)