

Aluminum Electrolytic Capacitor Expected Life

SAMWHA ELECTRIC

EXPECTED LIFE

1. Standard Series.

$$L = L_s \times 2^{\frac{T_s - (T + \Delta T)}{10}}$$

ALL of SMD, TR, BL products except guaranteed products of ripple are reduced the life when applying ripple.

2. Guaranteed products of ripple (BA, RH, BM, BL, BK, BM, QA, AR, HZ)

$$L = L_s \times 2^{\left[\frac{(T_s + \Delta T_s) - (T + \Delta T)}{10} \right]}$$

* ΔT

Ambient temperature(°C)	~50	65	85	105
ΔT_{s1} (°C)	30	25	10	5

* ΔT_s

T_s	85	105
ΔT_s (°C)	10	5

$$\Delta T = \Delta T_{s1} \left[\frac{I}{I_s} \right]^2$$

(Operating input Ripple)
(Rated Ripple)

3. Explanation

L : Lifetime of capacitor to be estimated (Hour)

L_s : Base life time of capacitor (Hour)

T_s : Maximum operating temperature shown in catalog (°C)

ΔT_s : An Increase temperature of capacitor by internal heating due to rated maximum permissible ripple current. (°C)

T : Ambient temperature (°C)

ΔT : An increase temperature produced by internal heating due to actual operating ripple current. (°C)