

Selecting Aluminum Electrolytic Capacitors

1. Checking your operating requirements.

(1) Checking special load conditions.

Standard aluminum electrolytic capacitors are designed for **power supply flattening use**, and the design must be specific to the following operating conditions.

A. For charge-discharge purposes.

Standard products go from deterioration of dielectric to gas generation, internal pressure build-up and safety vent operation.

B. If inverted voltage is applied.

The positive electrode film is not oxide processed and is formed only by the extreme thin film processing called natural oxidation (withstand voltage of 1V or less). Thus, if inverse voltage is applied, a reaction occurs that begins to form a dielectric film on the positive electrode foil surface and that generates gas and heat.

C. If surge current is large or frequent.

If the frequency of surge current is low (30 times or less per day) up to 200A per lead (used to connect terminal and foil) is permitted. However, if the charge-discharge is frequent, then a specially designed capacitor is required.

D. If voltage fluctuations are large.

If the device has been operated for a long time in low-voltage stage, and then a high voltage is applied, this may lead to heat emission.

E. When cleaning (Snap-in models).

Do not clean with cleaning agents that contain halogen compounds. Snap-in models can be made that are cleaning resistant.

(2) Checking operating conditions.

If the check shows no special load conditions, systematize the following operating conditions.

A. Applied voltage.

If the working voltage is 6.3 - 550V and this is exceeded, connect the capacitors in series and set up balance resistors in parallel. Voltage de-rating ($V.V. \times 0.6-0.9$) will increase life 1.3 to 3.5 times.

B. Ambient temperature.

Capacitor maintenance temperatures are generally 85°C and 105°C.

C. Ripple current.

D. Product life.

Guaranteed capacitor life is from 2,000 to 20,000 hours.

E. Space.

Ensure at least 3mm of safety vent operating space on the bottom of the case for substrate dependent models (5mm or more for 40mm or larger case diameter models).

F. Attachment dimensions.

Snap-in models, screw terminal models, bar wiring, etc.

G. Required capacitance.

ALUMINUM ELECTROLYTIC CAPACITORS

2. Understanding how Hitachi aluminum electrolytic capacitors are named.

(1) Screw terminal models (Example)

FXA 2G 472 Y D

∅ symbol

With the FX and later models, there are two types of dimension specifications, affix the ∅ symbol. Not necessary for other models.

∅	36	51	64	77	90	100
Symbol	A	C	D	E	F	G

Lead shape symbol

Y = 3 point fixing.

I = 2 point fixing (∅77 and 90 indicate non standard but can be used)

Capacitance code

3rd digit indicates the number of zeros

Voltage code

Working voltage	50	63	200	250	400	450	500	550	630
Symbol	1H	1J	2D	2E	2G	2W	2H	2L	2J

Series name

(2) Snap-in models (Example)

HU3 2G 151 M R X

∅ symbol

Because the HP3 and HU3 and later models have 2-4 types of dimensions by ∅ for each specification, attach the ∅ symbol.

∅	36	51	64	77	90	100
Symbol	A	C	D	E	F	G

Terminal shape symbols

C = 2-Claw Short Terminal

R = 2-Claw Terminal

U = Straight Short Terminal

S = 4-Claw Terminal

T = T-Terminal

Symbol for difference in permissible capacitance

M = ± 20% (general use)

Capacitance code

3rd digit indicates the number of zeros

Voltage code

Series name