Polymer capacitors

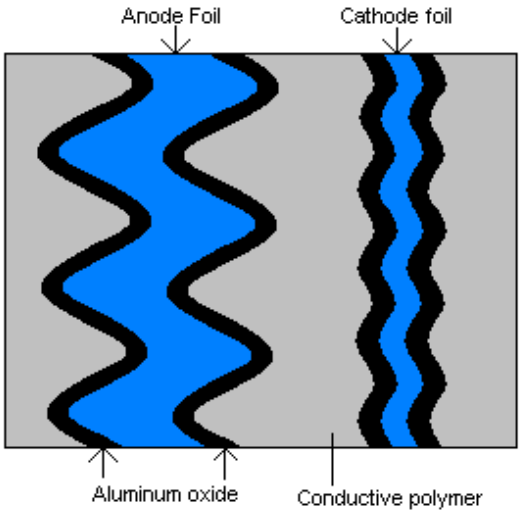
Aluminum polymer electrolytic capacitors are the latest evolutionary step in improving the properties of aluminum electrolytic capacitors to make them more like a film capacitor.
Aluminum Polymer capacitors have the following features:

1. Low ESR and impedance.
2. Temperature stable.
3. Small size.
4. Environmentally friendly.
5. High Capacitance.
6. Fire resistant.
7. Vibration resistant.
8. Available in radial lead and surface mount.

Aluminum Polymer capacitors are used in:

1. Motherboards
2. Power supplies
3. AC/DC converters
4. CPU's
5. DC/DC converters
6. Decoupling circuits
7. LCD Monitors

Surface mount Can type and Radial lead Polymer capacitors are produced in a similar manner to standard aluminum electrolytic capacitors. The main difference is the liquid electrolyte being replaced by a solid conductive polymer.



With the liquid electrolyte being replaced by a solid polymer material the polymer capacitors are very stable when exposed to temperature changes that would have standard aluminum electrolytic capacitors changing by as much as 40%.
The impedances changes are $\leq$1.25% for polymers while aluminum electrolytics can change from 300 to 800%.

The conductive polymer material allows these capacitors have substantially lower ESR values compared to standard aluminum electrolytic capacitors. This lower ESR allows these capacitors to handle ripple currents that are significantly greater that their aluminum and tantalum counter parts.

The life expectancy of these capacitors is significantly greater than other electrolytic capacitors.

Aluminum electrolytic	Aluminum Polymer
$L2=L1*(Vr/Vo)*2^{x}$	$L2=L1*10^{y}$

Where

$X=\frac{Tm-Ta-\Delta T}{2}$ For aluminum electrolytic capacitors

$Y=\frac{Tm-Ta}{20}$ For polymer capacitors

L2= Life expectancy at operating conditions.
L1= Life rating of capacitor.
Vr= Rated voltage of capacitor.
Vo= Operating voltage in application.
Tm= Maximum temperature rating of capacitor.
Ta= ambient temperature of application.
ΔT= Temperature rise due to applied ripple current.

For the same 20°C decrease the life expectancy of an aluminum electrolytic increases by a factor of 4 while an aluminum polymer capacitor increases by a factor of 10.