Capacitor comparison

Why

should I use

Hybrid Cap?

Vs Tantalum capacitor

- Short risk solution
- Moisture-resistant excellence
- High voltage products available

Vs Polymer capacitor

- Short risk solution
- High voltage products available

Vs Electrolytic capacitor

- Reduce of usage in set due to superior ripple characteristic(Ultra low ESR)
  → Reduce of set failure rate, reduce of set cost, reduce of mounting area (set miniaturization)
- Superior temperature characteristic

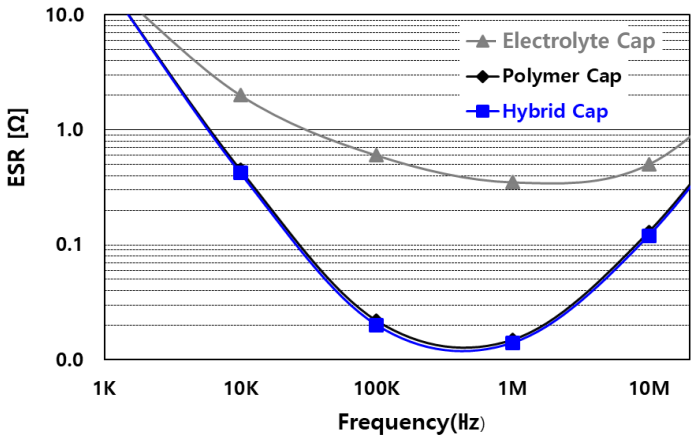
vs MLCC

- Short risk solution
- No capacitance reduction by DC BIAS
- Reduce of usage in set(Capacitance basis)
  → Reduce of set failure rate, reduce of set cost, reduce of mounting area (set miniaturization)

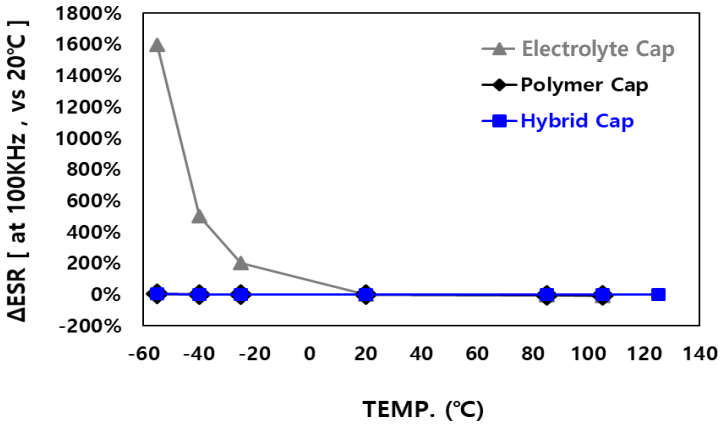
Capacitor comparison

Characteristics	Tantal capacitors		Aluminum Capacitors		
	Tantal	Polymer Tantal	Electrolyte Cap (SMD)	Polymer Al Cap	Hybrid Cap
Electrolyte	MnO_2	Conductive Polymer	Electrolyte	Conductive Polymer	**Liquid Electrolyte, Conductive Polymer**
Picture					
Max. Voltage	Weak (50V)	Weak (35V)	Excellent (450V)	Weak (50V)	**Excellent (100V)**
ESR	Normal	Excellent	Weak	Excellent	**Excellent**
Dissipation		Excellent		Excellent	**Excellent**
Ripple current		Excellent		Excellent	**Excellent**
Reliability		Excellent		Excellent	**Excellent**
Leakage current	Weak	Weak	Excellent	Weak	**Excellent**
High Temperature Load Reliability	Excellent	Excellent	Weak	Excellent	**Excellent**
moisture resistance (8585)	Weak	Weak	Excellent	Excellent	**Excellent**
Failure Type	Weak (Short)	Weak (Short)	Excellent (Open)	Weak (Short)	**Excellent (Open)**

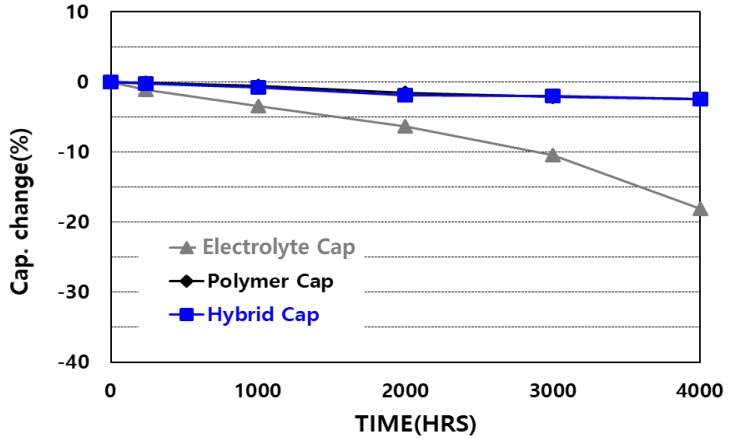
Capacitor comparison



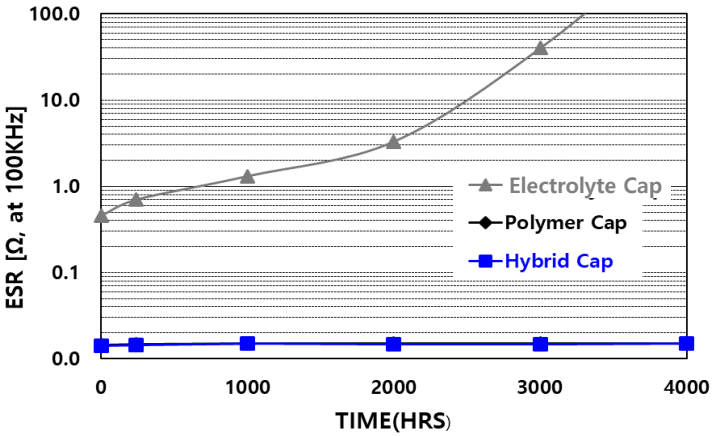
[Frequency Characteristics (ESR)]



[Temp. Characteristics (ESR)]



[Reliability Characteristics (Capacitance)]



[Reliability Characteristics (ESR)]

SAMWHA ELECTRIC