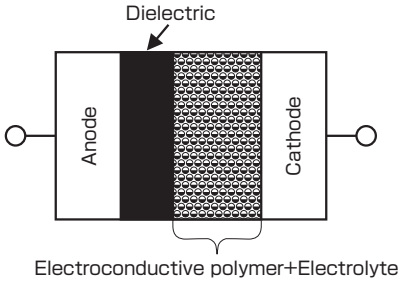
EP-cap Hybrid Conductive Polymer Type

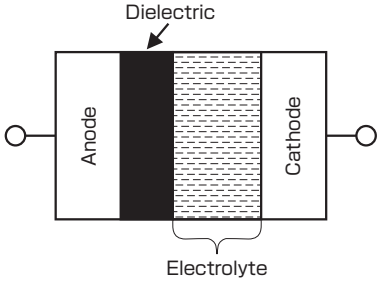
EP-cap is the first hybrid cathode aluminum electrolytic capacitors in the industry using a liquid electrolyte and a high conductive polymer.
EP-cap is very low ESR (equivalent series resistance) at high frequencies comparing with the standard aluminum electrolytic capacitors.
EP-cap has a self-healing mechanism of the dielectric due to a chemical reaction of the liquid electrolyte.
High voltage 125V, high reliability 135℃, high ripple current, long life (HVTXseries) and high temperature 150℃ (HVJ series) are ready in the line-up.

■ Basic Construction

■ EP-cap



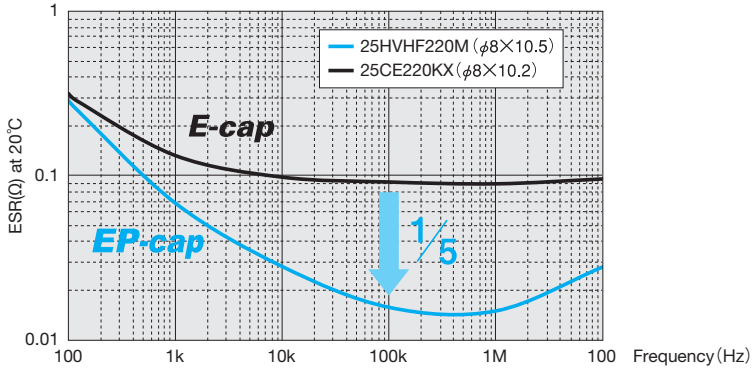
■ Electrolytic Capacitor



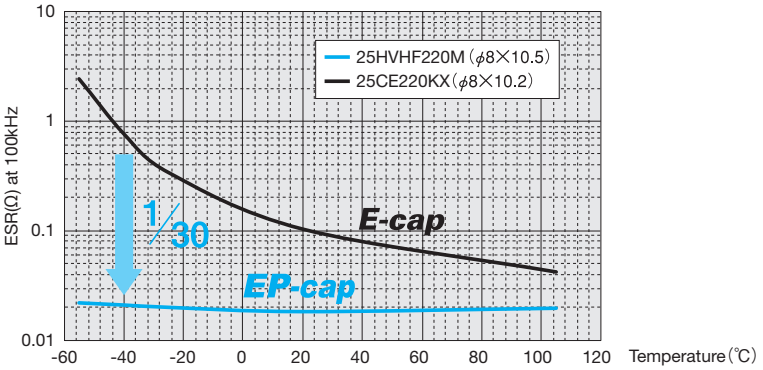
■ Features

- **Low ESR**
  (Downsize and upgrade your circuit)
  - ■ Excellent noise absorption capabilityat high frequency.
  - ■ High ripple current. Suitable for smoothingin switching regulators.
- **Excellent low temperature characteristics**
  - ■ Stable performance at low temperatures
- **Self-healing property of the liquid electrolyte**
  - ■ Less possibility of a short-circuit than the solid polymer capacitors. Low leakage current.
- **Rated voltage up to 125V.**
- **150℃ high temperature**
- **Applying a voltage up to the rated voltage is guaranteed.**
  - ■ Voltage derating is not necessary
- **RoHS compliance**
  (Environmental friendly)

■ Frequency characteristics



■ Temperature characteristics



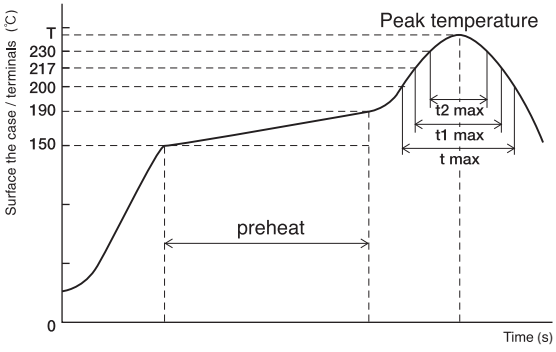
■ Soldering Condition

- Soldering with a soldering iron : within 3 seconds at 350℃ unless otherwise specified in the spec.
- Flow soldering : within 10 seconds at 260℃ unless otherwise specified in the spec.
  (Do not flow soldering with SMD type.)
- Thermal curing oven : within 2 minutes at below 150℃ ambient

■ Reflow Soldering Condition

●Profile 1

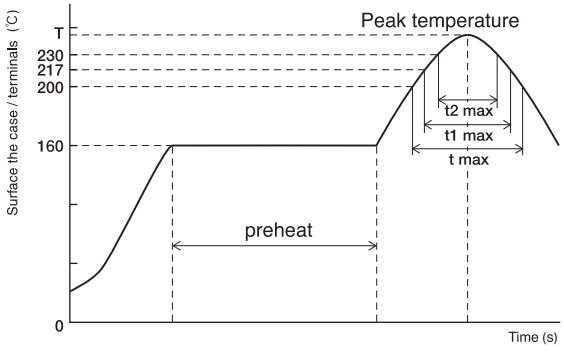
AIR reflow and IR reflow



Preheat ; 150℃ to 190℃, Within 120sec.

●Profile 2

AIR reflow and IR reflow



Preheat ; 160℃, Within 120sec.

Series	Voltage (V)	Size	Time of more than 200℃(t)	Time of more than 217℃(t1)	Time of more than 230℃(t2)	Peak temperature (T)	Reflow cycle	Profile
HVA, HVBF	6.3 to 16	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250℃★1	2	1
HVH, HVP HVT, HVJ HVHZ, HVPZ	16 to 63	φ6.3×6.0 to φ10	Within 100sec.	Within 80sec.	Within 40sec.	260℃★1	2	1
	80 to 125	ALL	Within 100sec.	Within 80sec.	Within 40sec.	250℃★1	2	1
HVHF, HVPF HVPX, HVTX HVPC	25 to 50	φ6.3	Within 70sec.	Within 40sec.	Within 30sec.	260℃★2	2	2
		φ8 to φ10	Within 70sec.	Within 40sec.	Within 30sec.	260℃★2	1	2
			Within 70sec.	Within 50sec.	Within 40sec.	245℃★3	2	2
	63 to 100	ALL	Within 70sec.	Within 40sec.	Within 30sec.	245℃★3	2	2

★1 Within 5sec.
★2 Less than 260℃
★3 Less than 245℃

The maximum cycle of reflow soldering is two times. The second cycle must be done after sufficient cooling time for more than one hour to return the temperatures of circuit boards and components back to room temperature.

■ Ripple Current Frequency Coefficient

Series	Capacitance : C (μF)	Frequency : F (Hz)			
		100 ≤ F < 1k	1k ≤ F < 10k	10k ≤ F < 100k	100k ≤ F
HVA, HVBF	C≤10	0.03	0.20	0.50	1.00
	10<C	0.05	0.20	0.50	1.00
HVH, HVP, HVT, HVJ HVHZ, HVPZ HVHF, HVPF HVPX, HVTX HEH, HEHZ, HEPZ HEHF, HEPF	6.8≤C≤33	0.05	0.32	0.67	1.00
	33<C	0.10	0.35	0.70	1.00
HVPC	ALL ITEM	0.10	0.35	0.65	1.00