



POWERED BY

Panasonic

Electronic Components

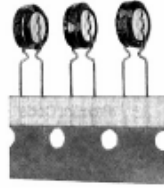
**Gold Capacitors
Electric Double Layer**

**The Benefit of Replacing A
Secondary Battery**

Gold Cap Electric Double Layer



Coin Types



SMT



Radial

Gold Capacitors

Target Market Segments

- Communications
- Computer & Peripherals
- Audio / Visual
- Industrial
- Toys

Major Characteristics

- Electric Double-Layer Capacitors offer faster charge or discharge rates either in the role of battery back-up or battery-replacement
- Low Voltage: 2.3V, 3.3V, 5.5V
- High Capacitance: 0.022F to 70F

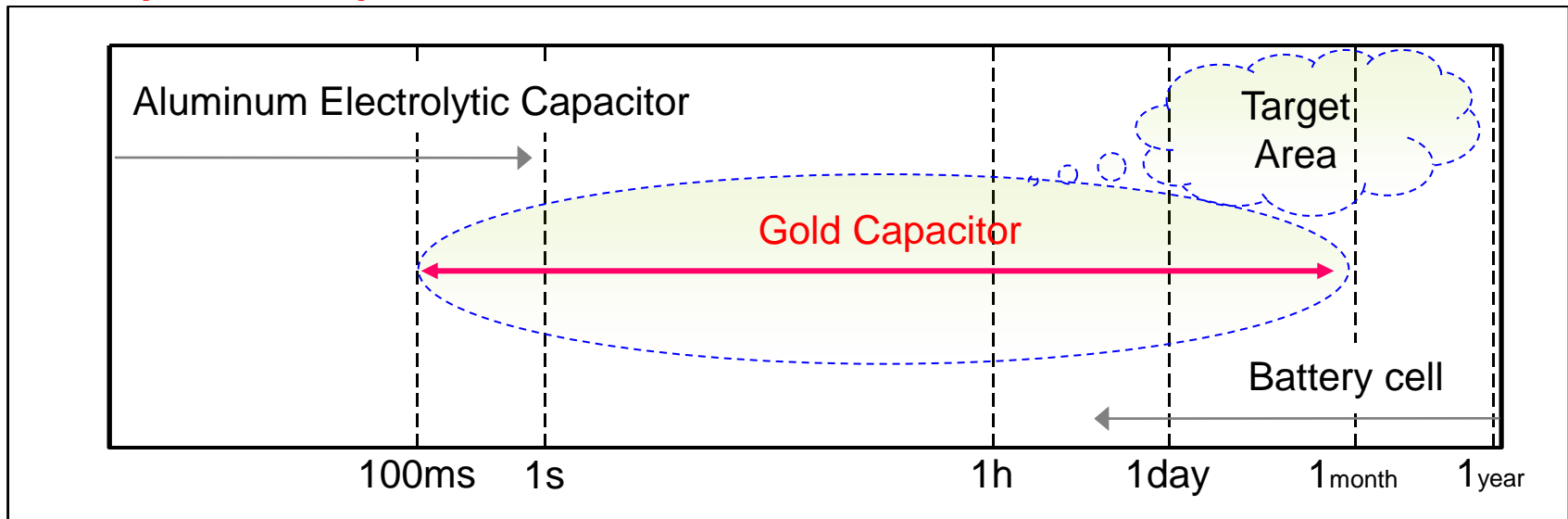
Applications

- Telecom – Cellular Handsets
- Real Time Clock – Battery Back-up
- Solar Battery Back-up
- Small Motor Starter
- Remote Reading Utility Meters
- Gaming Machines

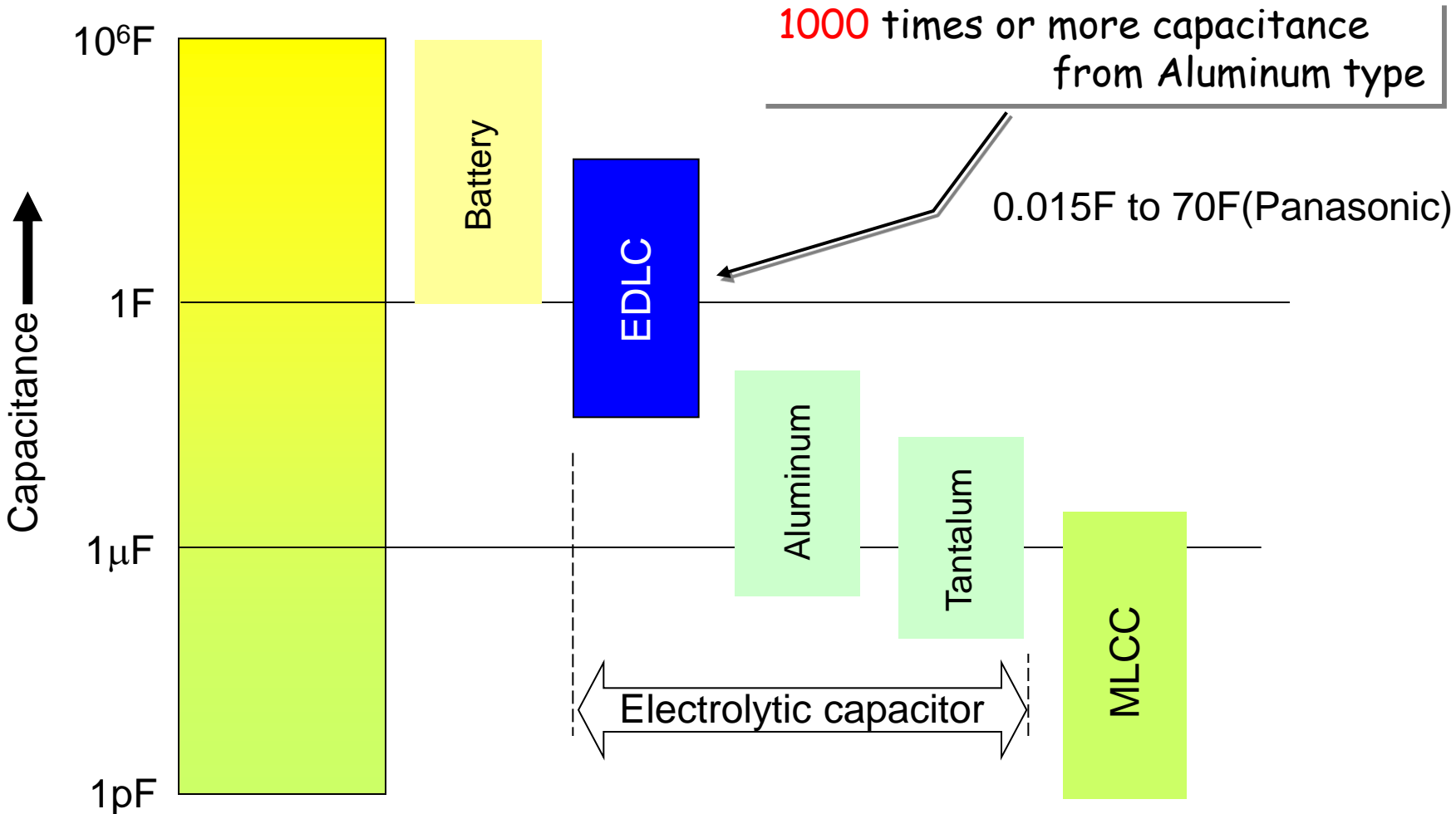
Gold Capacitor Benefits vs. Secondary Battery

- No charge and discharge cycle limitation promoted long life
- Easy circuit design
- No recycle restriction
- Green product, environmentally friendly
- No hazardous substances used
- No charging control circuit needed
- RoHS Compliant

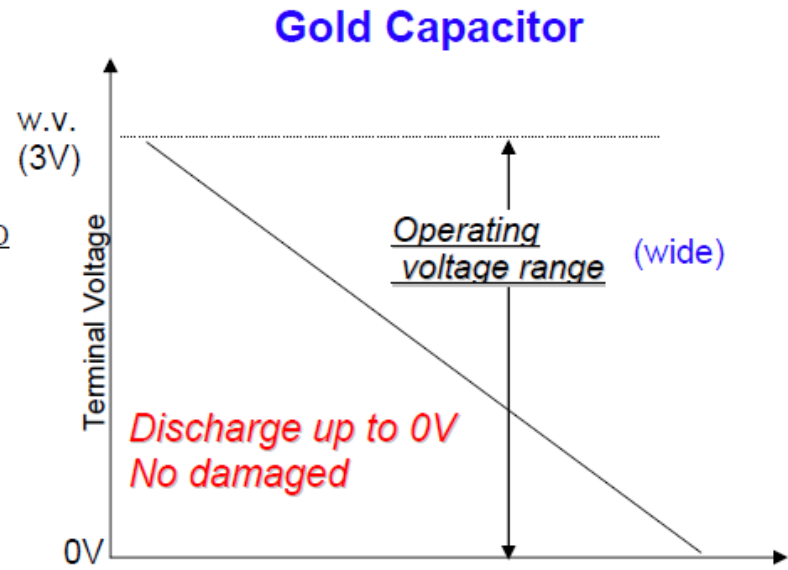
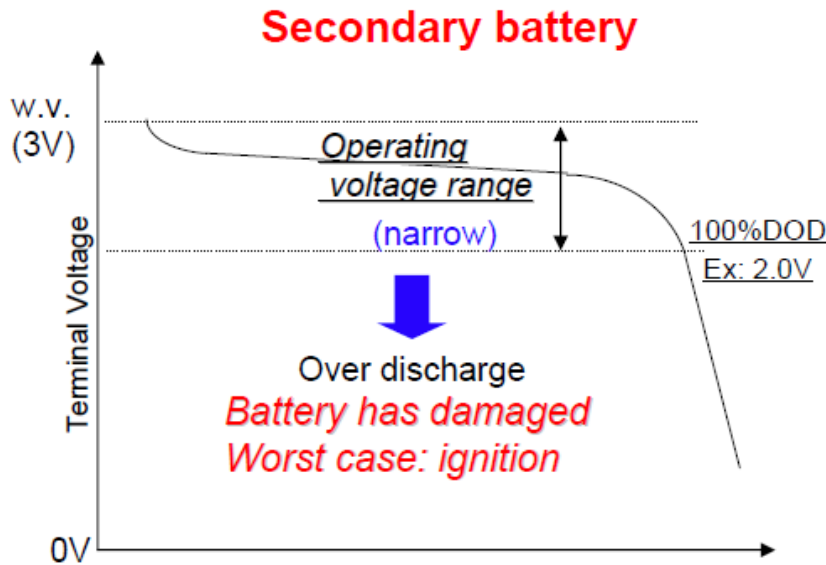
Backup time Comparison:



Position of Gold Capacitor

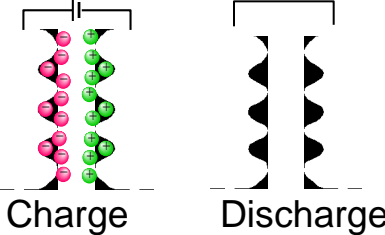
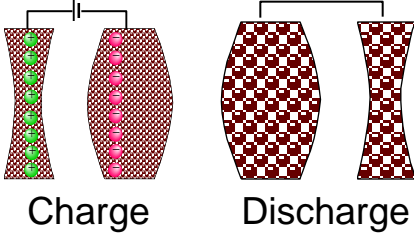


Gold Capacitor vs. Secondary Battery



No need the circuit that controls the charge and discharge.

Comparison with battery

	EDLC	battery
Principle of charge-discharge	Physical (moving ions) 	Chemical reaction 
Charge-discharge cycle life	No limited (No relation between charge-discharge cycle and product life)	Limited 100-1000cycles
Safety	No worry of smoking and the ignition.	Possibility of the ignition by the over discharge.
Capacitance density	1	10 to 100

EDLC (Gold Capacitor) is not a battery.

Please imagine Aluminum Electrolytic capacitor that has very high capacitance.

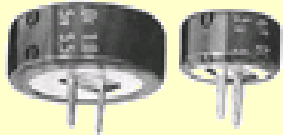
Gold Capacitor Products

Standard type

EECF5R5U***

NF

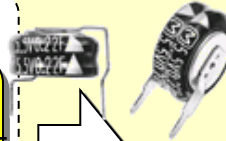
5.5V 0.10F to 1.5 F
-25 to +70°C



EECS0HD****

SD

5.5V 0.022 F to 0.33F
-25 to +70°C



EECS5R5****

SG

5.5V 0.47 F to 1.5 F
-25 to +70°C



Taping

EECSE0H***

SE

5.5V 0.022 F to 0.22F
-25 to +70°C



NEW

ER

2.6 V 0.015F
-10 to +60°C



High Reliability

EECF5R5H***

F

5.5V 0.033 F to 1.0 F
-25 to +85°C

85°C 1000H



85°C 2000H

EECRG0V***

RG

3.6 V 0.22/1.0 F
-25 to +85°C



EECRF0H***

RF

5.5V 0.1/ 0.68 F
-25 to +85°C



SMD

EECEN0F****

EN

3.3 V 0.2 F
-10 to +60°C

φ6.8x1.4 mm



EECEP****

EP

2.6 V (3.3 V) 0.033F
-10 to +60°C

φ3.8x1.1 mm



Large Capacitance / Low ESR

EECHW0D***

HW

2.3(2.1) V 1.0 F to 70 F
-25 to +70(60)°C



EECHZ0E***

HZ

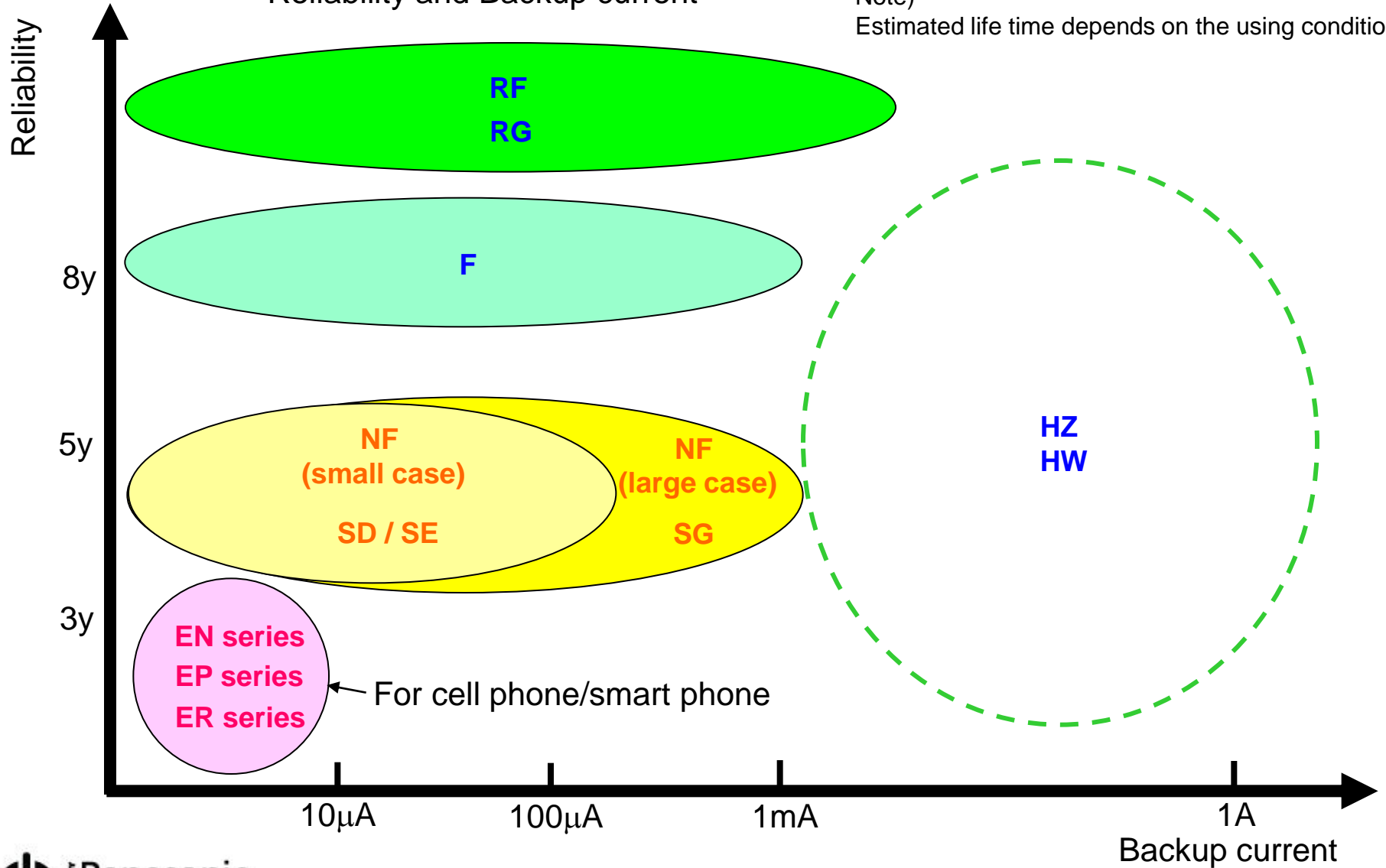
2.5V 3.3 F to 10 F
-25 to +60°C



Product Image of Gold Capacitor

Reliability and Backup current

Note)
Estimated life time depends on the using condition



EN series
EP series
ER series

For cell phone/smart phone