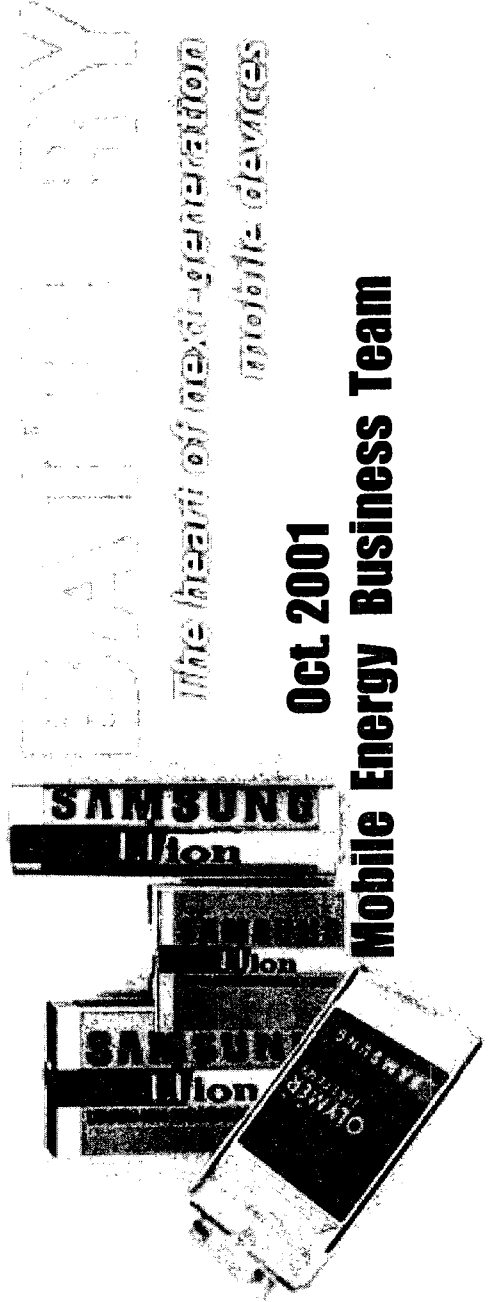

삼성 SDI의 리튬전지 기술현황

백 민 선
(삼성 SDI(주))



삼성SDI의 리튬전지 기술현황

SAMSUNG Li-ion



*The heart of next-generation
mobile devices*

Oct. 2001

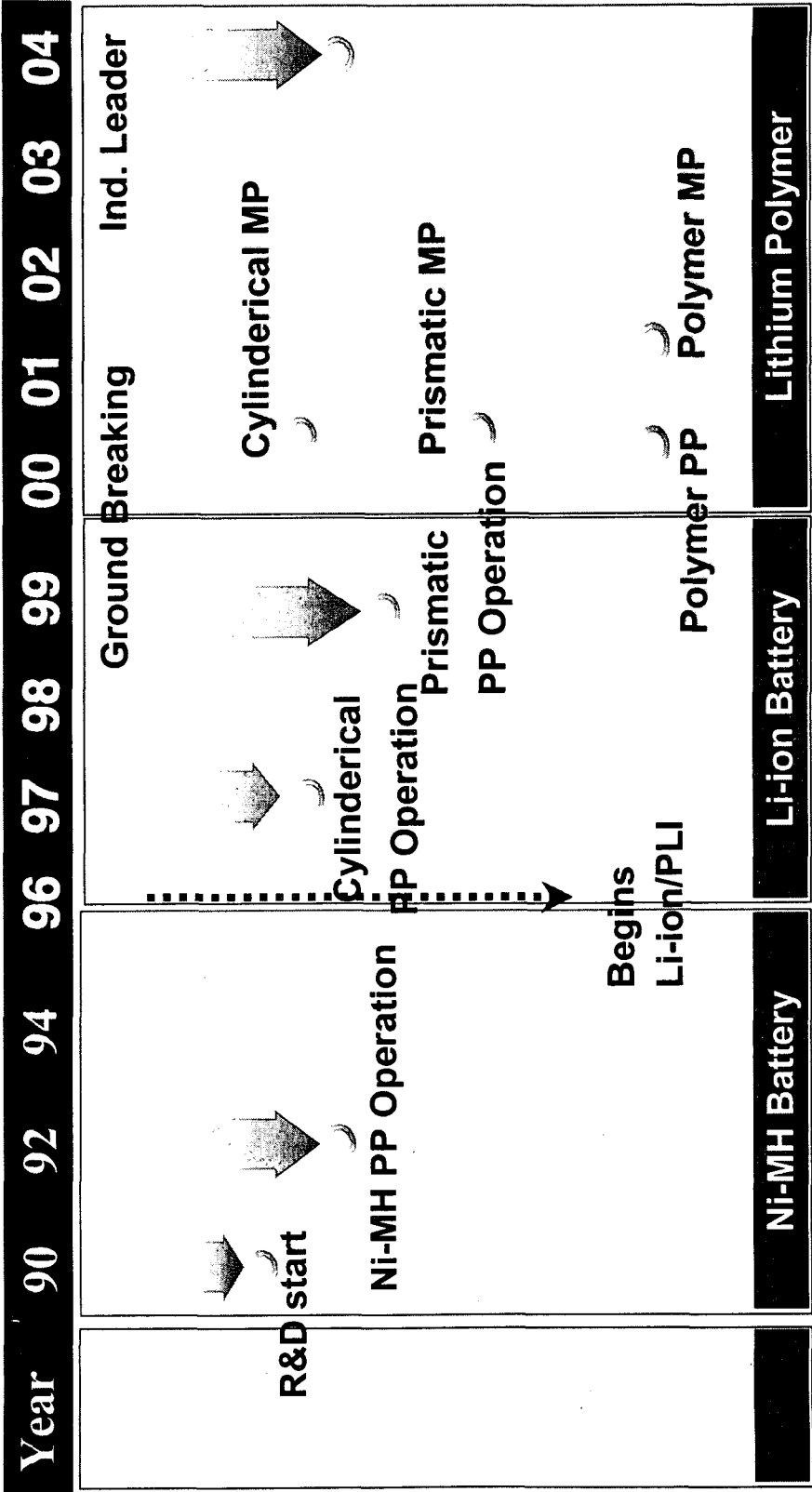
Mobile Energy Business Team

Contents



- 삼성SDI 리튬 전지
- 삼성SDI의 각형 전지
- 삼성SDI의 S²LB 전지
- 삼성SDI의 폴리머 전지

History of Samsung Battery



Roadmap(Prismatic)



- Based on Engineering Sample Release
 - Minimum Discharge capacities

Model	2001		2002
ICP463048			630 Ver
ICP553048		720	Ver.up
ICP633048	720		830 Ver.up
ICP633058	800	870	Ver.up
ICP463448	650	670	700
ICP463450			720 Ver
ICP553450R			900 Ver.up
ICP653450	900		
ICP653450R		950	1000 Ver
ICP653450L			850 Ver.up
ICP503465	900		1000
ICP653465		1200	Ver.up

R: Round Type L :: Non PCM

Roadmap(Cylindrical)



- Based on Engineering Sample Release
- Minimum Discharge capacities

Model	2001	2002
ICR1865-18	1800	
ICR18650-20	2000	
ICR18650-22		2200

Roadmap(Pouch)



- Based on Engineering Sample Release
 - Minimum Discharge Capacities

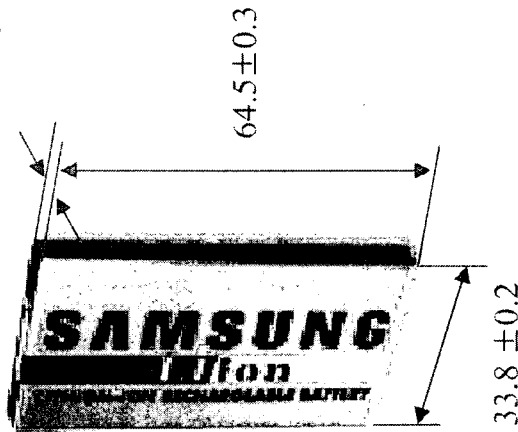
Model	2001	2002
Super Slim Lithium-ion Battery(S²LB)		
ICF323461	520	550
ICF383452	540	600
ICF383461	600(ICF403461)	
ICF383562	750	850
Lithium-ion Polymer Battery		
PGF383562	750	820 850
PCF295790	1100	1200
PCF315790	1200	1300
PCF315794	1300	1400
PCF345794	1400	1500

삼성SDI의 각형 전지

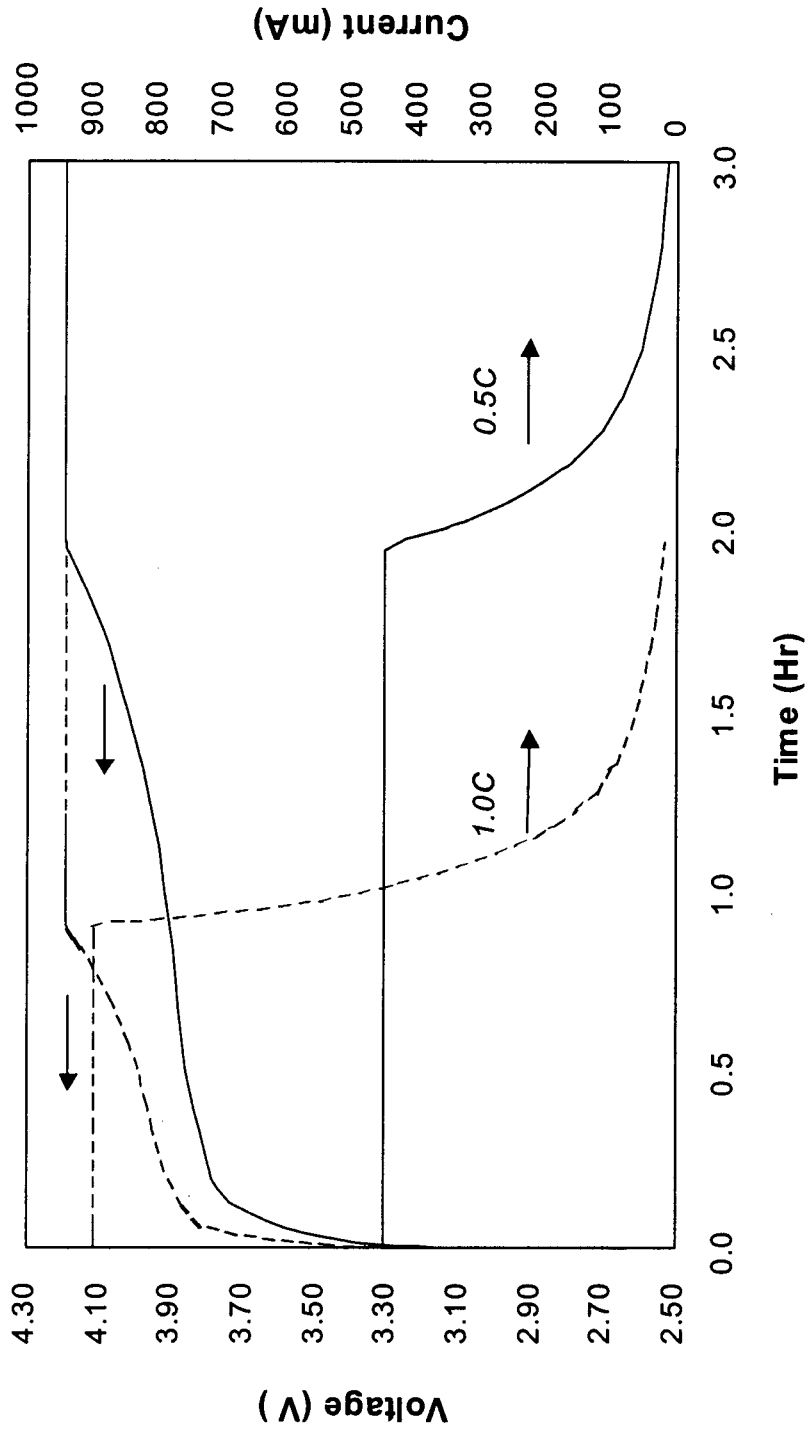


● Nominal Capacity	900mAh
● Nominal Voltage	3.7V
● Charging Method	CC-CV
● Charging Voltage	4.2V
● Charging Current	Standard 450mAh Rapid 900mAh
● Charging Time	Standard 0.5C 3.0h Rapid 1.0C 2.5h
● Operating Temperature	Charge 0 ~ 45 °C Discharge -20 ~ 60 °C
● Storage Temperature	1Year -20 ~ 20 °C 3Months -20 ~ 45 °C 1Month -20 ~ 60 °C
● Weight	23g

Max.5.0(Charged)

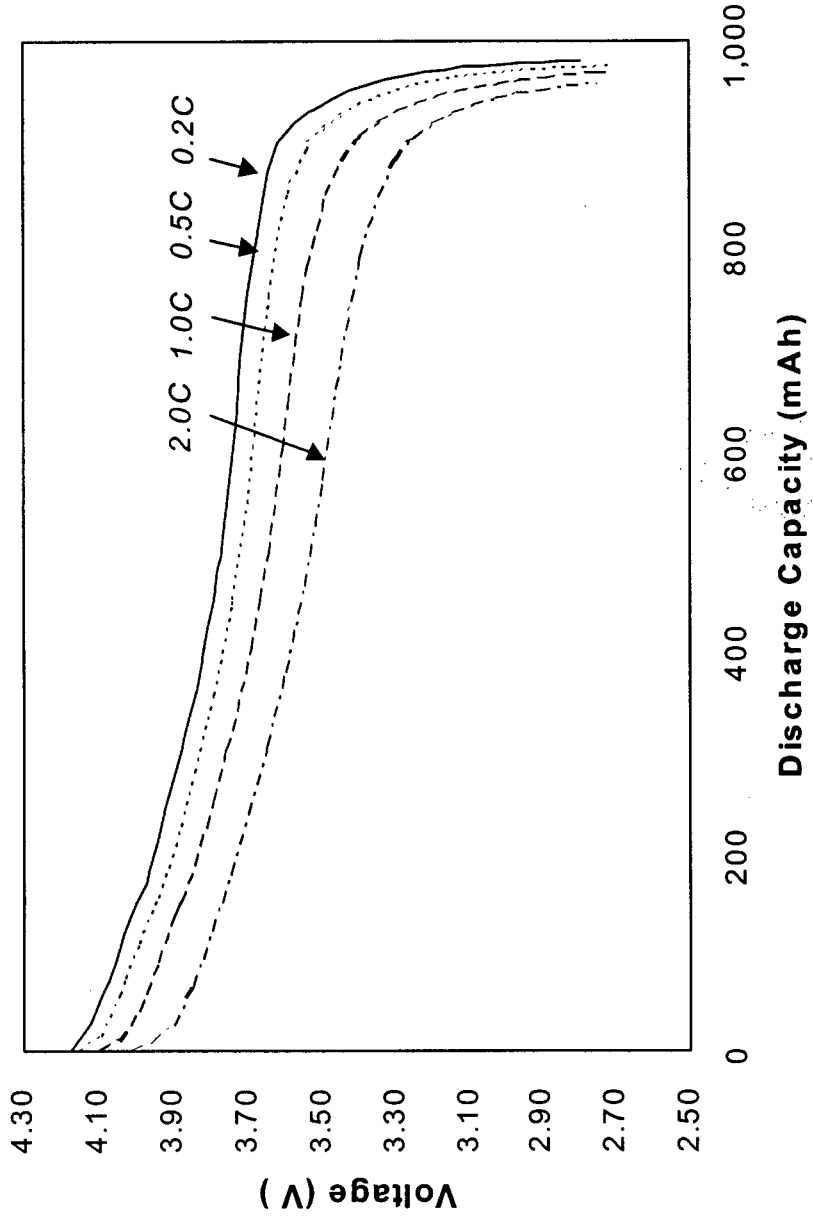


Charge Rate Characteristics

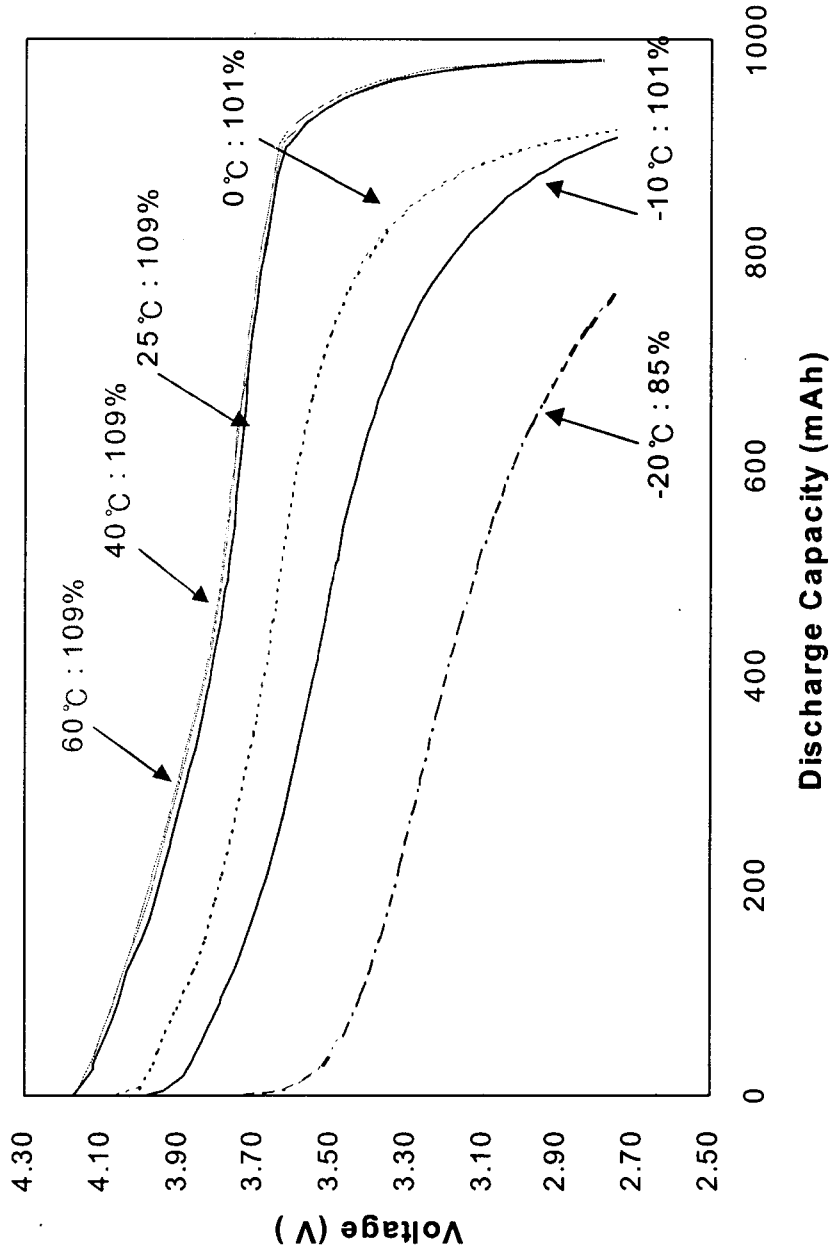




Discharge Rate Characteristics



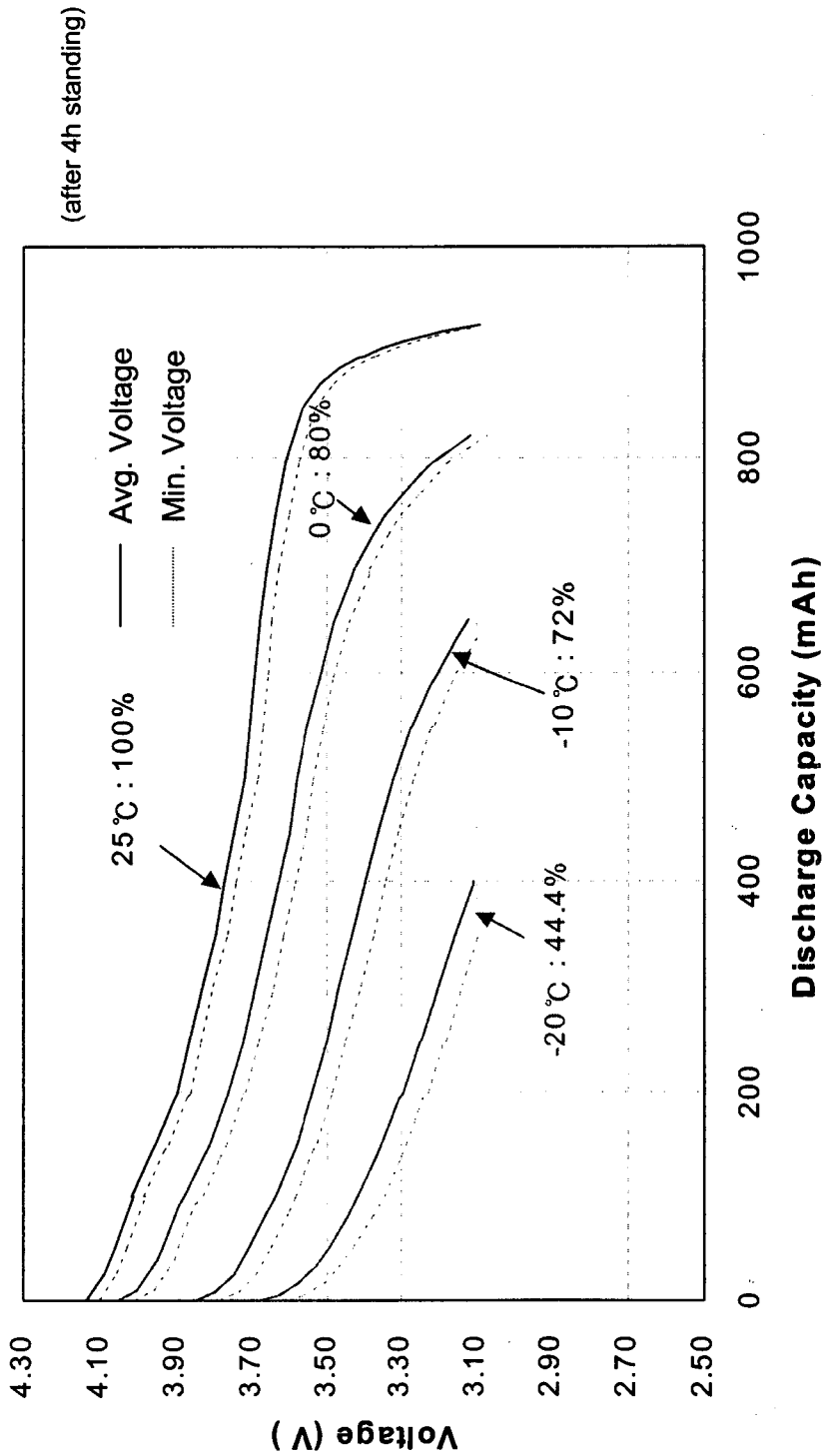
Discharge Temperature Characteristics (I)



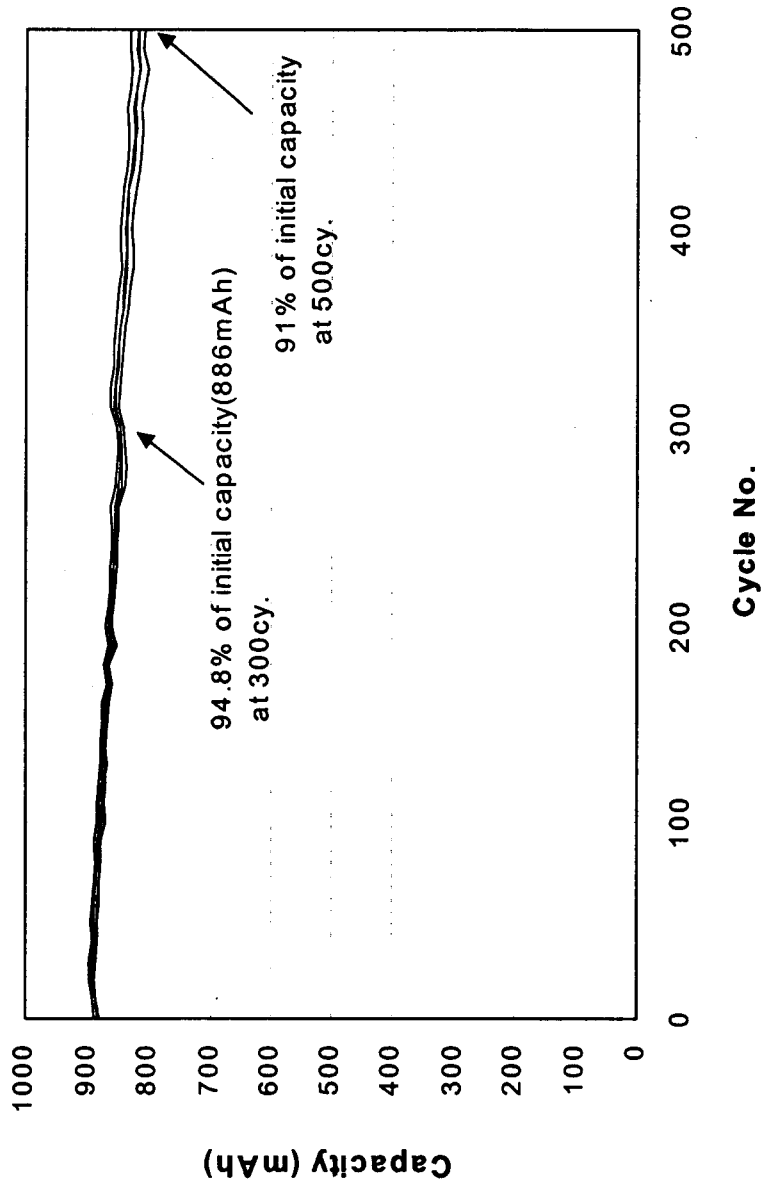
* Percentage is an index of nominal capacity (900mAh).



Pulse Discharge Characteristics



Cycle Life : Capacity Retention



* Percentage is an index of nominal capacity (900mAh).

Safety Test Results



Electrical Abuse

- External Short(25°C)
- External Short(60°C)
- Overcharge at 1C
- Overcharge at 3C

Mechanical Abuse

- Impact
- Crush
- Nail Penetration at 4.35V

Thermal Abuse

- Hot Oven at 130 °C
- Hot Oven at 150 °C

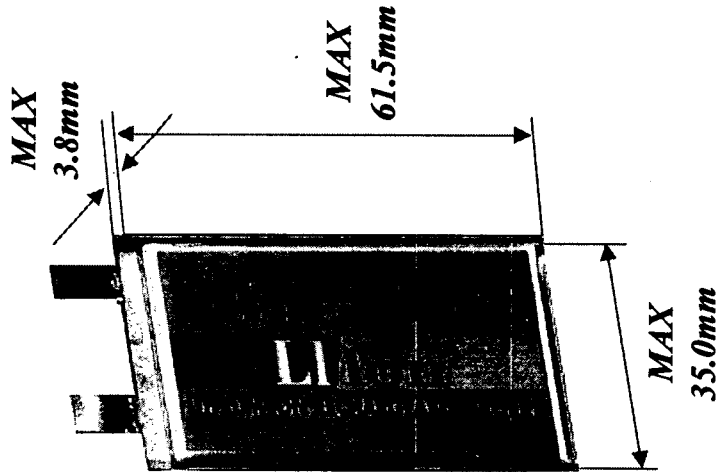
Results

No fire, no Explosion
No fire, no Explosion
No fire, no Explosion
No fire, no Explosion

No fire, no Explosion
No fire, no Explosion
No fire, no Explosion

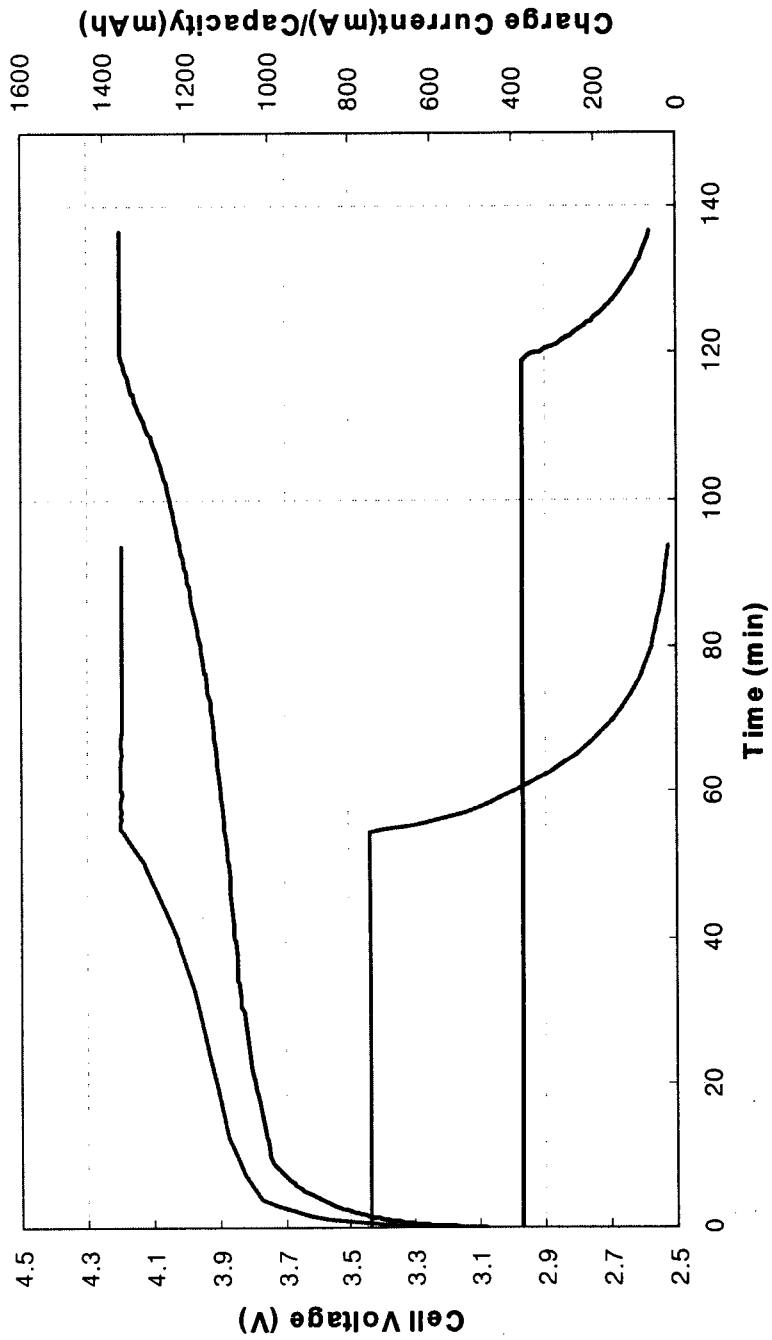
No fire, no Explosion
No fire, no Explosion

삼성SDI의 S²LB 전지

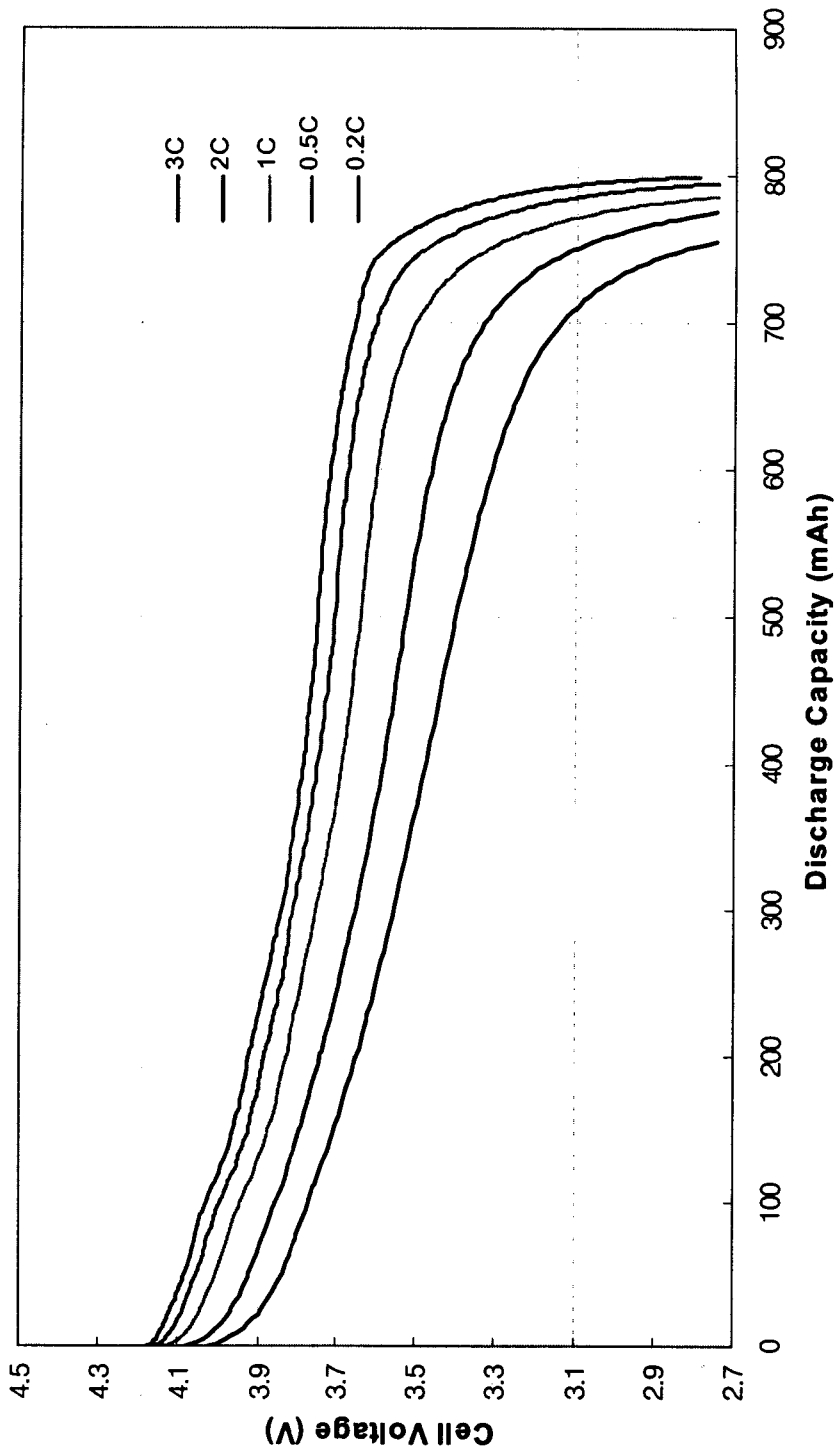


● Nominal Capacity	750mAh
● Nominal Voltage	3.7V
● Charging Method	CC-CV
● Charging Voltage	4.2V
● Charging Current	Standard 375mAh Rapid 750mAh
● Charging Time	Standard 0.5C 3.0h Rapid 1.0C 2.5h
● Operating Temperature	Charge 0 ~ 45 °C Discharge -20 ~ 60 °C
● Storage Temperature	1 Year -20 ~ 20 °C 3Months -20 ~ 45 °C 1Month -20 ~ 60 °C
● Weight	MAX 17.5g

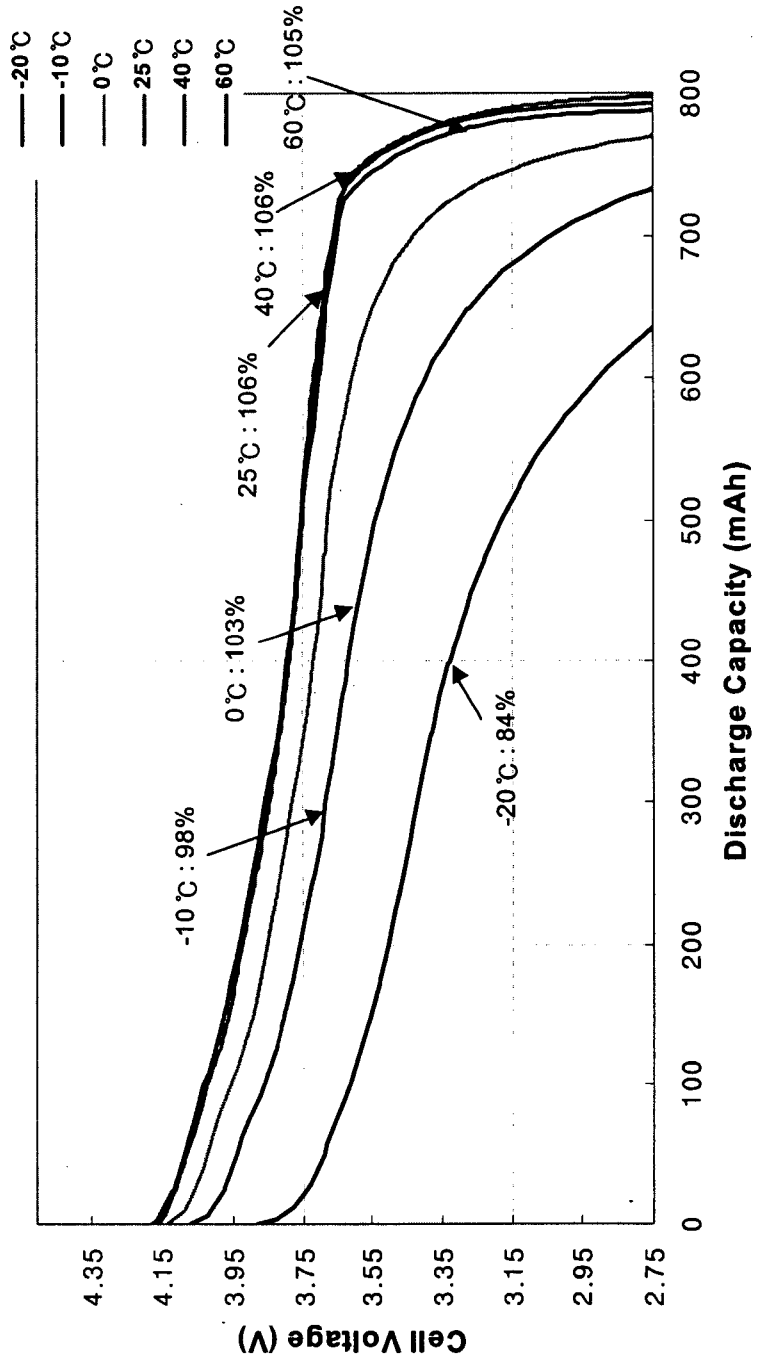
Charge Rate Characteristics



Discharge Rate Characteristics

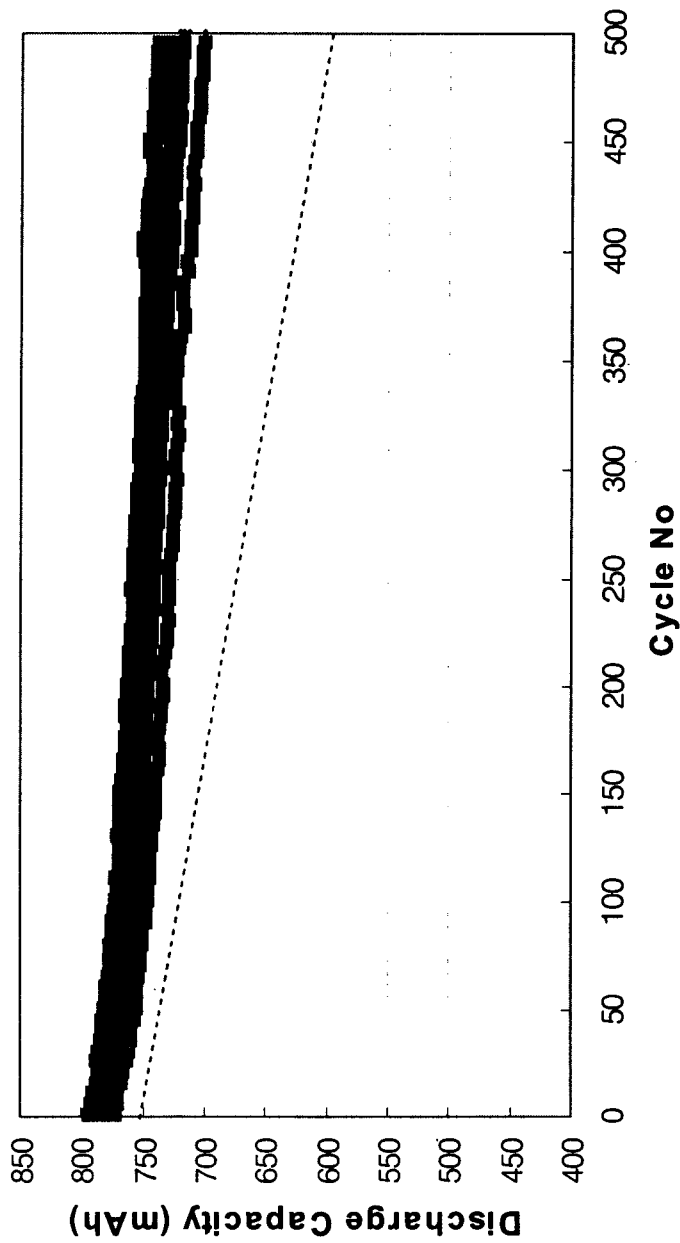


Discharge Temperature Characteristics



* Percentage is an index of nominal capacity (750mAh).

Cycle Life : Capacity Retention



Safety Test Results



Electrical Abuse

- External Short(25 °C)
- External Short(60 °C)
- Overcharge at 1C

Mechanical Abuse

- Impact
- Crush
- Nail Penetration at 4.35V

Thermal Abuse

- Hot Oven at 130 °C
- Hot Oven at 150 °C

Results

No fire, no Explosion
No fire, no Explosion
No fire, no Explosion

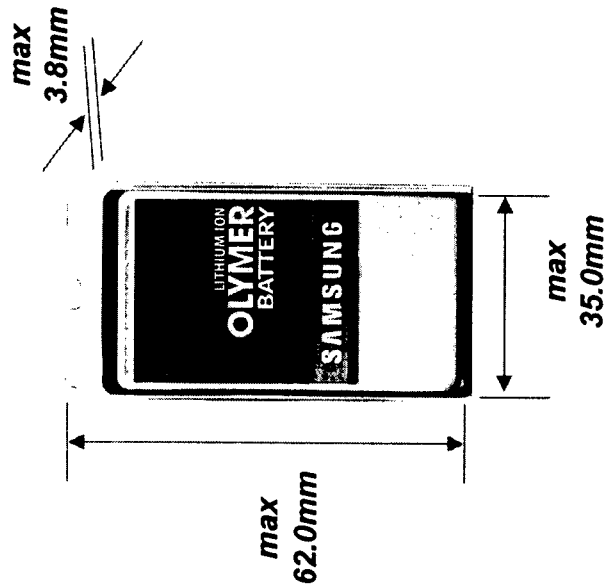
No fire, no Explosion
No fire, no Explosion
No fire, no Explosion

No fire, no Explosion
No fire, no Explosion

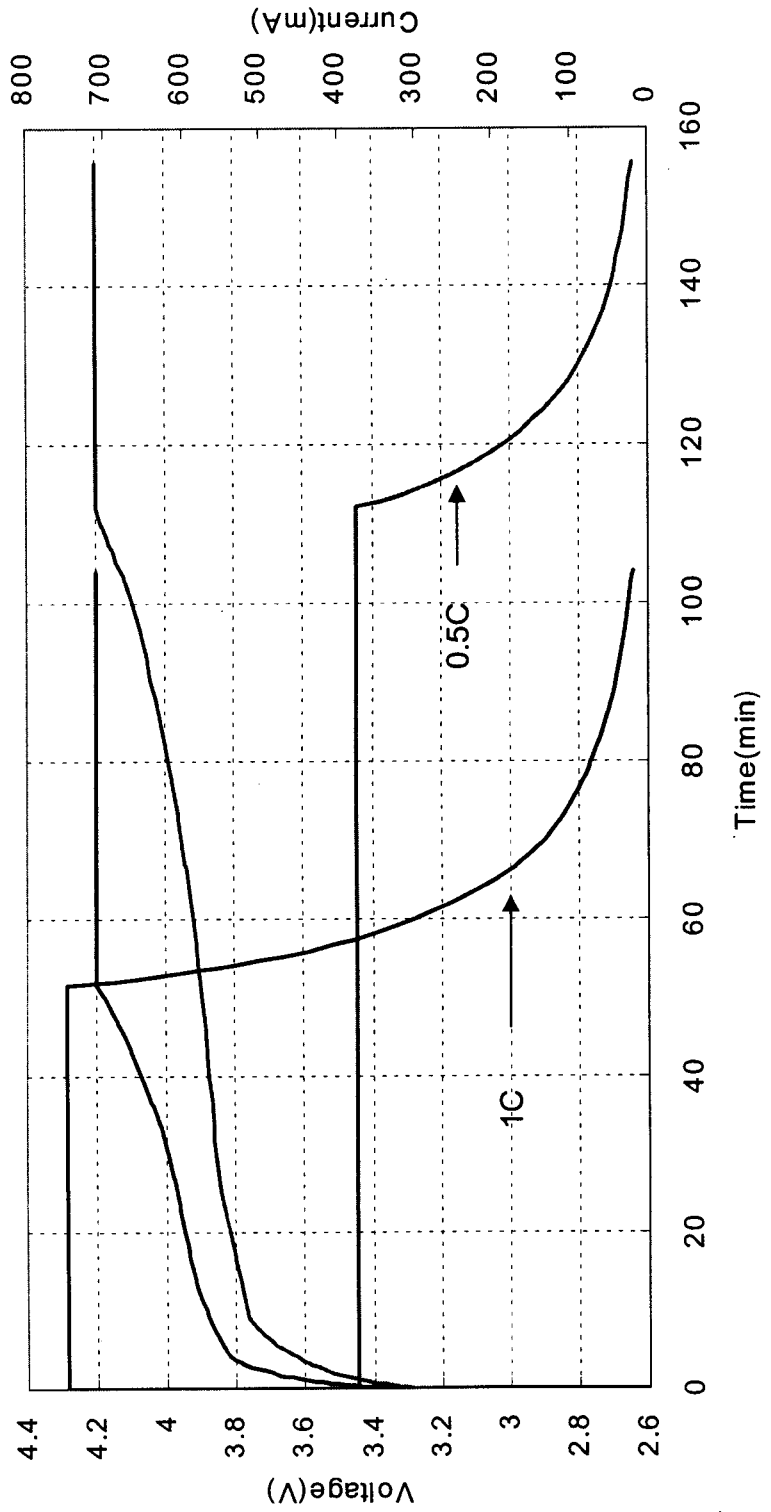
삼성SDI의 폴리머 전지



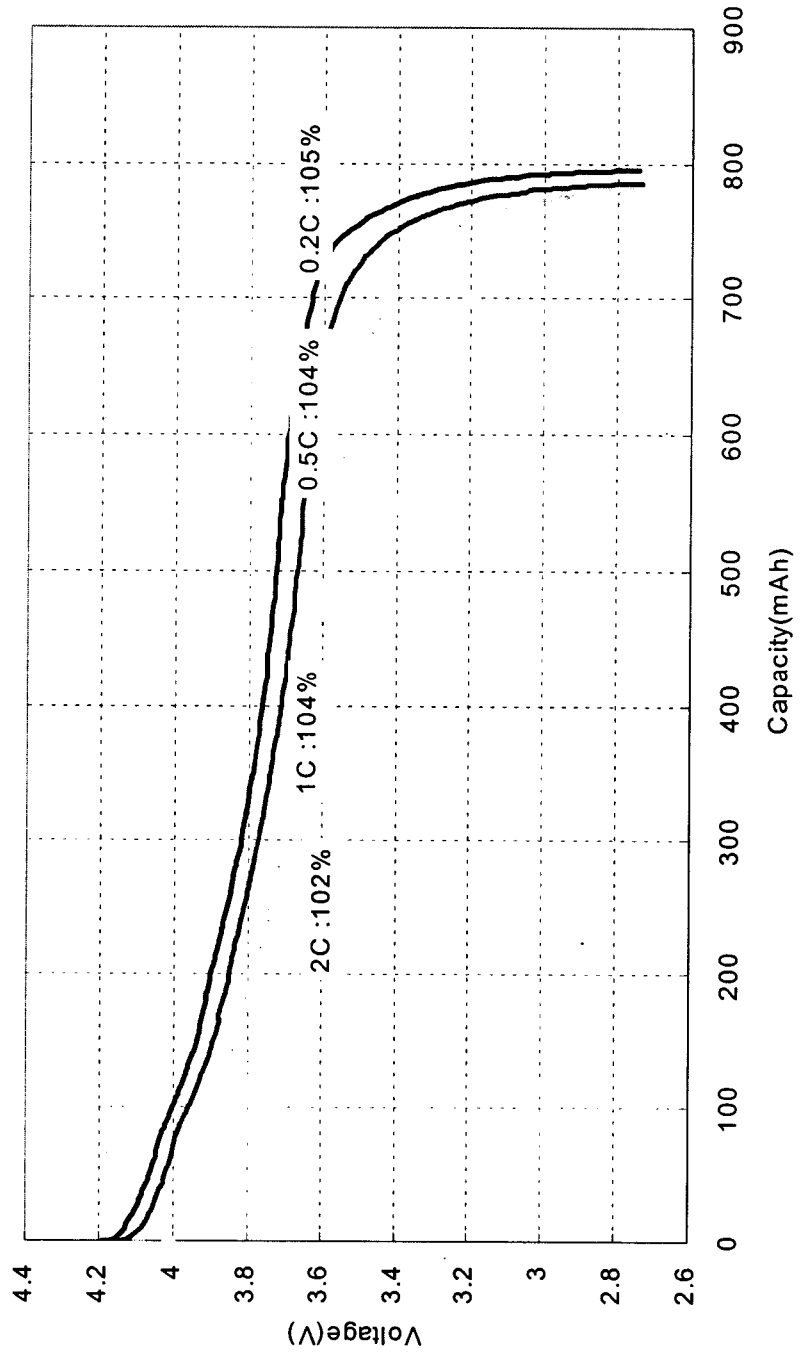
- Nominal Capacity 750mAh
- Nominal Voltage 3.7V
- Charging Method CC-CV
- Charging Voltage 4.2V
- Charging Current Standard 375mAh Rapid 750mAh
- Charging Time Standard 0.5C 3.0h Rapid 1.0C 2.5h
- Operating Temperature Charge 0 ~ 45 °C Discharge -20 ~ 60 °C
- Storage Temperature 1Year -20 ~ 20 °C 3Months -20 ~ 45 °C 1Month -20 ~ 60 °C
- Weight 15.7g



Charge Rate Characteristics

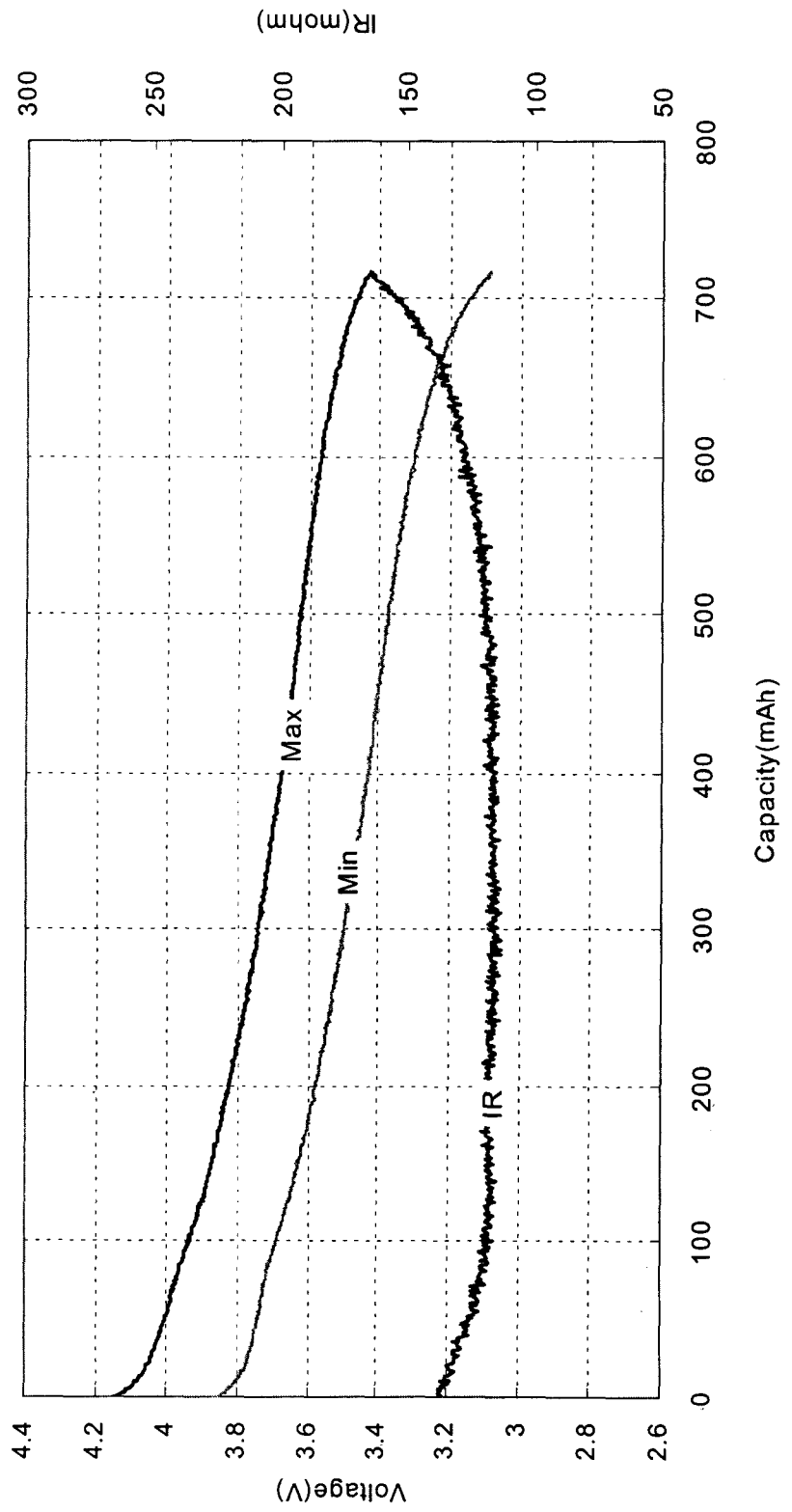


Discharge Rate Characteristics

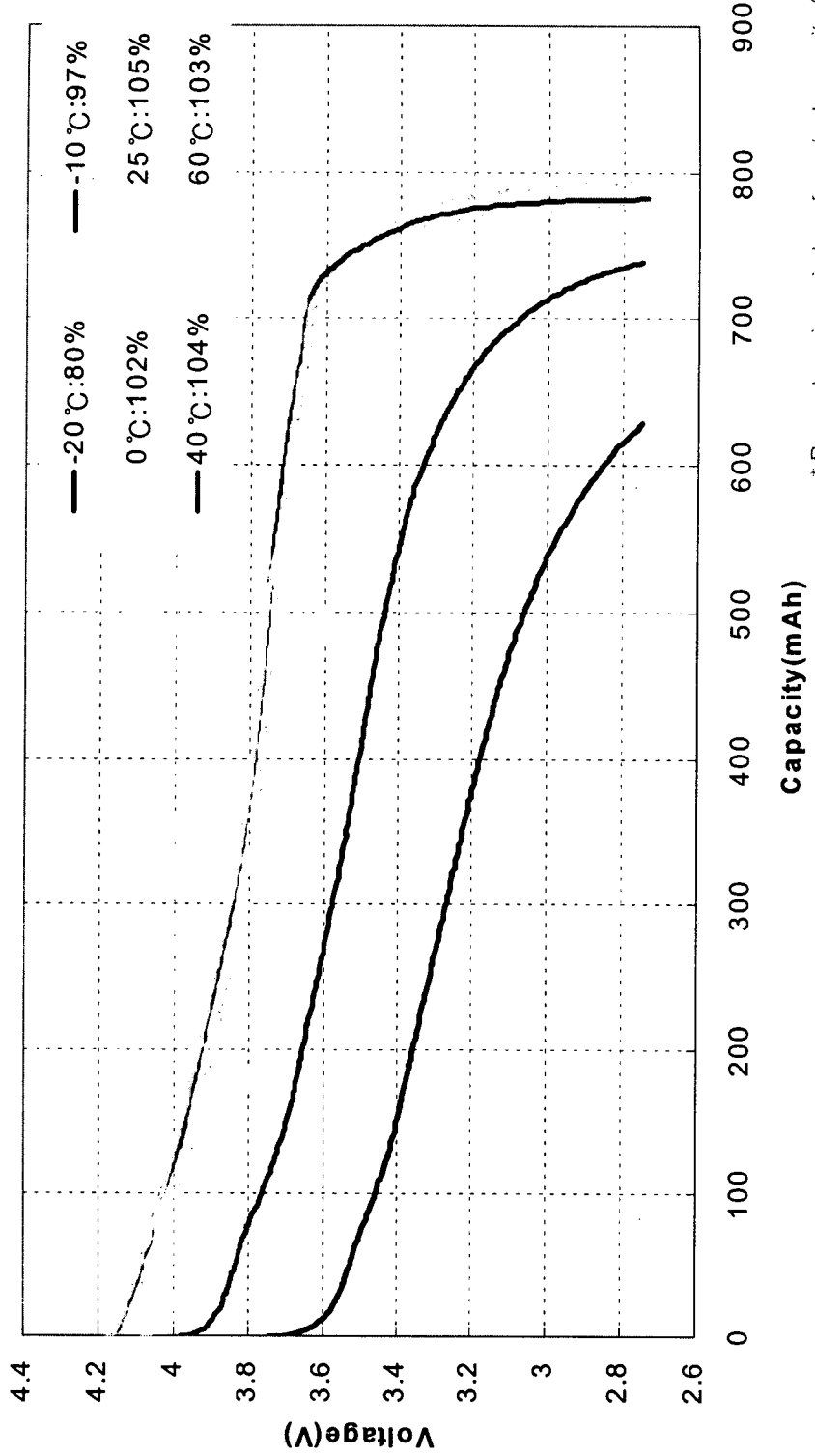


* Percentage is an index of nominal capacity (750mAh).

Pulse Discharge Characteristics



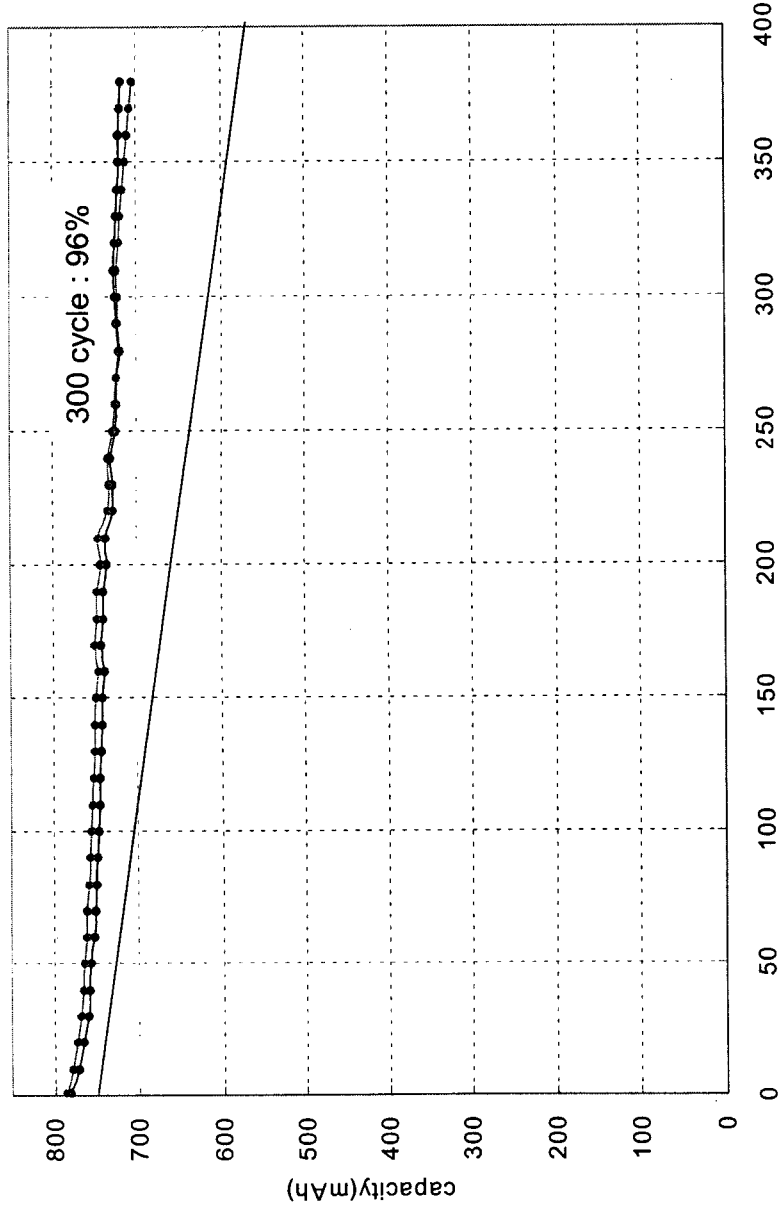
Discharge Temperature Characteristics



* Percentage is an index of nominal capacity (750mAh).



Cycle Life : Capacity Retention



cycle number

* Percentage is an index of nominal capacity (750mAh)

Safety Test Results



- Electrical Abuse**
 - Overcharge at 1C
- Mechanical Abuse**
 - Crush
 - Nail Penetration at 4.35V
- Thermal Abuse**
 - Hot Oven at 150°C

Results

No fire, no Explosion

No fire, no Explosion

No fire, no Explosion

No fire, no Explosion