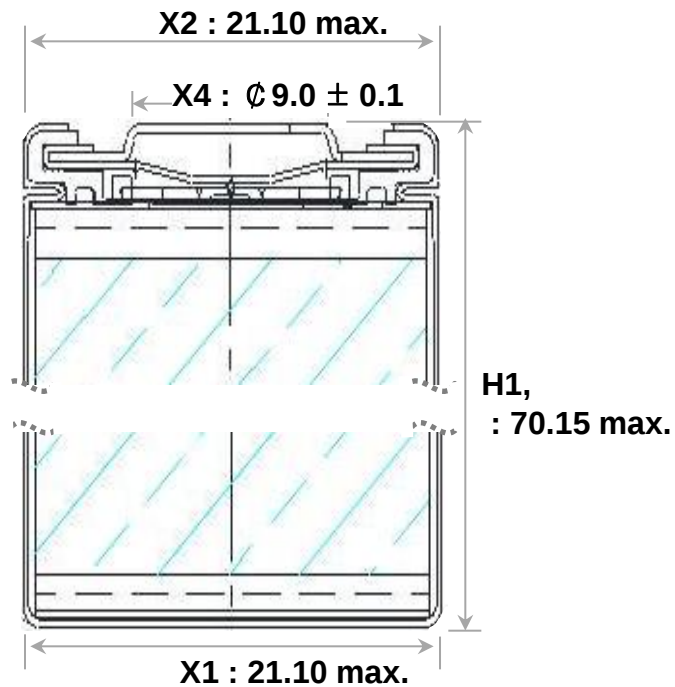


TECHNICAL INFORMATION of INR21700 M50

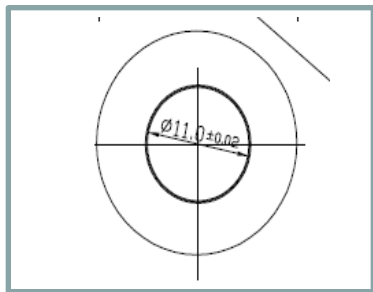
Contents

- 1. General information**
- 2. Discharge characteristic & DC-IR**
- 3. Discharge characteristics at low Temperature**
- 4. Max discharge power at room temperature**
- 5. Max discharge power at low temperature**
- 6. Cycle life**
- 7. Safety features**

2016. 09. 08



Drawing of Bottom-vent



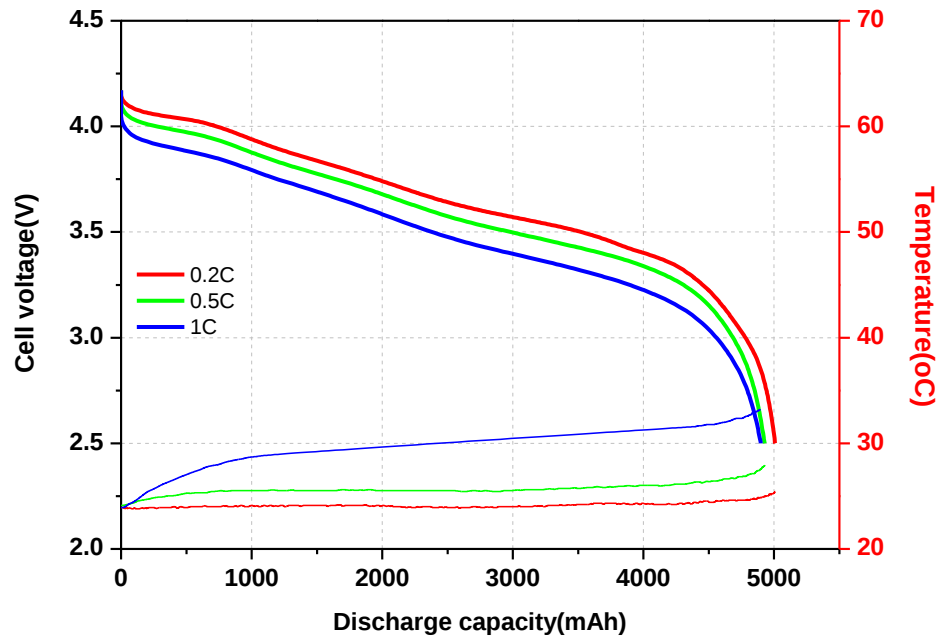
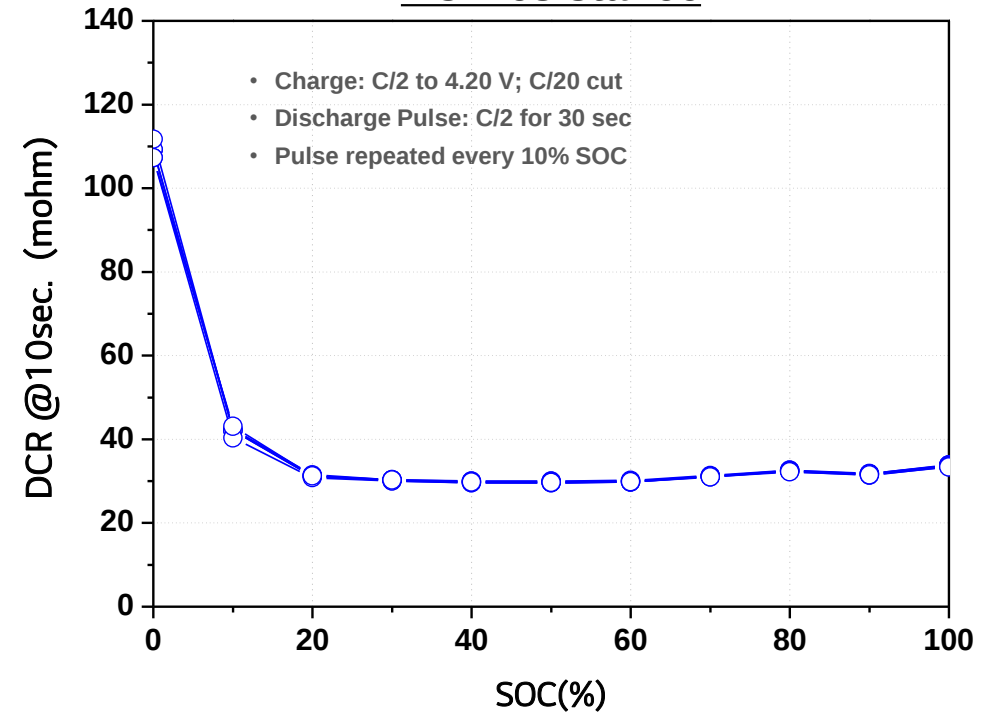
Position	Dimension
X1	Max. 21.10 mm
X2	Max. 21.10 mm
X4	9.0 ± 0.10 mm
H0	0 ± 0.11 mm
H1	Max. 70.15 mm

Can material: Steel (Nickel-plated)

Model INR21700 M50

0.2C Capacity *	Nominal	5,000 mAh
	Minimum	4,850 mAh
Max. Discharge Current		14A
Dimensions without tubing	Diameter	Max. 21.10 mm
	Height	Max. 70.15 mm
Weight		Max. 69.0 grams
Nominal Voltage		3.63V
Initial Internal Impedance		Approx. 25mOhm

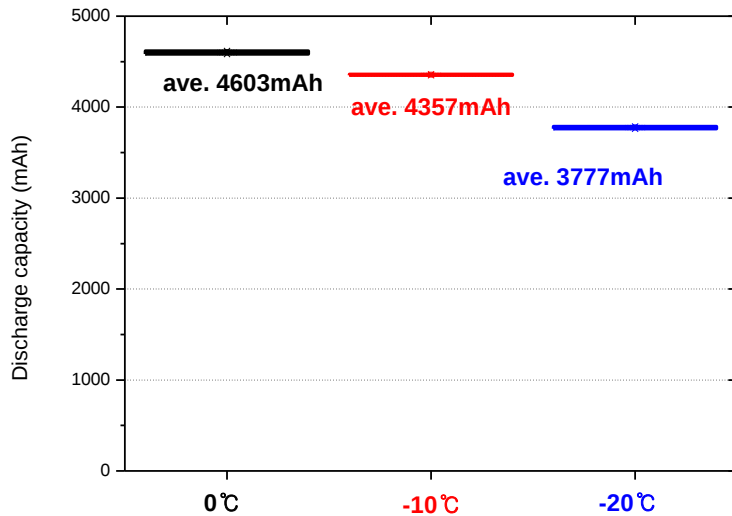
* Charge : 1455mA, 4.20V, 50mA End-current (CC-CV)
 Discharge : 970mA, 2.50V End-voltage (CC)

Voltage Profiles @ 24°CDC-Resistance

C-rate	Discharge Capacity (mAh)	Efficiency (%)	Discharge Energy (Wh)	Efficiency (%)
0.2 C	5000	100	18.2	100
0.5 C	4927	98.4	17.6	96.7
1.0 C	4898	97.8	17.1	94.0

SOC (%)	100	90	80	70	60	50	40	30	20	10	0
@ 24°C	33.8	31.8	32.6	31.3	30.1	30.0	30.0	30.4	31.5	42.5	109.1

Discharge Capacity at low temperature



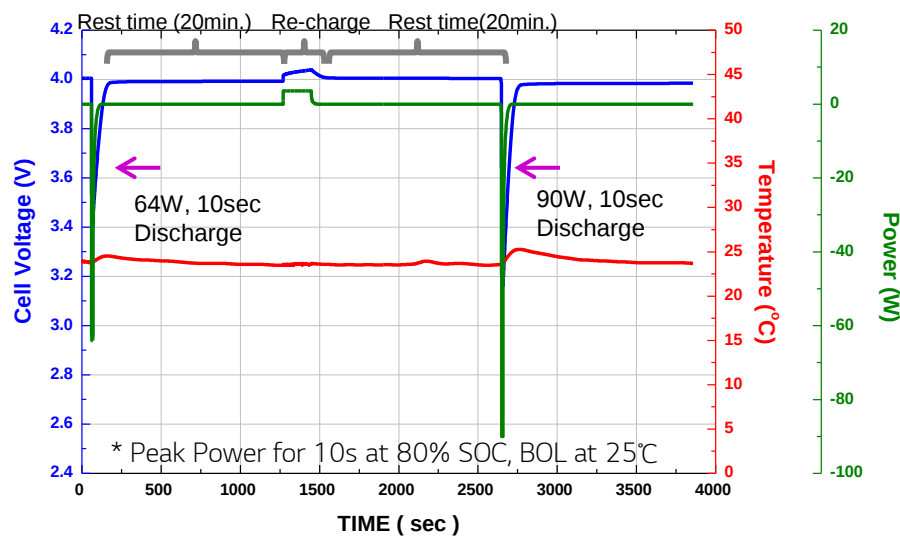
No.	@ 0℃		@ -10℃		@ -20℃	
	Capacity (mAh)	Energy (Wh)	Capacity (mAh)	Energy (Wh)	Capacity (mAh)	Energy (Wh)
1	4584	16.6	4362	16	3762	12.4
2	4616	16.7	4351	16	3781	12.4
3	4603	16.7	-	-	3788	12.4
Ave.	4603	16.7	4357	15.6	3777	12.4

■ Test condition

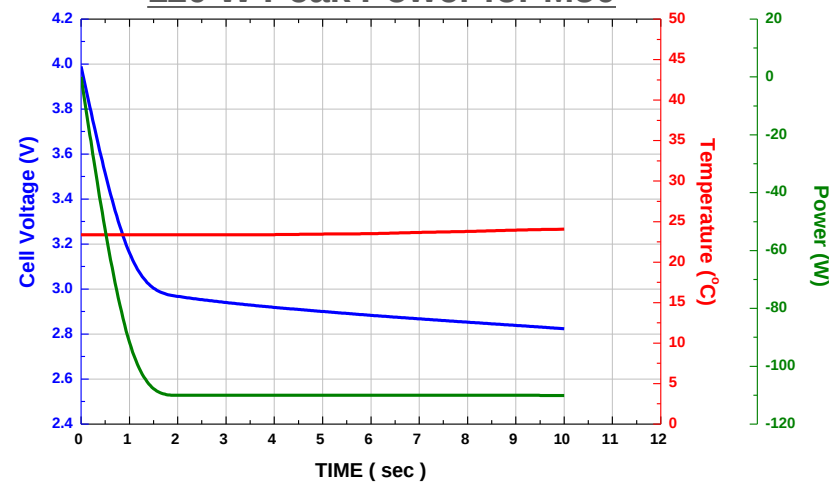
- Charge (CC-CV): 4.2V, 0.33C, End-current : 0.05C, @ 24℃
- Discharge (CC): 0.2C, End-voltage : 2.5V @ each temperature

Max peak power	@24℃	@0℃	@-10℃	@-20℃
	SOC80%	SOC100%		
	110W	102W	75W	35W

HPPC* Profiles



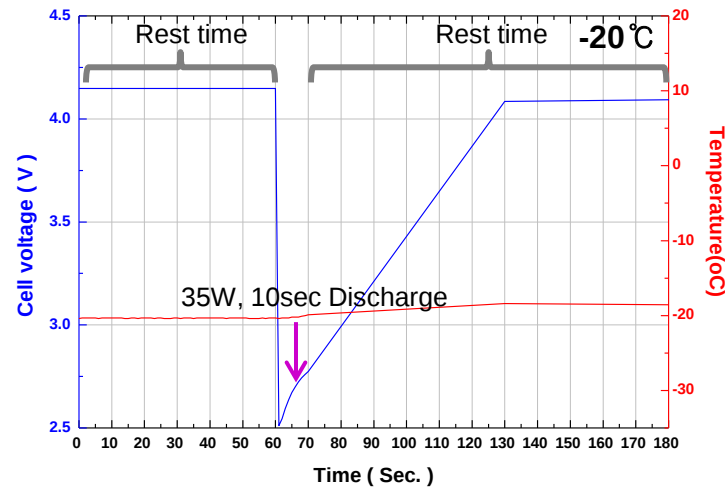
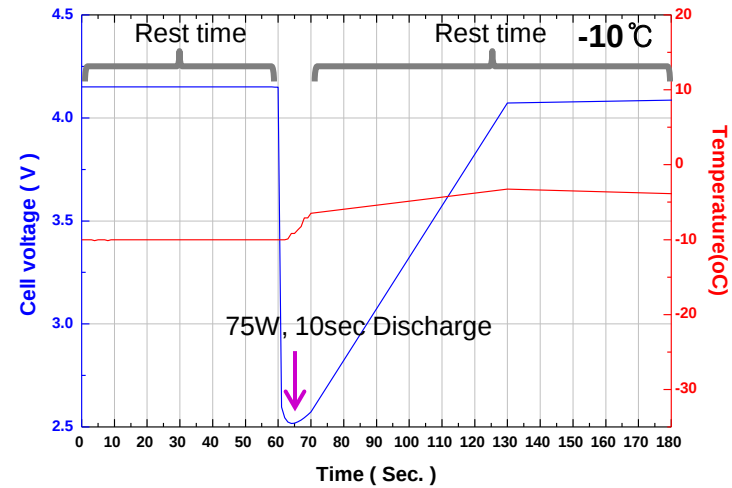
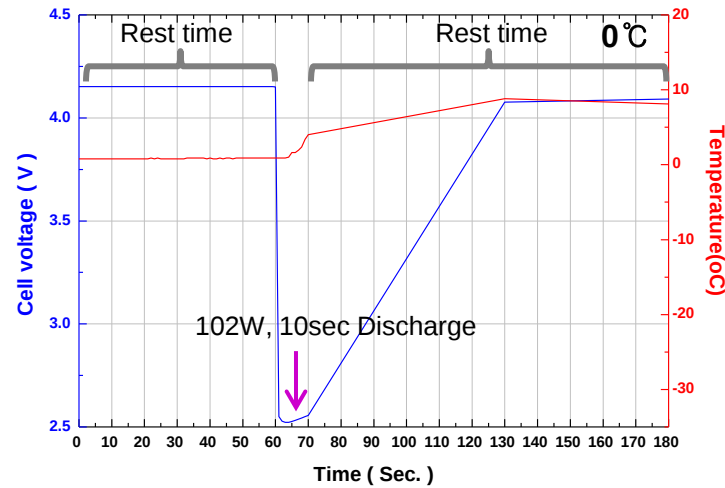
110 W Peak Power for M50



*HPPC: Hybrid Pulse Power Characterization

■ Test condition

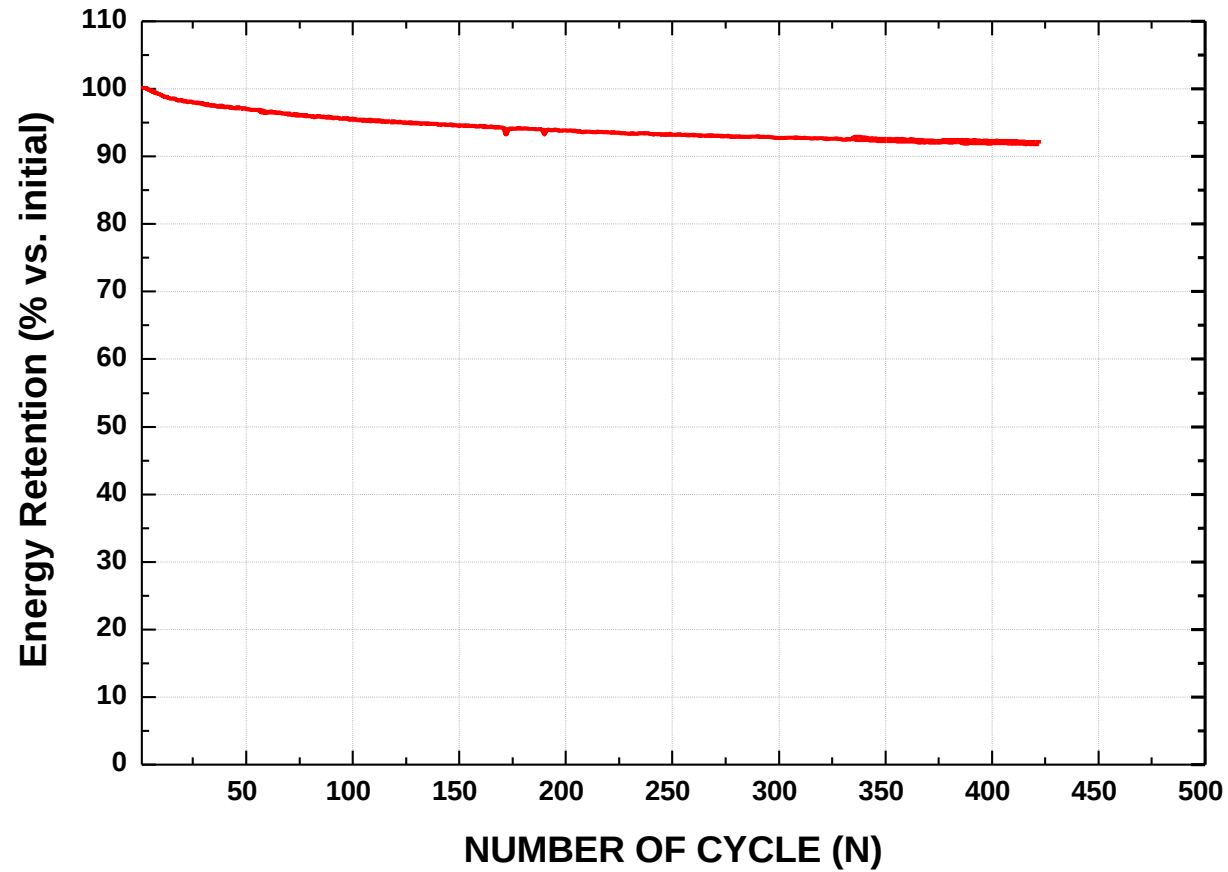
- Peak Power for 10sec at SOC 80%, at 24℃



■ Test condition

- Peak Power for 10sec at SOC 100%, at each temperature

24°C, 4.1V 0.3C charge / 2.85V 0.5C discharge



Test	Test Condition	Requirement	Qty	Result		
				OK	NG	P/F
External Short Circuit	Cells are charged and the positive and negative terminal is connected by 60 mΩ-wire for 1 hour at RT.	NF,NE	5	5	0	OK
Hot Box	Charged cell is heated in a circulating air oven at a rate of 5°C/min to 130°C. At 130°C, oven is to remain for 10 minutes before test is discontinued.	NS,NF,NE	5	5	0	OK
Over Charge	Cells are charged by 1.0C to SOC200% at RT.	NF,NE	5	5	0	OK
Vibration	Based on FreedomCAR Appendix A2	NL, NV, NF	5	5	0	OK
Crush	The flat surfaces are to be brought in contact with the cells and the crushing is to be continued until an applied force of 13 ±1 kN (3000 ±224 lbs) is reached.	NF,NE	5	5	0	OK
Impact	A 15.8 ±0.1-mm (5/8 ±0.004-in) diameter bar is to be placed across the center of the sample. A 9.1 ±0.46-kg (20 ±1-lb) weight is to be dropped from a height of 610 ±25 mm (24 ±1 in) onto the sample.	NF,NE	5	5	0	OK
Thermal Shock	Boundary Test, Fresh Cell, 50 Cycled cell [72±2°C,6hr ↔ -40±2°C,6hr,interval max. 30min] x 10cycle Storing at 20±5°C for 24h	NF,NE,NL, ΔV ≤ 10%	5	5	0	OK
Drop	1.0m X 3 times X 3 direction on the concrete	NF,NE,NL	5	5	0	OK