



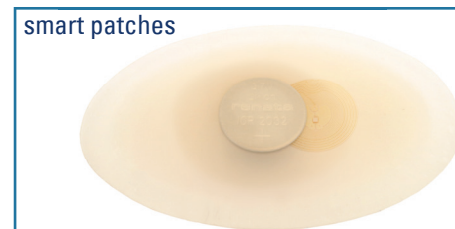
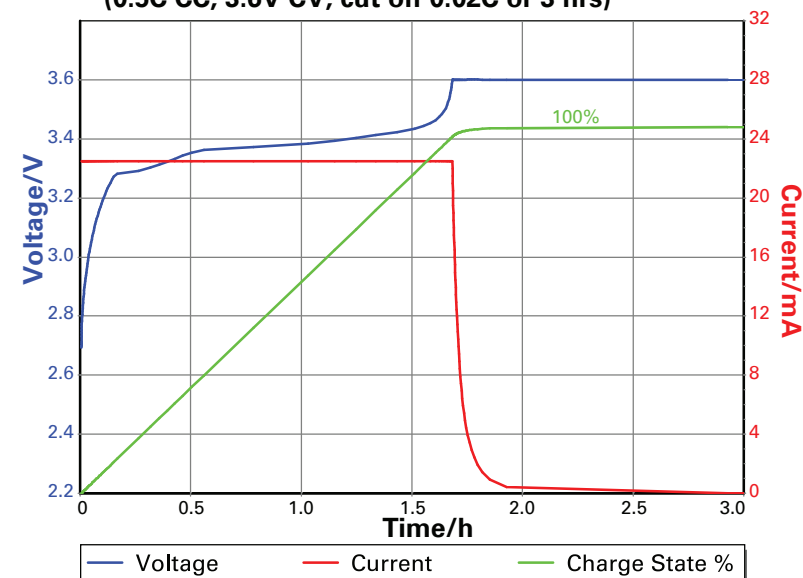
RECHARGEABLE LITHIUM COIN CELLS

Preliminary Data

Information and contents in this sheet are for reference purpose only and are subject to change without notice.

STANDARD SPECIFICATIONS	ICR	IFR
Nominal voltage / Chemical system	3.7V / LiCoO_2	3.2V / LiFePO_4
Nominal capacity range	21 ... 87 mAh (0.2 C Cut off 3.0V at 20°C)	16 ... 67 mAh (0.2 C Cut off 2.5V at 20°C)
Storage temperature	-20°C / +45°C temporary 0°C / +30°C for storage > 3 month	-20°C / +45°C temporary 0°C / +30°C for storage > 3 month
CHARGING CHARACTERISTICS		
Voltage	4.2 V (Voltage) ± 0.05 V	3.6 V (Voltage) ± 0.05 V
Current normal	0.5 C (Constant current)	0.5 C (Constant current)
Max. charging current	1.0 C (Constant current)	2.0 C (Constant current)
Temperature at charging	0°C / +45°C	0°C / +45°C
DISCHARGE CHARACTERISTICS		
Max. discharge current	2.0 C (Non-Continuous current) 1.0 C (Continuous current)	3.0 C (Non-Continuous current) 2.0 C (Continuous current)
Temperature at discharging	-20°C / +60°C	-20°C / +60°C
Cycle life at room temperature	> 80% of min. capacity after 500 cycles (0.5 C charge, 0.2 C discharge)	> 80% of min. capacity after 1600 cycles (0.5 C charge, 0.2 C discharge)

IFR2032 Charge Characteristics
(0.5C CC, 3.6V CV, cut off 0.02C or 3 hrs)





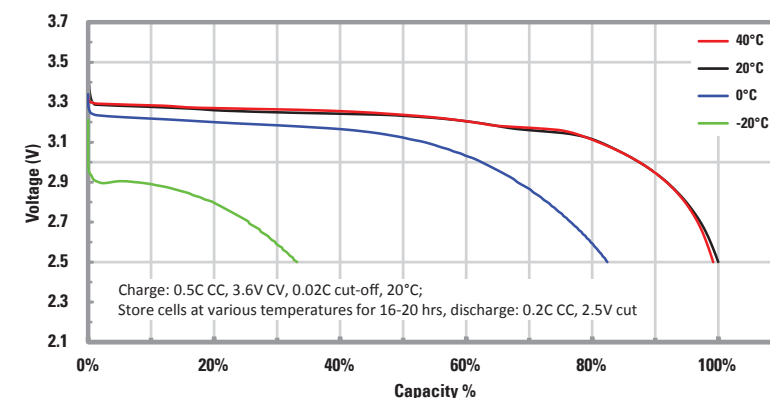
RECHARGEABLE LITHIUM COIN CELLS

Preliminary Data

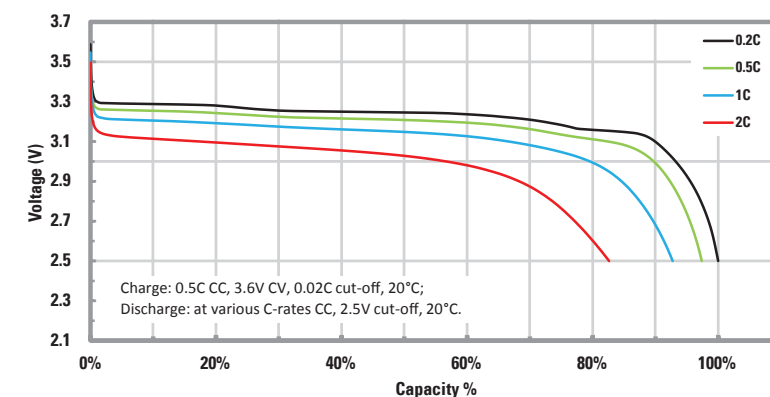
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Cell Model	Dimensions (mm)		Nominal Capacity (mAh)	Standard Discharge Current (mA)	Max. Continuous Discharge Current (mA)
	A	B			
IFR2016	20.00	1.60	16	3.20	32.00
IFR2025	20.00	2.50	33	6.60	66.00
IFR2032	20.00	3.20	45	9.00	90.00
IFR2045	20.00	4.50	67	13.40	134.00
ICR2016	20.00	1.60	21	4.20	21.00
ICR2025	20.00	2.50	44	8.80	44.00
ICR2032	20.00	3.20	60	12.00	60.00
ICR2045	20.00	4.50	87	17.40	87.00

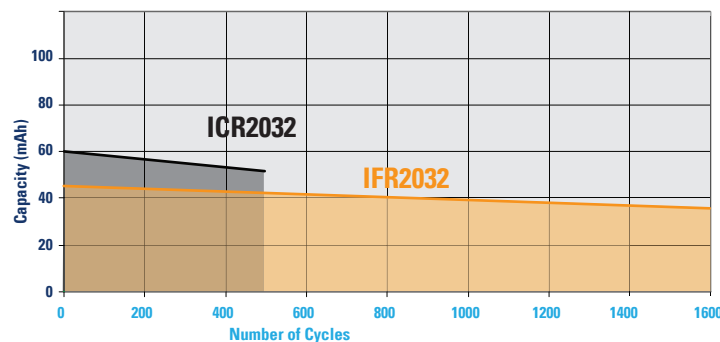
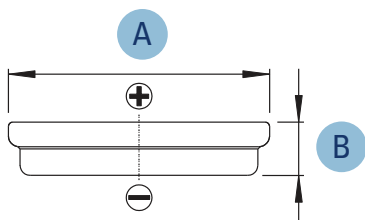
IFR2032 Discharge at Various Temperatures



IFR2032 Discharge at Various C-rates



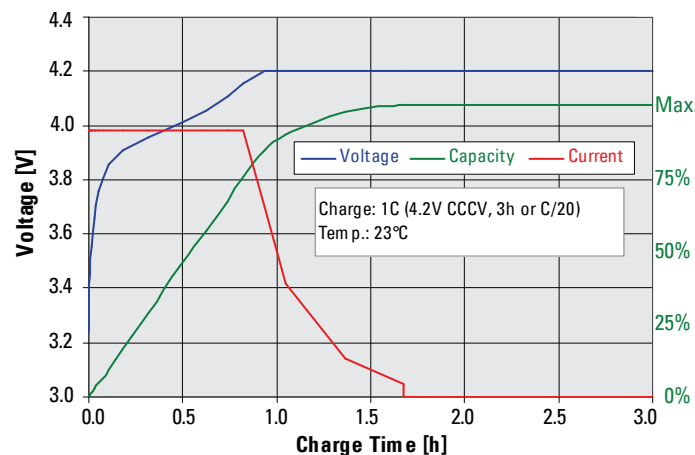
Dimensions of a cell model



3.7 V RECHARGEABLE LITHIUM-ION BUTTON CELL



STANDARD SPECIFICATIONS	
Nominal voltage	3.7V
Capacity	39 mAh (0.2 C Cut off 3.0V at 20°C)
Storage temperature	-20°C / +45°C temporary 0°C / +30°C for storage > 3 month
CHARGING CHARACTERISTICS	
Voltage	4.2 V (Voltage) ± 0.05 V
Current normal	0.5 C (Constant current)
Max. charging current	1.0 C (Constant current)
Temperature at charging	0°C / +45°C
DISCHARGE CHARACTERISTICS	
Max. discharge current	2.0 C (Non-Continuous current) 1.0 C (Continuous current)
Temperature at discharging	0°C / +60°C
Cycle life at room temperature	> 80% of min. capacity after 500 cycles (0.5 C charge, 0.5 C discharge)

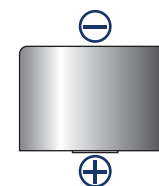


Preliminary Data

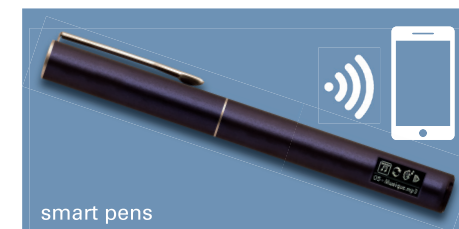
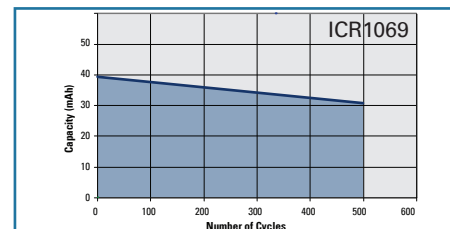
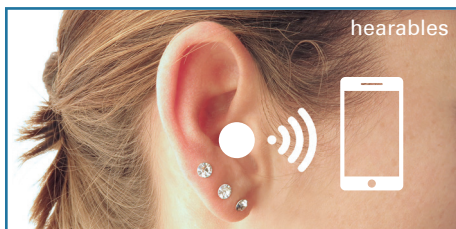
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Ø 9.9 ± 0.1 mm



H 6.8 ± 0.1 mm



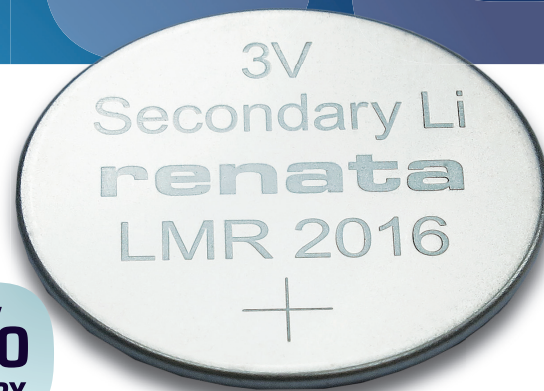
3V RECHARGEABLE LITHIUM COIN CELL

FEATURES

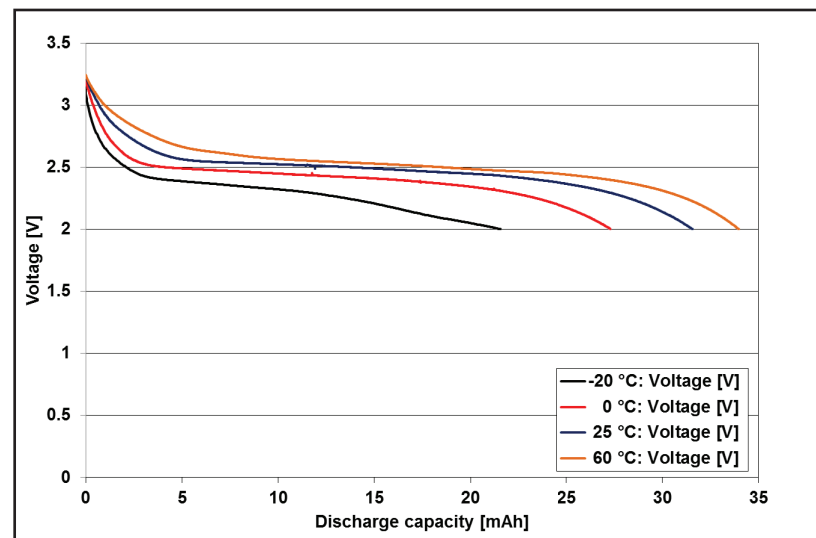
Low self-discharge rate and long cell life
Tabbed customized solutions possible
Non-magnetic casing
Industrial bulk and Card Unit Blister packaging available
UL certified: file MH 14002

STANDARD SPECIFICATIONS

Chemical system	Lithium Manganese Dioxide (Li / MnO ₂)
Nominal Voltage	3 Volt
Rated Capacity	30mAh
Internal impedance	Initial max. 30 Ω (at 23°C / 1 kHz) and after 12 month max. 35 Ω
Cycle life	500 cycles
Standard Discharge Current	0.2 mA
Max. Cont. Discharge Current	8.0 mA
Diameter	20.0 mm (+0 / -0.2)
Thickness	1.60 mm (+0.2 / -0.2)
Average Weight	~ 1.2 g
Temperature Range	-20°C to +60°C
Self Discharge at 23°C	< 1% per year
Freshly delivered batteries have a state of charge of ~90% (i.e. 27 mAh)	



0%
MERCURY



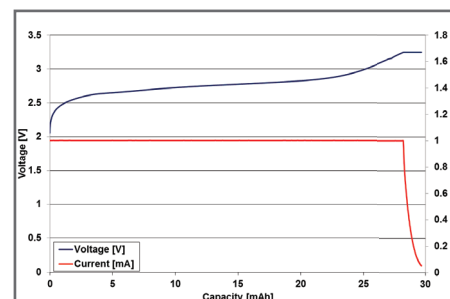
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3V RECHARGEABLE LITHIUM COIN CELL



CHARGING CHARACTERISTICS

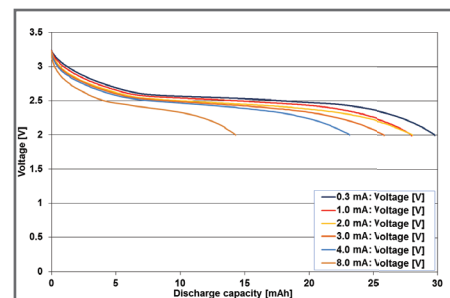
Charge conditions	Constant current / Constant voltage
Voltage (intermittent charging)	3.25 V CV
Voltage (continuous charging)	3.10 V CV
Standard charging current	0.3 mA
Max. charging current	10 mA
Temperature at charging	-20 °C ... +60 °C



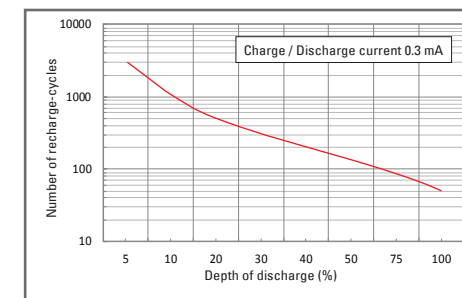
Charge characteristic at 25 °C

DISCHARGING CHARACTERISTICS

Cut off voltage	2.0 V
Standard discharge current	0.3 mA
Max. discharge current	8 mA (continuous); 20 mA (pulse)
Temperature during discharge	-20 °C ... +60 °C
Discharge capability	≥ 50% of nominal capacity at 8 mA discharge
Cycle life at room temperature	> 500 cycles (20 % depth of discharge)



Discharge characteristic at 25 °C



Charge-discharge-cycle characteristic