



Battery Handling and Precautions

Soldering

- Do not solder directly onto batteries. Always solder onto solder tag for connection.
- GP NiMH rechargeable button cells with tags can be flow-soldered in a charged state within 10 seconds.

Charging and Discharging

- Always charge batteries before first time application.
- Parallel charging or connection is not recommended. Parallel charging will produce irregular charging currents. Please consult GP Batteries for more details.
- Never short-circuit or reverse polarity in application.
- Do not use different types of batteries in the same battery assembly.
- If the battery has been deep-discharged, a prolonged charging time is required to bring the battery back to full capacity.

Storage

- Always store batteries in a cool, dry place.
- After long storage, e.g. over a year, it is desirable to cycle (charge/discharge) the battery 3 times to restore full capacity.
- Do not mix batteries with metal objects during storage or transportation to avoid accidental short-circuit.
- Do not store large quantities of batteries in a densely packed condition when they are in a charged or partially charged state.

Battery Handling

- Do not incinerate or dismantle batteries. Cell components are corrosive and may be harmful to skin and eyes.
- Do not pull on battery lead wires or connector. Excessive force on the leads or connectors can damage the welding joints or other connections.

Easy Battery Removal

- Some countries have legislation requiring easy removal of batteries from the devices. When designing a product, consideration should be given to the use of a socket connector and an easy-to-open battery compartment.

Distributed by:

GP Batteries

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GP Batteries

NiMH Rechargeable Batteries



NiMH



Rechargeable Batteries

Achieving World Class Standard

Committed to continued efforts in R&D and product innovation, GP Batteries is proud to present a whole range of high capacity NiMH batteries including cylindrical, prismatic and button series. This has been achieved through revolutionary designs in construction and new chemical formulation that increase the utilisation efficiency of the electrodes. The performance has also been perfected by the cell's improved mechanical construction and the use of unique thinner and stronger separators.



Major Features

- High capacity**
 GP NiMH batteries have high energy density and deliver up to double the capacity of NiCd batteries of similar size. They are most suitable for sophisticated high drain applications e.g. video cameras, cellular phones, notebook computers, etc.
- Superior high rate discharge characteristics**
 Up to 3C high rate discharge is possible.
- Broad operating temperature range**
 Down to -20°C and up to 60°C.
- Quick charging capability**
 Rapid charge in about one hour with GP specified charging condition.
- Long service life**
 Under different usage conditions, GP NiMH batteries can deliver 300 -1000 charge/discharge cycles.
- Excellent overcharge endurance**
 GP NiMH batteries can be continuously charged at 0.1C rate for one year without leakage or deformation.
- Built-in safety protection mechanism against misuse**
 A safety vent is built in to relieve internal pressure in case of misuse. Polarity reversal and overdischarge protection mechanisms are also incorporated in the cell.
- No memory effect**
 Discharge is not required before charging.
- Environmentally friendlier**
 No cadmium, lead or mercury are added. Most suitable for markets with high environmental concerns.
- Comprehensive range**
 GP NiMH batteries comprise of cylindrical, prismatic and button sizes catering for a wide range of applications.
- High reliability**
 GP NiMH batteries are produced with the best available material and advanced technology, allowing them to perform with outstanding reliability.
- ISO accreditation**
 GP Batteries is accredited by the ISO 9001, 14001, QS 9000 and OHSAS 18001 for the outstanding product safety, reliability and environmental friendliness.



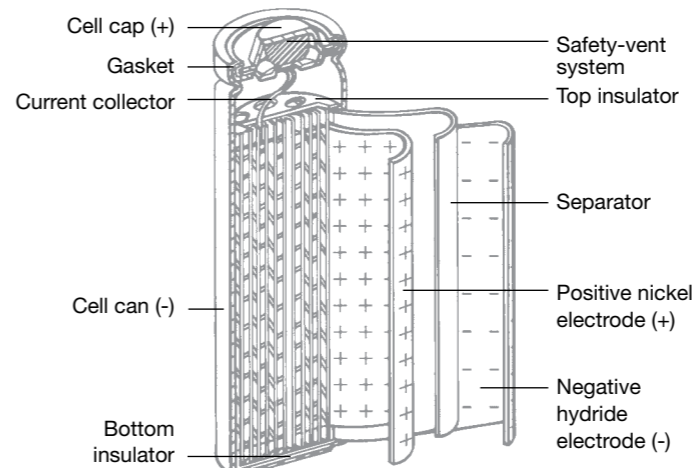
Major Applications

- Communications**
 Cellular phones, cordless phones, transceivers.
- Information devices**
 Notebook computers, personal digital assistants (PDAs), portable facsimile machines, MBU, bridging.
- Audio and video devices**
 Digital video cameras, LCD TVs, portable DVD, VCD, MD and CD players.
- Emergency lighting**
- Remote controls & security systems**
 Car alarms, smoke detectors, security alarms.
- Other applications**
 Remote control toys, shavers, massagers, electric tooth brushes, handheld vacuum cleaners, power tools, handheld terminals, electric bicycles, etc.

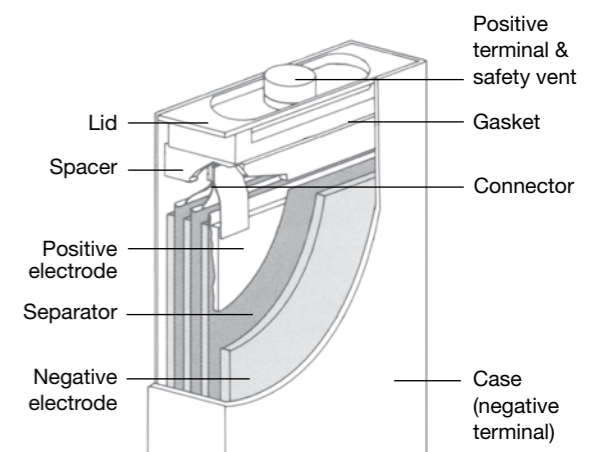


Cell Construction

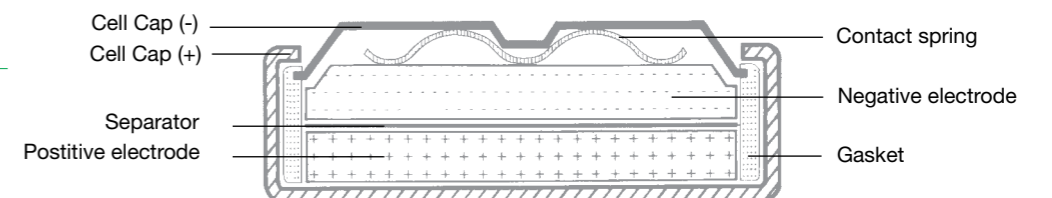
Cylindrical



Prismatic



Button



Specifications

Industrial Series - Cylindrical Type

Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)*(mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge		1 Hr Charge Current (mA)#		
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)			
Standard Series												
AAAA	1/2 AAAA	GP18AAAAH	1.2	180	185	8.6	20.5	4.0	18	16	180	
	5/4 AAAA	GP50AAAAALH	1.2	500	520	8.6	52.6	9.5	50	16	500	
AAA	1/3 AAA	GP17AAAH	1.2	170	180	10.4	14.1	4.2	17	16	170	
	2/3 AAA	GP28AAAM**	1.2	280	290	10.2	29.2	6.4	28	16	280	
	AAA	GP50AAAH	1.2	500	520	10.5	43.7	10.5	50	16	500	
	AAA	GP55AAAH**	1.2	550	580	10.5	43.7	13	55	16	550	
	AAA	GP60AAAH**	1.2	600	630	10.5	43.7	13	60	16	600	
	AAA	GP65AAAH**	1.2	650	680	10.5	43.7	13	65	16	650	
	AAA	GP70AAAH**	1.2	700	730	10.5	43.7	13	70	16	700	
	AAA	GP75AAAH**	1.2	750	780	10.5	43.7	13	75	16	750	
	AAA	GP80AAAH**	1.2	780	800	10.5	43.7	13	80	16	800	
	7/5 AAA	GP100AAAH	1.2	1000	1050	10.5	80	22	100	16	1000	
	AAAL	GP80AAALH	1.2	800	820	10.5	50	15	80	16	800	
	AAAL	GP85AAALH	1.2	850	880	10.5	50	14.5	85	16	850	
	AAAL	GP91AAALH	1.2	910	930	10.5	50	15.1	91	16	910	
	AA	AA	GP60AAM	1.2	600	620	14.4	48.2	15.5	60	16	600
		AA	GP80AAM	1.2	800	830	14.4	48.2	18	80	16	800
		AA	GP125AAM**	1.2	1250	1300	14.4	48.2	24	125	16	1250
AA		GP130AAM**	1.2	1300	1340	14.4	48.2	25	130	16	1300	
AA		GP135AAM	1.2	1350	1400	14.4	48.2	22.8	135	16	1350	
AA		GP150AAM**	1.2	1500	1530	14.4	48.2	26	150	16	1500	
AA		GP160AAM**	1.2	1600	1640	14.5	49.2	26	160	16	1600	
AA		GP170AAM**	1.2	1700	1750	14.5	49.2	27	170	16	1700	
AA		GP180AAM**	1.2	1800	1850	14.5	49.2	28	180	16	1800	
AA		GP220AAH	1.2	2200	2250	14.5	49.5	30.5	220	16	2200	
AF	1/3 AF	GP45AFH	1.2	450	500	17	16.3	10	45	16	450	
	4/5 AF	GP211AFH**	1.2	2100	2160	17	43	33	210	16	2100	
	AF	GP230AFH	1.2	2300	2350	17	50	36	230	16	2300	
	AF	GP250AFH**	1.2	2500	2550	17	50	39	250	16	2500	
	AF	GP270AFH	1.2	2600	2700	17	50	39.5	270	16	2700	
	7/5 AF	GP380AFH**	1.2	3700	3800	17.5	67	53.5	380	16	3800	
18670	18670	GP450LAH**	1.2	4300	4500	18.3	67	63	450	16	Not Applicable	
D	D	GP220DH	1.2	2150	2200	34.2	61.5	71	220	16	Not Applicable	

High Drain Series

AA	AA	GP130AAHE	1.2	1300	1350	14.5	49.2	27	130	16	1300	
	Sub-C	Sub-C	GP220SCH**	1.2	2200	2310	23	43	55	220	16	2200
		Sub-C	GP260SCHD**	1.2	2340	2600	23	43	56	260	16	2600
		Sub-C	GP330SCH	1.2	3300	3430	23	43	62	330	16	3300
D	Sub-C	GP300SCHD	1.2	2700	3000	23	43	59	300	16	3000	
	D	GP700DH**	1.2	7000	7350	33	60	155	700	16	7000	
	D	GP800DH	1.2	8000	8400	33	60	168	800	16	Not Applicable	
	D	GP900DH**	1.2	9000	9225	33	60	170	900	16	Not Applicable	
D	D	GP1000DH	1.2	10000	10250	33	60	175	1000	16	Not Applicable	
	D	GP1100DH	1.2	11000	11550	33	60	179	1100	16	Not Applicable	

Ambient temperature range : Standard charge : 0 to 45°C, Fast charge : 10 to 45°C, Discharge : -20 to 50°C, Storage : -20 to 35°C
One hour rate with charge termination control. * After charging at 0.1C for 16 hours. ** With UL approval.

High Temperature Series

AA	AA	GP30AASHT	1.2	290	300	14.5	16.6	8	30	16	Not Applicable
	AA	GP110AAHT	1.2	1100	1155	14.4	48.2	21.5	110	16	Not Applicable
	AA	GP125AAMT**	1.2	1250	1280	14.4	48.2	26	125	16	Not Applicable
AF	4/5 AF	GP160AFHT	1.2	1600	1680	17	43	33	160	16	Not Applicable
	AF	GP210AFHT	1.2	2100	2205	17	50	38	210	16	Not Applicable
Sub-C	Sub-C	GP160SCHT	1.2	1600	1680	23	43	41.5	160	16	Not Applicable
	Sub-C	GP220SCHT**	1.2	2200	2420	23	43	53	220	16	Not Applicable

Ambient temperature range : Standard charge : 0 to 70°C, Fast charge : -20 to 70°C, Discharge : -20 to 35°C, Storage : -20 to 60°C
One hour rate with charge termination control. * After charging at 0.1C for 16 hours. ** With UL approval.

Hobby Series

AF	2/3 AF	GP130AFHR	1.2	1200	1250	17	28.5	23.9	120	16	1200	
	Sub-C	Sub-C	GP370SCHR**	1.2	3400	3700	23	43	64.5	360	16	3600
		Sub-C	GP390SCH	1.2	3800	3900	23	43	63	380	16	3800
		Sub-C	GP430SCHR	1.2	3700	4100	23	43	62-65.8	390	16	3900

Ambient temperature range : Standard charge : 0 to 45°C, Fast Charge : 10 to 45°C, Discharge : -20 to 50°C, Storage : -20 to 35°C
One hour rate with charge termination control. * After charging at 0.1C for 16 hours. ** With UL approval.

Industrial Series - 9 Volt Type

Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)*(mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge		1 Hr Charge Current (mA)#
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)	
9V Series										
9V	9V	GP17R8H**	8.4	170	175	15.7(T) x 26.5(W) x 48.5(H)	32	17	16	170
	9V	GP17R9H**	9.6	170	175	15.7(T) x 26.5(W) x 48.5(H)	36	17	16	170

Ambient temperature range : Standard charge : 0 to 45°C, Fast charge : 10 to 45°C, Discharge : -20 to 50°C, Storage : -20 to 35°C
One hour rate with charge termination control. * After charging at 0.1C for 16 hours. ** With UL approval.

Major Applications

Cellular phones, cordless phones, transceivers, notebook computers, personal digital assistants (PDAs), portable facsimile machines, digital video cameras, LCD TVs, portable DVD / VCD / MD / CD players, emergency lightings, remote controls and security systems.

Industrial Series - Prismatic Type

Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)*(mAh)		Nominal Dimension (mm)	Weight (g)	Standard Charge		1 Hr Charge Current (mA)#
		Minimum	Typical			Current (mA)	Time (hour)	
GP5M60	1.2	550	600	6.1(T) x 17.0(W) x 35.3(H)	11	55	16	550
GP5M70	1.2	610	700	6.1(T) x 17.0(W) x 36(H)	11	61	16	610

Ambient temperature range : Standard charge : 0 to 45°C, Fast charge : 10 to 45°C, Discharge : -20 to 50°C, Storage : -20 to 35°C
One hour rate with charge termination control. * After charging at 0.1C for 16 hours.

Industrial Series - Button Type

Model No.	Nominal Capacity at 5-hr rate (mAh)	Nominal Dimension (mm)		Weight (g)	Standard Charge			Nominal Voltage (V)	End Voltage (V)
		Diameter	Height		Current (mA)	Time (hour)	Maximum Charging Voltage (V)		
High Capacity Series									
GP40BVH ^{2**}	40	11.7	5.5	1.9	4	16	1.5	1.2	1.0
GP80BVH ^{1**}	80	15.6	6.3	3.7	8	16	1.5	1.2	1.0
GP250BVH ²	250	25.2	6.4	10.9	28	16	1.5	1.2	1.0
GP320BVH ¹	320	25.2	8.7	14.1	32	16	1.5	1.2	1.0
Standard Series									
GP60BVH ¹	60	15.6	6.3	3.6	6	16	1.5	1.2	1.0
GP280BVH ¹	280	25.2	8.7	12.6	28	16	1.5	1.2	1.0

Ambient temperature range : ¹ Standard charge : 0 to 45°C, Discharge : 0 to 45°C, Storage : -20°C to 45°C
² Standard charge : 0 to 65°C, Discharge : -20 to 65°C, Storage : -40 to 65°C ** With UL approval.

Industrial Series - ReCyko⁺ Type

Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)*(mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge		1 Hr Charge Current (mA)#
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)	
ReCyko⁺ Series										
AAA	GP85AAAHB**	1.2	800	820	10.5	44.5	14	80	16	800
AA	GP210AAHB**	1.2	2000	2050	14.5	50.5	30	200	16	2000

Ambient temperature range : ¹ Standard charge : 0 to 45°C, Discharge : 0 to 45°C, Storage : -20°C to 45°C
² Standard charge : 0 to 65°C, Discharge : -20 to 65°C, Storage : -40 to 65°C ** With UL approval.

Major Applications

MBU, bridging, portable electronic devices, laptop computers, cordless phones, car alarms, torches, smoke detectors, security alarms.

Consumer Series

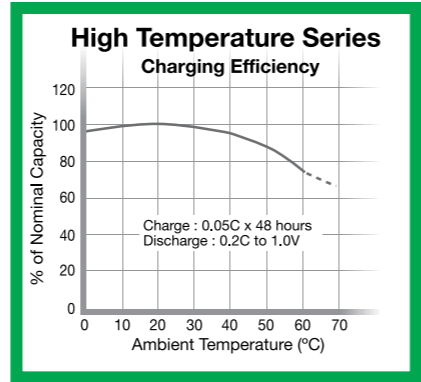
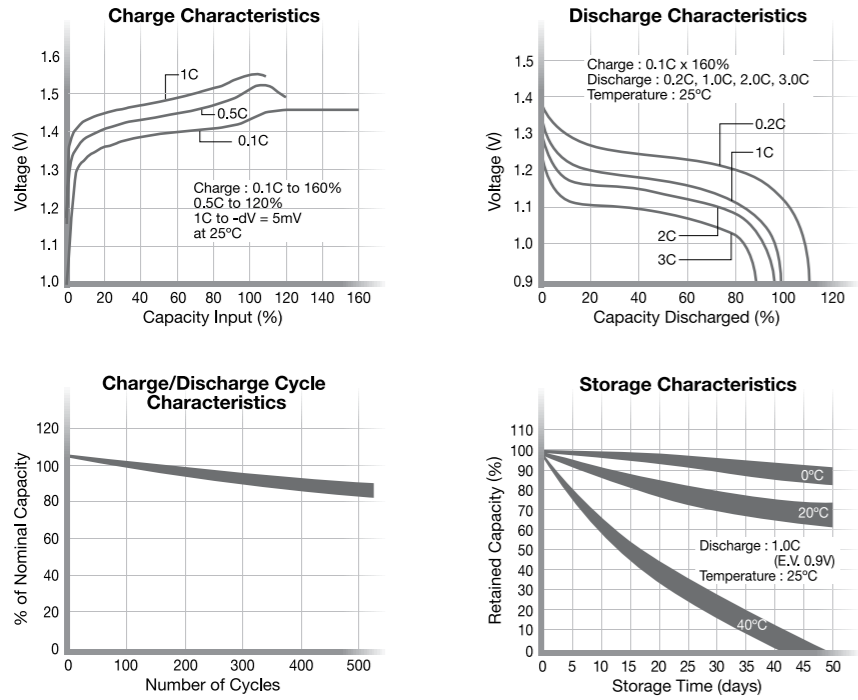
Cell Size	Model No.	Nominal Voltage (V)	Capacity (0.2C discharge)*(mAh)		Nominal Dimension (mm)		Weight (g)	Standard Charge		1 Hr Charge Current (mA)#	
			Minimum	Typical	Diameter	Height		Current (mA)	Time (hour)		
Standard Series											
AAA	GP35AAAH	1.2	350	370	10.5	44.5	7.7	35	16	350	
	GP45AAAH	1.2	450	470	10.5	44.5	12.5	45	16	450	
	GP50AAAH**	1.2	500	520	10.5	44.5	12	50	16	500	
	GP55AAAH**	1.2	550	578	10.5	44.5	13	55	16	550	
	GP60AAAH**	1.2	600	630	10.5	44.5	13	60	16	600	
	GP65AAAH**	1.2	630	650	10.5	44.5	13	65	16	650	
	GP70AAAH**	1.2	680	700	10.5	44.5	13	70	16	700	
	GP75AAAH**	1.2	730	750	10.5	44.5	13	75	16	750	
	GP80AAAH**	1.2	780	800	10.5	44.5	14	80	16	800	
	GP85AAAH	1.2	830	850	10.5	44.5	14.2	85	16	850	
	GP100AAAH	1.2	930	970	10.5	44.5	15.2	93	16	930	
	AA	GP60AAM	1.2	600	620	14.5	50.5	15.5	60	16	600
		GP130AAH**	1.2	1250	1300	14.5	50.5	25	130	16	1300
		GP130AAM	1.2	1300	1340	14.5	50.5	25	130	16	1300
		GP160AAH**	1.2	1550	1600	14.5	50.5	26	160	16	1600
		GP180AAH**	1.2	1750	1800	14.5	50.5	28	180	16	1800
GP210AAH**		1.2	2000	2050	14.5	50.5	28	200	16	2000	
GP230AAH**		1.2	2200	2250	14.5	50.5	29.5	220	16	2200	
GP250AAH**		1.2	2400	2450	14.5	50.5	31.0	240			



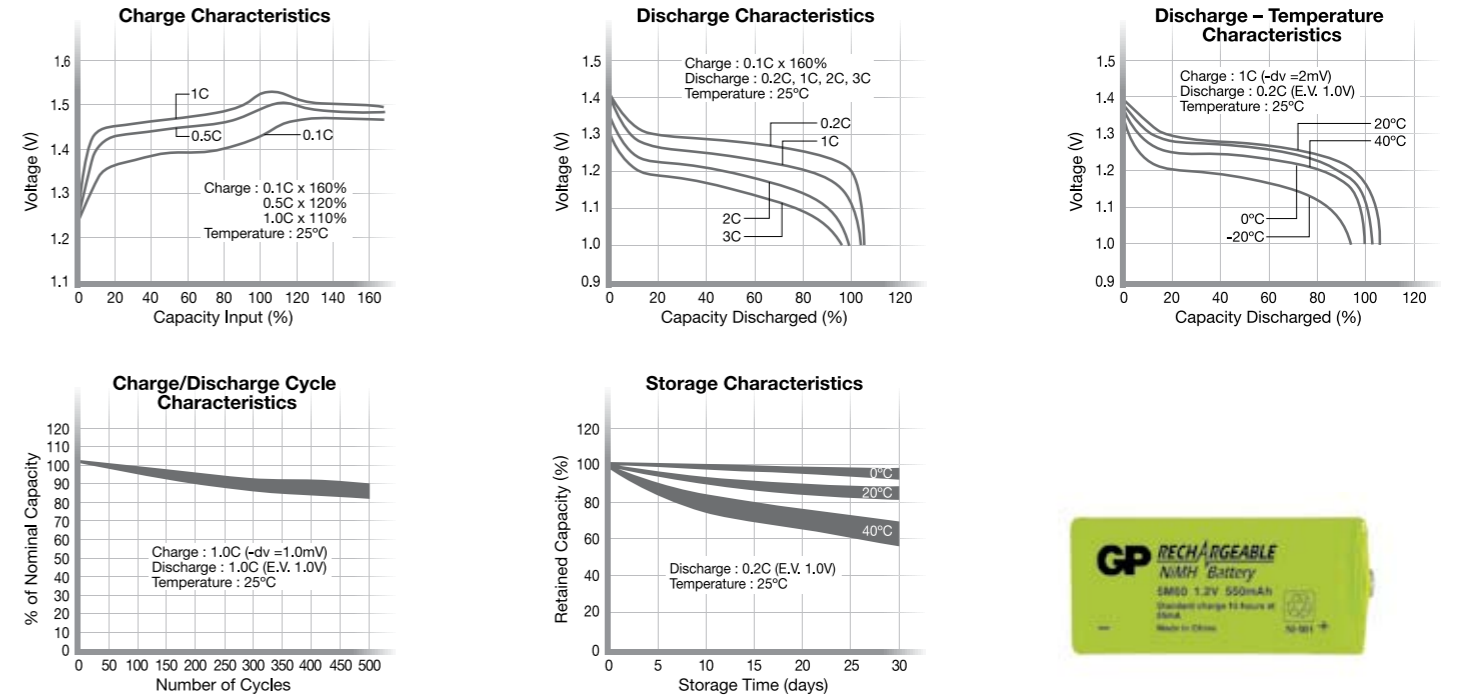
NiMH Rechargeable Batteries

Performance Characteristics

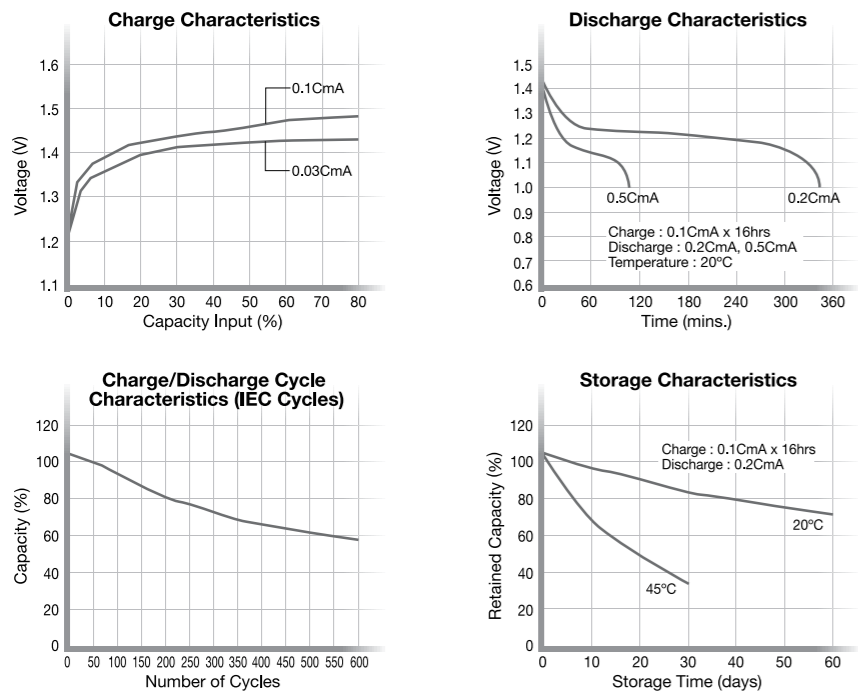
Cylindrical Cells



Prismatic Cells



Button Cells



9V Batteries

