

Battery Handling and Precautions

Safety

Don't Dismantle	Do not disassemble or modify the battery pack. The battery pack is equipped with built-in safety/protection features. Should these features be disabled, the battery pack can leak, emitting corrosive liquid, or it would overheat, burst or ignite.
Don't Short Circuit	Do not connect the positive (+) and negative (-) terminals with a metal object such as wire. Do not transport or store the battery pack together with metal objects such as necklaces, hair pins, etc. Otherwise, short-circuiting will occur, overcurrent will flow, causing the battery pack to leak electrolyte, overheat, emit smoke, burst and/or ignite, or the metal objects such as wire, necklaces or hair pin can generate heat.
Don't Put Into Fire	Do not discard the battery pack into fire or heat it. Otherwise, its insulation can melt down. Its gas release vent or safety features will be damaged and/or its electrolyte can ignite, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition on it.
Don't Put Into Water	Do not immerse the battery pack in water or seawater, and do not allow it to get wet. Otherwise, the protective features in it can be damaged. It can be charged with extremely high current and voltage, abnormal chemical reactions may occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Pierce	Do not pierce the battery pack with a nail or other sharp objects, strike it with a hammer, or step on it. Otherwise, the battery pack will become damaged and deformed, internal short-circuiting can occur, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Strike Or Throw	Do not strike or throw the battery pack. Otherwise, the protective feature in it may become damaged, it can be charged with extremely high current and voltage, abnormal chemical reactions can occur in it, possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition.
Don't Direct Soldering	Do not solder directly onto batteries. Always solder onto solder tag for connection. Otherwise, heat can melt down its insulation, damage its gas release vent or safety features possibly leading to acid leakage, overheating, smoke emission, bursting and/or ignition on it.

Distributed by:

GP Batteries

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GP Batteries

Lithium Ion Rechargeable Batteries



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GPPA4RBL-A 02/04



Lithium Ion Rechargeable Batteries

Increased demand for portable electronic appliances has expanded the spectrum of battery applications to a wider extent. The new advanced appliances are looking for batteries with longer running-hours, lighter weight and higher energy density. Among all the existing rechargeable battery systems, Lithium Ion technology is, and will continue to be the most logical power force for the portable age. GP Batteries, one of the world's top-ten battery manufacturers, offers a wide range of ultra-high performance cylindrical and prismatic Li-ion batteries to meet market needs.

GP Batteries owes its success to over 35 years of battery making experience, continuous efforts in R&D, cutting edge technology and advanced equipment. Today, GP Batteries has its manufacturing, marketing and distribution operations in 15 countries serving both retail and OEM markets. Take full advantage of GP's advanced technology and quality Li-ion batteries for better performance, and for more opportunities.

Major Features

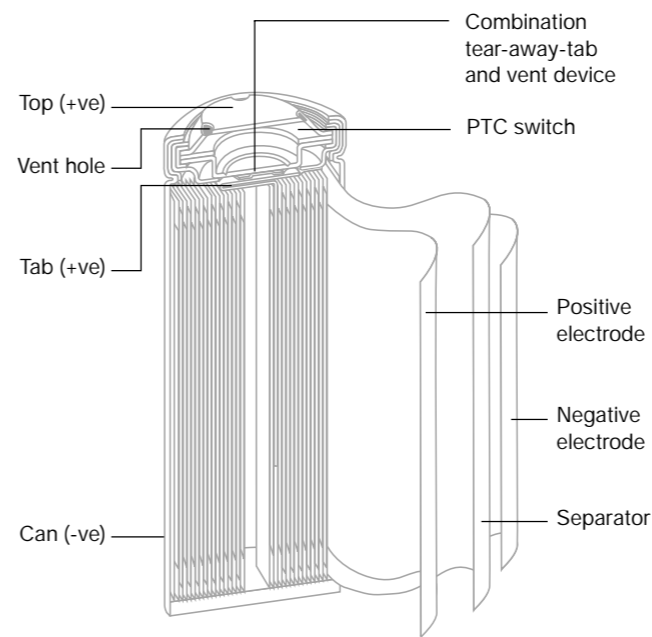
- High Energy Density**
 Advanced technology provides ultra-high capacity performance for GP Li-ion batteries.
- Variety of Sizes and Capacities**
 Our expanding list of models encompasses a wide range of battery sizes and capacities, making it convenient in various applications.
- Wide Operating Temperature Range**
 GP Li-ion batteries can be charged over a temperature range of 0°C to 45°C, and discharged between -30°C to 60°C.
- Designed for Safe Operation**
 All batteries are equipped with multiple safety features, including safe shut-down separator and safety vent.
- High-Output and High-Load Characteristics**
 Capable of continuously discharge at 2C rate. Effective for large power consumption applications, such as Notebook, PC etc.
- Stable Operating Voltage**
 Relatively gentle decreases in discharge voltage enhances the operating stability of the applications.
- Good Charge Retention**
 Charged GP Li-ion batteries can be stored for long period with high residual capacity, because of low self-discharge rate.
- No Memory Effect**
 The discharge performance is not affected even when the batteries are subjected repeatedly to shallow discharge cycles. There is thus no need to pre-discharge the batteries before charging.
- Long Cycle Life**
 GP Li-ion batteries offers stable capacity and performance for hundreds of cycles, thus providing a great value over its life time.

Major Applications

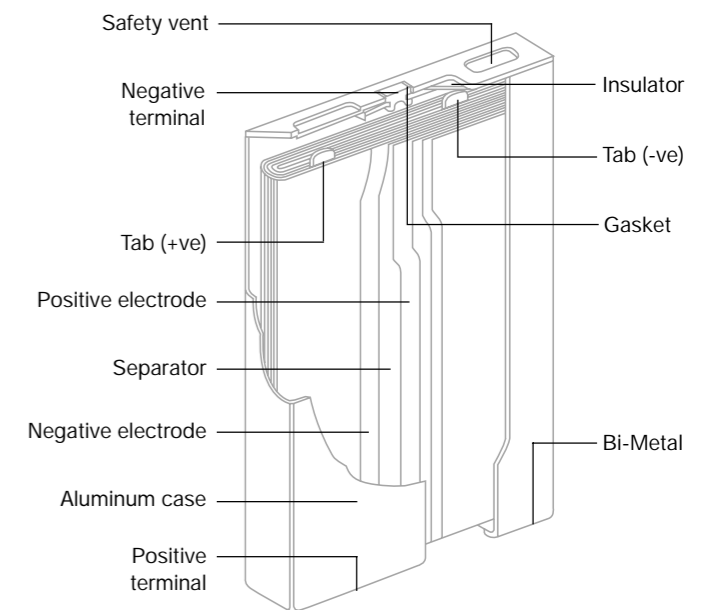
Notebook Computers, Cellular Phones, Digital Cameras, Camcorders, Video CD/DVD Players, MD Players, PDAs/Webpad, POS Terminals, Electronic Instruments, Communication Devices, etc.

Cell Construction

Cylindrical



Prismatic



Lithium Ion Rechargeable Batteries

Cylindrical Models

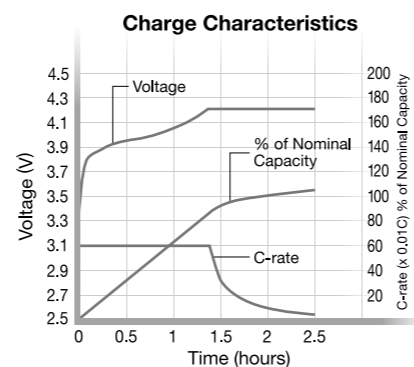
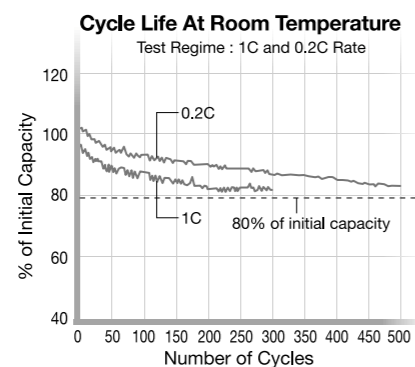
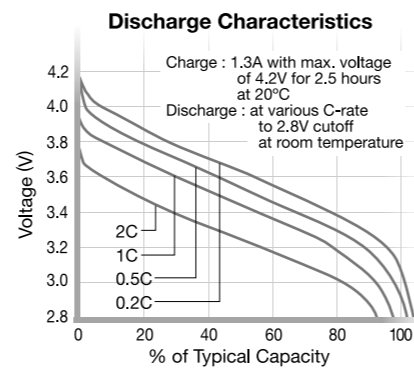
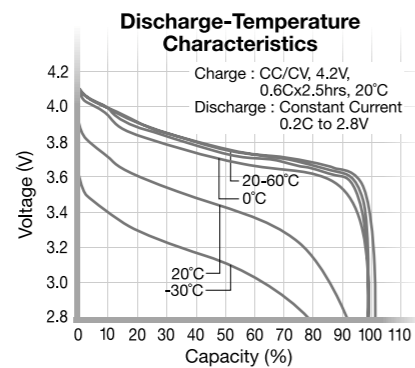
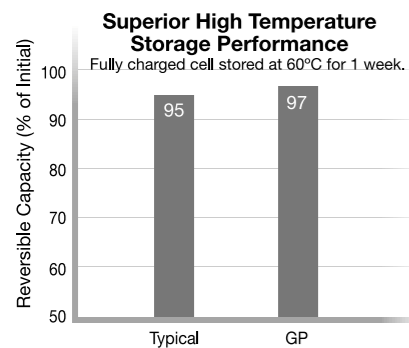
Specifications

Model No.	Nominal Voltage (V)	Capacity (mAh)		Dimension (mm)		Weight (g)	Maximum Discharge Current (mA)	Maximum Charging Voltage (V)	Maximum Charging Current (mA)
		Typical	Minimum	Diameter	Height				
GP1022L14	3.7	140	135	10.5	22.0	4.2	280	4.2	140
GP1029L18*	3.7	180	170	10.5	29.0	5.5	360	4.2	180
GP1051L35*	3.7	350	330	10.5	51.0	10	700	4.2	350
GP1443L58*	3.7	580	550	14.0	43.0	16	870	4.2	580
GP1443L63*	3.7	630	600	14.0	43.0	16	945	4.2	630
GP1450L70*	3.7	700	650	14.0	50.0	19	1050	4.2	700
GP1465L100*	3.7	1000	950	14.0	65.0	26	1500	4.2	1000
GP1750L110*	3.7	1100	1050	17.0	50.0	26	1650	4.2	1100
GP1767L160*	3.7	1600	1550	17.0	67.0	37	2400	4.2	1600
GP1850L130*	3.7	1300	1250	18.3	50.0	31	1950	4.2	1300
GP1850L140*	3.7	1400	1350	18.3	50.0	31	2100	4.2	1400
GP1865L180*	3.7	1800	1750	18.3	65.2	41	2700	4.2	1800
GP1865L200*	3.7	2000	1950	18.3	65.2	43	3000	4.2	2000
GP1865L210*	3.7	2100	2050	18.3	65.2	43	3150	4.2	2100
GP1865L220*	3.7	2200	2150	18.3	65.2	44	3300	4.2	2200

Typical Ambient Temperature : Charge : 0°C to 45°C / Discharge : -30°C to 60°C / Storage : -20°C to 45°C

* UL recognized model

Performance Characteristics



Configurations For soft packs of GP18650 Lithium Ion batteries.

Configuration Code	3-D View (unit in mm)	End View	Standard Protection Module (unit in mm)	Voltage (V)
1S1P			PART NO.: PCBVL001 	3.7
1S2P			PART NO.: PCBL1S2P-B/BF 	3.7
2S1P			PART NO.: PCBL2S1P-A 	7.4
2S2P			PART NO.: PCBL2S2P-B/BF 	7.4
3S1P			PART NO.: PCBDR202A 	11.1
3S2P			PART NO.: PCBDR202A 	11.1
3S3P			PART NO.: PCBDR202A 	11.1
4S2P			PART NO.: PCBL4S2P-B/BF 	14.8

* Apart from the standard items shown above, customised configurations are also available upon request.

Lithium Ion Rechargeable Batteries

Prismatic Models



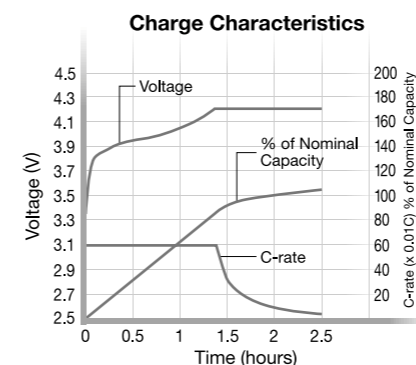
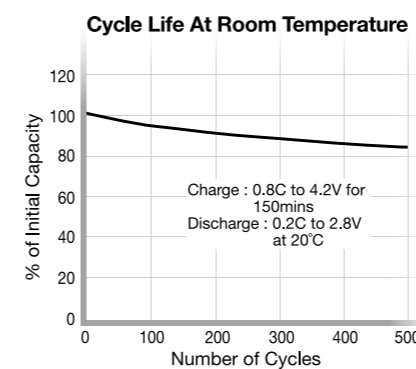
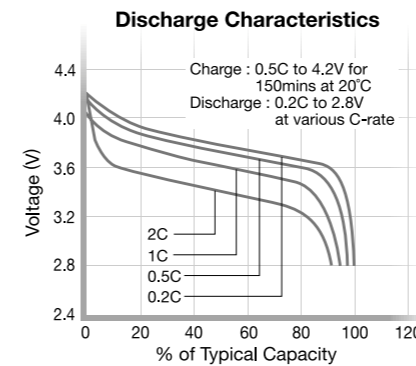
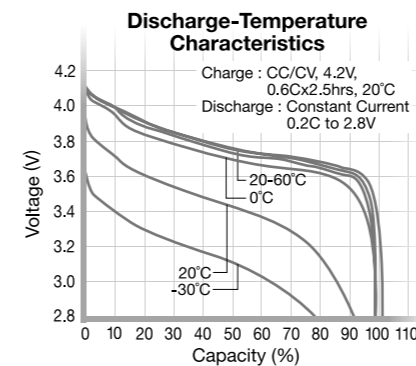
Specifications

Model No.	Nominal Voltage (V)	Capacity (mAh)		Dimension (mm)		Weight (g)	Maximum Discharge Current (mA)	Maximum Charging Voltage (V)	Maximum Charging Current (mA)
		Typical	Minimum	Diameter	Height				
GP363420L21	3.7	210	180	3.6(T) x 34.0(W) x 20.0(H)	7	420	4.2	210	
GP363450L64*	3.7	640	610	3.6(T) x 34.0(W) x 50.0(H)	16	1280	4.2	640	
GP363450L67	3.7	670	640	3.6(T) x 34.0(W) x 50.0(H)	17	1340	4.2	670	
GP413048L57*	3.7	570	540	4.1(T) x 30.0(W) x 48.0(H)	16	1140	4.2	570	
GP413048L63*	3.7	630	600	4.1(T) x 30.0(W) x 48.0(H)	17	1260	4.2	630	
GP413443L63*	3.7	630	600	4.1(T) x 34.0(W) x 43.0(H)	16	1260	4.2	630	
GP413450L72*	3.7	720	690	4.1(T) x 34.0(W) x 50.0(H)	18	1440	4.2	720	
GP413450L78	3.7	780	750	4.1(T) x 34.0(W) x 50.0(H)	19	1560	4.2	780	
GP493048L72R*	3.7	720	690	4.9(T) x 30.0(W) x 48.0(H)	18	1440	4.2	720	
GP503020L21*	3.7	210	180	5.0(T) x 30.1(W) x 20.0(H)	7	420	4.2	210	
GP503040L54*	3.7	540	510	5.0(T) x 30.1(W) x 40.0(H)	15	1080	4.2	540	
GP503048L72*	3.7	720	690	5.0(T) x 30.1(W) x 48.0(H)	18	1440	4.2	720	
GP503048L78	3.7	780	750	5.0(T) x 30.1(W) x 48.0(H)	19	1560	4.2	780	
GP503436L60R*	3.7	600	570	5.0(T) x 34.0(W) x 36.1(H)	16	1200	4.2	600	
GP503450L86R	3.7	860	830	5.0(T) x 34.0(W) x 50.4(H)	21	1720	4.2	860	
GP503450L90R	3.7	900	870	5.0(T) x 34.0(W) x 50.4(H)	21	1800	4.2	900	
GP582231L37	3.7	370	340	5.8(T) x 22.0(W) x 31.0(H)	11	740	4.2	370	
GP582237L43*	3.7	430	400	5.8(T) x 22.0(W) x 37.1(H)	13	860	4.2	430	
GP582248L52*	3.7	520	490	5.8(T) x 22.0(W) x 48.0(H)	16	1040	4.2	520	
GP582248L57*	3.7	570	540	5.8(T) x 22.0(W) x 48.0(H)	16	1140	4.2	570	
GP603450L95R*	3.7	950	920	6.0(T) x 34.1(W) x 50.0(H)	24	1900	4.2	950	
GP603450L107R*	3.7	1070	1040	6.0(T) x 34.1(W) x 50.0(H)	24	2140	4.2	1070	
GP603450L114R	3.7	1140	1110	6.0(T) x 34.1(W) x 50.0(H)	25	2280	4.2	1140	
GP603465L140	3.7	1400	1370	6.0(T) x 34.0(W) x 65.0(H)	33	2800	4.2	1400	
GP603465L144	3.7	1440	1410	6.0(T) x 34.0(W) x 65.0(H)	34	2880	4.2	1440	
GP623040L74*	3.7	740	710	6.2(T) x 30.0(W) x 40.0(H)	18	1480	4.2	740	
GP623048L85*	3.7	850	820	6.2(T) x 30.0(W) x 48.0(H)	21	1700	4.2	850	
GP623048L90	3.7	900	870	6.2(T) x 30.0(W) x 48.0(H)	22	1800	4.2	900	
GP623048L98	3.7	980	950	6.2(T) x 30.0(W) x 48.0(H)	23	1960	4.2	980	
GP813433L70*	3.7	700	670	8.1(T) x 34.0(W) x 33.0(H)	21	1400	4.2	700	
GP813448L120*	3.7	1200	1170	8.1(T) x 34.0(W) x 48.0(H)	32	2400	4.2	1200	
GP813448L130	3.7	1300	1270	8.1(T) x 34.0(W) x 48.0(H)	32	2600	4.2	1300	
GP843042L93*	3.7	930	900	8.4(T) x 30.0(W) x 42.0(H)	26	1860	4.2	930	
GP901940L63R*	3.7	630	600	9.2(T) x 19.1(W) x 40.0(H)	16	1260	4.2	630	
GP901942L63R*	3.7	630	600	9.2(T) x 19.1(W) x 42.0(H)	17	1260	4.2	630	
GP901942L70R*	3.7	700	670	9.2(T) x 19.1(W) x 42.0(H)	18	1400	4.2	700	
GP901942L77R	3.7	770	740	9.2(T) x 19.1(W) x 42.0(H)	19	1540	4.2	770	
GP901948L80R*	3.7	800	770	9.2(T) x 19.1(W) x 48.0(H)	20	1600	4.2	800	
GP103448L155*	3.7	1550	1520	10.0(T) x 34.0(W) x 48.0(H)	39	3100	4.2	1550	
GP103448L160	3.7	1600	1570	10.0(T) x 34.0(W) x 48.0(H)	40	3200	4.2	1600	
GP103448L170R	3.7	1700	1670	10.0(T) x 34.0(W) x 48.6(H)	41	3400	4.2	1700	
GP103450L165R	3.7	1650	1620	10.0(T) x 34.0(W) x 50.0(H)	41	3300	4.2	1650	
GP103450L180R	3.7	1800	1770	10.0(T) x 34.0(W) x 50.0(H)	41	3600	4.2	1800	

Typical Ambient Temperature : Charge : 0°C to 45°C / Discharge : -30°C to 60°C / Storage : -30°C to 45°C

* UL recognized model

Performance Characteristics



Battery Handling and Precautions

Charge

Charge Voltage Charge to 4.20 +0/-0.05V per cell, each being supervised.

Charge Current Do not exceed 1C charging rate.

Charge Temperature Charge in the range of 0 to 45°C.

Discharge

Discharge Current Size the discharge over-current protection elements to be able to take the maximum current.

Discharge Temperature Discharge in the range of -20 to 60°C. For prismatic models, the lowest discharge temperature is -30°C.

Overdischarge Do not discharge below 2.8V/cell under significant loads. Small leakage current may discharge the cell further in some devices even after shut down.

Storage

Storage Temperature Store at -20 to 45°C. Significant permanent loss can occur when storing at 60°C for prolonged period. Keep the battery away from fire. For prismatic models, the lowest storage temperature is -30°C.

Long Term Storage Deterioration of cell capacity is slower at lower state of charge. Store at below 50% state of charge or about 3.7V. For extended storage period over one year, recharge the battery to 3.7V to prevent overdischarge of the battery.

Equipment Design

Reverse Polarity Prevention Provide mechanical stop so that the battery pack cannot be inserted in a reverse manner. The electrical contacts should be designed so that they are difficult to short.

Battery Location Elements like solid state safety circuit should be mounted so that they are not subjected to high temperature or electromagnetic field emanating from the device it is powering or being charged by.

Damage Prevention Due to Drop The wiring and cells should be protected inside the battery pack by designing so that they are difficult to short.