

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 even though some of our batteries are delivered in a charged state.
- 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
- If the battery has been deep-discharged, a prolonged charging time is required to bring the battery back to full capacity.

- 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.

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WORLDWIDE HEADQUARTERS HONG KONG GPI INTERNATIONAL LIMITED

Gold Peak Building, 8/F., 30 Kwai Wing Road, Kwai Chung, N.T., Hong Kong Tel: (852) 2484 3333 Fax: (852) 2480 5912 E-mail address: gpii@goldpeak.com Website: http://www.gpbatteries.com.hk

SALES & MARKETING BRANCH OFFICES

ASEAN
GP BATTERY MARKETING (SINGAPORE) PTE. LIMITED 97 Pioneer Road, Singapore 639579 Tel: (65) 6559 9760 Fax: (65) 6559 9761

MALAYSIA
GP BATTERY MARKETING (MALAYSIA) SDN. BHD.
Lot 8, Jalan Pemberita U1/49,
Temasya Industrial Park,
40150 Shah Alam, Selangor Darul Ehsan, Malaysia
Tel: (60) 3 5569 3499 Fax: (60) 3 5569 3498

THAILAND GP BATTERY MARKETING (THAILAND) CO., LTD. 102 Soi Sukhumvit 26, Sukhumvit Road, Riongton, Riongtoey, Bangkok 10110 Thailand Tel: (66) 2 661 3688 Fax: (66) 2 661 3602

GOLD PEAK INDUSTRIES (TAIWAN) LIMITED – TAIPEI OFFICE Room 1200, International Trade Building, No.205 Sec. 1, Tun Hua South Road. Taipei 10647, Taiwan R.O.C. Tel: (868) 2 2741 4919 Fax: (886) 2 2731 4868/2741 0192

CHINA
HUIZHOU CHAO BA BATTERY TECHNOLOGY CO., LTD
2/F., South of Hongye Industrial Building,
Tianluo Mountain, 14th Industrial District,
Huizhou City, Guangdong, China (Postal Code: 516003) Tel: (86) 752 282 8428 Fax: (86) 752 280 2872

HONG KONG GP BATTERY MARKETING (H.K.) LIMITED Gold Peak Building, 8/F., 30 Kwai Wing Road. Kwai Chung, N.T., Hong Kong Tel: (852) 2420 0281 Fax: (852) 2494 9349

GP BATTERY MARKETING (KOREA) LIMITED Kursul Hoekwan Building, 9/F., 71-2 Non Hyun-Dong, Kang Nam-Gu, Seoul, South Korea Tel: (82) 2 549 7188/9, 2 516 3936/7 Fax: (82) 2 514 0623, 2 516 0621

U.S.A.
GOLD PEAK INDUSTRIES (NORTH AMERICA) INC. CA 92127-1638, U.S.A.
Tel: (1) 858 674 6099 Fax: (1) 858 674 6496

CANADA
GP BATTERY MARKETING INC.
Unit 7, 7780 Woodbine Avenue, Markham,
Ontario, Canada L3R 2N7
Tel: (1) 905 474 9507 Fax: (1) 905 474 9452

GP BATTERY MARKETING (LATIN AMERICA) INC. 8370 NW, 66th Street, Miami, Florida 33166, U.S.A. Tel: (1) 305 471 7717 Fax: (1) 305 471 7718

EUROPE GP BATTERIES EUROPE B.V. Kortijzer 4, 5721 VE Asten, The Netherlands Tel: (31) 493 681030 Fax: (31) 493 681039

GERMANY
GP BATTERY MARKETING (GERMANY) GMBH
Niederlorricker Str. 62, 40667 Meerbusch, Germany
Tel: (49) 2132 971504/5/6 Fax: (49) 2132 80145

POLAND GP BATTERY (POLAND) SP. Z.O.O. ul. Slowicza 19, PL-02170 Warsaw, Poland Tel: (48) 22 868 0490 Fax: (48) 22 846 7535

U.K.
GP BATTERIES (U.K.) LIMITED
Summerfield Avenue, Chelston Business Park,
Wellington, Somerset, TA21 9JF, U.K.
Tel: (44) 1 823 660 044 Fax: (44) 1 823 665 595

ITALY
GP BATTERY MARKETING ITALY S.R.L. Via. Alessandro Volta 3, 20094 Assago (Mi), Italy Tel: (39) 02 488 2512 Fax: (39) 02 488 2865

SCANDINAVIA GPBM NORDIC AB Grimboasen 5, SE-417 49, Goteborg, Sweden Tel: (46) 31 558 600 Fax: (46) 31 556 813

CP Batteries

NIMH Rechargeable **Button Cells**



NiMH (January)

Rechargeable Button Cells

Not only a Green but also a High Performance Solution

With the miniaturization of portable devices and a growing concern for the environment, GP Batteries has developed a complete range of high capacity NiMH button cells. The new range comes in a variety of sizes catering for the need of different applications. Due to higher energy density, the new NiMH range can deliver up to 40% more capacity than NiCd cells of similar size.

Tremendous improvements have been made in the chemical formulation and the electrode production process to deliver longer cycle life, higher drain performance and better charge retention.





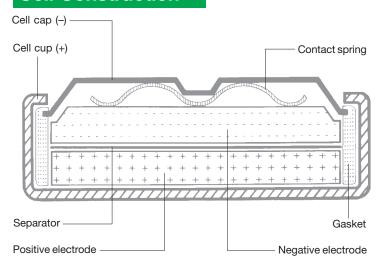
Major Features

- Long service life
- Under normal usage conditions, GP Batteries can deliver more than 500 IEC charge / discharge cycles.
- Excellent discharge characteristics
 Voltage remains above 1.2 volt per cell for 80% of the discharge period at 0.1C rate.
- High charge retention
 40% retained capacity after storage for one year at room temperature.
- Broad operating temperature range -20°C to 45°C
- Excellent overcharge endurance
 GP NiMH button cells can be continuously charged at 0.1C rate for one year without leakage or deformation.
- Built-in safety protection mechanism against misuse
 A one-time safety vent for most models 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 button cells comprise of a comprehensive range of different sizes catering for a wide range of applications.
- Flexible battery pack design
 Tailor-made battery packs of up to 12 volts can be made to suit customers' specific product requirements.
- Meets international safety standard
 GP NiMH button cells comply with international safety
 standards. UL Recognised Component card is available
 upon request.*
- High reliability
 GP NiMH button cells are produced with the best available
 material and advanced technology, allowing them to
 perform with outstanding reliability.
- ISO 9001 accreditation
 Sylva Industries Ltd., the manufacturing arm of GP Batteries received ISO 9001 accreditation in the design and manufacture of secondary and primary batteries in 1996.

Major Applications

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

Cell Construction





Applications

Applications / Model No.	GP15BNH	GP20BNH	GP25BNH	GP40BVH	GP60BVH GP80BVH			GP280BVH GP320BVH
Communication Products	· · · · · · · · · · · · · · · · · · ·						_	
Cordless phones, portable radio equipment, transmitters, transceivers							•	⊕
Computers								
Memory backup for desktop-PCs notebooks, PDAs, etc., real time clocks, bridging	•	⊕	•	•	•	•	•	⊕
Audio / Visual appliances								
Memory backup for desktop-PCs TV sets, car stereo, Hi-Fi, photo, etc., real time clocks	•	•	•	•	•			
Personal electronics								
Games, toys	\oplus	\oplus	\oplus	⊕	⊕	⊕	⊕	⊕
Pagers, pocket radios, radio microphones					\oplus	\oplus	\oplus	\oplus
Portable translators & calculators, solar watches, hearing aids	\oplus	\oplus	\oplus	\oplus	\oplus			
Devices for office peripherals								
Fax and telex machines, printers, copiers, data acquisition terminals	•	⊕	⊕	⊕	⊕	•		
Devices for industry peripherals				-			-	
Meters	⊕	\oplus	\oplus	⊕	⊕	⊕		
Smoke detectors	•	⊕	⊕	⊕	⊕			
Security alarms							⊕	\oplus
Timers	⊕	⊕	⊕	⊕	⊕			

NiMH Rechargeable Button Cells

Specifications

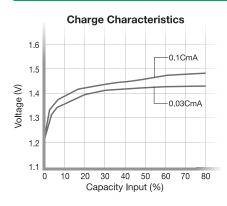
Nominal Capacit	Nominal Capacity	Nominal Din	nension (mm)-				Nominal		
Model No.	at 5-hr rate (mAh)	Diameter	Height	Weight (g)	Current (mA)	Time (hour)	Maximum Charging Voltage (V)	Voltage (V)	End Voltage (V)
High Cap	acity Series								
GP15BNH 2**	15	9.5	2.6	0.7	1.5	16	1.5	1.2	1
GP20BNH 2**	20	11.5	2.25	1.0	2	16	1.5	1.2	1
GP25BNH ²	25	11.6	3.5	1.4	2.5	16	1.5	1.2	1
GP40BVH 2**	40	11.6	5.5	1.9	4	16	1.5	1.2	1
GP80BVH 1**	80	15.5	6.3	3.7	8	16	1.5	1.2	1
GP150BVH ¹	120	15.5	7.8	4.8	12	16	1.5	1.2	1
GP250BVH ²	250	25	6.4	10.9	25	16	1.5	1.2	1
GP320BVH ¹	320	25	8.7	14.1	32	16	1.5	1.2	1
Standard	Series								
GP60BVH ¹	60	15.5	6.3	3.6	6	16	1.5	1.2	1
GP170BVH ¹	170	25	6.4	9.8	17	16	1.5	1.2	1
GP280BVH ¹	280	25	8.7	12.6	28	16	1.5	1.2	1

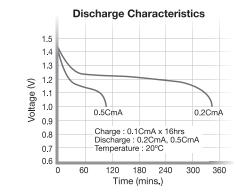
Typical Ambient Temperature: 1 Standard Charge / Discharge: 0°C to 45°C / Storage: -20°C to 45°C

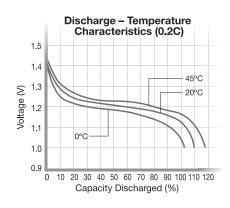
² Standard Charge: 0°C to 65°C / Discharge: -20°C to 65°C /

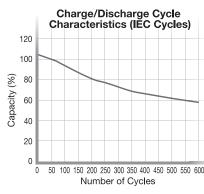
** With UL approval.

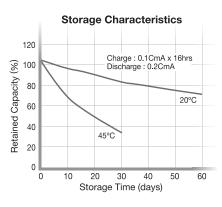
Performance Characteristics





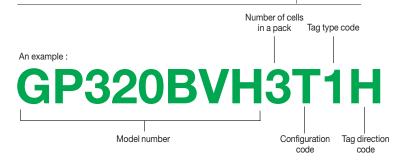






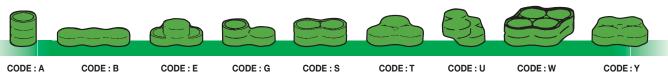
Configurations

Designation System for Battery Packs



For battery packs with connectors, the last two characters will be used to specify connector type eg. GP320BVH3TMU.

Standard Configurations for Battery Packs



Cells stacked in a vertical

Cells arranged

One cell centered on top of 2 cells or

Cells stacked in 2 vertical columns of 2 columns unequal number of cells of cells

Cells stacked in multiple columns and

Cells arranged in a horizontal triangle

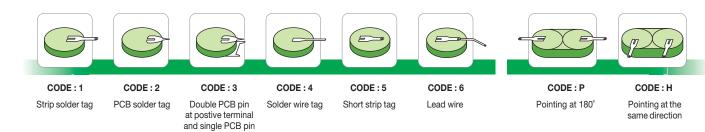
Cells stacked in ladder shape

Cells arranged zig-zag rows

Cells arranged in horizontal in a horizontal rectangle (in one or more

Tag Direction Codes

Tag Type Specifications



Connector Type Specifications

GP Universal Plug - exclusively from GP, offers distinctive features unparalleled in the market. - U.S. patent no. 5 161 990

Major Benefits

- Compatible with most cordless phone models (interchangeable with Mitsumi, JST, Molex plugs etc.)
- · Minimise inventory items
- User friendly



Universal Plug JST EHR-2





Molex 5264-02



Mitsumi M63M83-02

NiMH Rechargeable Button Cells

Memory Backup Applications

GP Batteries provide consistent and reliable performance for memory backup (MBU) and real time clock (RTC) application, Built-in PCB tags facilitate the subsequent processing and wave soldering.

Specifications

GP Model No.	No. of cells	Nominal Voltage (V)	Typical Capacity (mAh)	Nominal Capacity (mAh)	Length (mm)	Width (mm)	Height without pins (mm)	Tag Length (mm)	Weight (g)
MBU Series									
GP15BNH3A2H	3	3.6	16	15	9.8	10.3	10.3	4.5	2.3
GP20BNH3B2H	3	3.6	21	20	35.75	12.8	4.0	3.0	3.0
GP40BVH2A2H	2	2.4	48	40	11.7	12.5	12.5	4.5	4.2
GP40BVH3A2H	3	3.6	48	40	17.3	12.5	12.5	4.5	6.1
GP40BVH3B3H	3	3.6	48	40	36.0	12.5	7.0	3.5	6.1
GP80BVH2A2H	2	2.4	90	80	12.5	16.5	16.5	4.5	7.7
GP80BVH2B2H	2	2.4	90	80	31.5	11.5	7.0	4.5	7.7
GP80BVH3A3H	3	3.6	90	80	19.6	16.5	16.5	4.5	11.7
GP80BVH3B2H	3	3.6	90	80	43.0	11.5	7.0	4.5	11.7

^{*} Different configurations and capacities are available upon request

Major Applications

PC. VCR. desktop PC's, notebooks, PDA and car stereo etc





GP15BNH3A2H GP40BVH2A2H



GP80BVH3A3H



GP20RNH3R2H



GP40BVH3B3H



GP80RVH2R2H



GP80BVH3B2H

Bridging Applications

GP Batteries offer reliable and superior power backup for bridging purpose of mobile computers. It acts as an ultimate power supply temporarily during replacement of main battery. Batteries can be equipped with different connectors to suit specific requirement. The configuration of 6 cells together horizontally with connector is widely used in most portable power electronic devices.

Specifications

GP Model No.	No. of cells	Nominal Voltage (V)	Typical Capacity (mAh)	Nominal Capacity (mAh)	Length (mm)	Width (mm)	Height (mm)	Weight (g)	Wire Length (mm)
Bridging Ser	ies								
GP15BNH6BMX	6	7.2	16	15	59.0	13.0	3.4	4.9	35
GP20BNH6BMX	6	7.2	21	20	71.5	14.5	4.0	7.0	35
GP20BNH6SMX	6	7.2	21	20	36.7	14.5	7.0	7.0	20
GP40BVH6BMX	6	7.2	48	40	70.5	13.5	6.7	12.5	43
GP40BVH6WMX	6	7.2	48	40	42.5	22.5	7.5	12.5	60
GP80BVH6BMX	6	7.2	90	80	94.0	17.8	7.0	23.1	60
GP80BVH6SMX	6	7.2	90	80	48.0	18.5	13.2	24.0	60

^{*} Different configurations and capacities are available upon request.

Major Applications

Notebooks, palmtops and PDA etc

