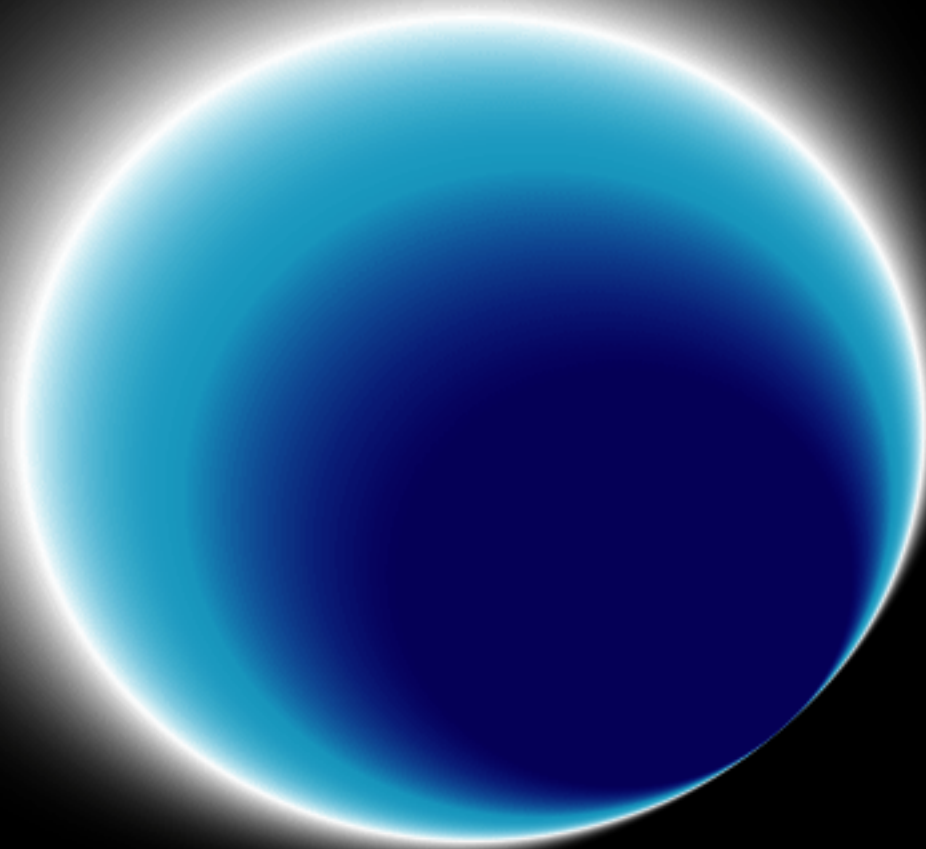
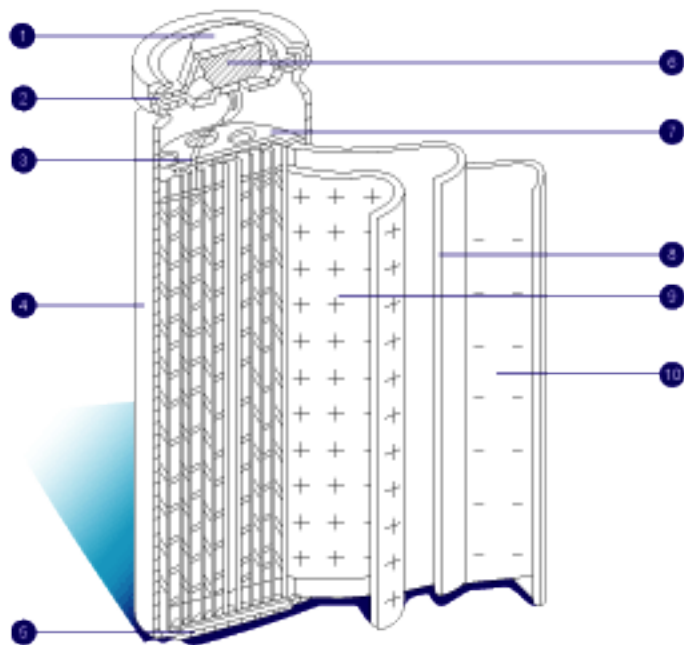


NI-MH

Rechargeable
Battery



CELL CONSTRUCTION



- | | |
|----------------------|------------------------------------|
| 1. Cell cap (+) | 6. Safety-vent system |
| 2. Gasket | 7. Top insulator |
| 3. Current collector | 8. Separator |
| 4. Cell case (-) | 9. Positive nickel electrode (+) |
| 5. Bottom insulator | 10. Negative hydride electrode (-) |

MAJOR FEATURES

1. Environmental friendly / Cd 0% Hg 0% Pb 0%
2. High energy density / The energy density of Power-Pack Ni-MH batteries is more than 55Wh/kg and 180Wh/dm³.
3. Long service life / The cell can be expected more than 500-1000 charge/discharge cycles under normal usage.
4. High discharge voltage and long platform time / Voltage remain above 1.2V per cell fro 40-50 minutes in the discharge period at 1.0C rate.
5. Excellent performance of high rate charge and discharge / For different applications, the cell can be quick charged in 1-3 hours, it can also withstand a high rate discharge up to 3C.
6. Reliable safety vent / It is 100% tested that the safety vent opens automatically when the cell internal pressure more than 25 atm.
7. Wide temperature range / Performance remains efficient over a wide temperature range -20°C-50°C.
8. Handling performance / Maintenance-free and can be applied optionally.
9. No memory effect
10. Low internal resistance

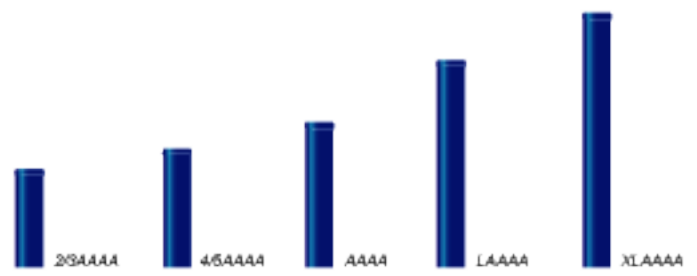
* Must use specified charge method, please ask for information.

MAJOR APPLICATIONS

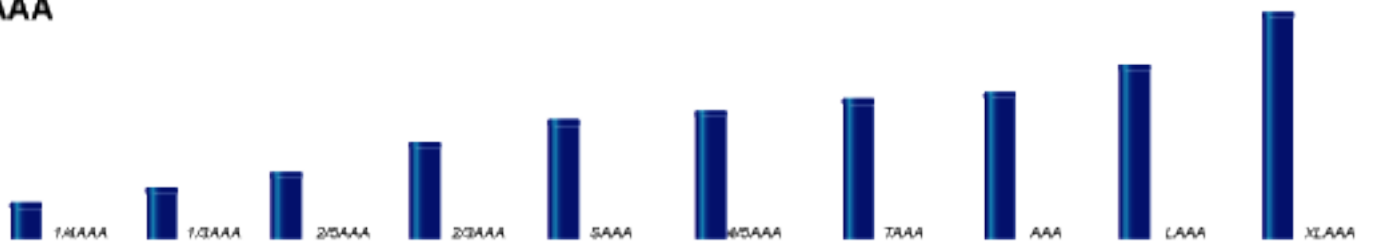
1. Telecommunication equipments, such as cordless phones, cellular phones, transceivers.
2. Emergency lightings and security systems
3. Radio control toys
4. Audio and video devices, such as camcorders, walkmans, MDs, portable DVDs, VCDs, TVs
5. Information devices, such as notebook computers, PDAs, portable fax machines
6. Power tools
7. Electric bicycles
8. Others applications, such as electric shavers, electric toothbrushes, massagers, portable vacuum cleaners, portable terminals.

SPECIFICATIONS of the BATTERIES

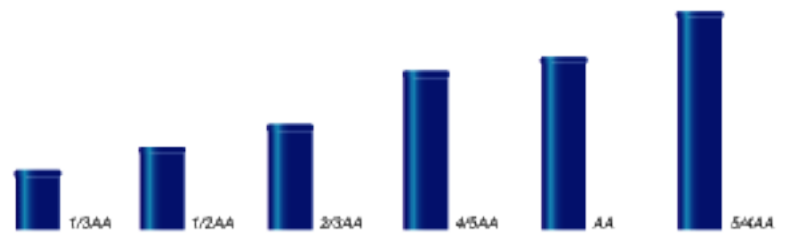
• AAAA



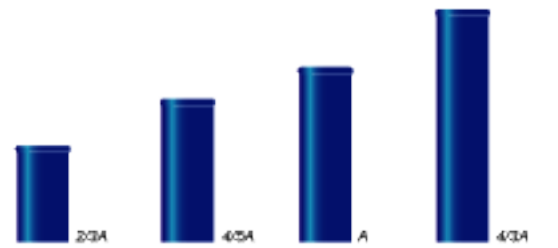
• AAA



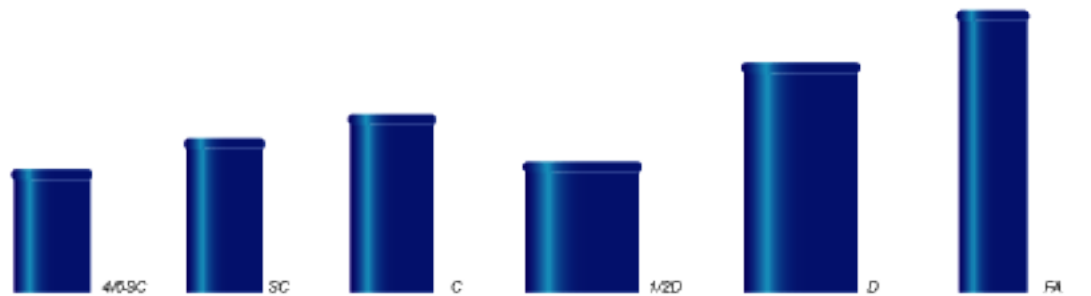
• AA



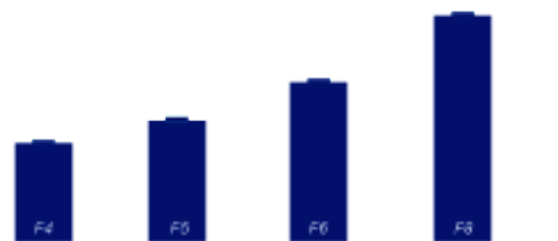
• A



• SC / C / D / FA



• Prismatic



INDUSTRIAL USE

Standard Series (cylindrical) / AAAA / AAA / AA / A

| No. | Model | Size | Nominal Voltage (V) | Capacity(0.2C discharge) (mAh) | | Standard Charge (12hr, mA) | Fast Charge* (2hr, mA) | Nominal Dimension (mm) | | Approx. Weight (g) |
|-------|------------|---------|---------------------|--------------------------------|---------|----------------------------|------------------------|------------------------|-------------|--------------------|
| | | | | Minimum | Typical | | | Diameter (mm) | Height (mm) | |
| PP001 | PH020-4A29 | 2/3AAAA | 1.2 | 200 | 210 | 20 | 200 | 8.7±0.07 | 29.0±0.10 | 5.0 |
| PP002 | PH035-4A38 | 4/5AAAA | 1.2 | 300 | 350 | 35 | 350 | 8.7±0.07 | 38.0±0.10 | 7.0 |
| PP003 | PH030-4A40 | 4/5AAAA | 1.2 | 300 | 310 | 30 | 300 | 8.7±0.07 | 40.0±0.10 | 7.0 |
| PP004 | PH040-4A40 | 4/5AAAA | 1.2 | 400 | 420 | 40 | 400 | 8.7±0.07 | 40.0±0.10 | 7.0 |
| PP005 | PH045-4A52 | AAAA | 1.2 | 450 | 470 | 45 | 450 | 8.7±0.07 | 52.0±0.10 | 10.0 |
| PP006 | PH055-4A55 | LAAAA | 1.2 | 550 | 575 | 55 | 550 | 8.7±0.07 | 55.0±0.10 | 11.0 |
| PP007 | PH055-4A67 | XLAAAA | 1.2 | 550 | 575 | 55 | 550 | 8.7±0.07 | 67.0±0.10 | 12.0 |
| PP008 | PH060-4A67 | XLAAAA | 1.2 | 660 | 680 | 65 | 650 | 8.7±0.07 | 67.0±0.10 | 12.0 |
| PP009 | PH065-4A67 | XLAAAA | 1.2 | 600 | 630 | 60 | 600 | 8.7±0.07 | 67.0±0.10 | 12.0 |
| PP010 | PH070-4A67 | XLAAAA | 1.2 | 700 | 735 | 70 | 700 | 8.7±0.07 | 67.0±0.10 | 13.0 |
| PP011 | PH008-3A11 | 1/4AAA | 1.2 | 70 | 80 | 8 | 80 | 10.5±0.07 | 11.0±0.10 | 2.4 |
| PP012 | PH010-3A15 | 1/3AAA | 1.2 | 100 | 105 | 10 | 100 | 10.5±0.07 | 15.0±0.10 | 4.0 |
| PP013 | PH012-3A15 | 1/3AAA | 1.2 | 120 | 125 | 12 | 120 | 10.5±0.07 | 15.0±0.10 | 4.0 |
| PP014 | PH015-3A17 | 1/3AAA | 1.2 | 150 | 155 | 15 | 150 | 10.5±0.07 | 17.0±0.10 | 4.0 |
| PP015 | PH015-3A21 | 2/5AAA | 1.2 | 150 | 155 | 15 | 150 | 10.5±0.07 | 21.0±0.10 | 5.0 |
| PP016 | PH018-3A21 | 2/5AAA | 1.2 | 180 | 230 | 18 | 180 | 10.5±0.07 | 21.0±0.10 | 5.0 |
| PP017 | PH022-3A21 | 2/5AAA | 1.2 | 220 | 230 | 22 | 220 | 10.5±0.07 | 21.0±0.10 | 5.5 |
| PP018 | PH027-3A29 | 2/3AAA | 1.2 | 270 | 280 | 27 | 270 | 10.5±0.07 | 28.5±0.10 | 7.0 |
| PP019 | PH030-3A29 | 2/3AAA | 1.2 | 300 | 315 | 30 | 300 | 10.5±0.07 | 28.5±0.10 | 7.0 |
| PP020 | PH035-3A29 | 2/3AAA | 1.2 | 350 | 365 | 35 | 350 | 10.5±0.07 | 28.5±0.10 | 7.0 |
| PP021 | PH040-3A29 | 2/3AAA | 1.2 | 400 | 420 | 40 | 400 | 10.5±0.07 | 28.5±0.10 | 7.5 |
| PP022 | PH045-3A38 | SAAA | 1.2 | 450 | 470 | 45 | 450 | 10.5±0.07 | 38.0±0.10 | 9.0 |
| PP023 | PH050-3A38 | 4/5AAA | 1.2 | 500 | 525 | 50 | 500 | 10.5±0.07 | 38.0±0.10 | 10.0 |
| PP024 | PH055-3A43 | TAAA | 1.2 | 550 | 575 | 55 | 550 | 10.5±0.07 | 42.5±0.10 | 11.0 |
| PP025 | PH055-3A44 | AAA | 1.2 | 550 | 575 | 55 | 550 | 10.5±0.07 | 44.0±0.10 | 12.0 |
| PP026 | PH060-3A44 | AAA | 1.2 | 600 | 630 | 60 | 600 | 10.5±0.07 | 44.0±0.10 | 12.0 |
| PP027 | PH065-3A44 | AAA | 1.2 | 650 | 680 | 65 | 650 | 10.5±0.07 | 44.0±0.10 | 12.0 |
| PP028 | PH070-3A44 | AAA | 1.2 | 680 | 700 | 70 | 700 | 10.5±0.07 | 44.0±0.10 | 12.0 |
| PP029 | PH075-3A44 | AAA | 1.2 | 700 | 750 | 75 | 750 | 10.5±0.07 | 44.0±0.10 | 13.0 |
| PP030 | PH080-3A44 | AAA | 1.2 | 750 | 800 | 80 | 800 | 10.5±0.07 | 44.0±0.10 | 14.0 |
| PP031 | PH070-3A50 | LAAA | 1.2 | 700 | 735 | 70 | 700 | 10.5±0.07 | 50.0±0.10 | 14.0 |
| PP032 | PH075-3A50 | LAAA | 1.2 | 750 | 785 | 75 | 750 | 10.5±0.07 | 50.0±0.10 | 14.0 |
| PP033 | PH080-3A50 | LAAA | 1.2 | 800 | 840 | 80 | 800 | 10.5±0.07 | 50.0±0.10 | 14.0 |
| PP034 | PH090-3A67 | XLAAA | 1.2 | 900 | 945 | 90 | 900 | 10.5±0.07 | 67.0±0.10 | 18.0 |
| PP035 | PH095-3A67 | XLAAA | 1.2 | 950 | 995 | 95 | 950 | 10.5±0.07 | 67.0±0.10 | 18.0 |
| PP036 | PH110-3A67 | XLAAA | 1.2 | 1100 | 1155 | 110 | 1100 | 10.5±0.07 | 67.0±0.10 | 19.0 |
| PP037 | PH025-2A17 | 1/3AA | 1.2 | 250 | 260 | 25 | 250 | 14.5±0.07 | 17.0±0.10 | 8.0 |
| PP038 | PH050-2A25 | 1/2AA | 1.2 | 500 | 525 | 50 | 500 | 14.5±0.07 | 25.0±0.10 | 11.0 |
| PP039 | PH060-2A29 | 2/3AA | 1.2 | 600 | 630 | 60 | 600 | 14.5±0.07 | 29.0±0.10 | 14.0 |
| PP040 | PH065-2A29 | 2/3AA | 1.2 | 650 | 680 | 65 | 650 | 14.5±0.07 | 29.0±0.10 | 14.0 |
| PP041 | PH075-2A29 | 2/3AA | 1.2 | 750 | 785 | 75 | 750 | 14.5±0.07 | 29.0±0.10 | 14.0 |
| PP042 | PH105-2A43 | 4/5AA | 1.2 | 1000 | 1050 | 105 | 1050 | 14.5±0.07 | 43.0±0.10 | 23.0 |
| PP043 | PH110-2A43 | 4/5AA | 1.2 | 1100 | 1155 | 110 | 1100 | 14.5±0.07 | 43.0±0.10 | 23.0 |
| PP044 | PH120-2A43 | 4/5AA | 1.2 | 1200 | 1260 | 120 | 1200 | 14.5±0.08 | 43.0±0.10 | 23.0 |
| PP045 | PH030-2A49 | AA | 1.2 | 800 | 840 | 80 | 800 | 14.5±0.08 | 49.0±0.10 | 19.0 |
| PP046 | PH110-2A49 | AA | 1.2 | 1100 | 1155 | 110 | 1100 | 14.5±0.08 | 49.0±0.12 | 21.0 |
| PP047 | PH120-2A49 | AA | 1.2 | 1200 | 1260 | 120 | 1200 | 14.5±0.08 | 49.0±0.12 | 24.0 |
| PP048 | PH130-2A49 | AA | 1.2 | 1300 | 1365 | 130 | 1300 | 14.5±0.08 | 49.0±0.12 | 24.0 |
| PP049 | PH150-2A49 | AA | 1.2 | 1500 | 1550 | 150 | 1500 | 14.5±0.08 | 49.0±0.12 | 25.0 |
| PP050 | PH160-2A49 | AA | 1.2 | 1600 | 1650 | 160 | 800*2.5hrs | 14.5±0.08 | 49.0±0.12 | 25.0 |
| PP051 | PH170-2A49 | AA | 1.2 | 1700 | 1750 | 170 | 850*2.5hrs | 14.5±0.07 | 49.0±0.12 | 28.0 |
| PP052 | PH180-2A49 | AA | 1.2 | 1750 | 1800 | 180 | 900*2.5hrs | 14.5±0.07 | 49.0±0.12 | 28.0 |
| PP053 | PH200-2A49 | AA | 1.2 | 1900 | 2000 | 200 | 900*2.5hrs | 14.5±0.07 | 49.0±0.12 | 28.0 |
| PP054 | PH180-2A65 | 5/4AA | 1.2 | 1800 | 1850 | 180 | 900*2.5hrs | 14.5±0.07 | 65.0±0.12 | 32.0 |
| PP055 | PH220-2A65 | 5/4AA | 1.2 | 2200 | 2300 | 220 | 1100*2.5hrs | 14.5±0.07 | 65.0±0.12 | 36.0 |

* Must use specified charge method, please ask for information.

INDUSTRIAL USE

Standard Series (cylindrical) / AAAA / AAA / AA / A

(continue)

| No. | Model | Size | Nominal Voltage (V) | Capacity(0.2C discharge) (mAh) | | Standard Charge (1.2V @ 0.1C) | Fast Charge* (1.2V @ 0.2C) | Nominal Dimension (mm) | | Approx. Weight (g) |
|-------|-----------|--------|---------------------|--------------------------------|---------|-------------------------------|----------------------------|------------------------|-------------|--------------------|
| | | | | Minimum | Typical | | | Diameter (mm) | Height (mm) | |
| PP056 | PH090-A29 | 2/3AAA | 1.2 | 900 | 945 | 90 | 900 | 17.0±0.07 | 28.5±0.10 | 21.0 |
| PP057 | PH100-A29 | 2/3AAA | 1.2 | 1000 | 1050 | 100 | 1000 | 17.0±0.07 | 28.5±0.10 | 21.0 |
| PP058 | PH120-A29 | 2/3AAA | 1.2 | 1200 | 1260 | 120 | 1200 | 17.0±0.07 | 28.5±0.10 | 21.0 |
| PP059 | PH170-A43 | 4/5A | 1.2 | 1700 | 1750 | 170 | 850*2.5hrs | 17.0±0.07 | 43.0±0.10 | 33.0 |
| PP060 | PH180-A43 | 4/5A | 1.2 | 1800 | 1850 | 180 | 900*2.5hrs | 17.0±0.07 | 43.0±0.10 | 33.0 |
| PP061 | PH200-A50 | A | 1.2 | 2000 | 2050 | 200 | 1000*2.5hrs | 17.0±0.07 | 60.0±0.10 | 38.0 |
| PP062 | PH210-A50 | A | 1.2 | 2100 | 2150 | 210 | 1050*2.5hrs | 17.0±0.07 | 60.0±0.10 | 38.0 |
| PP063 | PH220-A50 | A | 1.2 | 2200 | 2250 | 220 | 1100*2.5hrs | 17.0±0.07 | 60.0±0.10 | 38.0 |
| PP064 | PH300-A67 | 4/3A | 1.2 | 3000 | 3050 | 300 | 1500*2.5hrs | 17.0±0.07 | 67.0±0.10 | 51.0 |
| PP065 | PH330-A67 | 4/3A | 1.2 | 3300 | 3350 | 300 | 990*4.5hrs | 17.0±0.07 | 67.0±0.10 | 51.0 |
| PP066 | PH350-A67 | 4/3A | 1.2 | 3500 | 3550 | 330 | 1050*4.5hrs | 17.0±0.07 | 67.0±0.10 | 52.0 |
| PP067 | PH380-A67 | 4/3A | 1.2 | 3800 | 3850 | 360 | 1080*4.5hrs | 17.0±0.07 | 67.0±0.10 | 52.0 |

Standard Series (cylindrical) / SC / C / D / FA

| No. | Model | Size | Nominal Voltage (V) | Capacity(0.2C discharge) (mAh) | | Standard Charge (1.2V @ 0.1C) | Fast Charge* (1.2V @ 0.2C) | Nominal Dimension (mm) | | Approx. Weight (g) |
|-------|------------|-------|---------------------|--------------------------------|---------|-------------------------------|----------------------------|------------------------|-------------|--------------------|
| | | | | Minimum | Typical | | | Diameter (mm) | Height (mm) | |
| PP068 | PH360-FA65 | 18850 | 1.2 | 3600 | 3650 | 360 | 1080*4.5hrs | 18.3±0.07 | 65.0±0.10 | 58.0 |
| PP069 | PH420-FA72 | 7/5FA | 1.2 | 4200 | 4300 | 420 | 1260*4.5hrs | 18.3±0.07 | 72.5±0.10 | 63.0 |
| PP070 | PH220-SC34 | 4/5SC | 1.2 | 2200 | 2310 | 220 | 660*4.5hrs | 23.0±0.10 | 34.0±0.10 | 48.0 |
| PP071 | PH200-SC43 | 8C | 1.2 | 2000 | 2100 | 200 | 600*4.5hrs | 23.0±0.10 | 43.0±0.10 | 56.0 |
| PP072 | PH240-SC43 | 8C | 1.2 | 2400 | 2520 | 240 | 720*4.5hrs | 23.0±0.10 | 43.0±0.10 | 56.0 |
| PP073 | PH270-SC43 | 8C | 1.2 | 2700 | 2835 | 270 | 810*4.5hrs | 23.0±0.10 | 43.0±0.10 | 56.0 |
| PP074 | PH300-SC43 | 8C | 1.2 | 3000 | 3150 | 300 | 900*4.5hrs | 23.0±0.10 | 43.0±0.10 | 56.0 |
| PP075 | PH400-C50 | C | 1.2 | 4000 | 4200 | 400 | 1200*4.5hrs | 26.0±0.10 | 48.5±0.10 | 80.0 |
| PP076 | PH400-D37 | 1/2D | 1.2 | 4000 | 4200 | 400 | 1200*4.5hrs | 33.0±0.10 | 37.0±0.10 | 95.0 |
| PP077 | PH800-D60 | D | 1.2 | 8000 | 8400 | 800 | 2400*4.5hrs | 33.0±0.10 | 60.0±0.10 | 160.0 |

High Temperature Series

| No. | Model | Size | Nominal Voltage (V) | Nominal Capacity (mAh) | Standard Charge (1.2V @ 0.1C) | Nominal Dimension (mm) | | Approx. Weight (g) |
|-------|------------|--------|---------------------|------------------------|-------------------------------|------------------------|-------------|--------------------|
| | | | | | | Diameter (mm) | Height (mm) | |
| PP078 | PT080-3A44 | AAA | 1.2 | 800 | 80 | 10.5±0.07 | 44.0±0.10 | 12.0 |
| PP079 | PT120-2A43 | 4/5AAA | 1.2 | 1200 | 120 | 14.5±0.07 | 43.0±0.10 | 23.0 |
| PP080 | PT120-2A49 | AA | 1.2 | 1200 | 120 | 14.5±0.07 | 49.0±0.10 | 24.0 |
| PP081 | PT180-A43 | 4/5A | 1.2 | 1800 | 180 | 17.0±0.07 | 43.0±0.10 | 33.0 |
| PP082 | PT200-A50 | A | 1.2 | 2000 | 200 | 17.0±0.07 | 50.0±0.10 | 38.0 |
| PP083 | PT280-A67 | 4/3A | 1.2 | 2800 | 280 | 17.0±0.07 | 67.0±0.10 | 52.0 |
| PP084 | PT280-SC43 | 8C | 1.2 | 2800 | 280 | 23.0±0.10 | 43.0±0.10 | 56.0 |
| PP085 | PT400-C50 | C | 1.2 | 4000 | 400 | 26.0±0.10 | 48.5±0.10 | 80.0 |

Power Tool Series

| No. | Model | Size | Nominal Voltage (V) | Capacity(0.2C discharge) (mAh) | | Standard Charge (1.2V @ 0.1C) | Fast Charge* (1.2V @ 0.2C) | Nominal Dimension (mm) | | Approx. Weight (g) |
|-------|------------|------|---------------------|--------------------------------|---------|-------------------------------|----------------------------|------------------------|-------------|--------------------|
| | | | | Minimum | Typical | | | Diameter (mm) | Height (mm) | |
| PP086 | PP170-SC34 | 8C | 1.2 | 1700 | 1750 | 170 | 1700 | 23.0±0.07 | 43.0±0.10 | 56.0 |
| PP087 | PP290-SC43 | 8C | 1.2 | 2900 | 2900 | 290 | 2900 | 23.0±0.07 | 43.0±0.10 | 57.0 |

Standard Series (Prismatic)

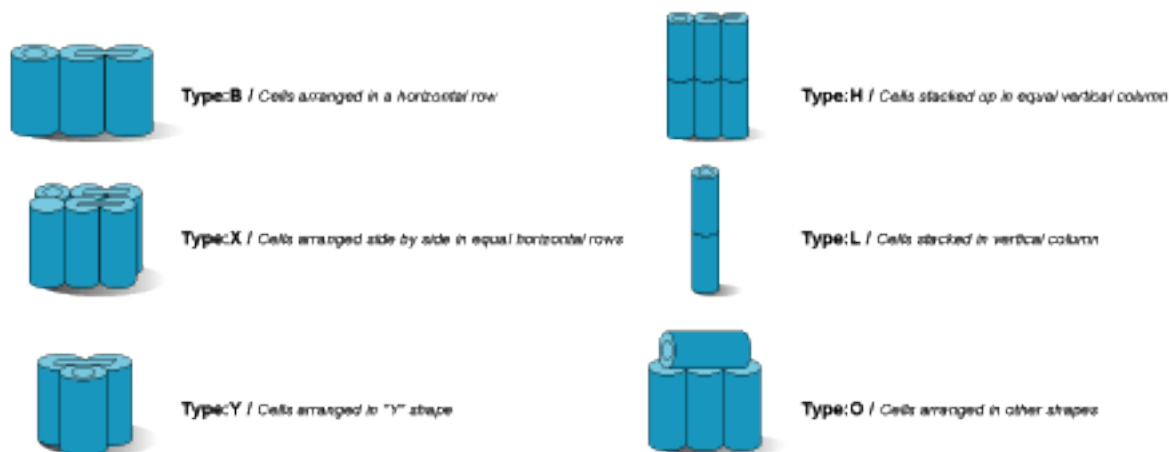
| No. | Model | Size | Nominal Voltage (V) | Nominal Capacity (mAh) | Standard Charge (1.2V @ 0.1C) | Fast Charge* (1.2V @ 0.2C) | Nominal Dimension (mm) | | | Approx. Weight (g) |
|-------|----------|------|---------------------|------------------------|-------------------------------|----------------------------|------------------------|----------------|-------------|--------------------|
| | | | | | | | Width (mm) | Thickness (mm) | Height (mm) | |
| PP088 | PH040-F4 | F4 | 1.2 | 400 | 40 | 400 | 16.8±0.07 | 6.5±0.07 | 29.0±0.07 | 8.0 |
| PP089 | PH050-F5 | F5 | 1.2 | 500 | 50 | 500 | 16.8±0.07 | 6.5±0.07 | 35.0±0.07 | 13.0 |
| PP090 | PH072-F6 | F6 | 1.2 | 720 | 72 | 720 | 16.8±0.07 | 6.5±0.07 | 48.0±0.07 | 19.0 |
| PP091 | PH105-F8 | F8 | 1.2 | 1050 | 105 | 1050 | 16.8±0.07 | 6.5±0.07 | 67.0±0.07 | 26.0 |

CONFIGURATIONS

1 Designation system for battery packs

| | | | | | | | | |
|-------------|-----------------|---------------|---------------------|---------------|-------------|---------------|----------------------|------------------------|
| PH | 060 | - | 2A | 29 | C | 3 | B | MS |
| <i>Code</i> | <i>Capacity</i> | <i>Hyphen</i> | <i>Size of cell</i> | <i>Height</i> | <i>Cell</i> | <i>Number</i> | <i>Configuration</i> | <i>Connector model</i> |

2 Standard configurations for battery packs



3 Tag type specifications

| TYPE | AAA | AA | A | SC | C | D |
|----------------|------|------|------|------|------|------|
| Length (mm) | 13 | 18 | 22 | 26 | 28 | 30 |
| Width (mm) | 3 | 4 | 5 | 5 | 7 | 6 |
| Thickness (mm) | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 | 0.12 |
| Sketch map | | | | | | |

4 Tag | Direction | Codes



5 Standard connector | models

