

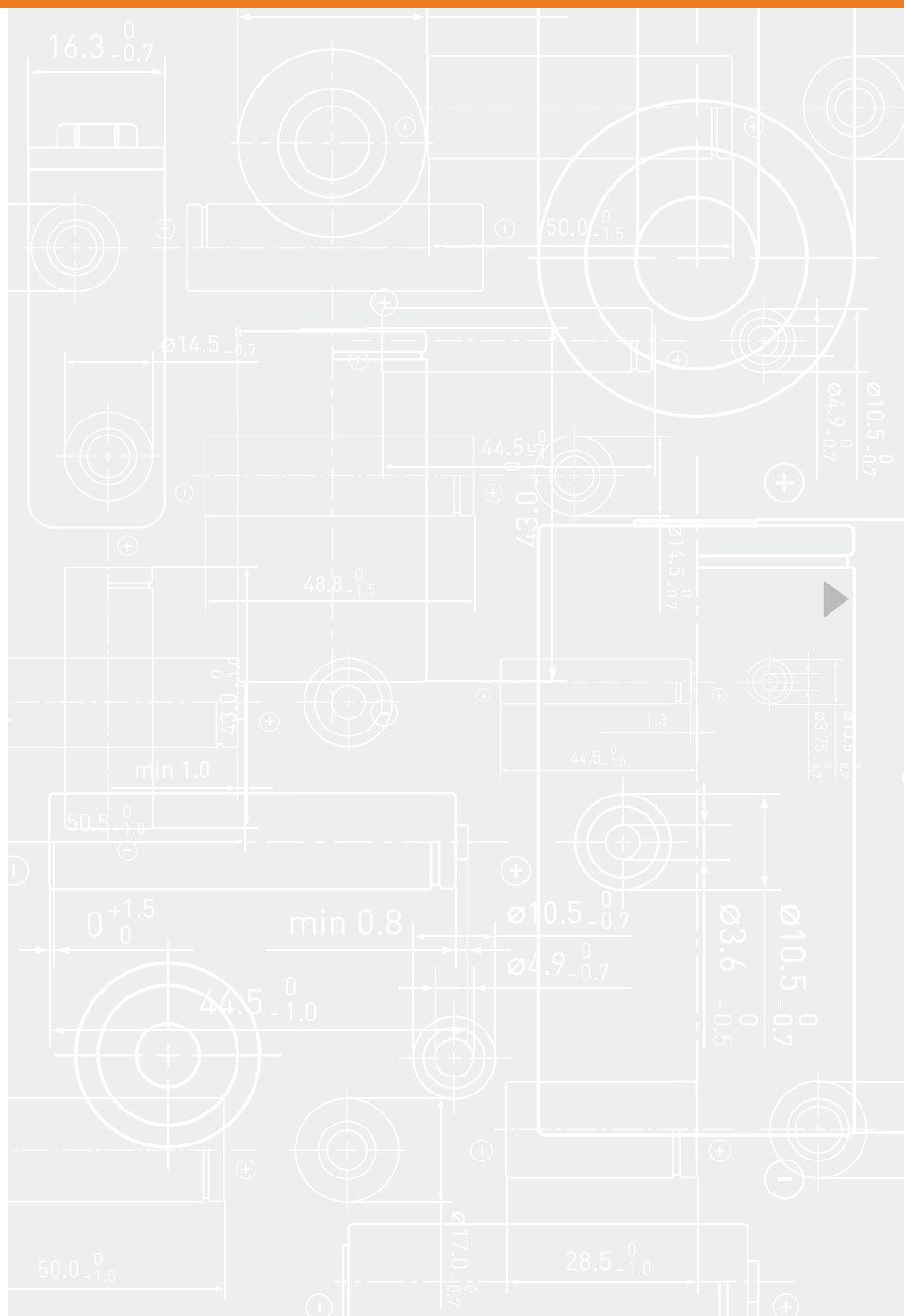
NI-MH HANDBOOK

ENGLISH

INDUSTRIAL BATTERIES

APPLICATIONS

- ⊗ Garden tool
- ⊗ Shaver
- ⊗ Marine device
- ⊗ Electrical vehicle
- ⊗ Two way radio
- ⊗ Power tool
- ⊗ Handheld scanner
- ⊗ Vacuum cleaner
- ⊗ Toothbrush
- ⊗ Defibrillator
- ⊗ Ticketing machine
- ⊗ Energy storage
- ⊗ Alarm system
- ⊗ Combined solar application
- ⊗ Medical device
- ⊗ POS terminal
- ⊗ Emergency light, etc.

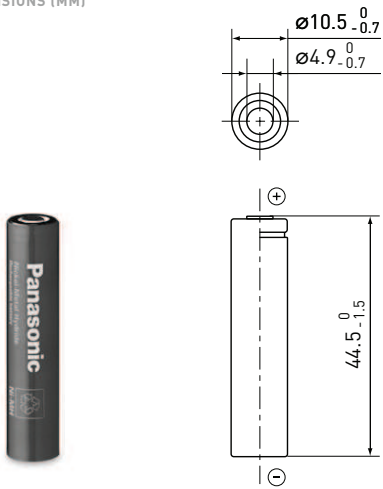


Panasonic BATTERIES
Quality is our Business.

INDIVIDUAL DATA SHEETS

BK-60AAA
HHR-60AAA (OLD)

DIMENSIONS (MM)

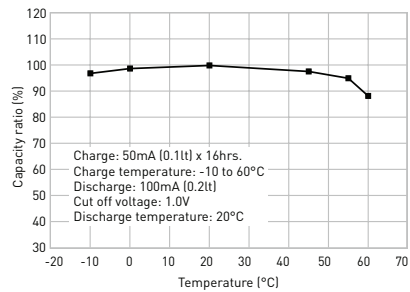
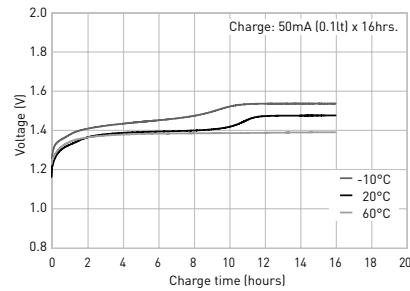


SPECIFICATIONS		BK-60AAA
Name		BK-60AAA
Diameter (mm)		10.5 +0/-0.7
Height (mm)		44.5 +0/-1.5
Approximate weight (g)		13
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	550
	Rated/min. (mAh)	500
Approx. internal impedance at 1,000Hz at charged state (mΩ)		35
Charge	Standard [mA x hrs.]	50 x 16
	Rapid*3 [mA x hrs.]	250 x 2.4
	Low rate [mA x hrs.]	25 x 32
Charge	Standard [°C]	-10 to 60
	Rapid [°C]	-10 to 60
	Low rate	-10 to 45
Discharge [°C]		-10 to 60
	<1 year	-20 to 35
	<6 months	-20 to 45
Storage	<1 month	-20 to 55
	<1 week	-20 to 65

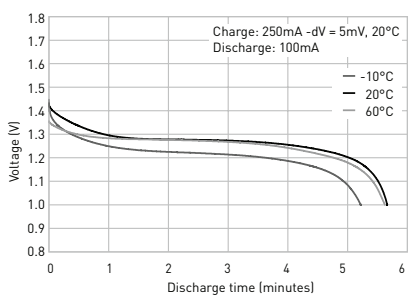
HIGH TEMPERATURE & LONG LIFE TYPE
AAA SIZE (HR11/45)

H type

TYPICAL CHARGE CHARACTERISTICS



TYPICAL DISCHARGE CHARACTERISTICS



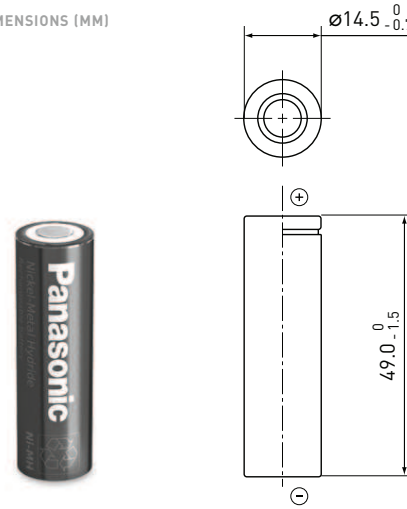
*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

Battery performance and cycle life are strongly affected by how they are used. In order to maximise battery safety, please consult Panasonic when determining charge/discharge specs, warning label contents and design. The data in this document are for descriptive purposes only and are not intended to make or imply any guarantee or warranty.

INDIVIDUAL DATA SHEETS

BK-70AAH
HHR-70AAH (OLD)

DIMENSIONS (MM)

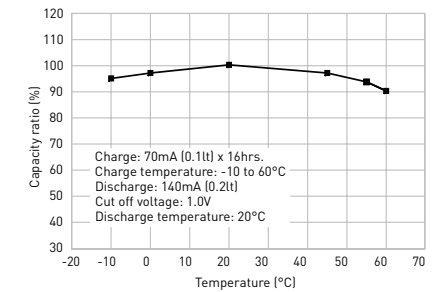
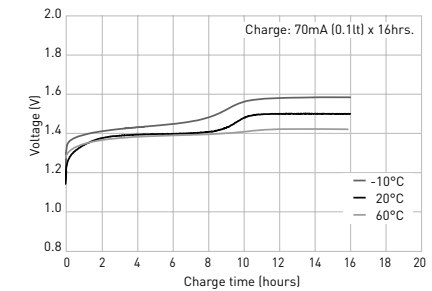


SPECIFICATIONS		BK-70AAH
Name		BK-70AAH
Diameter (mm)		14.5 +0/-0.7
Height (mm)		49.0 +0/-1.5
Approximate weight (g)		18
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	750
	Rated/min. (mAh)	700
Approx. internal impedance at 1,000Hz at charged state (mΩ)		25
Charge	Standard [mA x hrs.]	70 x 16
	Rapid*3 [mA x hrs.]	350 x 2.4
	Low rate [mA x hrs.]	35 x 32
Charge	Standard	-10 to +60
	Rapid	-10 to +60
	Low rate	-10 to +45
Discharge [°C]		-10 to +60
	<1 year	-20 to +35
	<6 months	-20 to +45
Storage	<1 month	-20 to +55
	<1 week	-20 to +65

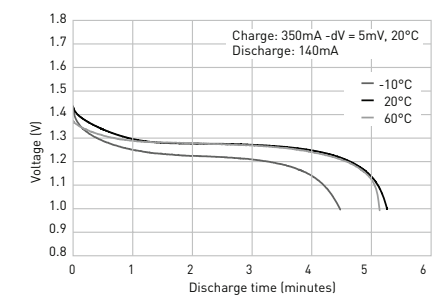
HIGH TEMPERATURE & LONG LIFE TYPE
AA SIZE (HR15/49)

H type

TYPICAL CHARGE CHARACTERISTICS



TYPICAL DISCHARGE CHARACTERISTICS

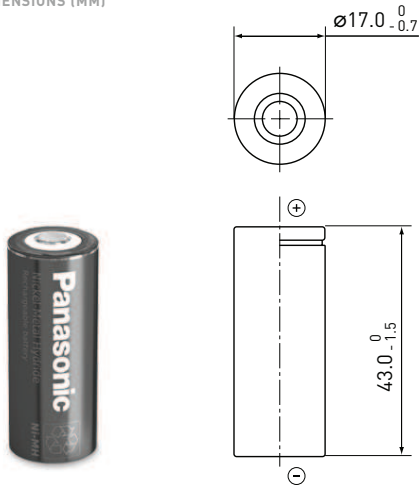


*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

Battery performance and cycle life are strongly affected by how they are used. In order to maximise battery safety, please consult Panasonic when determining charge/discharge specs, warning label contents and design. The data in this document are for descriptive purposes only and are not intended to make or imply any guarantee or warranty.

BK-160AH

DIMENSIONS (MM)



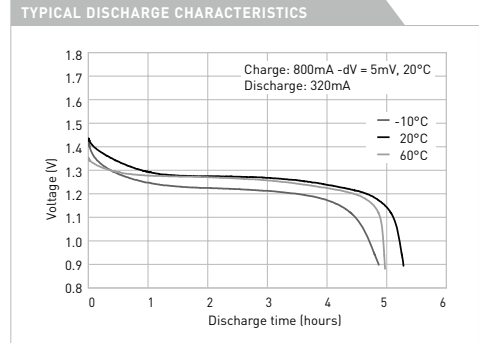
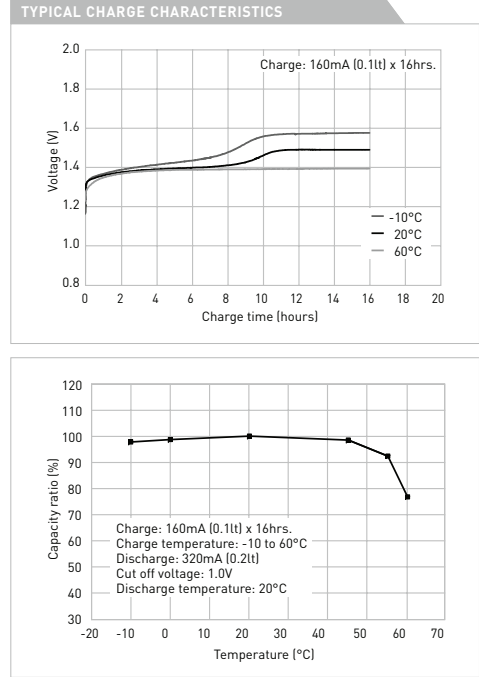
SPECIFICATIONS		BK-160AH
Name		BK-160AH
Diameter (mm)		17.0 +0/-0.7
Height (mm)		43.0 +0/-1.5
Approximate weight (g)		29
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	1,720
	Rated/min. (mAh)	1,600

Approx. internal impedance at 1,000Hz at charged state (mΩ) 20

Charge	Standard [mA x hrs.]	160 x 16
	Rapid*3 [mA x hrs.]	800 x 2.4
	Low rate [mA x hrs.]	80 x 32
Charge	Standard [°C]	-10 to +60
	Rapid [°C]	-10 to +60
	Low rate	-10 to +45
Discharge [°C]		-10 to +60
	<1 year	-20 to +35
	<6 months	-20 to +45
Storage	<1 month	-20 to +55
	<1 week	-20 to +65

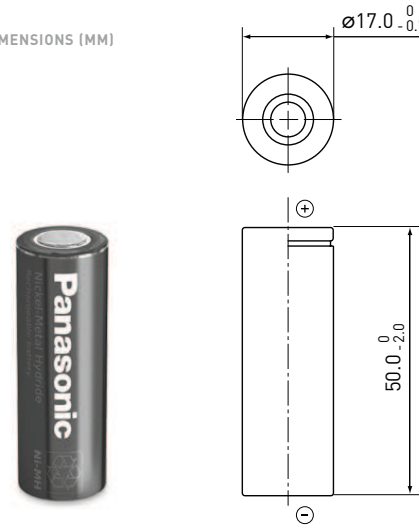
*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
 *2 For reference only.
 *3 Need specially designed control system. Please contact Panasonic for details.

HIGH TEMPERATURE & LONG LIFE TYPE
 4/5A SIZE (HR17/43) H type



BK-210AH
 HHR-210AH (OLD)

DIMENSIONS (MM)



SPECIFICATIONS		BK-210AH
Name		BK-210AH
Diameter (mm)		17.0 +0/-0.7
Height (mm)		50.0 +0/-2.0
Approximate weight (g)		36
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	2,050
	Rated/min. (mAh)	1,900

Approx. internal impedance at 1,000Hz at charged state (mΩ) 20

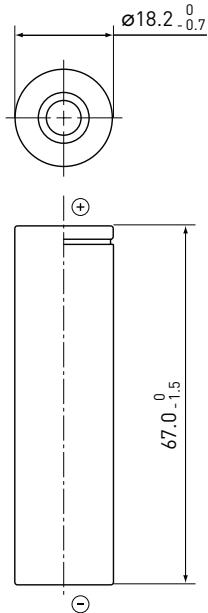
Charge	Standard [mA x hrs.]	190 x 16
	Rapid*3 [mA x hrs.]	1,000 x 2.3
	Low rate [mA x hrs.]	105 x 32
Charge	Standard [°C]	-10 to +60
	Rapid [°C]	-10 to +60
	Low rate	-10 to +45
Discharge [°C]		-10 to +60
	<1 year	-20 to +35
	<6 months	-20 to +45
Storage	<1 month	-20 to +55
	<1 week	-20 to +65

*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
 *2 For reference only.
 *3 Need specially designed control system. Please contact Panasonic for details.

INDIVIDUAL DATA SHEETS

BK-370AH
HHR-370AH (OLD)

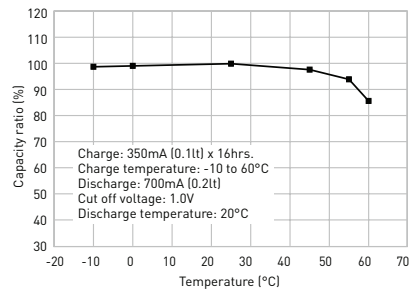
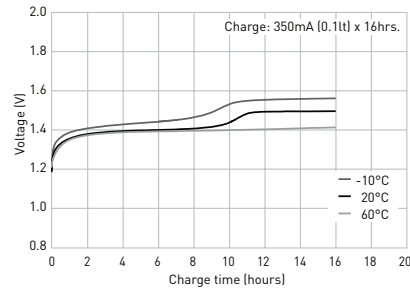
DIMENSIONS (MM)



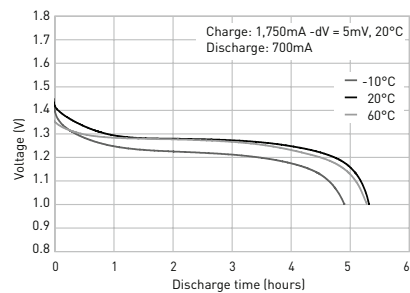
HIGH TEMPERATURE & LONG LIFE TYPE
LFAT/A SIZE

H type

TYPICAL CHARGE CHARACTERISTICS



TYPICAL DISCHARGE CHARACTERISTICS



SPECIFICATIONS

Name	BK-370AH	
Diameter (mm)	18.2 +0/-0.7	
Height (mm)	67.0 +0/-1.5	
Approximate weight (g)	60	
Nominal voltage (V)	1.2	
Discharge capacity*1	Average*2 (mAh)	3,700
	Rated/min. (mAh)	3,500

Approx. internal impedance at 1,000Hz at charged state (mΩ) 20

Charge	Standard [mA x hrs.]	350 x 16
	Rapid*3 [mA x hrs.]	3,000 x 1.4
	Low rate [mA x hrs.]	185 x 32

Charge (°C)	Standard	-10 to +60
	Rapid	-10 to +45
	Low rate	-10 to +60

Ambient temperature	Discharge (°C)	<1 year	-20 to +35
		<6 months	-20 to +45
	Storage (°C)	<1 month	-20 to +55
		<1 week	-20 to +65

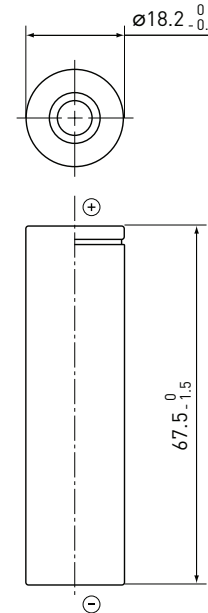
*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

Battery performance and cycle life are strongly affected by how they are used. In order to maximise battery safety, please consult Panasonic when determining charge/discharge specs, warning label contents and design. The data in this document are for descriptive purposes only and are not intended to make or imply any guarantee or warranty.

INDIVIDUAL DATA SHEETS

BK-330APH
HHR-330APH (OLD)

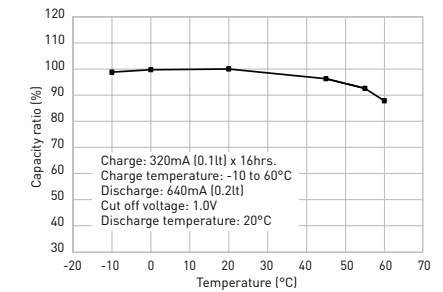
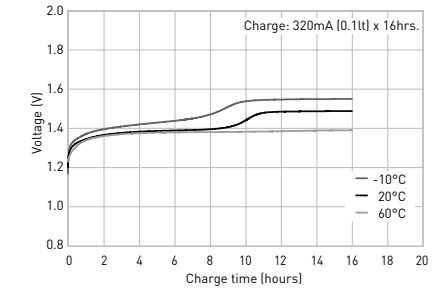
DIMENSIONS (MM)



HIGH RATE DISCHARGE & HIGH TEMPERATURE TYPE
LFAT/A SIZE

PH type

TYPICAL CHARGE CHARACTERISTICS



SPECIFICATIONS

Name	BK-330APH	
Diameter (mm)	18.2 +0/-0.7	
Height (mm)	67.5 +0/-1.5	
Approximate weight (g)	60	
Nominal voltage (V)	1.2	
Discharge capacity*1	Average*2 (mAh)	3,300
	Rated/min. (mAh)	3,200

Approx. internal impedance at 1,000Hz at charged state (mΩ) 5.5

Charge	Standard [mA x hrs.]	320 x 16
	Rapid*3 [mA x hrs.]	1,650 x 2.4
	Low rate [mA x hrs.]	165 x 32

Charge (°C)	Standard	-10 to +60
	Rapid	-10 to +45
	Low rate	-10 to +60

Ambient temperature	Discharge (°C)	<1 year	-20 to +35
		<6 months	-20 to +45
	Storage (°C)	<1 month	-20 to +55
		<1 week	-20 to +65

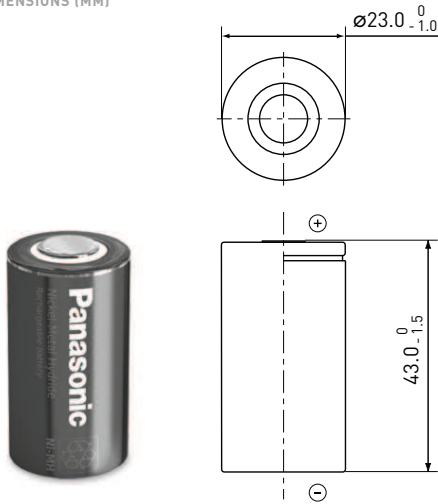
*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

Battery performance and cycle life are strongly affected by how they are used. In order to maximise battery safety, please consult Panasonic when determining charge/discharge specs, warning label contents and design. The data in this document are for descriptive purposes only and are not intended to make or imply any guarantee or warranty.

INDIVIDUAL DATA SHEETS

BK-250SCH
HHR-250SCH (OLD)

DIMENSIONS (MM)



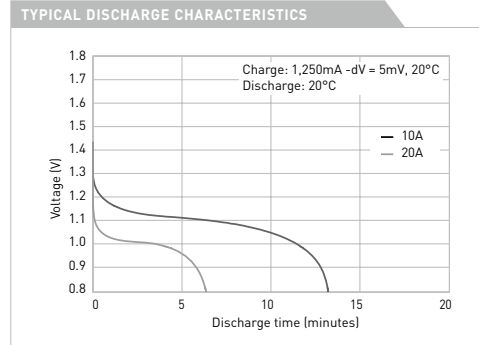
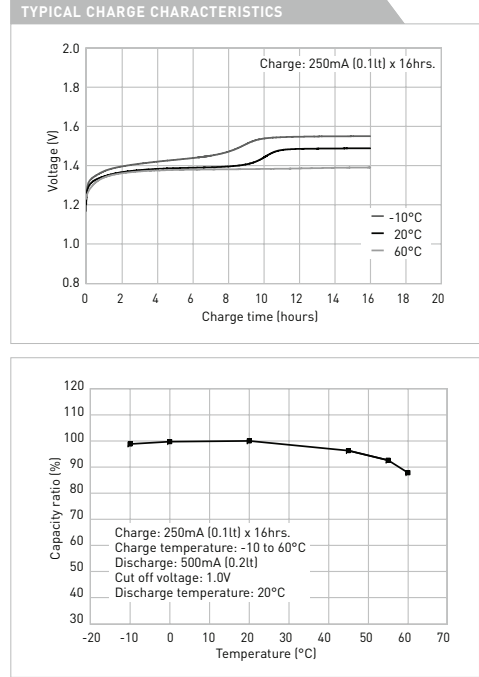
SPECIFICATIONS		BK-250SCH
Name		BK-250SCH
Diameter (mm)		23.0 +0/-1.0
Height (mm)		43.0 +0/-1.5
Approximate weight (g)		55
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	2,650
	Rated/min. (mAh)	2,500

Approx. internal impedance at 1,000Hz at charged state (mΩ) 5

Charge	Standard [mA x hrs.]	250 x 16	
	Rapid*3 [mA x hrs.]	1,250 x 2.4	
	Low rate [mA x hrs.]	125 x 32	
Charge (°C)	Standard	-10 to +60	
	Rapid	-10 to +45	
	Low rate	-10 to +60	
Discharge (°C)	Standard	-10 to +60	
	Rapid	-10 to +45	
	Low rate	-10 to +60	
Ambient temperature	Storage (°C)	<1 year	-20 to +35
		<6 months	-20 to +45
		<1 month	-20 to +55
		<1 week	-20 to +65

*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

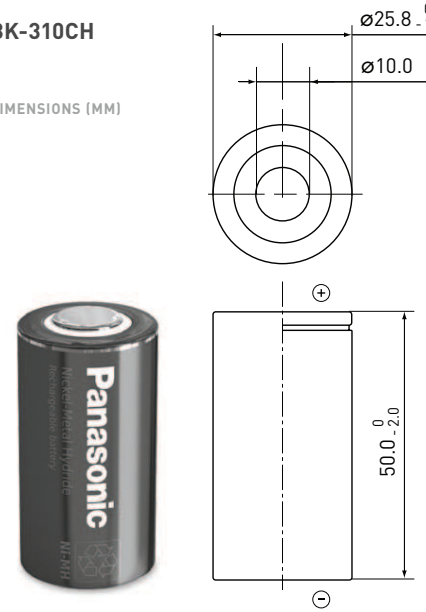
HIGH RATE DISCHARGE & HIGH TEMPERATURE TYPE PH type
SC SIZE (HR23/43)



INDIVIDUAL DATA SHEETS

BK-310CH

DIMENSIONS (MM)



SPECIFICATIONS		BK-310CH
Name		BK-310CH
Diameter (mm)		25.8 +0/-1.0
Height (mm)		50.0 +0/-2.0
Approximate weight (g)		80
Nominal voltage (V)		1.2
Discharge capacity*1	Average*2 (mAh)	3,300
	Rated/min. (mAh)	3,100

Approx. internal impedance at 1,000Hz at charged state (mΩ) 5

Charge	Standard [mA x hrs.]	310 x 16	
	Rapid*3 [mA x hrs.]	1,550 x 2.4	
	Low rate [mA x hrs.]	150 x 32	
Charge (°C)	Standard	-10 to +60	
	Rapid	-10 to +45	
	Low rate	-10 to +60	
Discharge (°C)	Standard	-10 to +60	
	Rapid	-10 to +45	
	Low rate	-10 to +60	
Ambient temperature	Storage (°C)	<1 year	-20 to +35
		<6 months	-20 to +45
		<1 month	-20 to +55
		<1 week	-20 to +65

*1 After charging at 0.1It for 16 hours, discharging at 0.2It.
*2 For reference only.
*3 Need specially designed control system. Please contact Panasonic for details.

CONTACT

United Kingdom/Ireland

Panasonic Automotive & Industrial
Systems Europe GmbH (PAISEU)
Willoughby Road
Bracknell Berkshire
RG12 8FP
England
Phone: +44 1344 - 853260
Fax: +44 1344 - 853313

Panasonic Italia

Branch Office of
Panasonic Marketing Europe GmbH
Viale dell'Innovazione 3
20126 Milano
Italy
Phone: +39 02 - 6788 - 232
Fax: +39 02 - 6788 - 207

Spain/Portugal

Panasonic Automotive & Industrial
Systems Europe GmbH (PAISEU)
Sucursal en España
Parque Empresarial @ Sant Cugat,
Via Augusta 15-25
Edificio B2 Planta 4 Oficina 17
08174 Sant Cugat del Valles
Barcelona
Spain
Phone: +34 93 - 5043010
Fax: +34 93 - 6755892

Notice to Readers

It is the responsibility of each user to ensure that every battery application is adequately designed safe and compatible with all conditions encountered during use, and in conformance with existing standards and requirements. This literature contains information concerning cells and batteries manufactured by Panasonic Corporation. This information is descriptive only and is not intended to make or imply any representation, guarantee or warranty with respect to any cells and batteries. Cell and battery designs are subject to modification without notice.

This catalog has been produced using unchlorinated paper.

For more details please contact:

France

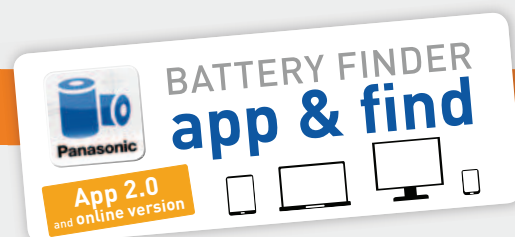
Panasonic Automotive & Industrial
Systems Europe GmbH (PAISEU)
10, rue des petits ruisseaux
91370 Verrières-le-Buisson
France
Phone: +33 1 - 60 13 57 62
Fax: +33 1 - 60 13 57 72

Germany

(all other European countries)
Panasonic Automotive & Industrial
Systems Europe GmbH (PAISEU)
Winsbergring 15
22525 Hamburg
Germany
Phone: +49 40 - 85386 - 373
Fax: +49 40 - 85386 - 238

E-mail and website for all countries

battery-solutions@eu.panasonic.com
<http://eu.industrial.panasonic.com/>



Website for Panasonic Battery Finder

Get more information on Panasonic Battery
Finder website.
[http://eu.industrial.panasonic.com/
battery-finder](http://eu.industrial.panasonic.com/battery-finder)



App Stores for Panasonic Battery Finder

The Panasonic Battery Finder is available for
Android and iOS (iPhone) devices and can be
downloaded free of charge in app stores. Scan
QR code to go to app store and download app.



Panasonic®

Panasonic is a registered trademark
of Panasonic Corporation.
Printed in Germany 2015
© Panasonic Corporation