	Control Number	2005-11E-013

Digi-Key Corporation

SPECIFICATION	
LITHIUM BATTERY	
Ordering Code	BR-1/2AAE2PE
Model Code	BR-1/2AAE2P

Approved by
Division/Department
Name
Title
Signature/Date

ISSUANCE
NOV. 24. 2005
MBI

Issued; Nov. 1st. 2005
Lithium & Micro Battery Business Unit
Primary Battery Company
Matsushita Battery Industrial Co., Ltd.

Approved	Checked	Checked	Drafted

Change Description

No.	Date	Revision
1	Nov. 1st. 2005	Issue

1. Application Rage

This specification applies to poly-carbonmonofluoride lithium batteries those are delivered from Matsushita Battery Industrial Co., Ltd. (MBI).

2. Nominal Specification

2-1 Model Number	BR-1/2AAE2PE (Bare cell: BR-1/2AA)
2-2 Nominal Voltage	3V
2-3 Nominal Capacity	1,000mAh (Nominal capacity is based on the standard discharge current and cut-off voltage 1.8V at 20℃.)
2-4 Standard Discharge Current	2.5mA
2-5 Maximum Continuous Discharge Current	50mA at 20℃
2-6 Dimensions	The attached drawing
2-7 Mass	Approximately 8g
2-8 Appearance	There shall be no noticeable deformation.
2-9 Temperature	Operation –40 to +100℃ Storage –20 to +60℃ (Consult Panasonic in case continuous high-temperature over +60℃ usage conditions.)

3. Characteristics

3-1 Open Circuit Voltage	
3-1-1 Initial	Between 3.0 and 3.5V
3-1-2 After 1 year (at 25±5℃)	Between 3.0 and 3.5V
	(The measuring method described item 5-4-1.) (Humidity during storage shall be less than 70%RH.)
3-2 Impedance	
3-2-1 Initial	Between 0.1 and 1.5Ω
3-1-2 After 1 year (at 25±5℃)	Between 0.1 and 1.5Ω
	(The measuring method described item 5-4-2.) (Humidity during storage shall be less than 70%RH.)
3-3 Duration	
3-3-1 Initial	300h MIN. (20±3℃)
3-3-2 After 1 year (at 25±5℃)	300h MIN. (20±3℃)
	(The measuring method described item 5-4-3.) (Humidity during storage shall be less than 70%RH.)
3-4 Vibration Resistance	Deterioration of performance (3-1) shall not occur after the test described in item 4-4-4.
3-5 Leakage Resistance	The battery shall not show leakage or salting which harms the performance (2-1) after the heat cycle test described in item 4-4-5.
3-6 High Temperature Storage	The battery shall not show leakage or salting after the high temperature storage described in item 4-4-6.

4. Test Condition

4-1 Test Condition	Unless otherwise specified the test shall be carried out at, Temperature : 25±5℃ Humidity : 65±10%RH
4-2 Test Timing	The test shall be started within a month from delivered day.
4-3 Measurement Instrument	
4-3-1 Voltage Meter	Input impedance : ≧ 10MΩ
4-3-2 Battery Impedance Meter	Accuracy : ≦ 0.5% Sine-wave AC method (1kHz, 0.1mA) (Agilent Technologies LCR Meter[4263B] is recommended)
4-3-3 Caliper	Accuracy : ≦ 1% by JIS
4-3-4 Balance	Sensitivity : ≦ 100mg

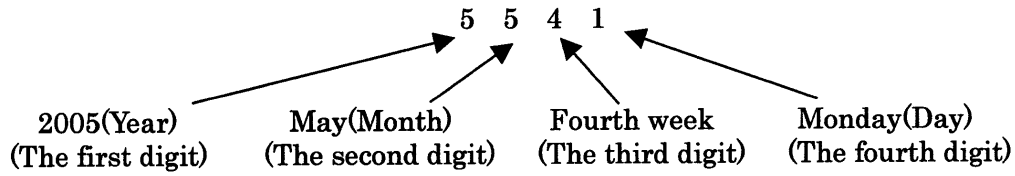
5. Measuring Method

5-1 Dimensions	This shall be measured with the caliper described in item 4-3-3.
5-2 Mass	This shall be measured with the balance described in item 4-3-4.
5-3 Appearance	Deformation or tarnish shall be visually checked.
5-4 Characteristics	
5-4-1 Open Circuit Voltage	This shall be measured with the voltage meter described in item 4-3-1.
5-4-2 Impedance	This shall be measured with the impedance meter described in item 4-3-2.
5-4-3 Duration	This shall be measured by constant resistance discharge method. The condition is Test temperature : 20±3℃ Load resistance : 1,000Ω End voltage: 1.8V
5-4-4 Vibration Test	This test shall be carried out by the following condition according to UN Manual of Test and Criteria, PartⅢ, sub-section 38.3.4.5, Amplitude: 0.8mm Frequency: 10 to 55Hz Sweep speed: 1Hz/min Directions: X, Y, Z Duration: 90 minutes
5-4-5 Heat Cycle Test	The test shall be carried out by the following condition. Temperature range : 60℃1h ⇔ -20℃1h / cycle Duration: 9 cycles Then leakage and appearance shall be checked by naked eyes after 24hours kept at Room Temperature. Dimensions shall be checked.

5-4-6 High Temperature Storage	The battery shall be stored at 60℃ for 28 days. After the storage, the battery shall be kept in dry place at 25±5℃ during 4hours, then leakage and appearance shall be checked by naked eyes.

6. Date Code System

Ex.



October; 0, November; Y, December; Z

7. UL Standard

BR-1/2AA is complied by UL1642 (File No.MH12210).

8. Operations and Modification of This Specification

Modification must be carried out under mutual agreement.

Any accidents caused by non-described items in this specification must be discussed and solved mutually.

9. Important Notes (Warranty)

1) The Batteries are warranted to conform to the description contained in this Specification for a period of twelve [12] months from the ex-factory date and any claim by you (customer) must be made within such period.

During that warranty period, if the Batteries are proved to become defective, non-defective and conforming Batteries will be supplied in due course at sole expense of Matsushita Battery Industrial Co., Ltd. (MBI) upon MBI's own determination that this is apparently caused by negligence of MBI.

Any further claims based on the delivery of defective Batteries shall be excluded. Such exclusion shall not affect the liability of MBI based on product liability for grossly negligence or intentional behavior of MBI.

2) Confirmation of the matching and reliability of Batteries into your actual sets or units is your own responsibility.

3) MBI shall not warrant or be responsible in any case where your fails to carry out proper handling, operating, installation, testing, service and checkout of the batteries and/or to follow the instructions, cautions, warnings, notes provided in this Specifications, or other MBI's reasonable instructions or advice.

4) This product specification will be validated assuming that it is accepted when it is not returned within six months from the date of issue.

10. Precautions for use

1) The battery shall not be stored at temperatures in excess of 45℃.
Storage at less than 30℃ is recommended. Storage at less than -20℃ can deform the plastic parts and may cause a leakage. To prevent self-discharge caused by corrosion or decrease of insulation, humidity during storage shall be less than 70%RH.

2) The battery has an explosion resistant construction. But the following cautions should be taken, because combustible materials such as lithium metal and organic electrolyte are contained in the battery.

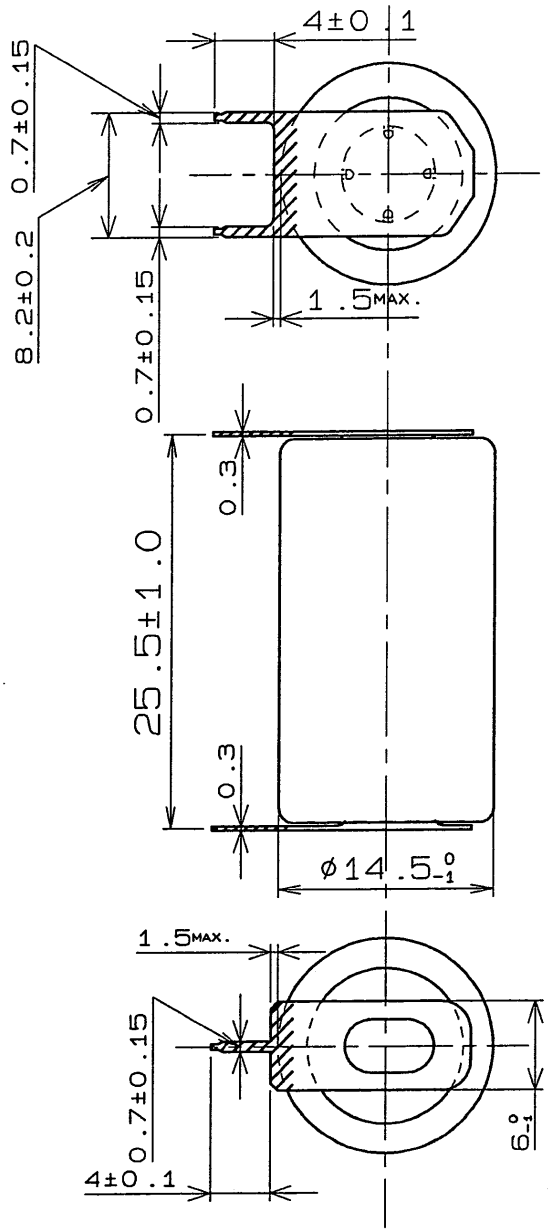
* Do not use except in applicable model or equipment.
* Do not connect more than two cells in series.
* Do not mix different types (chemistries) of batteries.
* Do not short circuit.
* Do not dispose in fire.
* Do not charge.
* Do not disassemble.

3) Keep away from heat source or flame.

4) The battery shall not be washed by ultrasonic wave washer.

Symbol	Date	Revision	Signed	Checked
△				

2005-11E-013



Note: *1 Material of tabs:
Stainless steel+Nickel plating+partial Tin plating.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN TOLERANCES
ON "Lithium & Micro Battery Dimension Standard"

Unit: mm

Lithium & Micro Battery Dimension Standard (for Products)	Nominal Size	Tolerance	Product No.	BR-1/2AAE2PE
	≦6	±0.2		
	6<~≦30	±0.5		
	30<~≦120	±0.8	Name	Product Drawing
	Angle	±5°		

Scale	Designed	Drawn	Checked	Checked	Approved	Drawing No.	PC-B12AA0254E
2: 1	S.N JUN.15.2004	S.N JUL.23.2004	Nov.1.2005	N.Ueno Nov.1.2005			

Matsushita Battery Industrial Co., Ltd. Lithium and Micro Battery Business Unit A4

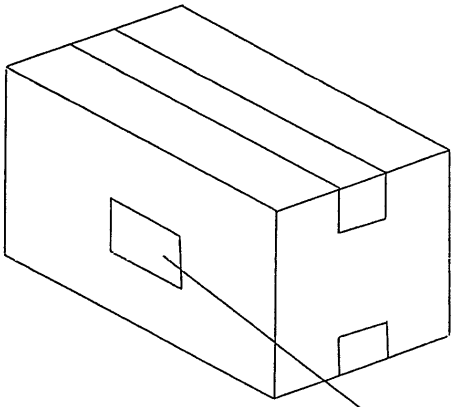
包　装　仕　様　書	分類番号	232-円筒-CR/BR-共通
	制　定	2002.12.20
品　番／Model Number	実　施	2003.01月切以降

ＶＴＣＰ対応の梱包箱表示

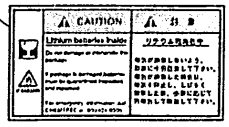
VTCP marking and labeling for air tansportation of lithium cells and batteries.

＊円筒形リチウム電池（品番:ＢＲ-,ＣＲ-）の場合.
Cylindrical type lithium cell and Batteries.（BR- ,CR-）

＊外装段ボ-ル箱<Corrugated board case.>



「VTCP mark」



シ-ル貼り又は印刷.
marking or labeling.

【VTCP mark】

	⚠ CAUTION	⚠ 注　意
	Lithium batteries inside	リチウム電池在中
 IF DAMAGED	Do not damage or mishandle this package. If package is damaged,batteries must be quarantined,inspected, and repacked. For emergency information, call CHEMTREC at 800-424-9300. Outside the United States Call 703-527-3887 Collect calls accepted.	梱包が損傷しないよう、取扱に十分注意して下さい。 梱包が損傷した場合は、輸送を停止し、しばらく観察した後、必要に応じて再梱包して輸送して下さい。

1/1

符号記事	1）VTCP対応					作成	検印	承認
年.月.日	2002.12.20					M.Hashimoto	A.Amari	S.Oguro
訂正者	橋本／M.Hashimoto							

松下電池工業株式会社 一次電池社 リチウム一次電池ビジネスユニット
MATSUSHITA BATTERY INDUSTRIAL CO.,LTD.
1-1 MATSUSHITA-CHO ,MORIGUCHI-SHI,OSAKA, 570-8511 JAPAN

Panasonic

Battery Safety Practices
Avoid danger when handling batteries

Lithium batteries contain volatile materials such as lithium, organic solvents and other chemical ingredients. Incorrect handling of lithium batteries may result in heat generation, fire or explosion, with the risk of personal injury or damage. To prevent accidents when handling batteries, be sure to observe the following precautions.

1. Do not stack or jumble batteries

Avoid contact between positive (+) and negative (−) battery poles, and contact with other metal surfaces, as this can cause short circuits with intense current flows and heat.
Stacking or jumbling batteries, as shown at right, may cause short circuits, heat generation, fire or explosion.

Example of stacked and jumbled batteries



* Contact between battery poles may form a discharge circuit and lead to heat generation, fire or explosion.

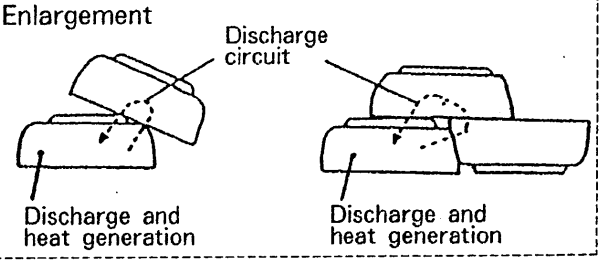
2. Do not dispose of batteries in fire

Disposal of batteries in fire is extremely dangerous with a risk of explosion and violent flaring.

3. Do not heat batteries

When lithium batteries are heated above 100℃ (212°F), the resin used in seals, separators and other parts may be damaged, causing electrolyte leaks and internal short circuits which may lead to fire or explosion.

Enlargement



4. Do not Solder directly onto batteries

Heat from soldering may damage seals, separators and other parts, causing electrolyte leaks and internal short circuits which may lead to fire or explosion.

5. Do not recharge batteries

Attempting to recharge batteries may result in internal generation of gases, which may lead to swelling, fire or explosion.

6. Do not dissemble batteries

Do not disassemble lithium batteries as this can generate a gas that may irritate the throat. Lithium may also react with moisture to generate heat and fire.

7. Do not deform batteries

When extreme pressure is applied to batteries, seals may be deformed or damaged, causing electrolyte leaks or internal short circuits. This may lead to the risk of heat generation, fire or explosion.

8. Do not mix different types of batteries

For some applications, mixing different types of batteries, or new and old batteries, can cause over discharge due to differences in voltage and electrical capacities. This may lead to the risk of swelling or explosion.

9. Insert batteries correctly

Depending on the application device, incorrect insertion of batteries, with positive (+) and negative (−) poles reversed, may result in short circuits and the risk of heat generation, fire or explosion.

Please ensure the above precautions are strictly observed by related divisions including production departments, sales departments and external subcontractors. For additional details and information, please contact our sales representatives.

Lithium And Micro Battery Business Unit, Matsushita Battery Industrial Co.,Ltd. 2002. 2

OCEAN CHIPS
Океан Электроники
Поставка электронных компонентов

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- Поставка оригинальных импортных электронных компонентов напрямую с производств Америки, Европы и Азии, а так же с крупнейших складов мира;
- Широкая линейка поставок активных и пассивных импортных электронных компонентов (более 30 млн. наименований);
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
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- Помощь Конструкторского Отдела и консультации квалифицированных инженеров;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Поставка электронных компонентов под контролем ВП;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
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