Individual Product Specifications for Alkaline Battery

Model : LR03
(size AAA)

(B2SS20060040IS_03)

1st/January/2012

Energy Device Business Unit			
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Energy Company
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Individual Product Specifications	B2SS20060040IS_03
LR03	Alkaline Battery size (AAA)

Reference **JIS C 8515, IEC 60086-2**

1 Designation : **LR03**
2 Nominal Voltage : **1.5 V**
3 Product mass: **11 g**
4 Performance
4.1 OCV shall satisfy Table 1 after the test mentioned in **8** (Testing).
4.2 Minimum Average Duration (MAD) : The MAD shall meet the value mentioned in Table 1 or more, after the test of **8** (Testing).
4.3 Resistance to leakage shall satisfy Table 1 after the test of **8** (Testing).

Table 1: Performance

		Test condition				Panasonic Corporation Energy Company SPEC [a]	
		Load (Ω)	Discharging time per day	End point (V)	Unit	Initial	20 °C After 12 months
OCV [b]		–	–	–	V	Max.1.65 Min.(1.54)	Max.1.65 Min.(1.53)
Minimum Average Duration (MAD)		5.1	4min x 8cycles [c]	0.9	m	185	170
		24	d)	1.0	h	18.0	17.0
		10	1hour	0.9	h	6.8	6.2
		75	4hours	0.9	h	58	53
		600mA	10sec/min/1h [e]	0.9	cycle	250	200
Resistance to Leakage	Over discharge	Cf. Table 2				There shall be neither evidence of electrolyte leakage on the surface of any battery nor deformation beyond the specified dimension.	
	Under high temperature	Cf. Table 2				There shall be neither evidence of electrolyte leakage on the surface of any battery nor deformation beyond the specified dimension.	

Note a) Expiration date is indicated to the drawing of artistic designs.
b) "Max." and "Min." in column of OCV mean maximum and minimum values. The value with parenthesis is informative.
c) The specified load shall be applied across the battery for 4 minutes on, 56 minutes off per hour.
It is repeated for 8 hours per day.
d) The specified load shall be applied across the battery for 15 seconds on, 45 seconds off per minute.
It is repeated for 8 hours per day.
e) The specified current drain shall be applied across the battery for 10 seconds on, 50 seconds off per minute.
It is repeated for 1 hour per day.
It can be added to the cumulative discharging frequency when the discharge for 10 seconds is completed.

5 Dimensions : As per attached in Figure 1.
6 Terminals : As per attached in Figure 1. (+) Cap, (–) Base
There shall be no rust or deformation, which will cause hindrance on use.
7 Appearance : There shall be no stain, scratch and deformation which will hindrance cause on use.
The marking on surface shall be clear.

Stipulation	11/December/1996	Newly produced
Revised	20/March/1998	Revised followed to JIS C 8511:1998
Revised	1/Augast/2006	Revised followed to JIS C 8511:2004
Revision	1/October/2008	To meet JIS C 8515 instead of previous JIS C 8511. New Company naming.
Revision	1/January/2012	For change of name of Business Unit.

8 Testing

8.1 Storage and test condition : If not specified, the temperature is 20 ± 2 °C and the relative humidity shall be (60 ± 15) %. However, during 3 months that it is short period only, it may be 20 ± 5 °C.

8.2 Testing method : Refer to Table 2

Table 2 : Testing method

Open circuit voltage	After more than 8 hours storage under the condition specified in **8.1**, measure with a voltmeter mentioned below at the same condition. The accuracy of the measuring equipment shall be ≦ 0.25% and the precision shall be ≦ 50% of the value of the last significant digit. The internal resistance of the measuring instrument shall be ≧ 1MΩ.
Service life	Battery shall be discharged as specified condition until the voltage on load drops for the first time below the specified end point. (service life under the intermittent discharge should be accumulated the time on load) **a**) Commencement : After more than 8 hours storage under the condition specified in **8.1**. **b**) Discharging method : Based on Table 1 **c**) Calculation of average service life : Test 9 batteries and calculate the average.
Resistance to leakage at over discharge	After usual discharging test, the discharge is continued until voltage of battery drops to 0.6 V for the fist time.
Resistance to leakage at high temperature	The test battery should be stored for 30 days under the temperature at 45 ± 2 °C and relative humidity below 70 %(RH).
Dimensions	Dimensions shall be measured by the vernier caliper specified in JIS B 7507 having below 200 mm of measuring capability and minimum division 0.05 mm.
Terminal	Visual Observation
Appearance	Visual Observation

9 Marking Specified as the drawing of artistic designs.

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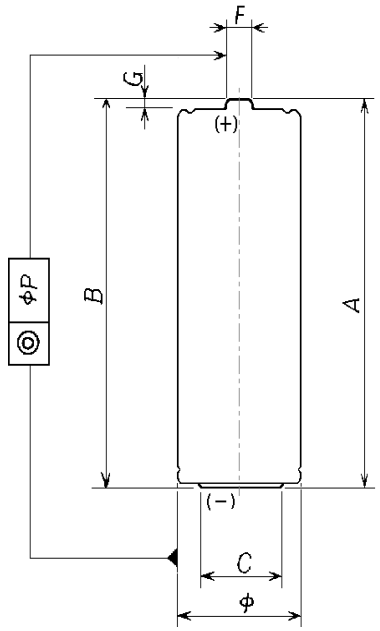
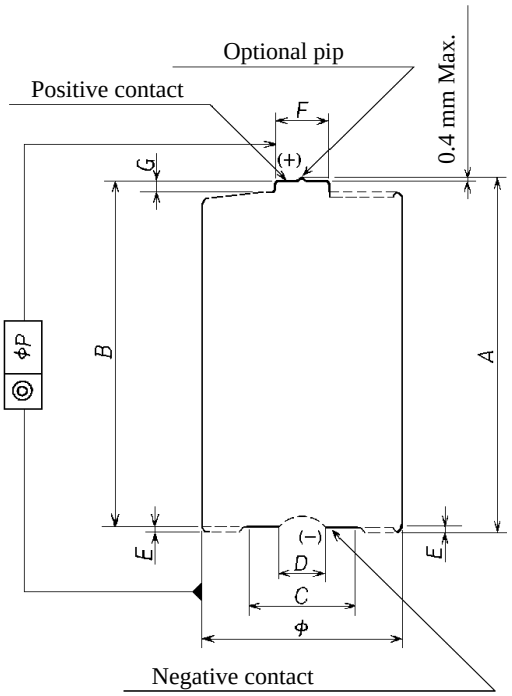


Figure 1 LR03



Reference drawing : JIS C 8515: 2007

Unit : mm

	Max.	Min.
A	44.5	(43.3)
B	—	43.3
C	—	4.3
D	—	—
E	0.5	—
F	3.8	(2.0)
G	—	0.8
ϕ	10.5	9.5
ϕP	0.4	—
Pip	0.4	—

Note **1** Numerical value with parentheses: informative

Note **2** The symbols of dimensions are as following.

A : Overall height

B : Distance between (+) and (–) terminals, excluding pip.

C : Outer diameter of (–) flat contact surface

D : Diameter of concave part of central (–) terminal. (This model doesn't have this part on the surface of (–) terminal.)

E : Recess of (–) flat contact surface from outside cover. (E of this model is zero. Because this model has the projected (–) contact.)

F : Diameter of the specified projection of (+) terminal.

G : Projected height of (+) contact, excluding pip.

ϕ : Diameter of the battery.

ϕP : Concentricity of the positive contact

Pip : Height of pip. (This model doesn't have pip.)

Note **3** The cylindrical surface is insulated from the contacts.

Note **4** The negative contact "*C*" may be flat over the whole area.

Note **5** The profile over the dotted line sections is not specified.