

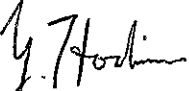
**Individual Product Specifications
for Alkaline Battery**

Model : LR03(XW)
(size AAA)

Panasonic "ALKALINE" Industrial
(B2SS20070021IS_05)

Only for OEM

1st/April/2013

Energy Device Business Division			
Approved	Quality Assurance	Product Engineering	
	Confirmed	Checked	Described
 Tetsuo Nanno	 Yoshikazu Inoue	 Hirofumi Iwaki	 Yasuko Hoshina

Automotive & Industrial Systems Company
Panasonic Corporation

Individual Product Specifications				B2SS20070021IS_05			
LR03(XW)				Alkaline Battery size (AAA) Panasonic "ALKALINE " Industrial			
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 AIS 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	Max.1.65
						Min.(1.54)	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 cause hindrance on use.							
The marking on surface shall be clear.							
Stipulation	1/October/2007		Stipulated for change of design and part number.				
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 and document format.				
Revision	1/September/2012		To change the country of production from Japan to Thailand.				
Revision	1/ April/2013		For change of name of Company.				

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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 $\leq 0.25\%$ and the precision shall be $\leq 50\%$ of the value of the last significant digit. The internal resistance of the measuring instrument shall be $\geq 1M\Omega$.	
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 first 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.		
10 Manufacturer Panasonic Energy (Thailand) Co., Ltd. [Abbreviated name: PECTH]		

Product Specifications

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LR03(XW)

Alkaline Battery size (AAA)
Panasonic "ALKALINE" Industrial

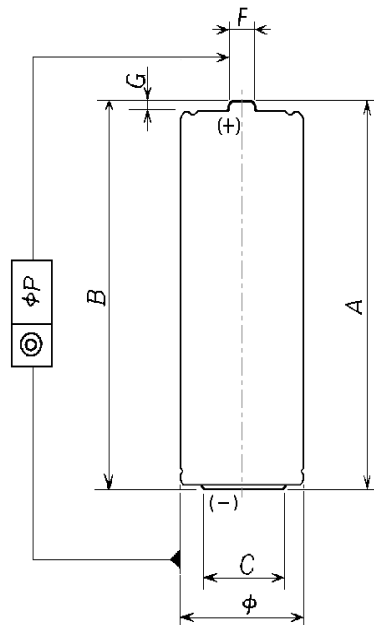
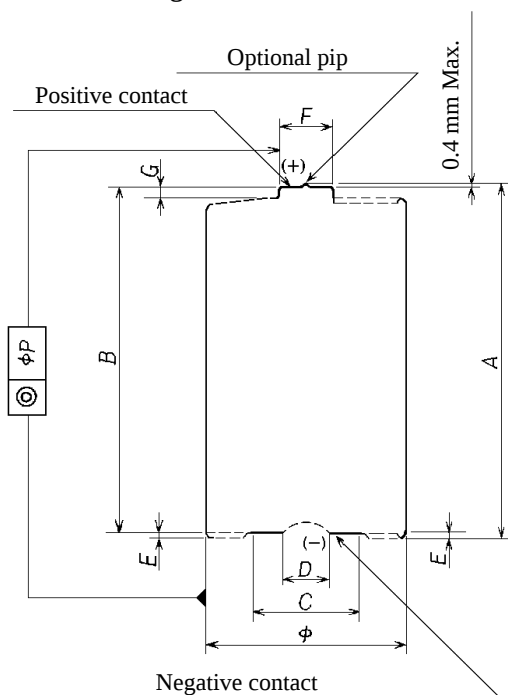


Figure 1 LR03



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.