



# TECHNICAL INFORMATION

ALKALINE MANGANESE BATTERY

**LR03RS**

(Made in Indonesia)

March 5, 2013

**FDK CORPORATION**

GLOBAL SALES DEPARTMENT

**PT FDK INDONESIA**

QUALITY CONTROL DEPARTMENT

**FDK ENERGY CO., LTD.**

QUALITY CONTROL DEPARTMENT



1. Type

LR03 (IEC : LR03, JIS : LR03)

2. Nominal value

(1) Nominal voltage : 1.5 volts

(2) Standard capacity : 1,300 mAh (300Ω continuously discharge at 20°C,  
End point voltage = 0.9 volts)

3. Structure

Show Fig.1.

4. Dimension

Show Fig.2.

5. Electric characteristics

	Initial	After 1 year	After 2 years
Off-load voltage (V)	1.60	1.58	1.57
On-load voltage (V)	1.53	1.47	1.44
Short-circuit current (A)	9.0	8.0	7.5

- 1) Load resistance : 5Ω (The resistance shall be adjusted within ±0.5%),  
Measure time : 0.3 seconds
- 2) Test temperature : 20 ± 2°C, Storage temperature : 20 ± 2°C.

6. Service out-put

(1) Average duration

Discharge condition		Initial	After 1 year	After 2 years
24Ω 15s on/45s off 8hr/day (hr) EPV=1.0V	JIS	Above 14.5	Above 13.0	Above 13.0
	Normal	20.8	20.5	20.0
600mA 10s on/55s off 1hr/day (cycles) EPV=0.9V	IEC,JIS	Above 140	Above 125	Above 125
	Normal	361	349	338
5.1Ω 4min. × 8/day (min) EPV=0.9V	IEC,JIS	Above 130	Above 115	Above 115
	Normal	246	231	220
10Ω 1hr./day (hr) EPV=0.9V	IEC,JIS	Above 5.0	Above 4.5	Above 4.5
	Normal	8.4	8.0	7.6
75Ω 4hr./day (hr) EPV=0.9V	IEC,JIS	Above 44	Above 39	Above 39
	Normal	74.8	69.8	64.8

- 1) EPV : End point voltage
- 2) Test temperature : 20 ± 2°C, Storage temperature : 20 ± 2°C.



- (2) Service life at various temperatures

Show Fig.3.

- (3) Shelf life

Show Fig.4.

7. Electrolyte leakage proof characteristics

- (1) Over-discharge test

Visual check at the time when the on-load voltage of test cell first decreases below 40% of the nominal voltage.

Discharge condition	n	Leakage
20Ω continuous	n=9×5lots	none
3.6Ω 15sec./min.	n=9×5lots	none
5.1Ω 4min.×8/day	n=9×5lots	none
10Ω 1hr./day	n=9×5lots	none
75Ω 4hr./day	n=9×5lots	none

- (2) Storage at 45°C, below 70%RH

Period	n	10days	20days	30days	60days	90days
Leakage	40	none	none	none	none	none

- (3) Storage at 60°C, 90%RH

Period	n	10days	20days	30days	40days
Leakage	40	none	none	none	none

8. Safety characteristics (abuse test)

- (1) Short circuit test

Shorted time	n	12hours	24hours
Explosion	20	none	none

- (2) Charging test (150mA)

Charging time	n	12hours	24hours
Explosion	20	none	none

Fig.1 LR03 STRUCTURE

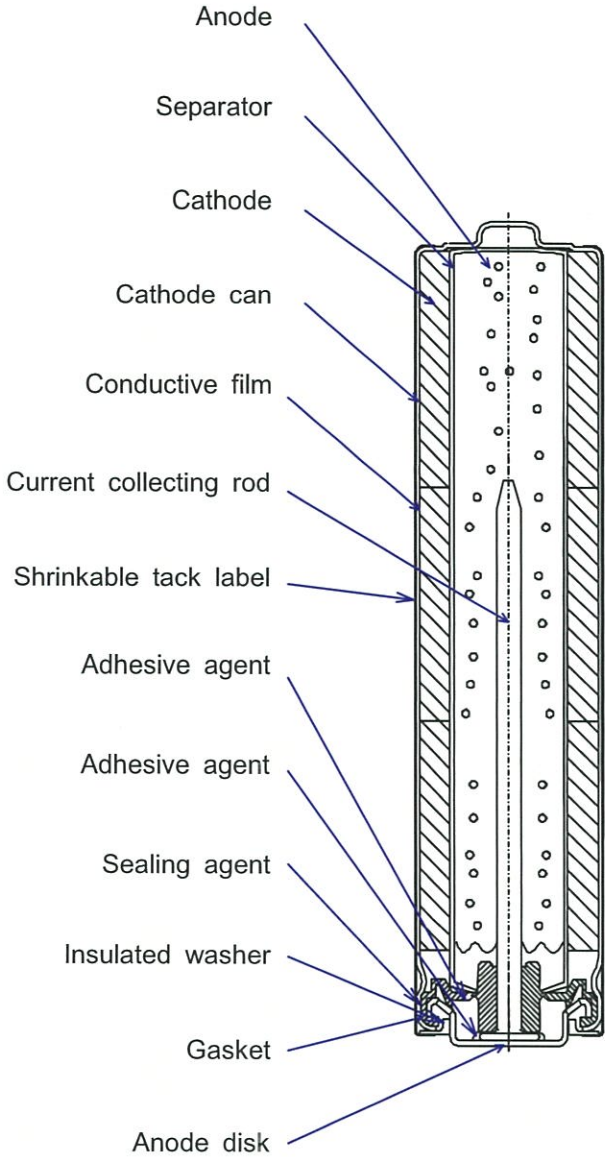
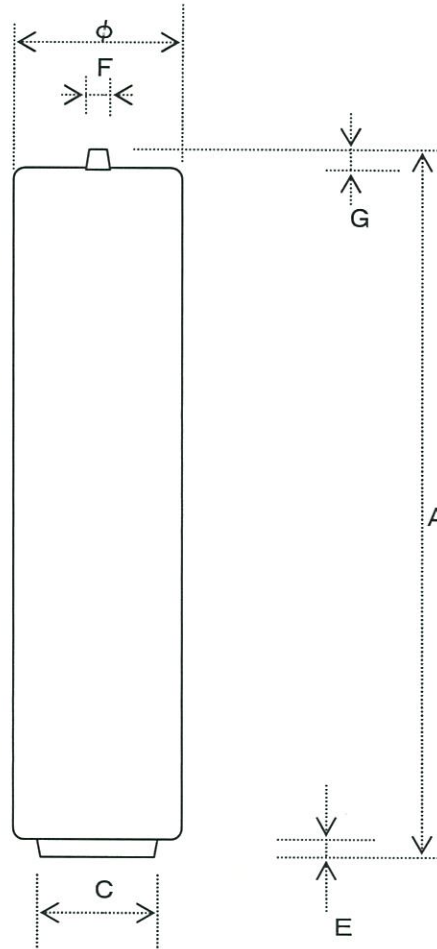


Fig.2 LR03 DIMENSION



Unit : mm

A	Overall height	44.5 max. (43.3 min.)
C	Outer diameter of the negative contact area	4.3 min.
E	Recess of negative contact from enclosure	0.5 max.
F	Diameter of the positive contact	3.8 max. (2.0 min.)
G	Height of the projected flat contact from the next higher part	0.8 min.
$\phi$	Diameter	10.5 max. 9.5 min.

The numerical values in parentheses are informative reference values.

Fig.3 LR03 SERVICE LIFE AT VARIOUS TEMPERATURES

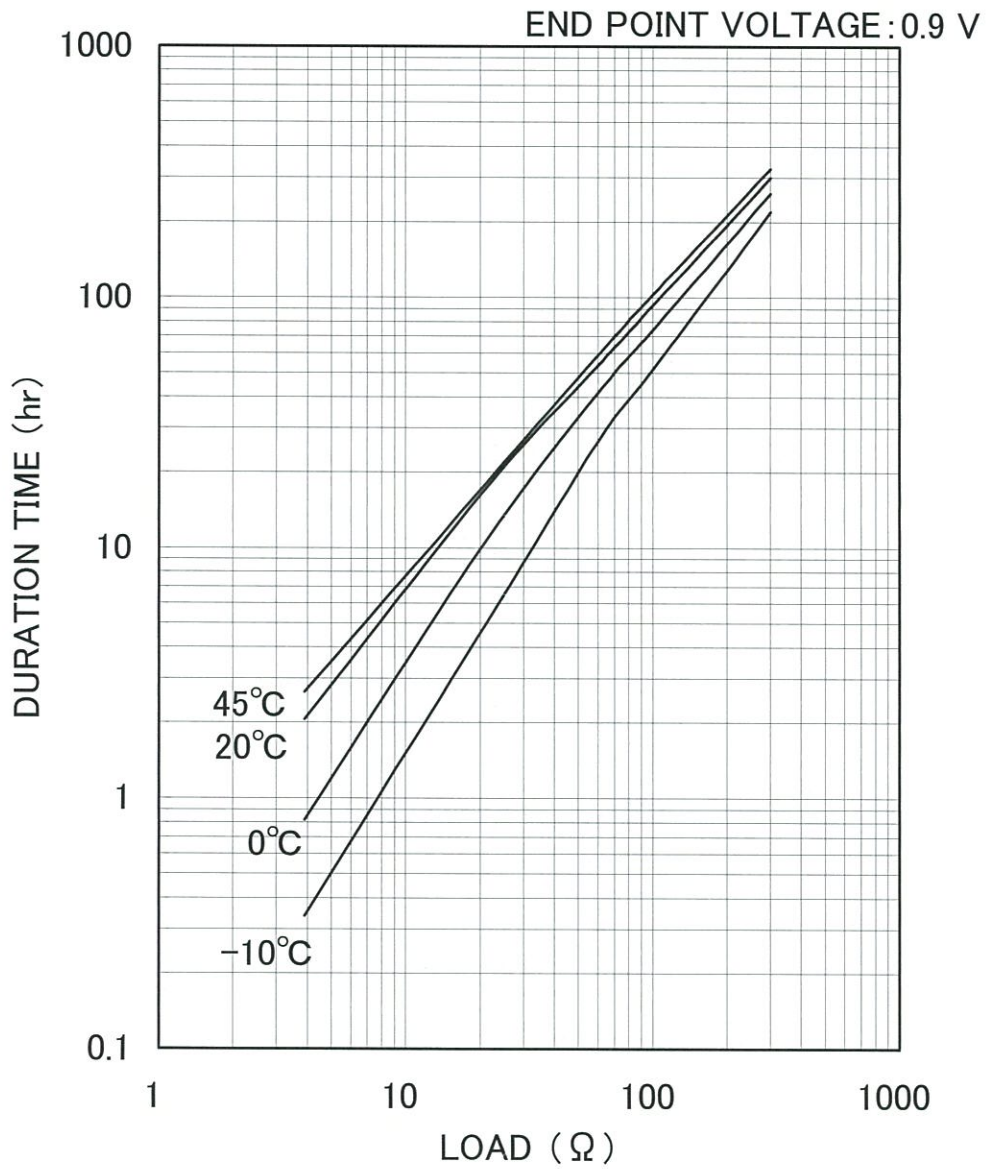
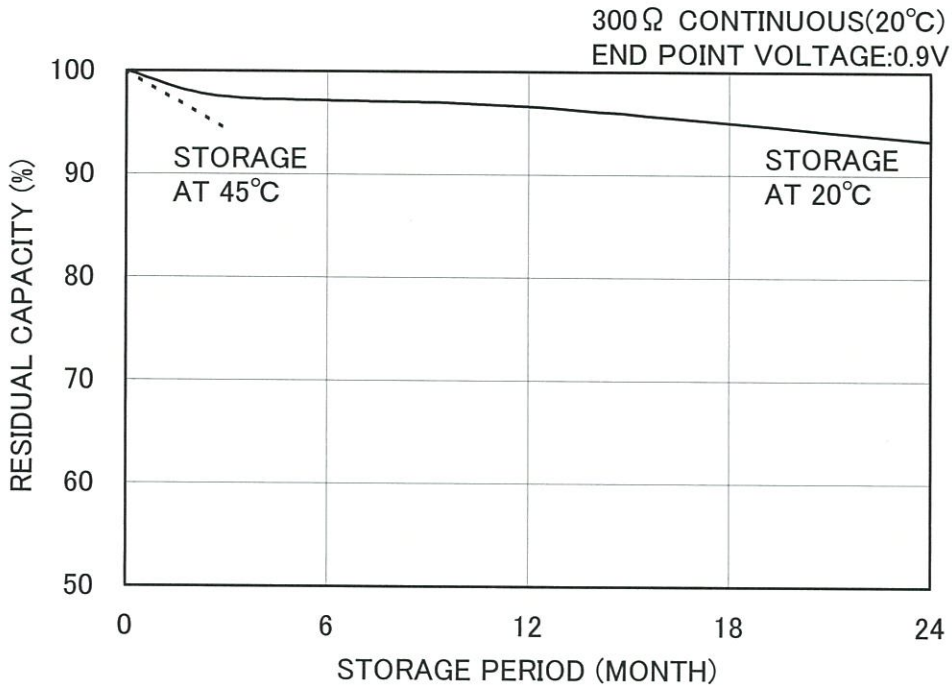
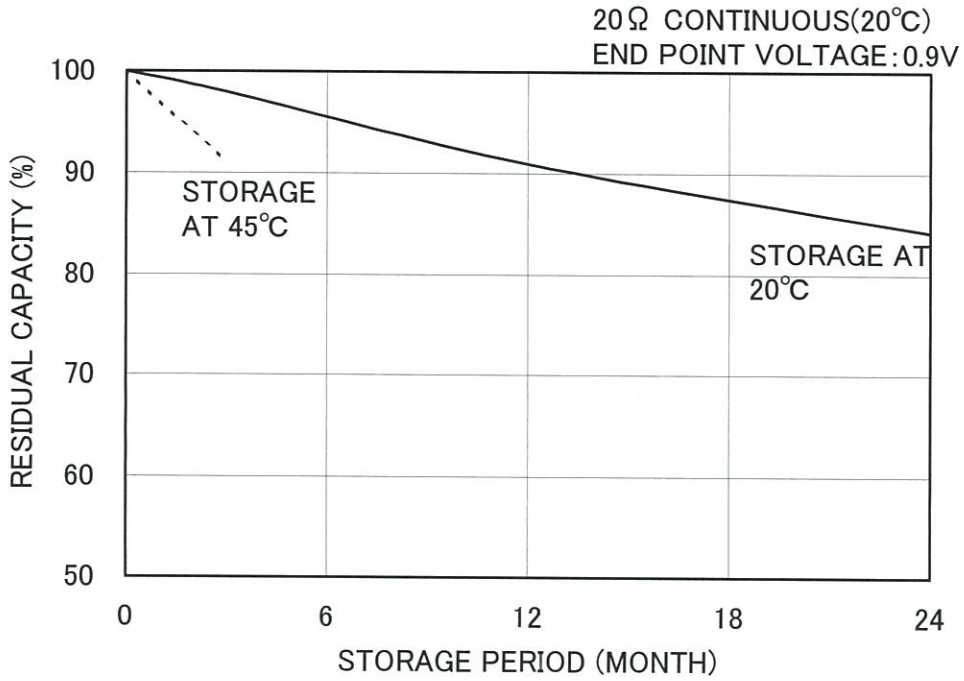


Fig.4 LR03 SHELF LIFE



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