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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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TECHNICAL INFORMATION

ALKALINE MANGANESE BATTERY

LR03RS

(Made in Indonesia)

March 5, 2013

FDK CORPORATION

GLOBAL SALES DEPARTMENT

PT FDK INDONESIA

QUALITY CONTROL DEPARTMEN

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 $\pm 0.5\%$),

Measure time : 0.3 seconds

2) Test temperature : $20 \pm 2^\circ\text{C}$, Storage temperature : $20 \pm 2^\circ\text{C}$.

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 : $20 \pm 2^\circ\text{C}$, Storage temperature : $20 \pm 2^\circ\text{C}$.

- (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

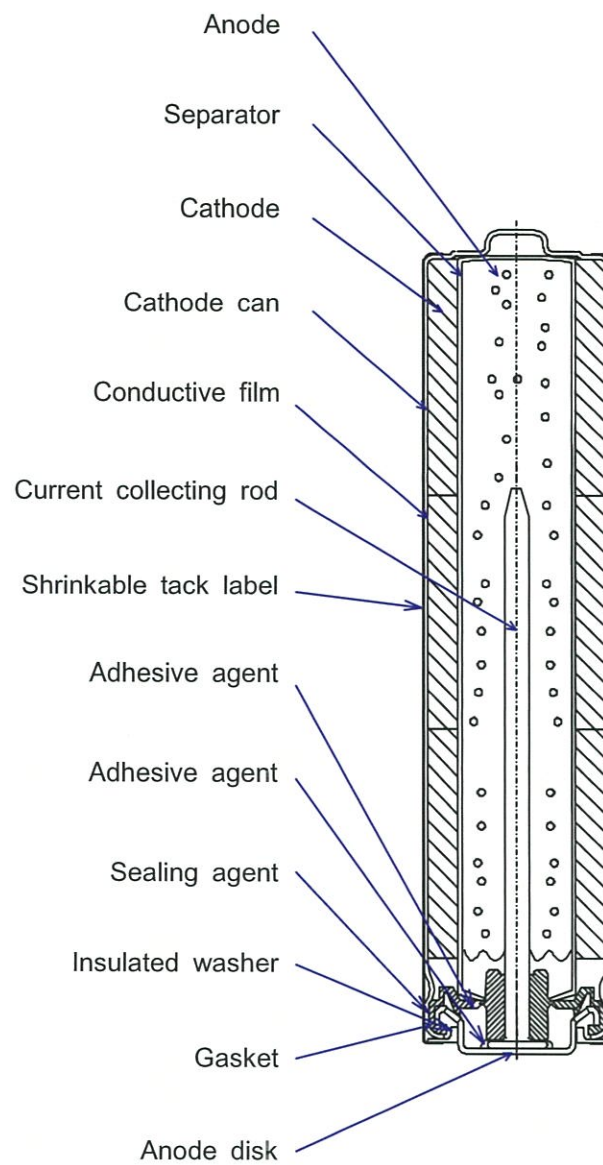
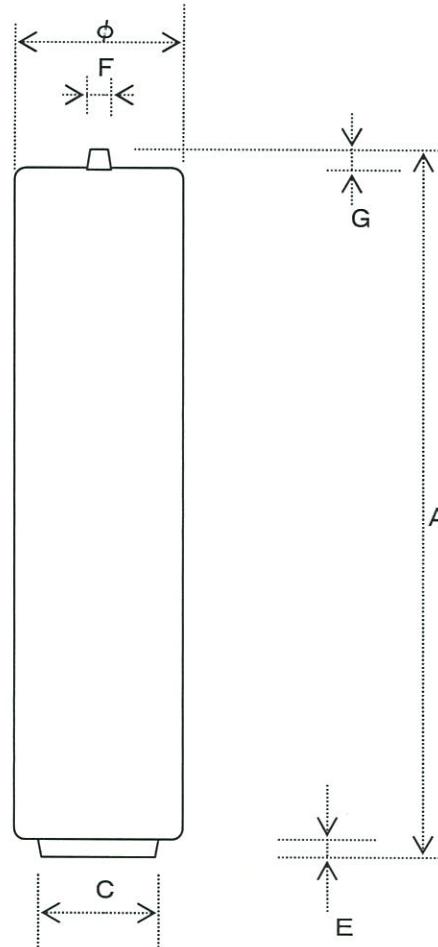


Fig.2 LR03 DIMENSION



Unit : mm

		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.
ϕ	Diameter	10.5 max. 9.5 min.

The numerical values in parentheses are informative reference values.

Fig.3 LR03 SERVICE LIFE AT VARIOUS TEMPERATURES

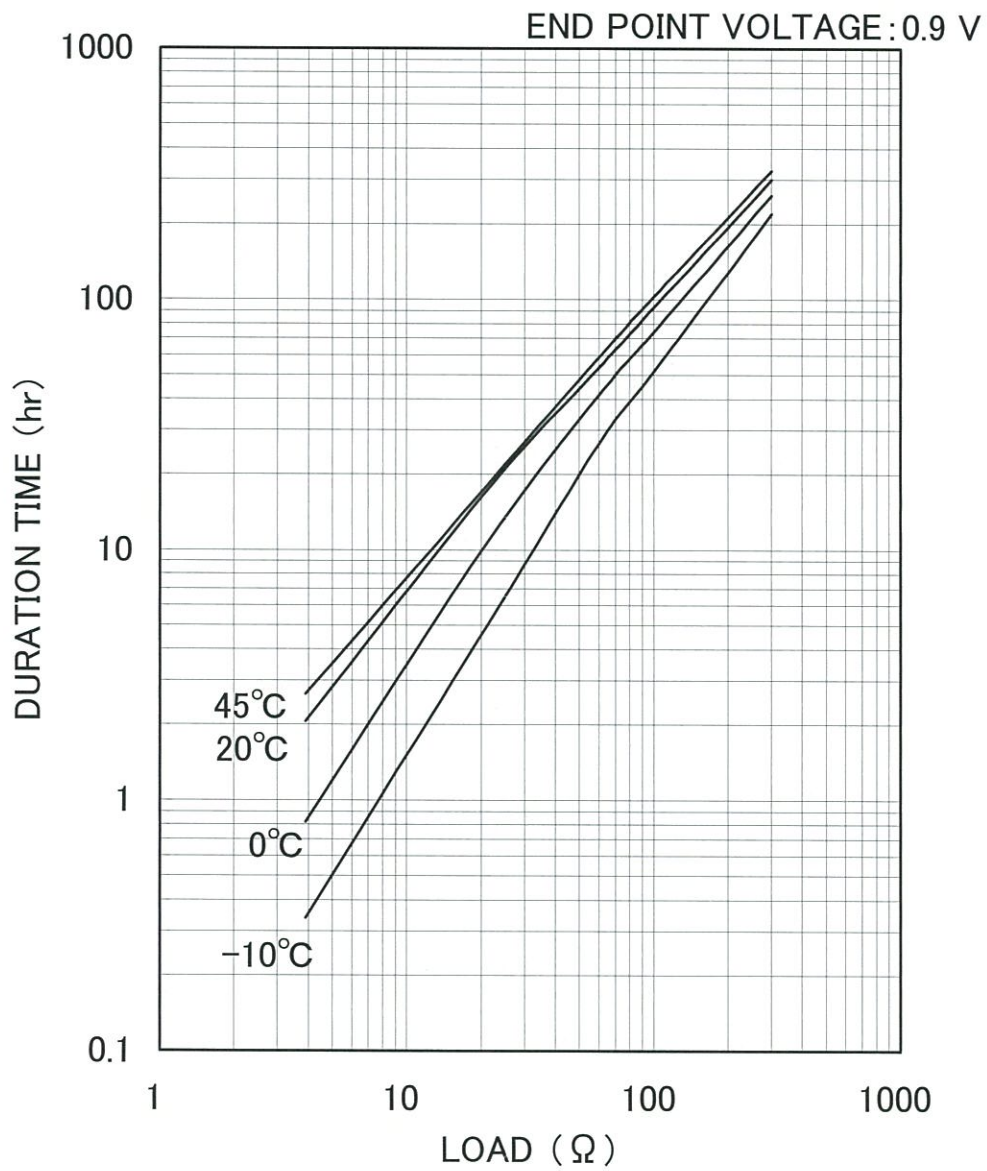


Fig.4 LR03 SHELF LIFE

