

# TECHNICAL INFORMATION

ALKALINE MANGANESE BATTERY  
LR03 Universal Power

**FDK CORPORATION**  
ALKALINE BATTERY DIVISION  
QUALITY ASSURANCE DEPARTMENT



1. Type

LR03 Universal Power (IEC : LR03, JIS : LR03)

2. Nominal value

(1) Nominal voltage : 1.5 volts

(2) Standard capacity : 1,260 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 years	After 7 years
Off-load voltage (V)	1.60	1.58	1.53
On-load voltage (V)	1.52	1.46	1.39
Short-circuit current (A)	10.0	8.0	5.0

1) Load resistance : 2Ω

Measure time : 0.1 second

2) Test temperature : 20±2°C, Storage temperature : 20±2°C.

6. Service out-put

(1) Average duration

Discharge condition		Initial	After1years	After7years
5.1Ω 4mON/56mOFF Repeat.× 8hr/D (m) EPV=0.9V	Normal	<b>218</b>	<b>211</b>	<b>200</b>
	JIS/IEC(MAD)	<b>130</b>	<b>115</b>	<b>115</b>
24Ω 15s ON/45s OFF Repeat.× 8hr/D (hr)EPV=1.0V	Normal	<b>19</b>	<b>19</b>	<b>18</b>
	JIS/IEC(MAD)	<b>14.5</b>	<b>13.0</b>	<b>13.0</b>
5.1Ω 1hr/D (m) EPV=0.8V	Normal	<b>228</b>	<b>223</b>	<b>206</b>
	JIS/IEC(MAD)	<b>120</b>	<b>105</b>	<b>105</b>
50mA 1hr on /11hr off Repeat. (hr.) EPV=0.9V	Normal	<b>20</b>	<b>19</b>	<b>18</b>
	JIS/IEC(MAD)	<b>12</b>	<b>10</b>	<b>10</b>

1) EPV : End point voltage

2) Test temperature : 20±2°C, Storage temperature : 20±2°C.

3) MAD=Minimum average duration

(Minimum average time on discharge which is met by a sample of batteries)

\*This data are not intended to make or imply any guarantee or warranty.



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
5.1Ω 4mON/56mOFF Repeat.× 8hr/D	n=8×5lots	0
5.1Ω 1hr/D	n=8×5lots	0

(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	24hours
Explosion	20	none

(2) Incorrect installation (four batteries in series)

Charging time	n	24hours
Explosion	20	none

9. Operating temperature range

-10°C~50°C(In the state of over 40°C, within 30 day)

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Fig.1 LR03 STRUCTURE

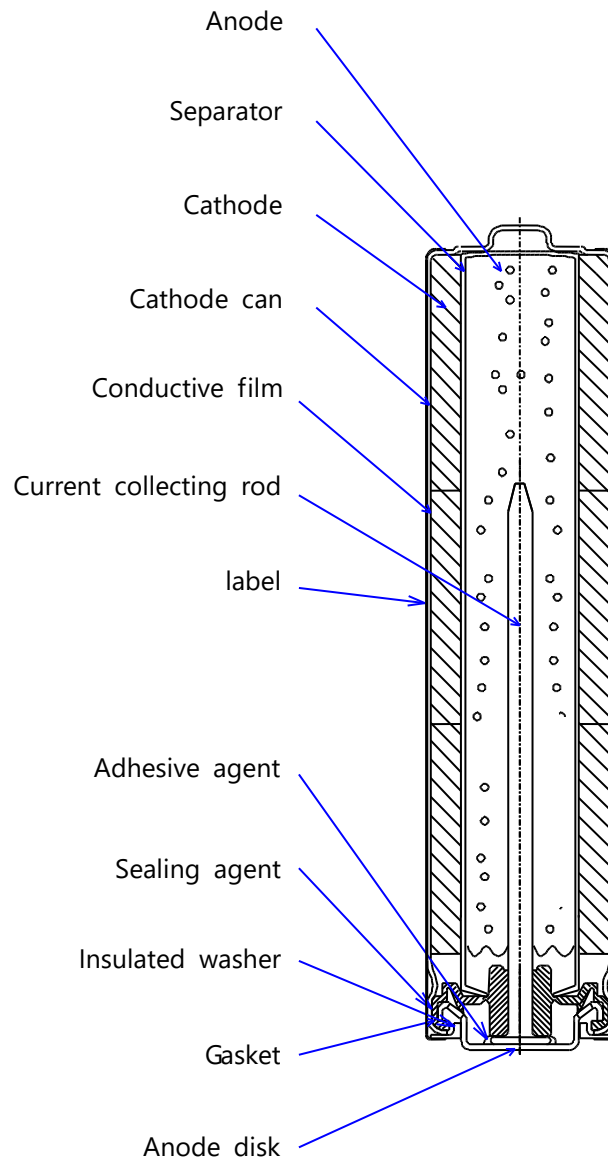
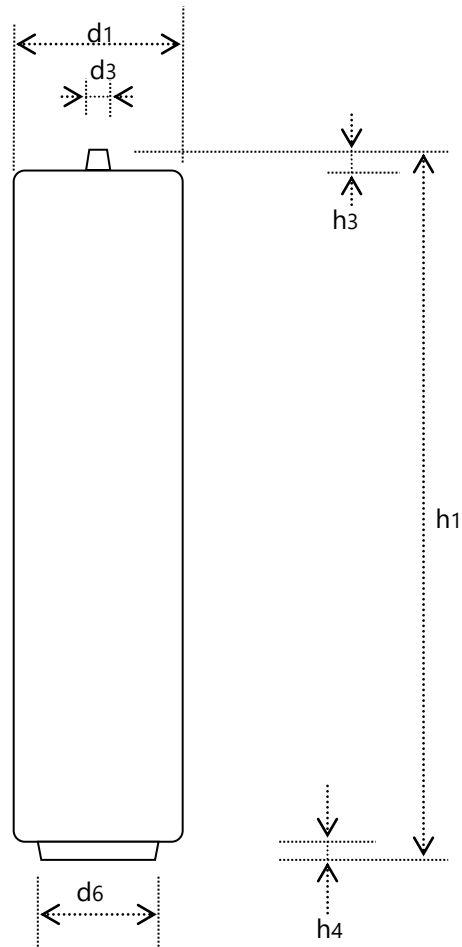


Fig.2 LR03 DIMENSION



Unit : mm

		Unit : mm
h1	Overall height	44.5 max. (43.5 min.)
d6	Outer diameter of the negative contact area	4.3 min.
h4	Recess of negative contact from enclosure	0.5 max.
d3	Diameter of the positive contact	3.8 max. (2.0 min.)
h3	Height of the projected flat contact from the next higher part	0.8 min.
d1	Diameter	10.5 max. 9.8 min.

The numerical values in parentheses are informative reference values.