Issue	0	Date	08/2007	Page	1/12

	Written by	Checked by	Approved by
Position	Assistant Manager	General Manager	Chief Technical Officer
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Signature			

STANDARD SPECIFICATION

PRIMARY LITHIUM THIONYL CHLORIDE BATTERY

SB-AA11P

0	08/2007	C.B.Lee
Rev.	Date	Issued by

VITZRO CELL

STANDARD SPECIFICATION

SB-AA11P

▶ CONTENTS ◀

STANDARD SPECIFICATION

SB-AA11P

TYPICAL VALUES

Model Name	SB-AA11P
Nominal Voltage	3.6V
Key Characteristic	High capacity, Enhanced start up
Nominal Capacity	2.5Ah (Resistance 1.8㏀/Current 2㎃ at 20℃, Cut-off Voltage 2.0V; Varies according to the discharge current, the temperature and the cut-off voltage)
Maximum Continuous Current	60㎃ (To get 50% of nominal capacity at 20℃. If higher currents are needed, require consulting Vitzrocell.)
Maximum Pulse Current	150㎃ (Max. pulse current/0.1 second pulses, drained every 2min. at +20℃ from undischarged cell with 10㎂ base current, yield voltage readings above 3.0V. It varies according to the pulse characteristics, the temperature, and the cell's previous history. Fitting the cell with a capacitor may be recommended in severe conditions, Consult Vitzrocell)
Operating Temperature Range	-55 ~ 85℃ (Capacity reduce or operation voltage is lower at the beginning of pulses according to temperature.)
Typical Weight	16.0g

VITZRO CELL

STANDARD SPECIFICATION

SB-AA11P

CONSTRUCTION

Electrode Design — Concentric electrode (Bobbin type)

VISUAL ASPECT

When inspected with naked eyes, there should be no corrosion, no electrolyte leakage or swelling. Marking should be readable.

TESTS

Environmental

Altitude Simulation — Test cells shall be stored at a pressure of 11.6 kPa or less for at least six hours at ambient temperature (20 ± 5 ˚C).
Cells meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire and if the open circuit voltage of each test cell or battery after testing is not less than 90% of its voltage immediately prior to this procedure.

Vibration — Vibration on three perpendicular axes.
- Frequency : 10 to 55Hz
- Peak to peak amplitude : 1.6mm
- Test duration : 95±5mm/axis

The cell must retain its operational characteristics and normal visual aspect.

STANDARD SPECIFICATION

SB-AA11P

Thermal	Test cells are to be stored for at least six hours at a test temperature equal to 75 ± 2 °C, followed by storage for at least six hours at a test temperature equal to - 40 ± 2 °C. The maximum time interval between test temperature extremes is 30 minutes. this procedure is to be repeated 10 times, after which all test cells and batteries are to be stored for 24 hours at ambient temperature (20 ± 5 °C). Cells meet this requirement if there is no mass loss, no leakage, no venting, no disassembly, no rupture and no fire.
Drop	2 drops per each plane (randomly oriented) onto a concrete floor from an height of 1.0m without any explosion or fire.

Mechanical

Shock	Shock applied to each of the three perpendicular axes. - Average acceleration : 75G - Maximum acceleration : 175G The cell must retain its operational characteristics and normal visual aspect.
Impact	The test sample cell or component cell is to be placed on a flat surface. A 15.8 mm diameter bar is to be placed across the centre of the sample. A 9.1 kg mass is to be dropped from a height of 61 ± 2.5 cm onto the sample. Cells meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly and no fire within six hours of this test.

STANDARD SPECIFICATION

SB-AA11P

Electrical

Short	The cell shall be subjected to a short circuit condition with a total external resistance of less than 0.1 ohm at 20 ± 5°C. This short circuit condition is continued for at least one hour after the cell external case temperature has returned to 20 ± 5 °C. Cells meet this requirement if their external temperature does not exceed 170 °C and there is no disassembly, no rupture and no fire within six hours of this test.
Overcharge	- Charging current : 15㎃ - Duration time : 135hrs The cells meet this requirement if there is no disassembly and no fire within seven days of the test.
Forced Discharge	Each cell shall be forced discharged at ambient temperature by connecting it in series with a 12 V D.C. up to 100% of nominal capacity. The cells meet this requirement if there is no disassembly and no fire within six hours of this test.

STORAGE

Condition	Should be stored in dry and cool conditions (at not exceeding 30℃). Storage at higher temperature may make cell capacity and initial cell voltage lower.

STANDARD SPECIFICATION

SB-AA11P

WARNING

Safety

- Do not remove the cells from their original packing before use.
- Do not store the cells in bulk in order to avoid accidental short circuit.
- Do not disassemble.
- Do not recharge.
- Do not solder directly in the cell.
- Do not mix new and used cells or cells from different origins.
- Respect the polarities of the cell.

Sentences on cell

Fire, explosion, and severe burn hazard. Do not recharge, crush, disassemble, heat above 212°F (100℃) or incinerate. Keep battery out of reach of children and in original package until ready to use. Dispose of used batteries promptly.

GUARANTEE

Minimum Value

	initial	After 1year storage at 30℃ max.
Open Circuit Voltage	3.65V	3.65V
Closed Circuit Voltage (after 5sec on 60㎃/50Ω)	3.00V	2.8V
Capacity (on 2㎃)	2.35Ah	2.20Ah

※After 1 year, self-discharge rate is about 1% per year.

STANDARD SPECIFICATION

SB-AA11P

TRANSPORT

Restriction

Lithium Batteries are dangerous goods, UN 3090. Therefore they are generally subject to transport regulations depending on the transport mode.

- Cell contains no more than 1g of lithium.
- Batteries contain no more than 2g of lithium.

Therefore the SB-AA11P is classified as *non-restricted for transport*.

OUTGOING INSPECTION

Comprehensive

The SB-AA11P is 100% inspected by open circuit voltage (OCV) and closed circuit voltage (CCV)

Sampling

Vitzrocell carries out the sampling inspection as per the following standard.
- Visual aspect
- Capacity
- Dimension

• Sampling standard

ISO	American
KSA A ISO 2859	MIL-STD-105D

• Acceptable Quality Levels (AQL)

Sampling Level	AQL
S-2	0.10%

VITZRO CELL

STANDARD SPECIFICATION

SB-AA11P

PACKING

Inner

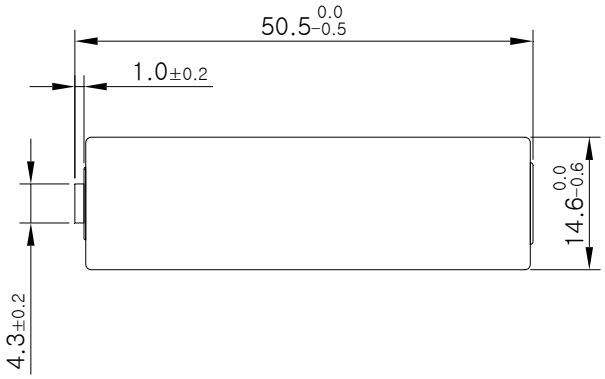
Unit/Type	Quantity (EA)	Net Weight (g)
1pc(bulk)/TC,ST,P	100	1660
1pc(bulk)/AX	25	440

Outer

Unit/Type	Q'ty (EA)	Net Wt. (kg)	Gross Wt. (kg)	CBM	Dimension (mm)
1pc/TC,ST,P	600	10	10.9	0.0337	510×330×200
1pc/AX	250	4.4	5.3	0.0290	435×370×180

BATTERY DIMENSION

TC



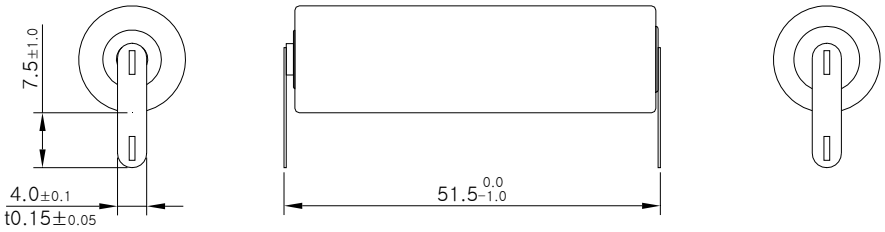
VITZRO CELL

STANDARD SPECIFICATION

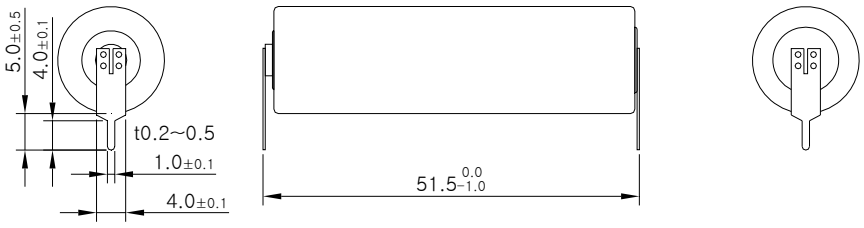
SB-AA11P

BATTERY DIMENSION

ST



2P



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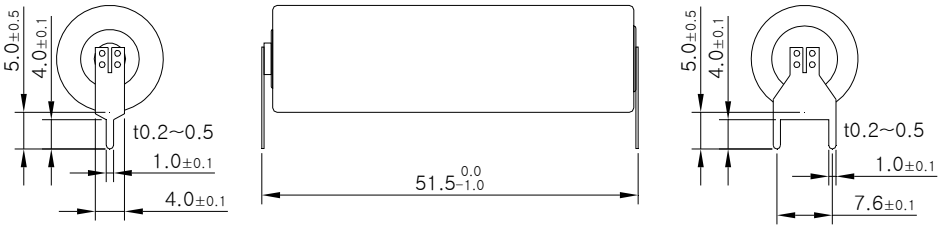
VITZRO CELL

STANDARD SPECIFICATION

SB-AA11P

BATTERY DIMENSION

3P



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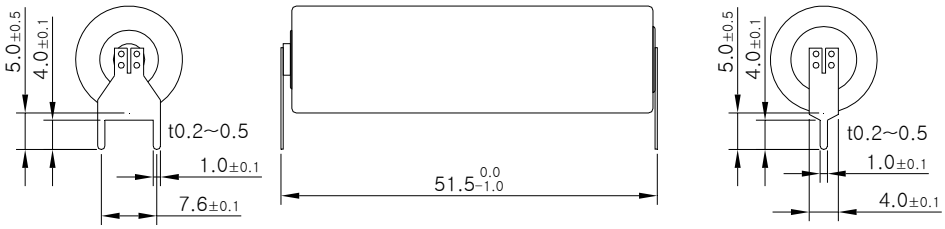

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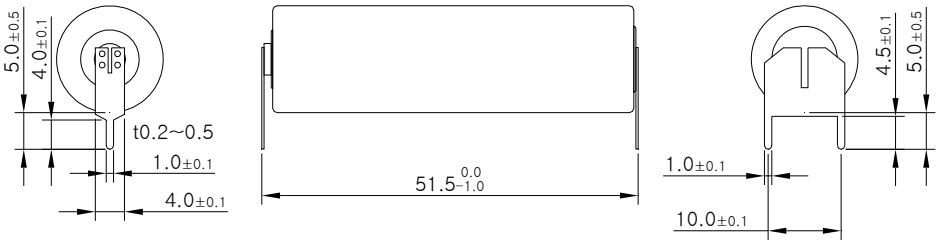
VITZRO CELL

STANDARD SPECIFICATION

SB-AA11P

BATTERY DIMENSION

3PW



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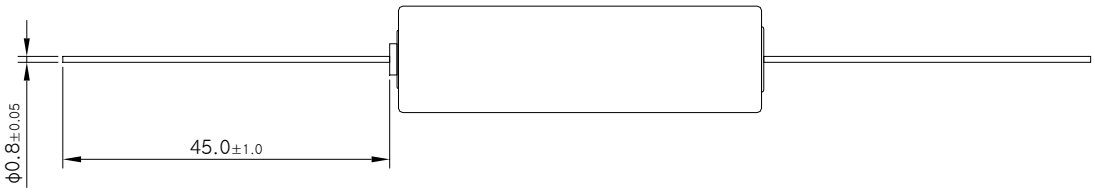

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