
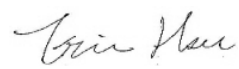




<b>TEST REPORT</b> <b>UN38.3</b> <b>TRANSPORT OF DANGEROUS GOODS - Lithium metal and lithium ion batteries</b>		
<b>Report Number.....</b> : BATT-4788780710-UN38.3-B <b>Date of issue.....</b> : 2019-06-27 <b>Total number of pages .....</b> : 22		
<b>Applicant's name .....</b> : VARTA MICROBATTERY PTE LTD <b>Address.....</b> : #05-01, 300 TAMPINES AVE 5, TAMPINES JUNCTION, SINGAPORE 529653 SINGAPORE		
<b>Test specification:</b> <b>Standard .....</b> : ST/SG/AC.10/11/Rev.6/Amend.1 <b>Test procedure .....</b> : Type Approved <b>Non-standard test method .....</b> : N/A		
<b>Test item description.....</b> : Rechargeable Lithium Ion Battery Pack <b>Trade Mark.....</b> : Desoutter, CP ( Chicago Pneumatic ), or Fuji <b>Manufacturer .....</b> : VARTA MICROBATTERY PTE LTD #05-01 300 Tampines Ave 5, Tampines Junction, Singapore, 529653, Singapore <b>Model/Type reference .....</b> : 6158132670 for trade mark Desoutter; 8940176068 for trade mark Chicago Pneumatic; 5412106064 for trade mark Fuji; 56646 710 098 <b>Ratings .....</b> : 36Vdc, 2.5Ah, 90Wh		
<b>Testing procedure and testing location:</b>		
<b>Testing Laboratory:</b>	Underwriters Laboratories Taiwan Co., Ltd.	
<b>Testing location/ address .....</b>	260 Da-Yeh Road, Peitou, Taipei City, Taiwan 112	
<b>Tested by (name + signature).....</b>	Joy Shen	
<b>Approved by (name + signature) .....</b>	Eric Hsu	

<b>Summary of testing:</b>	
<b>Tests performed (name of test and test clause):</b>  T.1: ALTITUDE SIMULATION T.2: THERMAL TEST T.3: VIBRATION T.4: SHOCK T.5: EXTERNAL SHORT CIRCUIT T.7: OVERCHARGE  - All models are identical to each other except for model designation and trademarks.  - All tests for Model 6158132670 were considered to be representative of Models 8940176068, 5412106064 and 56646 710 098.	<b>Testing location:</b>  Underwriters Laboratories Taiwan Co., Ltd. 260 Da-Yeh Road, Peitou, Taipei City, Taiwan 112

<b>Test item particulars</b> .....:	
<b>Battery type designation</b> .....	Rechargeable Lithium Ion Battery Pack
<b>Weight of cell or battery</b> .....	Approx. 0.778 kg
<b>Lithium equivalent content</b> .....	N/A
<b>Nominal energy</b> .....	90Wh
<b>Number of series connected cells</b> .....	10S-1P
<b>EODV</b> .....	32V
<b>Manufacturer of the packaging</b> .....	N/A
<b>Description of the packaging design type</b> .....	N/A
<b>Possible test case verdicts:</b>	
- test case does not apply to the test object.....	: N/A
- test object does meet the requirement.....	: P (Pass)
- test object does not meet the requirement.....	: F (Fail)
<b>Testing</b> .....:	
<b>Date of receipt of test item</b> .....	: 2019-05-22
<b>Date (s) of performance of tests</b> .....	: 2019-06-11 to 2019-06-25
<b>General remarks:</b>	
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(See Enclosure #)" refers to additional information appended to the report. "(See appended table)" refers to a table appended to the report.	
<b>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</b>	
<b>Name and address of factory (ies)</b> :	VARTA Microbattery SRL Boulevard Grivita 1x W 3, 500177 Brasov ROMANIA
<b>General product information:</b>	
<b>Product Description:</b>	
- Electronic components mounted on PWB with 10-series, 1-parallel certified Li-ion cells, housed plastic enclosure, secured together by snap-fit and 12 special screws.	
<b>Model Difference:</b>	
- All models are identical to each other except for model designation and trademarks.	

<b>UN 38.3</b>			
Clause	Requirement + Test	Result - Remark	Verdict
38.3.4	<b>Transport tests</b>		P
38.3.4.1	Test T-1: Altitude simulation		P
	Cells or batteries are stored at a pressure of 11.6 kPa or less for at least 6 h at ambient temperature.		P
	Results: no leakage, no venting, no short-circuit, no rupture, no explosion and no fire during this test.	See appended Table .4.1	P
38.3.4.2	Test T-2: Thermal test		P
	Cells or batteries previously subjected to altitude simulation test.		P
	Cells or batteries are stored for at least 6 h at a test temperature of $72 \pm 2$ °C, followed by storage for at least 6 h at a test temperature of $-40 \pm 2$ °C. Maximum time for transfer is 30 minutes. This procedure is repeated until 10 total cycles are complete, after which all test cells and batteries are to be stored for 24 hours at ambient temperature.		P
	For large cells or batteries the duration of exposure to the test temperatures is at least 12 h instead of 6 h.	Not large batteries.	N/A
	Storage for at least 24 h at ambient temperature.		P
	Results: no leakage, no venting, no short-circuit, no rupture, no explosion and no fire during this test.	See appended Table .4.2	P
38.3.4.3	Test T-3: Vibration		P
	Cells or batteries previously subjected to thermal test		P
	Cells or batteries are subjected to the following sinusoidal vibration with a logarithmic sweep: from 7 Hz a peak acceleration of 1 $g_n$ is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm and the frequency increased until a peak acceleration of 8 $g_n$ occurs (approximately 50 Hz). A peak acceleration of 8 $g_n$ is then maintained until the frequency is increased to 200 Hz.		P
	Large batteries are subjected to the following sinusoidal vibration with a logarithmic sweep: from 7 Hz a peak acceleration of 1 $g_n$ is maintained until 18 Hz is reached. The amplitude is then maintained at 0.8 mm and the frequency increased until a peak acceleration of 2 $g_n$ occurs (approximately 25 Hz). A peak acceleration of 2 $g_n$ is then maintained until the frequency is increased to 200 Hz.	Not large batteries.	N/A
	Cycle is repeated 12 times for a total of 3 h for each of three mutually perpendicular mounting positions. One of the directions is perpendicular to the terminal face.		P
	Results: no leakage, no venting, no short-circuit, no rupture, no explosion and no fire during this test.	See appended Tab 38.3.	P
38.3.4.4	Test T-4: Shock		P
	Cells or batteries previously subjected to vibration test.		P

<b>UN 38.3</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	Cells or batteries are subjected to three shocks in each direction of three mutually perpendicular mounting positions of the cell or battery for a total of 18 shocks.		P
	Cells are subjected to half-sine shock of peak acceleration of 150 g <sub>n</sub> and pulse duration of 6 ms.	Not cells	N/A
	As an alternative, large cells are subjected to a half-sine shock of peak acceleration of 50 g <sub>n</sub> and pulse duration of 11 ms.	Not large cells.	N/A
	Small batteries are subjected to half-sine shock of peak acceleration of the smaller of the following and pulse duration of 6 ms: - 150 g <sub>n</sub> ; or - $\sqrt{(100850 / \text{mass in kg})}$ g <sub>n</sub>		P
	Large batteries are subjected to half-sine shock of peak acceleration of the smaller of the following and pulse duration of 11 ms: - 50 g <sub>n</sub> ; or - $\sqrt{(30000 / \text{mass in kg})}$ g <sub>n</sub>	Not large batteries.	N/A
	Results: no leakage, no venting, no short-circuit, no rupture, no explosion and no fire during this test.	See appended Table 38.3.4.4	P
38.3.4.5	Test T-5: External short-circuit		P
	Cells or batteries previously subjected to shock test.		P
	Cells or batteries are heated for a period of time necessary to reach a homogeneous stabilized temperature of 57 ± 4 °C, measured on the external case.		P
	Cells or batteries are subjected to a short-circuit condition with a total external resistance of less than 0.1 ohm at 57 ± 4 °C. Short-circuit condition is continued for at least 1 h after the cell or battery external case temperature has returned to 57 ± 4 °C, or in the case of the large batteries, has decreased by half of the maximum temperature increase observed during the test and remains below that value.		P
	The test sample is observed for a further 6 h.		P
	Results: no excessive temperature rise, no rupture, no explosion and no fire during this test and within the 6 h of observation.	See appended Table 38.3.4.5	P
38.3.4.6	Test T-6: Impact / crush		N/A
	The test is conducted using test cells or component cells that have not been previously subjected to other transport tests.		N/A
	Each test cell or component cell shall be subjected to one impact / crush only.		N/A
	Cylindrical cells not less than 18.0 mm in diameter are tested with impact test procedure.		N/A

<b>UN 38.3</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	The cell is placed on a flat smooth surface. A stainless steel bar with a diameter of $15.8 \pm 0.1$ mm and a length of at least 60 mm or of the longest dimension of the cell, whichever is greater, is placed across the centre of the test sample. A mass of $9.1 \pm 0.1$ kg is dropped from a height of $61 \pm 2.5$ cm at the intersection of the bar and the test sample using a vertical sliding track or channel. The vertical track is oriented 90 degrees from the horizontal supporting surface.		N/A
	The test sample is impacted with its longitudinal axis parallel to the flat surface and perpendicular to the longitudinal axis of the steel bar lying across the centre of the test sample.		N/A
	Prismatic, pouch, coin/button cells and cylindrical cells less than 18.0 mm in diameter are tested with crush test procedure.		N/A
	The cell is crushed between two flat surfaces. The crushing is to be gradual with a speed of approximately 1.5 cm/s at the first point of contact.		N/A
	A prismatic or pouch cell shall be crushed by applying the force to the widest side. A button/coin cell shall be crushed by applying the force on its flat surfaces. For cylindrical cells, the crush force shall be applied perpendicular to the longitudinal axis.		N/A
	The crushing is to be continued until one of the three conditions below is reached: <ul style="list-style-type: none"> <li>- The applied force reaches <math>13 \pm 0.78</math> kN;</li> <li>- The voltage of the cell drops by at least 100 mV; or</li> <li>- The cell is deformed by 50 % or more of its original thickness.</li> </ul> As soon as one of the above conditions has been obtained, the pressure shall be released.		N/A
	The test sample is observed for a further 6 h.		N/A
	Results: no excessive temperature rise, no explosion and no fire during this test and within the 6 h of observation.	See appended Table 4.6	N/A
38.3.4.7	Test T-7: Overcharge		P
	The charge current of the battery is twice the manufacturer's recommended maximum continuous charge current.	Tested with 4A (manufacturer's recommended maximum continuous charge current: 2.0A)	P
	The manufacturer's recommended charge voltage is not more than 18 V. The minimum voltage of the test is the lesser of two times the maximum charge voltage of the battery or 22 V.	Tested with 49.92Vdc (manufacturer's recommended maximum continuous charge voltage: 41.6Vdc)	P
	The manufacturer's recommended charge voltage is more than 18 V. The voltage of the test is not less than 1.2 times the maximum charge voltage.		N/A

<b>UN 38.3</b>			
Clause	Requirement + Test	Result - Remark	Verdict
	The test is conducted at ambient temperature. The charging condition is maintained for at least 24 h.		P
	The test sample is observed for a further 7 days.		P
	Results: no explosion and no fire during this test and within the 7 days of observation.		P
38.3.4.8	Test T-8: Forced discharge	Not cells	N/A
	Each cell is forced discharged at ambient temperature by connecting it in series with a 12 V direct current power supply at an initial current equal to the maximum continuous discharge current specified by the manufacturer. Time interval for discharging equals to rated capacity divided by the initial test current.		N/A
	The test sample is observed for a further 7 days.		N/A
	Results: no explosion and no fire during this test, nor within the 7 days of observation.		N/A

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.1	TABLE: Altitude							P
Sample No.	Pre-condition	Open circuit voltage before test (V)	Mass before test (g)	Open circuit voltage after test (V)	Mass after test (g)	Mass loss (%)	Voltage remain (%)	Results
2307755-1	C	39.41	779.73	39.28	779.56	0.02	99.67	A
2307755-2	C	39.46	779.70	39.33	779.50	0.03	99.67	A
2307755-3	C	39.48	780.16	39.35	779.95	0.03	99.67	A
2307755-4	C	39.47	779.37	39.34	779.18	0.02	99.67	A
2307755-5	D	39.50	778.85	39.35	778.66	0.02	99.62	A
2307755-6	D	39.49	778.51	39.36	778.29	0.03	99.67	A
2307755-7	D	39.49	778.19	39.36	777.96	0.03	99.67	A
2307755-8	D	39.48	778.50	39.36	778.29	0.03	99.70	A

Supplementary information:

Precondition:

- A: Fully discharged state.
- B: Undischarged state.
- C: First cycle in fully charged state.
- D: After 50 cycles ending in fully charged state.
- E: After 25 cycles ending in fully charged state.

Results:

- A: No leakage, no venting, no short-circuit (voltage not remain 90%), no rupture, no disassembly (explosion), and no fire.
- B: Other (please explain):



UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.2	TABLE: Thermal Test							P
Sample No.	Pre-condition	Open circuit voltage before test (V)	Mass before test (g)	Open circuit voltage after test (V)	* Mass after test (g)	* Mass loss (%)	Voltage remain (%)	Results
2307755-1	C	39.280	779.56	NO OCV	778.24	0.17	NA	A, B
2307755-2	C	39.330	779.50	NO OCV	778.04	0.19	NA	A, B
2307755-3	C	39.350	779.95	NO OCV	778.56	0.18	NA	A, B
2307755-4	C	39.340	779.18	NO OCV	777.89	0.17	NA	A, B
2307755-5	D	39.350	778.66	NO OCV	776.91	0.22	NA	A, B
2307755-6	D	39.360	778.29	NO OCV	776.59	0.22	NA	A, B
2307755-7	D	39.360	777.96	NO OCV	776.84	0.14	NA	A, B
2307755-8	D	39.360	778.29	NO OCV	776.83	0.19	NA	A, B

Supplementary information:

Precondition:

- A: Fully discharged state.
- B: Undischarged state.
- C: First cycle in fully charged state.
- D: After 50 cycles ending in fully charged state.
- E: After 25 cycles ending in fully charged state.

Results:

- A: No leakage, no venting, no short-circuit (voltage not remain 90%), no rupture, no disassembly (explosion), and no fire.
- B: Other (please explain): Fuse not open. Cells could be measured voltage. PCB circuit out of work. Test Result was compliance.

\*- No leakage, but the weight loss over 0.1%. After confirming, it was caused by moisture absorption plastic material. After one day, these samples were restore some weight, see Vibration Test.

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.3	TABLE: Vibration							P
Sample No.	Pre-condition	Open circuit voltage before test (V)	Mass before test (g)	Open circuit voltage after test (V)	*Mass after test (g)	*Mass loss (%)	Voltage remain (%)	Results
2307755-1	C	NO OCV	778.31	NO OCV	778.31	0.00	NA	A
2307755-2	C	NO OCV	778.13	NO OCV	778.13	0.00	NA	A
2307755-3	C	NO OCV	778.66	NO OCV	778.64	0.00	NA	A
2307755-4	C	NO OCV	778.00	NO OCV	777.98	0.00	NA	A
2307755-5	D	NO OCV	777.04	NO OCV	777.04	0.00	NA	A
2307755-6	D	NO OCV	776.75	NO OCV	776.75	0.00	NA	A
2307755-7	D	NO OCV	776.95	NO OCV	776.95	0.00	NA	A
2307755-8	D	NO OCV	776.93	NO OCV	776.93	0.00	NA	A

Supplementary information:

Precondition:

- A: Fully discharged state.
- B: Undischarged state.
- C: First cycle in fully charged state.
- D: After 50 cycles ending in fully charged state.
- E: After 25 cycles ending in fully charged state.

Results:

- A: No leakage, no venting, no short-circuit (voltage not remain 90%), no rupture, no disassembly (explosion), and no fire.
- B: Other (please explain): Fuse not open. Cells could be measured voltage. PCB circuit out of work during T2 Thermal Test. Test Result was compliance.

\*- Due to moisture absorption plastic material, these samples were restore some weight.

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.4	TABLE: Shock							P
Sample No.	Pre-condition	Open circuit voltage before test (V)	Mass before test (g)	Open circuit voltage after test (V)	Mass after test (g)	Mass loss (%)	Voltage remain (%)	Results
2307755-1	C	NO OCV	778.31	NO OCV	778.31	0.00	NA	A
2307755-2	C	NO OCV	778.13	NO OCV	778.13	0.00	NA	A
2307755-3	C	NO OCV	778.66	NO OCV	778.64	0.00	NA	A
2307755-4	C	NO OCV	778.00	NO OCV	777.98	0.00	NA	A
2307755-5	D	NO OCV	777.04	NO OCV	777.04	0.00	NA	A
2307755-6	D	NO OCV	776.75	NO OCV	776.75	0.00	NA	A
2307755-7	D	NO OCV	776.95	NO OCV	776.95	0.00	NA	A
2307755-8	D	NO OCV	776.93	NO OCV	776.93	0.00	NA	A

Supplementary information:

Precondition:

- A: Fully discharged state.
- B: Undischarged state.
- C: First cycle in fully charged state.
- D: After 50 cycles ending in fully charged state.
- E: After 25 cycles ending in fully charged state.

Results:

- A: No leakage, no venting, no short-circuit (voltage not remain 90%), no rupture, no disassembly (explosion), and no fire.
- B: Other (please explain): Fuse not open. Cells could be measured voltage. PCB circuit out of work during T2 Thermal Test. Test Result was compliance.

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.5	TABLE: External short-circuit					P
Sample No.	Pre-condition	Open circuit voltage before test (V)	Open circuit voltage after test (V)	Maximum case temperature (°C)	Total external resistance ( $\Omega$ )	Results
2307755-1	C	NO OCV	--	58.0	<0.1	A
2307755-2	C	NO OCV	--	58.0	<0.1	A
2307755-3	C	NO OCV	--	57.4	<0.1	A
2307755-4	C	NO OCV	--	57.6	<0.1	A
2307755-5	E	NO OCV	--	57.7	<0.1	A
2307755-6	E	NO OCV	--	57.7	<0.1	A
2307755-7	E	NO OCV	--	58.0	<0.1	A
2307755-8	E	NO OCV	--	58.0	<0.1	A

Supplementary information:

Precondition:

- A: Fully discharged state.
- B: Undischarged state.
- C: First cycle in fully charged state.
- D: After 50 cycles ending in fully charged state.
- E: After 25 cycles ending in fully charged state.

Results:

- A: No excessive temperature rise (above 170°C), no rupture, no disassembly (explosion), and no fire.
- B: Other (please explain): Fuse not open. Cells could be measured voltage. PCB circuit out of work during T2 Thermal Test. Test Result was compliance.

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.6a	TABLE: Impact			N/A
Sample No.	Precondition	Open circuit voltage before test (V)	Maximum case temperature (°C)	Results
Supplementary information: Precondition: A: Undischarged. B: Fully discharged. C: One half discharged.  Results: A: No excessive temperature rise (above 170°C), no disassembly (explosion), and no fire. B: Other (please explain)				

38.3.4.6b	TABLE: Crush						N/A
Sample No.	Open circuit voltage before test (V)	Voltage drop of the cell (mV)	Applied force (kN)	Thickness before test (mm)	Thickness after test (mm)	Maximum case temperature (°C)	Results
Supplementary information: Precondition: A: Undischarged. B: Fully discharged. C: One half discharged.  Results: A: No excessive temperature rise (above 170°C), no disassembly (explosion), and no fire. B: Other (please explain)							

UN 38.3			
Clause	Requirement + Test	Result - Remark	Verdict

38.3.4.7	TABLE: Overcharge					P
Sample No.	Precondition	Open circuit voltage before test (V)	Maximum charging current (mA)	Maximum charging voltage (V)	Total charging time (h)	Results
2307755-9	A	#	4.0091	39.47	24 hrs	A
2307755-10	A	#	4.0086	39.47	24 hrs	A
2307755-11	A	#	4.0094	39.50	24 hrs	A
2307755-12	A	#	4.0131	39.53	24 hrs	A
2307755-13	B	#	4.0141	39.53	24 hrs	A
2307755-14	B	#	4.0101	39.42	24 hrs	A
2307755-15	B	#	4.0091	40.85	24 hrs	A
2307755-16	B	#	4.0074	40.84	24 hrs	A

Supplementary information:

Precondition:

A: First cycle in fully charged state.  
B: After 50 cycles ending in fully charged state.  
C: After 25 cycles ending in fully charged state.

Results:

A: No disassembly (explosion), and no fire.  
B: Other (please )

# - Confirmed there is OCV on battery, but do not record the OCV before test. No impact the test results.

38.3.4.8	TABLE: Forced discharge				N/A
Sample No.	Precondition	Open circuit voltage before test (V)	Measured reverse charging current (mA)	Total time for reversed charging application (min)	Results

Supplementary information:

Precondition:

A: Fully discharged state.  
B: First cycle in fully discharged state.  
C: After 50 cycles ending in fully discharged state.

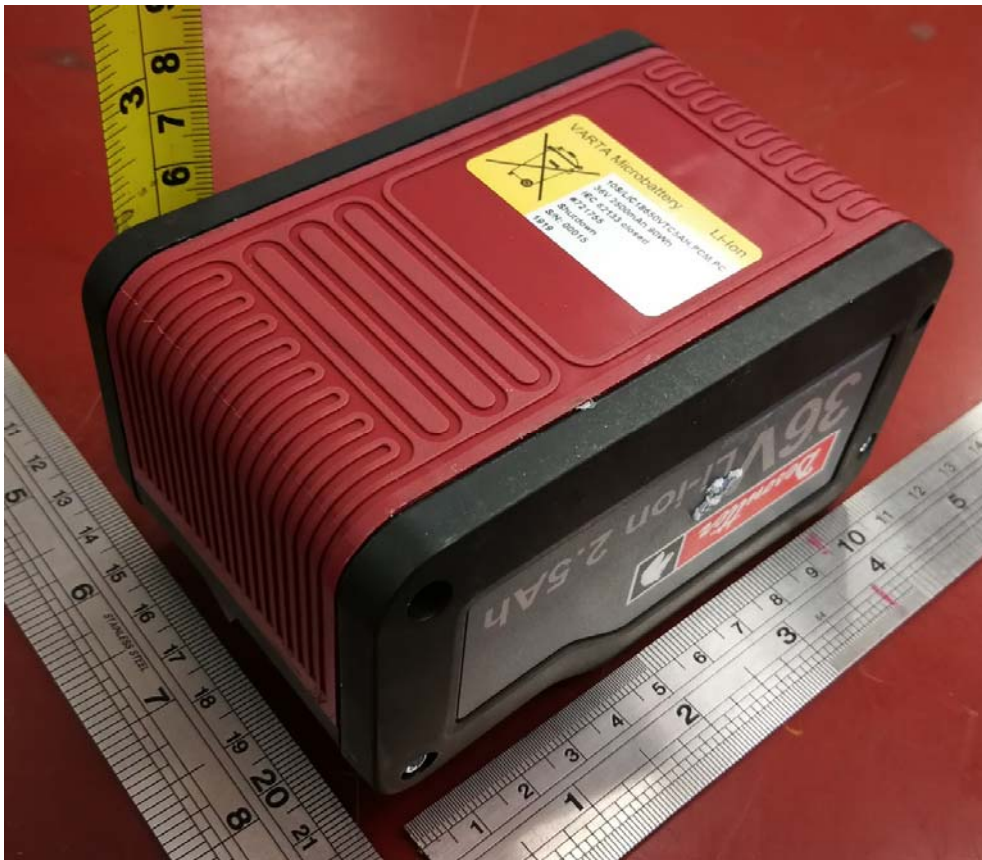
Results:

A: No disassembly (explosion), and no fire.  
B: Other (please explain)

**ENCLOSURE**

Supplement Id	Description
01-1~01-3	Overall view
02	Specification
03-1~03-2	Charging protection design for battery pack - Components Table
04	Packaging Method

ID-01-1





ID-01-2



ID-01-3



ID-02

【Specification】 Important Test Parameters: (For IEC62133 Pack)						
Model Designation (IEC)	Chemistry	Internal Cell Protective Devices		Capacity, mAh	Nominal Voltage, Vdc	Test Current, It
		Mfg/Part no. (Only for cell)	Type (Only for cell)			
10INR19/66	Lithium Ion	-	-	Min2500 mAh / Nom. 2600 mAh	36V	2500mA
Test Current (It)						
IT(A) – CN(AH)/1(H)						
Where;		Cn - rated capacity declared by the manufacturer in ampere hours (Ah), and n - time base in hours (h) for which the rated capacity is declared				
Battery - Model (VKB & Customer)	Max Charging Voltage, Vdc	Max Charging Current, mA	End of Charge Current or 0.05C, mA	End of discharge voltage, Vdc		
56646710098 / 6158132670	41.6V	2000	250	32V		
(3) (Only for cell)						
Model (IEC/Supplier)	Recommended Charging Method CC, CV, or CC/CV	Recommended Charging Voltage Vc, Vdc	Recommended Charging Current Irec, A	Max. charging voltage & temperature (IEC62133 2nd ed)		
INR19/66 / US18650VTC5AH)	CC/CV	4.25	6.0A	4.25V 60°C		
<b>Additional info</b>						
Operating Temperature	Charging: 0°C to 45°C Discharge: -20°C to +60°C					

## ID-03-1

Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
01. Connectors and Receptacles (secondary SELV circuits) (Alternate)	Interchangeable	Metal/Plastic	Copper alloy pins housed in bodies of PWB rated V-1 minimum.	--	--
02. Plastic Enclosure (Plastic casing , Side Bumper Right & Left , Lock hook, Push Button)	DOMO ENGINEERING PLASTICS ITALY SPA	FR 6G 15V0E	Minimum 0.75mm thick, V-0, 65 degree C. See Enclosure ID 10-1 to 10-3.	UL 94, UL746C	UL
03. Cells Holders	DOMO ENGINEERING PLASTICS ITALY SPA	FR 6G 15V0E	Minimum 0.75mm thick, V-0, 65 degree C. See Enclosure ID 10-1.	UL 94, UL746C	UL
04. Internal Plastic Part Materials (for parts greater than 1.75cm <sup>3</sup> )	Interchangeable	Interchangeable	Min. V-2.	UL 94 UL 746C	UL
05. PWB	Interchangeable	Interchangeable	V-0, 120 degree C.	UL 796	UL
06. Battery cells	Tohoku Murata Manufacturing Co., Ltd.	US18650VTC5A	rating 3.6+0.6, -1.6V, Nominal Capacity: 2600 mAh, Rated Capacity: 2500mAh.	IEC 62133: 2012	SGS, CBTC FI-35422
07. IC (IC1)	Texas Instruments Incorporated	bq76200PWR	--	--	N/A
08. IC (IC2)	Texas Instruments Incorporated	bq7692000PWR	--	--	N/A
09. IC (IC3)	Texas Instruments Incorporated	bq78350DBTR-R1	--	--	N/A
10. IC (IC5)	STMicroelectroni cs	STM32F030CCT6-TR	--	--	N/A
11. MOSFET (Q1, Q2, Q11, Q12, Q21, Q22)	AOS	AON6260	--	--	N/A

## ID-03-2

Object/part no.	Manufacturer/ trademark	Type/model	Technical data	Standard	Mark(s) of conformity <sup>1)</sup>
12. Fuse (F1, F2)	BEL FUSE INC.	0678L9300-02	Max. 72Vdc, 10~30A	UL 248-14, Second Edition	UL
13. Thermistor (NTC1)	SEMITEC CORP	103AT-2S	NTC type, 10kΩ at 25 degree C.	UL 1434, First Edition	UL
13a Thermistor (NTC1) (Alternate)	Interchangeable	Interchangeable	NTC type, 10kΩ at 25 degree C.	--	--
14. Current Sensing Resistor (SR1, SR2)	VISHAY	WSLF25121L00 0FEA	1 mohm, minimum 6 W.	--	--
14a. Current Sensing Resistor (SR1, SR2) (Alternate)	Interchangeable	Interchangeable	1 mohm, minimum 6 W.	--	--

ID-04

**Packing Plan**  
12 Batteries per Carton

**Pos. 210**  
Cover box  
356x282x47  
#720892

**Pos. 260**  
Handling precaution  
form for LIP & LIC  
#704616

**Pos. 240**  
Innecarton label DES10  
#723589  
**to be stuck on  
at upper left corner  
- as shown -**

**Pos. 220**  
Innecarton  
12x #723587

**Pos. 270**  
Caution label for Lithium  
#718990

**Pos. 280**  
Packing label  
Desoutter DES10  
#723622

**Pos. 290**  
SS Adhesive tape  
transparent 50MM  
#717955

**Battery #721755**  
to be packed  
into Innecarton  
with Manual Book

**Pos. 230**  
**Manual Book**  
#723850  
*! 2018-12-18 vorläufig (Kalkulation) aus BOM!*

**Pos. 200**  
Carton box  
346x272x125  
#720891

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1 of 2  
In Arbeit

02	Removed Pos. 240 (quality label) according customer request	22.10.2018	Mayer, M.
01	Modified drawing description and position numbering	17.10.2018	Mayer, M.
Index		Änderung / Attention	Date Name
Projection	Formel/Dimensionen General/Dimensions	Clear/Make visible secondary part/01 This dimensions are contingent instruction	Maßstab / Scale 1:5 (1:10)
Made in mm in dimensions in mm	up to 6 up to 10 up to 15 up to 20 up to 30 up to 50 up to 100 up to 150	+ 0.1 + 0.2 + 0.3 + 0.5	Material / Designation VKB 56646 710 098
Part description Bauteil, site techn. specification	over 6 over 10 over 15 over 20	+ 0.1 + 0.2 + 0.3 + 0.5	10S/LIC18650-VTC5AH.PCM.PC 36 V BATTERY
Property data property certificate, if applicable	over 100	+ 0.5	Part No. 3 Drawing / Design No. PP-721755 Sheet 1 of 02
<b>VARTA</b>		Original	Revised