

TB 100 Thermal Battery Test Report

5 pages

November 2023

TB100 Thermal Battery Test Report

1 Experimental basis and purpose

According to the TB100 Thermal Battery Test Outline, conduct acceptance tests on 3 pcs TB100 thermal batteries to inspect whether the product meets the requirements of the TB 100 Thermal Battery Test Outline.

2 Test time

November 2, 2023 to November 3, 2023

3 Experimental basis

TB100 Thermal Battery Test Outline.

4 Test equipment details

Table 1 List of Test Equipment Details

Number	Equipment/measuring tool name	Model/Specification	Equipment validity period	Remarks
1	Low temperature test chamber	GWD-100	2023.12	
2	Electric blast drying oven	WG-71	2024.11	
3	16 channel data acquisition instrument	IDTS-4516U	2024.4	
4	Electronic load	IT8818	2024.3	
5	Vernier caliper	0~150mm	2023.12	Accuracy not less than 0.02mm
6	balance	-	2024.3	Sensitivity not less than 0.5g
7	Insulation resistance meter	ZC42A-2 type	2024.11	
8	Helium mass spectrometer leak detector	ZQJ530	2024.3	
9	Universal ignition head	-	2024.3	
10	Multimeter	FLUKE17B+	2024.3	
11	Electric vibration testing system	MPA102/L620M	2024.4	
12	Impact test bench	SY11-25	2024.5	

5 Test result

The results of the thermal battery test are shown in Tables 2 to 6.

Table 2 Static Inspection Results of Thermal Batteries

Number	Battery number	exterior	Activation circuit resistance / Ω	insulation resistance /M Ω	External dimensions/mm		Weight/g	Sealing performance /Pa · m ³ /S
			0.8~1.2	≥ 50	Φ 63.5max	125max	≤ 1200	$\leq 3 \times 10^{-7}$
1	005	qualified	1.047	200	Φ 63.30	124.56	1080.65	2.2×10^{-8}
2	029	qualified	0.965	200	Φ 63.34	124.50	1076.12	1.2×10^{-8}
3	055	qualified	0.998	200	Φ 63.30	124.46	1080.35	3.0×10^{-8}

Table 3 Safety Current Test Results

Number	Battery number	Appearance	Has it been activated
1	005	qualified	no
2	029	qualified	no
3	055	qualified	no
technical requirement		Apply a continuous DC current of 1A, and the ignition head must not ignite within 5 minutes	

Table 4 Transportation Impact Test Results

Number	Battery number	Appearance	Activation circuit resistance/ Ω	Insulation resistance/M Ω
1	005	qualified	1.046	200
2	029	qualified	0.963	200
3	055	qualified	0.996	200
technical requirement		After undergoing the specified transportation impact test, the thermal battery should have no physical damage and the insulation resistance should be $\geq 50M \Omega$, the activation circuit resistance should be between 0.8 Ω and 1.2 Ω .		

Table 5 Transportation Vibration Test Results

Number	Battery number	Appearance	Activation circuit resistance/ Ω	Insulation resistance/M Ω
1	005	qualified	1.047	200
2	029	qualified	0.965	200
3	055	qualified	0.998	200
technical requirement		After undergoing the specified transportation vibration test, the thermal battery should have no physical damage and the insulation resistance should be $\geq 50M \Omega$, the activation circuit resistance should be between 0.8 Ω and 1.2 Ω .		

Table 6 Electrical Performance Test Data

Number	Battery number	Constant temperature state	Working voltage/V	Working hours/s	Activation time/s	Pulse voltage/V	Remarks
1	005	low temperature	31.66	146	0.441	29.39	
2	055	high temperature	32.08	138	0.291	29.57	
3	029	normal temperature	32.03	139	0.281	29.6	
technical requirement			26~33	≥ 100	≤ 0.7	≥ 20	

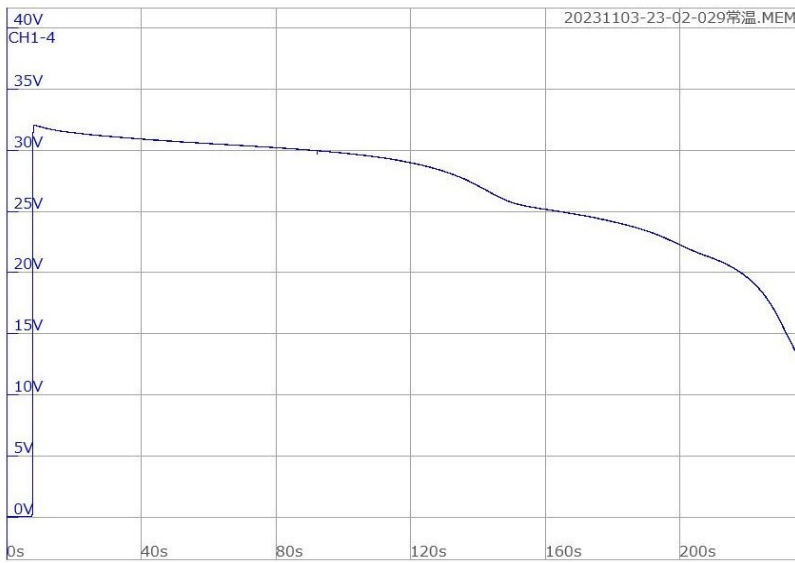


Figure 1 029 Room temperature working curve

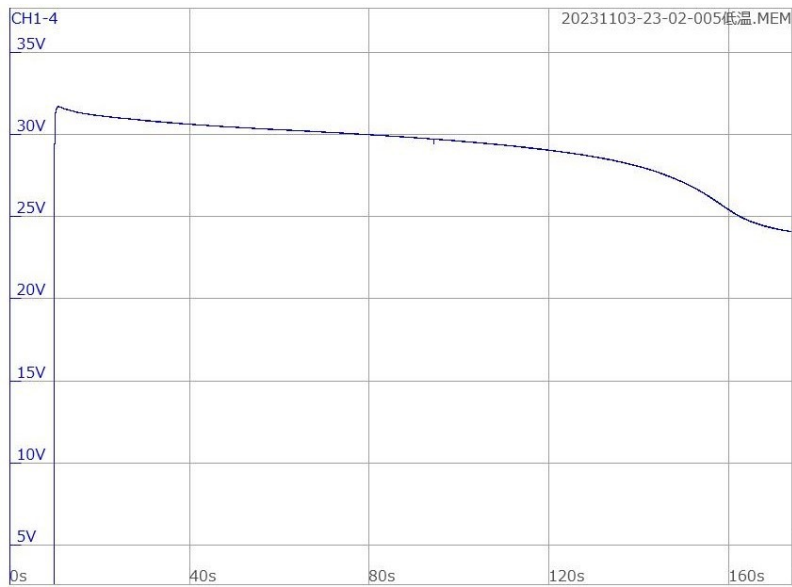


Figure 2 005 Low temperature working curve

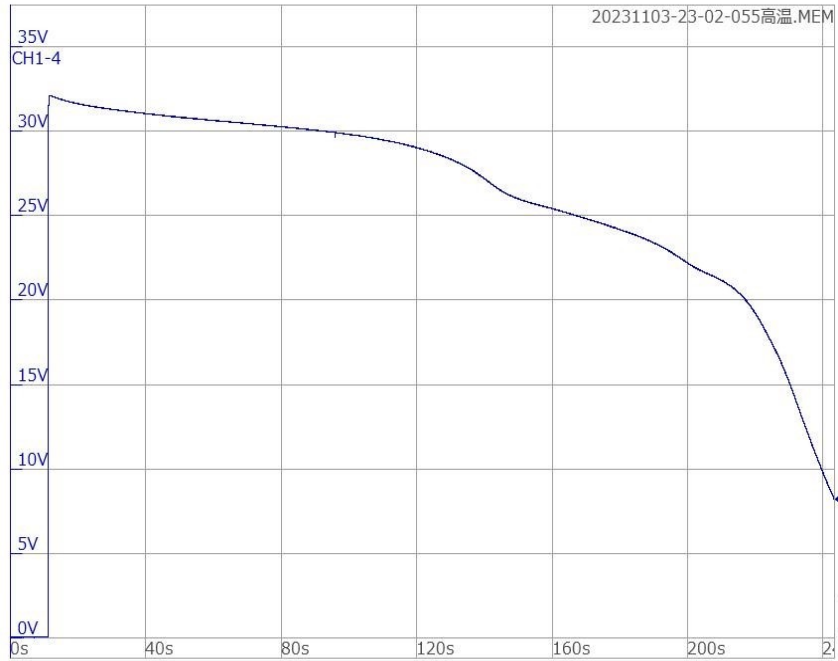


Figure 3 055 High temperature working curve

6. conclusion

The testing personnel have confirmed that the instruments, detection equipment, and discharge lines used in the TB100 thermal battery test comply with the provisions of the TB100 Thermal Battery Test Outline, and the test is strictly according to the prescribed methods and procedures, all test results meet the requirements of the TB100 Thermal Battery Test Outline and can be delivered for use .

