



Specification Approval Sheet

Name: Tenergy 2/3 AA NiCd Battery

Model: 20101

SPEC: 1.2V 450mAh

Approved By	Checkup	Make

Customer Confirmation	Signature	Date
	Company Name :	
	Stamp :	

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NO:		Date	Modification description	Modification Manager
1	Ver1.0	2012.11.09	New Release	张华南



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1、 APPLICATION

This specification governs the performance of the following TENERGY Nickel-Cadmium Cylindrical cell and its stack-up battery。

Model : 20101

Cell Size : Flat : 2/3AA($\phi 14.5^{+0}_{-0.7} \times 28.5^{+0}_{-1.5}$)

2、 RATINGS

Description	Unit	Specification		Conditions
Nominal Voltage	V/Cell	1.2		---
Nominal Capacity	mAh	450		Standard Charge/Discharge
Minimum Capacity	mAh	400		Standard Charge/Discharge
Standard Charge	mA	40		Ambient Temperature: Ta= 20± 5℃
	Hour	16		
Trickle Charge	---	(0.03C)~(0.05C)		Ta = 0~45℃
Standard discharge	mA	80		Ambient Temperature: Ta= 0~45℃ Humidity: 50± 15%
Discharge Cut-off Voltage	V/cell	1.0		---
Storage Temperature	℃	-20~35℃	1year	discharged state、 Humidity、 Max.60%
		0~60℃	1week	discharged state、 Humidity、 Max.80%
Approx Typical Weight	g/ cell	Approx 11g		Unit cell

3、 PERFORMANCE

Unless otherwise stated, tests should be done within one month of delivery under the following conditions:

Ambient Temperature, T : $20 \pm 5^\circ\text{C}$; Relative Humidity: $50 \pm 15\%$

Test item	Unit	Specification	Other Condition	Remarks
Least Capacity (0.2C)	mAh	400	Standard Charge Discharge	up to 3 cycles are allowed



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Open Circuit Voltage(OCV)	V/ cell	≥ 1.25	Within 1 week after standard Charge	---
Internal Impedance	m Ω /cell	≤ 45	Upon fully charge(1 KHz)	---
High Rate Discharge(1.0C)	Minute	≥ 54	Standard Charge,1 hour rest before Discharge by 1.0C to 1.0V/cell	up to 3 cycles are allowed
Overcharge	---	No leakage nor deformation	40mA(0.1C)Charge10days/40mA (0.1C)	---
Charge Retention	mAh	≥ 260	Standard Charge Storage : 45 °C Ambient temperature 7 days , Standard Discharge Standard Discharge	---
IEC Cycle Life/ IEC	Cycle	500	IEC61951-1(2003) 7.4.1.1	(see Note 4)
Leakage Test	---	No leakage nor deformation	Fully Charge at 0.5C for 2.5 hour stand for 14 days	---
Security Test	---	No break nor blast , but allow leakage or deformation	charge the cell at 0.1C for 16 hours , then $\leq 100\text{m } \Omega$ Impedance short circuit for 1 hour	Surroundings Temperature: $T=20 \pm 5^{\circ}\text{C}$
Impact Resistance	---	Change of voltage should be under 0.02V/cell Change of impedance should be under 5m Ω	Charge the group 0.1C 16hrs Then leave for 1-4hrs, check battery-before/after dropped Height 50cm Wooden board (thickness 30 mm) Direction not specified,3 times	Surroundings Temperature: $T=20 \pm 5^{\circ}\text{C}$



Vibration Resistance	---	Change of voltage should be under 0.02V/ Change of impedance should be under 5m Ω	Charge the cell 0.1C 16hrs, then leave for 24 hour check battery before /after vibration Amplitude :1.5mm; Vibration 3000CPM; Any direction for 60mins.	Surroundings Temperature: T=20 \pm 5 $^{\circ}$ C
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4、CONFIGURATION,DIMENSIONS AND MARKINGS

Please refer to the attached drawing.

5、EXTERNAL APPEARANCE

The cell/battery shall be free from cracks, scars, breakage, rust, discoloration, leakage nor deformation.

6、CAUTION

- (1) Reverse charging is not acceptable.
- (2) Charge before use. The cell /battery are delivered in an uncharged state.
- (3) Do not charge/discharge with more than our specified current.
- (4) Do not short circuit the cell/battery Permanent damage to the cell/battery may result.
- (5) Do not incinerate or mutilate the cell/battery.
- (6) Do not solder directly to the cell/battery.
- (7) The life expectancy may be reduced if the cell/battery is subjected adverse conditions like: extreme temperature, deep cycling, excessive overcharge/ over-discharge.
- (8) Store the cell/battery uncharged in a cool dry place. Always discharge batteries before bulk storage or shipment.

7. Notes:

- (1) T_a : Ambient Temperature
- (2) Approximate charge time from discharged state, for reference only.
- (3) We recommend cells or batteries are charged and discharged at least once every 6 months.
- (4) IEC61951-2(2003)7.4.1.1 Cycle Life

Cycle No.	Charge	Rest	Discharge
1	0.1C \times 16h	None	0.25C \times 2h20min
2-48	0.25C \times 3h10min	None	0.25C \times 2h20min

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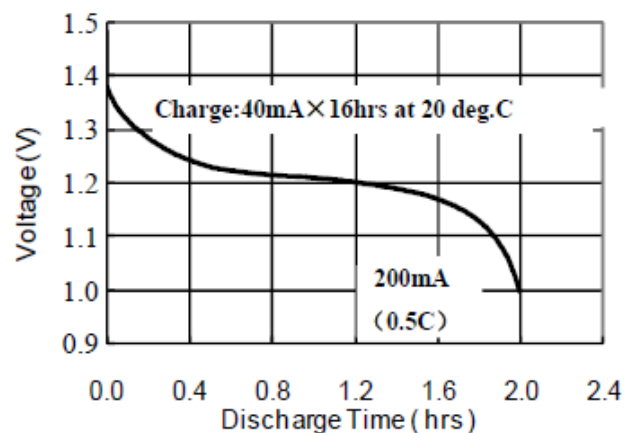
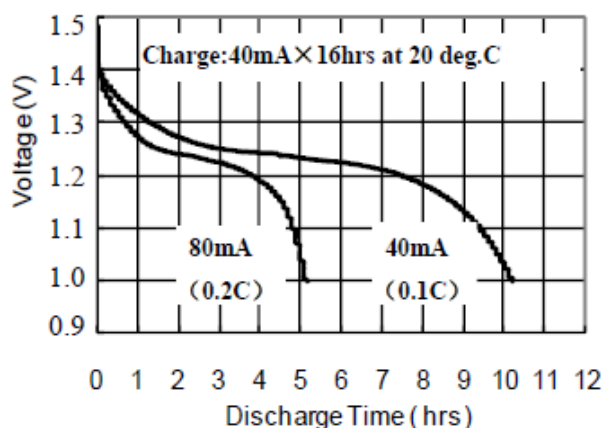
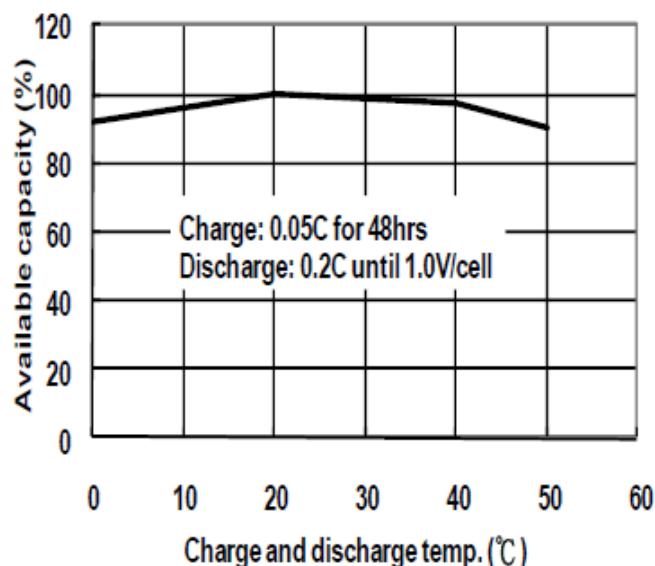
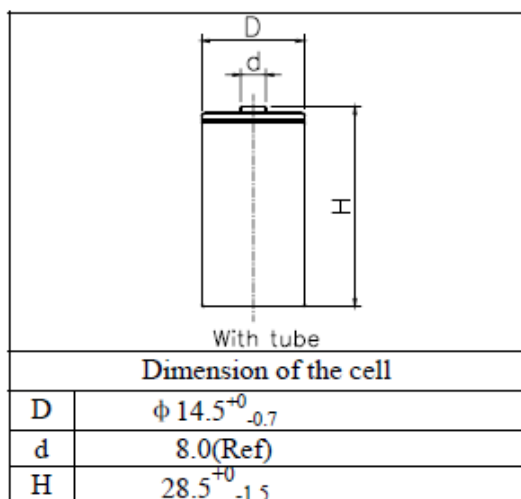
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49	$0.25C \times 3h10min$	None	0.25C to 1.0V/cell
50	$0.1C \times 16h$	1-4h	0.2C to 1.0V/cell
Cycles 1 to 50 shall be repeated until the discharge duration on any 50th Cycle becomes less than 3 h.			

8. THE ATTACHED DRAWING



- z 1、The information (subject to change without prior notice) contained in this document is for reference only and should not be used as a basis for product guarantee or warranty. For applications other than those described here, please consult your nearest TENERGY sales and Marketing office or Distributors.
- z 2、Manufacturer reserves the right to after or amend the design ,model and specification without prior notice