

Tadiran Lithium Ion Rechargeable Battery Model TLI-1020A

1. Scope

This specification applies to the AAA size Lithium Ion Rechargeable battery supplied by Tadiran Batteries Ltd.

Notice: Charging circuit and application load profile have to be approved by Tadiran prior to the use of this cell.

2. Characteristics

2.1. Physical

- 2.1.1. Length: 21 mm Max.
- 2.1.2. Diameter: 10.5 mm Max
- 2.1.3. Weight: 4.2 gr. Max.

2.2. Electrical / Charge

- 2.2.1. Charge Voltage: 4.1 V
- 2.2.2. Charge Current: 8 mA Max.
- 2.2.3. Charge Method: CCCV (Constant Current/Constant Voltage)
- 2.2.4. End of Charge: 1.6 mA Max. per cell
- 2.2.5. Charge Temp. Range: -20 to +50 °C

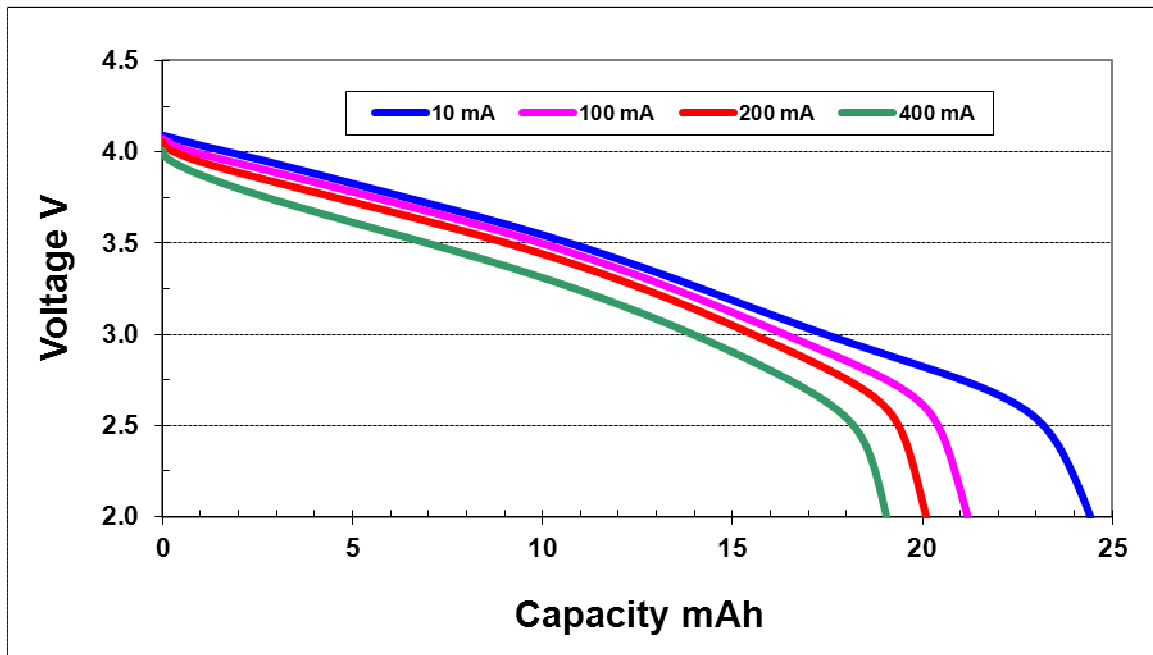
Charge temperature can be extended to -40 ÷ +85 °C provided that the max. charge current is limited to 1.6 mA.

2.3. Electrical / Discharge

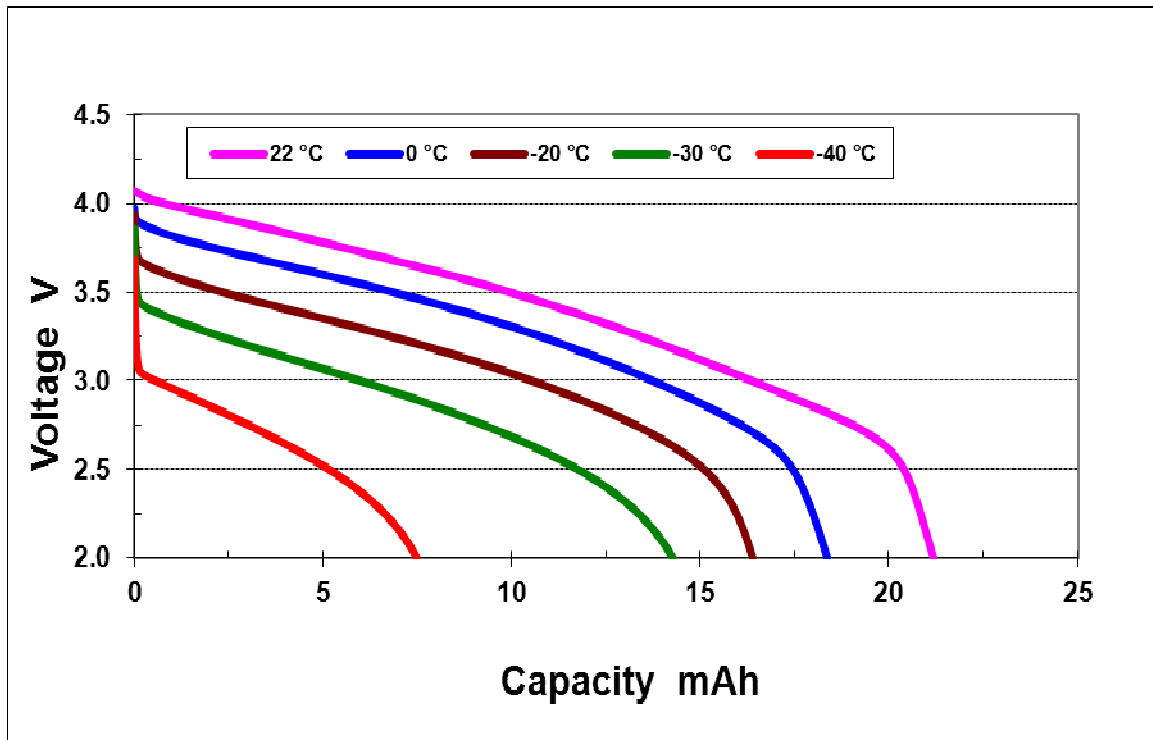
- 2.3.1. Nominal Current: 20 mA
- 2.3.2. End of Discharge: 2.5 V @ Room Temperature
- 2.3.3. Discharge Temp. Range: -40 to +85 °C
- 2.3.4. Performance Characteristics:

| Item | Performance | Conditions |
|-------------------------------|--------------------|---|
| Battery Capacity | 27 [mAh] | Discharge at 8 mA |
| | 26 [mAh] | Discharge at 80 mA |
| Charge Discharge Cycles | 24 [mAh] | After 100 cycles Discharge at 20 mA |
| Temperature | 24 [mAh] | Discharge at -20 °C at 20 mA |
| | 27 [mAh] | Discharge at 60 °C at 20 mA |
| Charge Retention (reversible) | 24 [mAh] | After 5 years at RT, Discharge at 20 mA |
| Impedance | Less than 600 mohm | Impedance at 1 KHz |

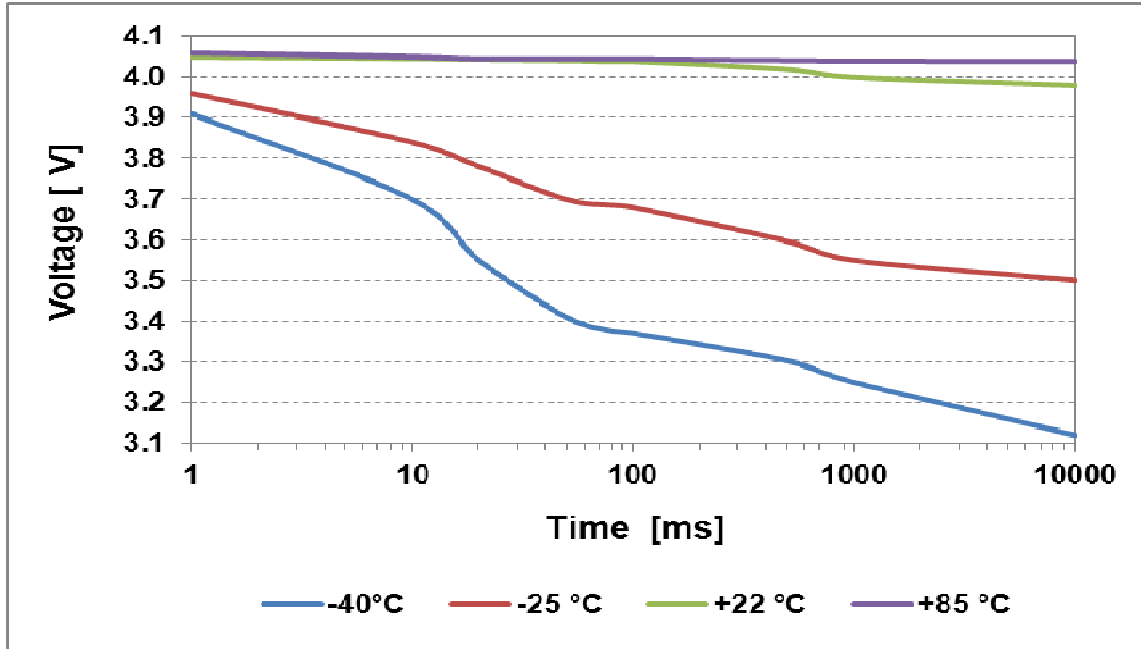
Discharge curves at Room Temperature



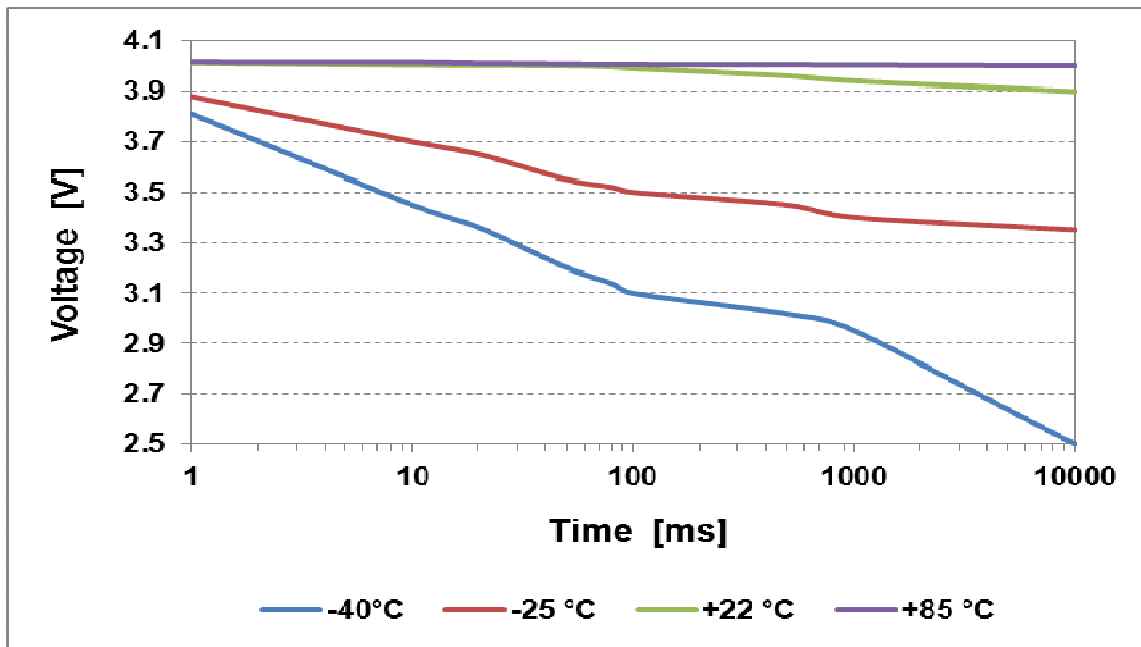
Discharge Curves at Several Temperatures, @ 100 mA



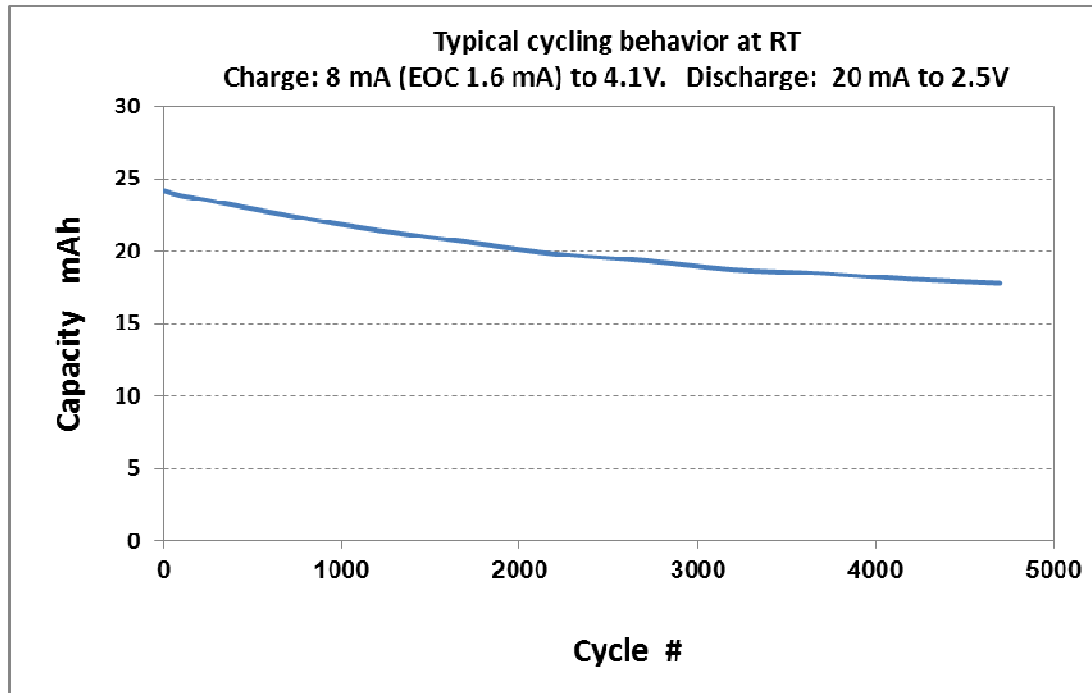
Voltage Curves @ 60 mA , 10 sec pulse



Voltage Curves @ 100 mA , 10 sec pulse



Charge/ Discharge Cycling Performance



2.4. Cell / Battery Protection (to be applied by the user)

| Item | Specifications |
|---------------------------|--|
| Over charge protection | Cell voltage should not be higher than 4.2 V |
| Over discharge protection | Cell voltage should not be lower than 2.4 V |

2.5. Safety Characteristics

The cells successfully passed the following safety tests:

- Short circuit at RT, 55 °C and 85 °C.
- Temperature test up to 170 °C.
- Crush.
- Impact.
- Nail penetration.
- Over charge up to 40 mA, 12 V.
- Over discharge (300%) up to 160 mA.
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2.6. Battery pack assembly and usage considerations

- For 2 cells or more in series, voltage shall be monitored on each cell.
- For more than 2 cells in parallel, maximum charge current shall be limited to 20 mA for the whole pack.