

# HLC – 1020L



## Hybrid Layer Capacitor (HLC) For *PulsesPlus™* batteries

### Electrical characteristics (For batteries stored at RT for 1 year or less)

Capacity when charged to 3.67 V	30 As
Capacity when charged to 3.90 V	45 As
Discharge end voltage	2.5 V (discharge below 2.5 V at RT may increase the HLC internal impedance). For other temperatures and discharge condition please contact Tadiran for these end voltage conditions.

### Mechanical characteristics

Length	21 -1 mm.
Diameter	10.0 +0.5/-0.0 mm.
Weight	4.2 gr. max

### Operating conditions

Maximum discharge current:	
Continuous	150 mA
Pulse	500 mA
Charge (for HLC testing purpose only)	
Max. charge voltage	3.95 V
Max. charge current	6 mA
Operating & Storage temperature range	
HLC in <i>PulsesPlus™</i> battery	-40 °C ÷ +85 °C
Storage temperature range for HLC	-40 °C ÷ +60 °C
Cell impedance at RT	< 600 mΩ at 1 kHz
Self discharge in <i>PulsesPlus™</i> battery at RT	2 µA
Self discharge in <i>PulsesPlus™</i> battery at 80 °C	5 µA

Shelf life at different storage temperature to 80% of initial capacity

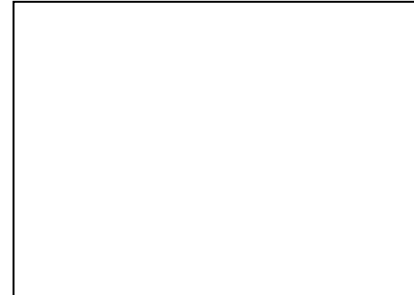
Temperature	HLC	HLC in <i>PulsesPlus™</i> battery
RT	1 years	>10 years
55 °C	2 weeks	10 years
80 °C	1 week	1 year

### Safety

### Tested according to:

Short circuit at RT and at +55 °C	UL, UN, IEC
Oven at +150 °C	UL, IEC
Over-charge & over-discharge (200 % at currents up to 80 mA)	UL, UN, IEC
Impact	UL, UN, IEC
Compression	UL, IEC
Shock and Vibration	UL, IEC

UN Manual of Tests and Criteria, UL 1642, IEC 60086



### Technology

- Anode: Carbon based
- Cathode: Multi metal oxides
- Electrolyte: Organic

### Key Features

- Hermetically sealed (glass-to-metal)
- Wide operating temperature range
- Low self discharge
- End of life indication capability
- High reliability
- Lightweight
- Shut down separator
- Safe design

### Main Applications

- Utility Meters (AMR)
- Asset, Container & Cargo Tracking
- RFID Devices
- Sonar Buoys
- Communication Equipment
- Emergency & Medical Devices

### Ordering Part No.

- HLC-1020L/S 61102522000
- HLC-1020L/T 61102522150

### Tadiran Batteries Ltd.

34 Yitzhak Rabin Boulevard  
Kiryat Ekron 76950, Israel  
Tel: +972 (8) 944-4555  
Fax: +972 (8) 941-3079

[www.tadiranbatteries.com](http://www.tadiranbatteries.com)

**WARNING:**  
Fire, Explosion, And Severe Burn Hazard.  
Do Not Recharge, Crush, Disassemble, Heat  
Above 100°C, Incinerate Or Short Circuit.

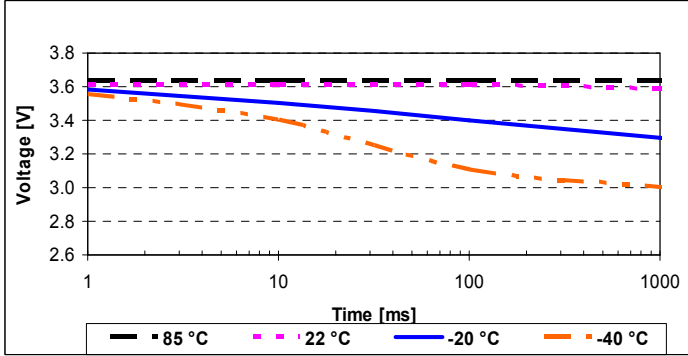
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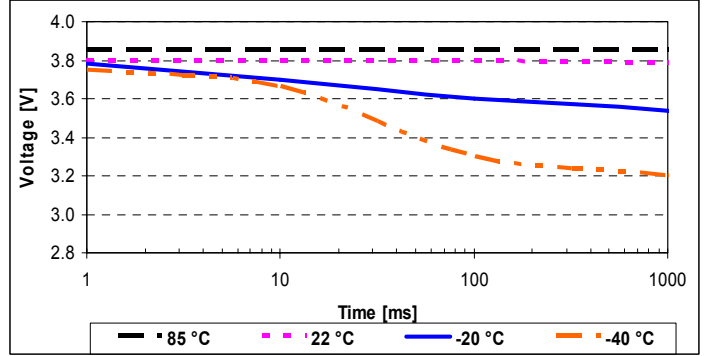


## Performance data

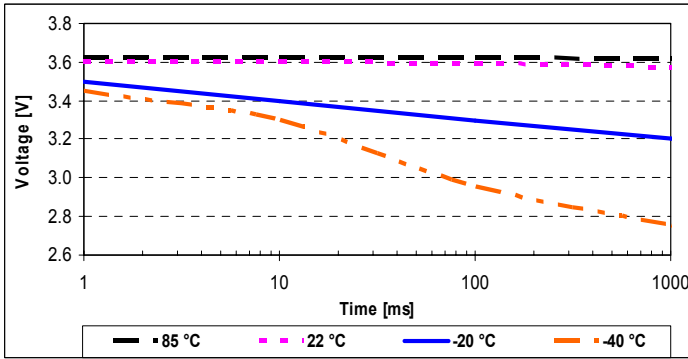
Voltage curves for HLC1020L at Li/SOCl<sub>2</sub> potential (3.67 V), 45 mA



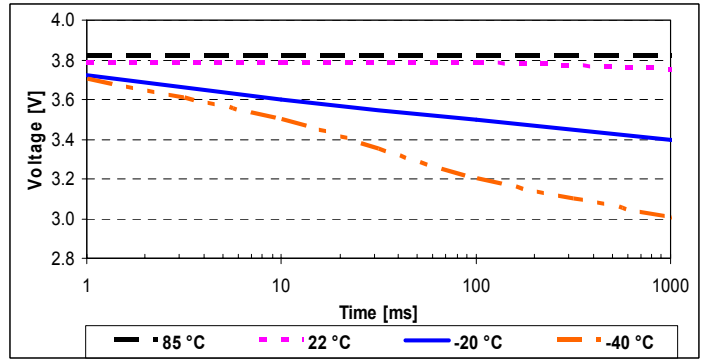
Voltage curves for HLC1020L at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 45 mA



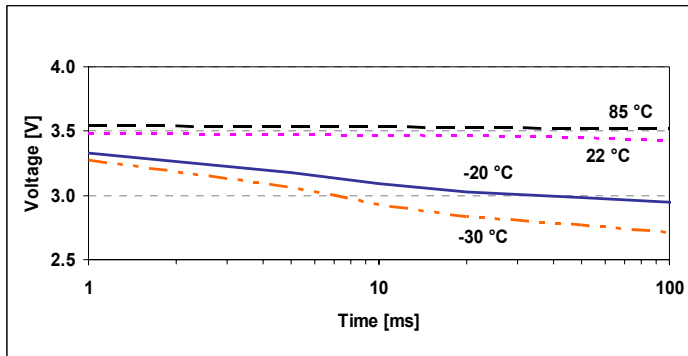
Voltage curves for HLC1020L at Li/SOCl<sub>2</sub> potential (3.67 V), 70 mA



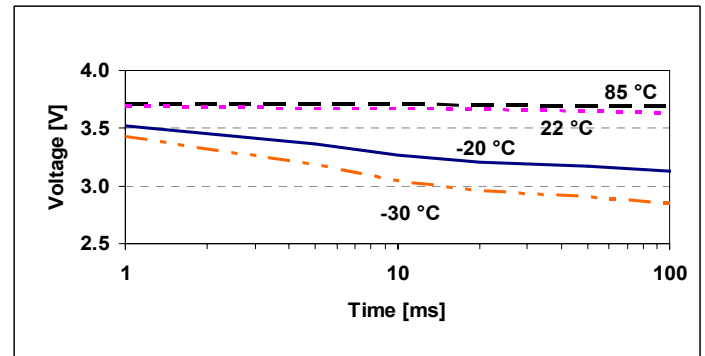
Voltage curves for HLC1020L at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 70 mA



Voltage curves for HLC1020L at Li/SOCl<sub>2</sub> potential (3.67 V), 200 mA



Voltage curves for HLC1020L at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 200 mA

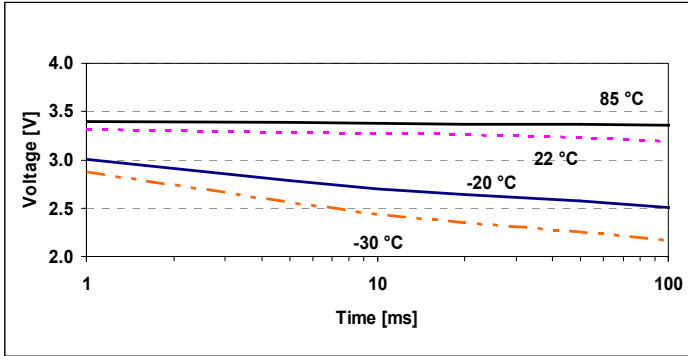


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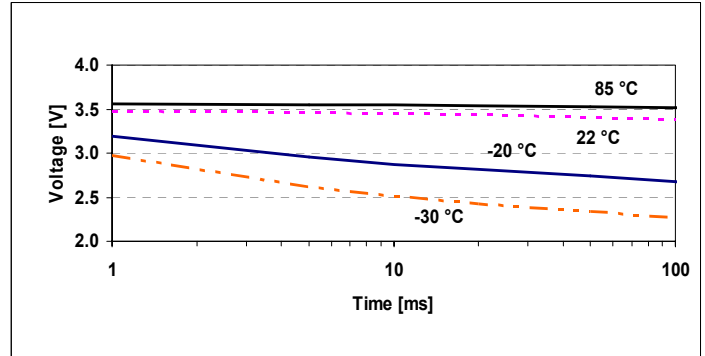
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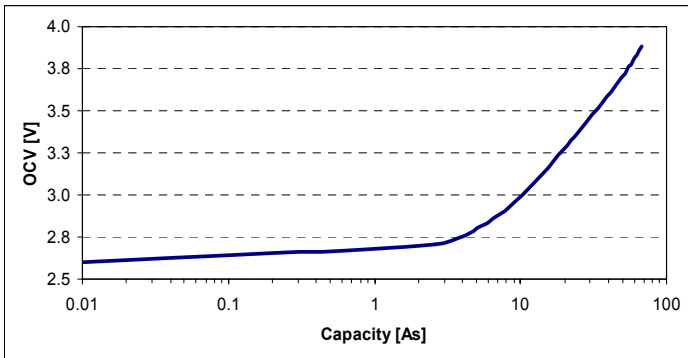
Voltage curves for HLC1020L at Li/SOCl<sub>2</sub> potential (3.67 V), 420 mA



Voltage curves for HLC1020L at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 420 mA



Discharge capacity vs. OCV for HLC1020L (at RT, 15 mA discharge)



**Warning:**

- The HLC is designed for use in a PulsesPlus™ battery or in low charge current as specified only. The HLC may explode or violently vent if over-charge above 4.4V.
- Charging the HLC at above 3.95 V may lead to capacity loss and / or internal impedance rise.
- Do not charge the HLC higher than 4.1 V, over discharge, short circuit, heat above 100 °C, incinerate or expose content to water.

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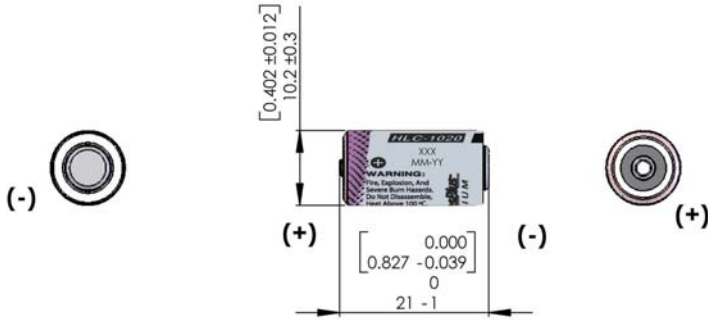
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## Lead terminations

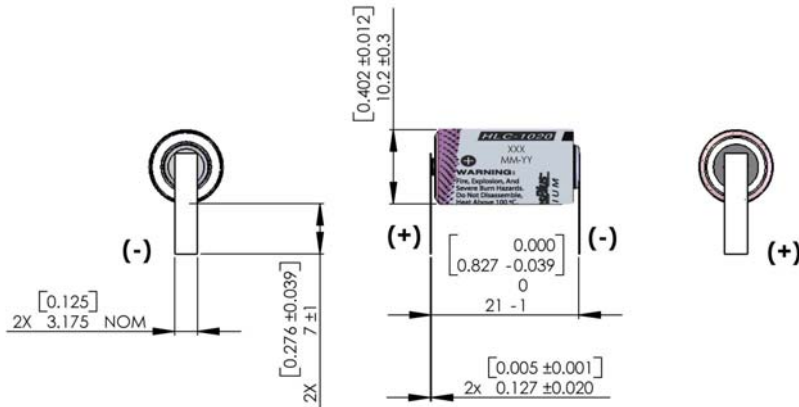
### HLC-1020L/S (Standard Contacts)

Cat. # 61102522000



### HLC-1020L/T (Soldering Tabs)

Cat. # 61102522150



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Rev E, October 2009

ECN 6101088