

# HLC – 1020 P6

## Hybrid Layer Capacitor (HLC) For *PulsesPlus*<sup>TM</sup> batteries

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

Capacity when charged to 3.67 V	50 As
Capacity when charged to 3.90 V	75 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	250 mA
Pulse	2000 mA
Charge (for HLC testing purpose only)	
Max. charge voltage	3.95 V
Max. charge current	8 mA
Operating & Storage temperature range	
HLC in <i>PulsesPlus</i> <sup>TM</sup> battery	-40 °C ÷ +85 °C
Storage temperature range for HLC	-40 °C ÷ +60 °C
Cell impedance at RT	< 200 mΩ at 1 kHz
Self discharge in <i>PulsesPlus</i> <sup>TM</sup> battery at RT	1 μA
Self discharge in <i>PulsesPlus</i> <sup>TM</sup> battery at 80 °C	5 μA

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

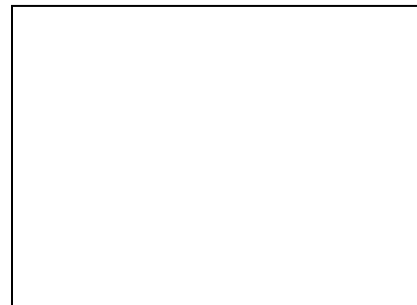
Temperature	HLC	HLC in <i>PulsesPlus</i> <sup>TM</sup> battery
RT	1 years	>10 years
60 °C	2 weeks	10 years
80 °C	1 week	2 years

### 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 (pending), IEC 60086 (pending)



### 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-1020 P6/S 61102622000
- ☒ HLC-1020 P6/T 61102622150

### Tadiran Batteries Ltd.

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

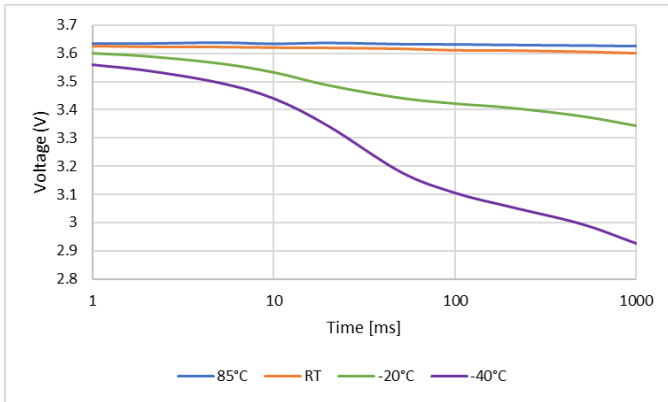
[www.tadiranbatteries.com](http://www.tadiranbatteries.com)

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

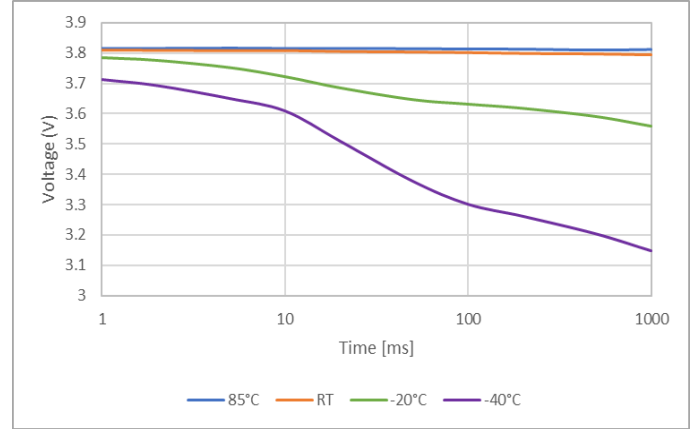
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## Performance data

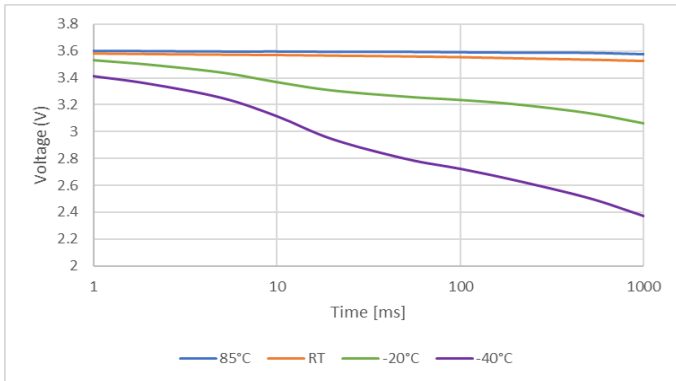
Voltage curves for HLC1020 P6 at Li/SOCl<sub>2</sub> potential (3.67 V), 200 mA



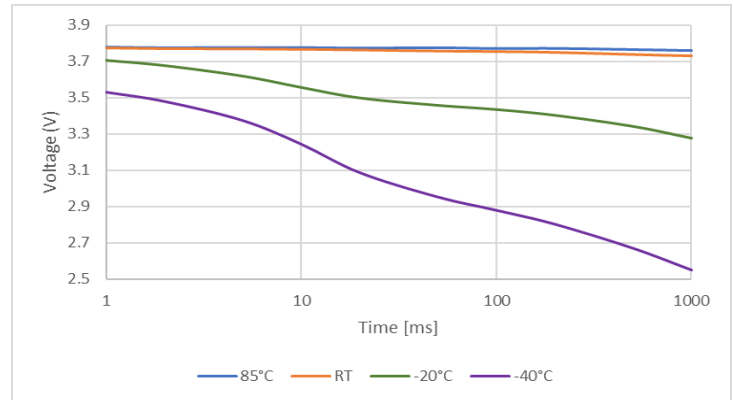
Voltage curves for HLC1020 P6 at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 200 mA



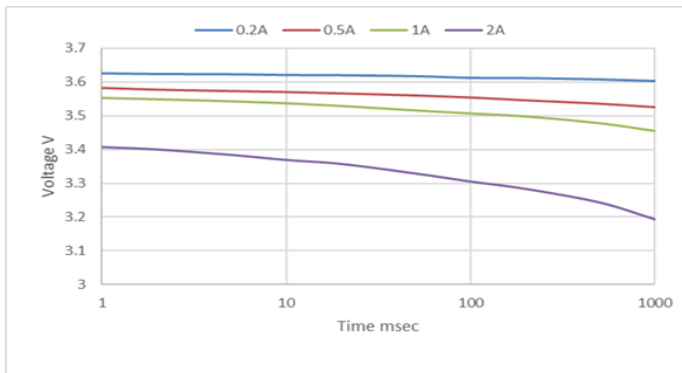
Voltage curves for HLC1020 P6 at Li/SOCl<sub>2</sub> potential (3.67 V), 500 mA



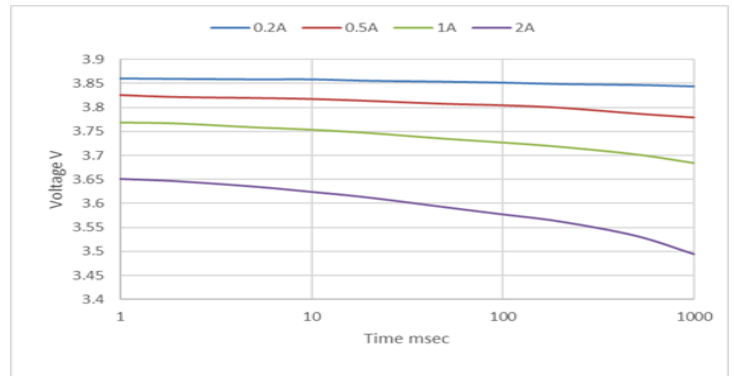
Voltage curves for HLC1020 P6 at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V), 500 mA



Voltage curves, @ RT, for HLC1020 P6 at Li/SOCl<sub>2</sub> potential (3.67 V)



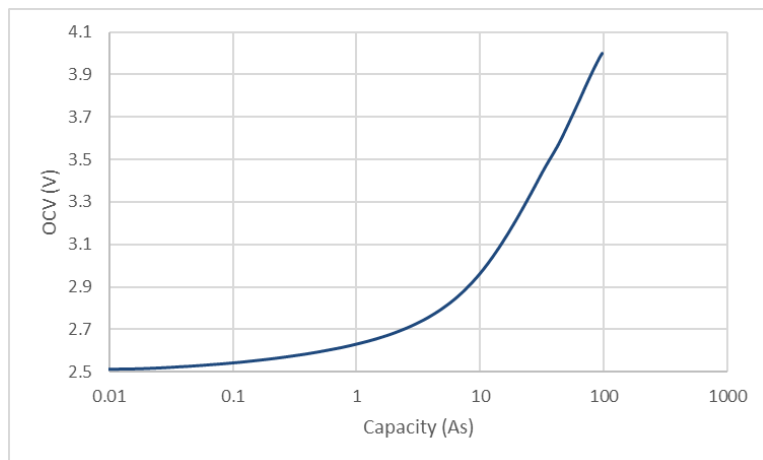
Voltage curves, @ RT, for HLC1020 P6 at Li/SO<sub>2</sub>Cl<sub>2</sub> potential (3.90 V)



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Discharge capacity vs. OCV for HLC1020 P6 (at RT, 1 mA discharge)



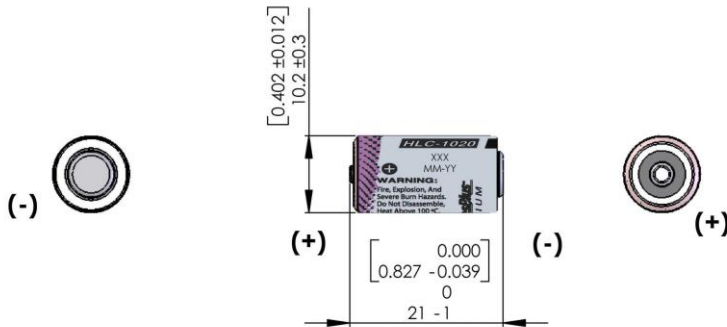
**Warning:**

- 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.

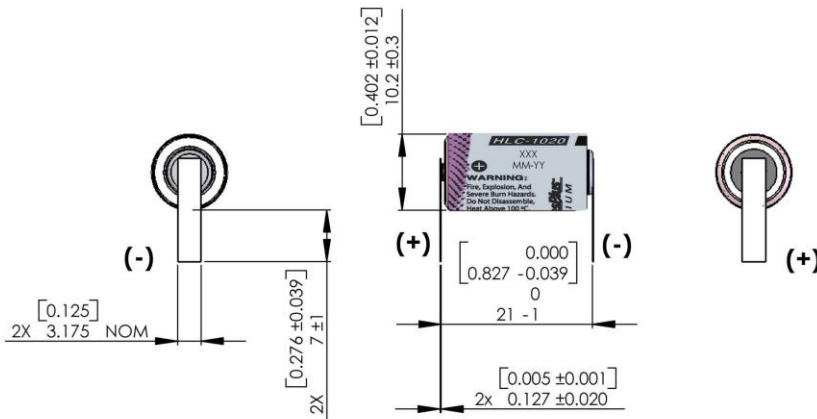
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## Lead terminations

### HLC-1020 P6/S (Standard Contacts) Cat. # 61102622000



### HLC-1020 P6/T (Soldering Tabs) Cat. # 61102622150



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