Lithium ion cell for Aerospace applications LFC 40

Overview
The LFC40 lithium-ion Rechargeable cell is optimized for High Rate Applications which also require high energy density. The cell design is based on our state of the art technology and extensive experience in manufacturing cells for space applications and large-scale industrial batteries.

Features
- High energy density
- Excellent discharge characteristics
- Sealed structure
- Low self-discharge
- Excellent performance in high shock environments

Applications
- Launch vehicles and other rockets
- Other high reliability applications

<table>
<thead>
<tr>
<th>Nominal voltage (V)</th>
<th>3.7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity (Ah)</td>
<td></td>
</tr>
<tr>
<td>Rated</td>
<td>40</td>
</tr>
<tr>
<td>Nominal</td>
<td>44</td>
</tr>
<tr>
<td>Width</td>
<td>137</td>
</tr>
<tr>
<td>Thickness</td>
<td>31</td>
</tr>
<tr>
<td>Height</td>
<td>165</td>
</tr>
<tr>
<td>Weight (Kg)</td>
<td>1.6</td>
</tr>
<tr>
<td>Specific Energy (Wh/kg)</td>
<td>102</td>
</tr>
<tr>
<td>Energy Density (Wh/l)</td>
<td>244</td>
</tr>
<tr>
<td>Maximum charge rate(CA)</td>
<td>0.5</td>
</tr>
<tr>
<td>Maximum discharge rate(CA)</td>
<td>1.0 (pulse 3.0,1.0sec)</td>
</tr>
<tr>
<td>Recommended temperature range</td>
<td></td>
</tr>
<tr>
<td>Charge</td>
<td>10°C ~ 30°C</td>
</tr>
<tr>
<td>Discharge</td>
<td>0°C ~ 65°C</td>
</tr>
<tr>
<td>Storage</td>
<td>-5°C ~ 4°C</td>
</tr>
<tr>
<td>Maximum AC impedance at BOL</td>
<td>1.1mΩ</td>
</tr>
</tbody>
</table>
**Technology**

- **Lithium Cobalt Oxide cathode material:** Provides the best combination of high reliability, high energy storage, and long life.
- **Elliptic cylindrical construction:** Allows for better thermal management and packaging efficiency when compared to cylindrical cells.

**Cell Characteristics**

- **Charge Characteristics of LFC40 at BOL:**
  - Voltage vs. Time: 2.0 to 4.5 Volts
  - Test Condition: Charge: 0.4 A/4.1 V (CC/CD) for 8 hours
  - Temperature: 25 degrees C

- **Discharge Characteristics of LFC40 at BOL:**
  - Discharge Capacity vs. Time: 2.0 to 5.0 Ampere Hours
  - Test Condition: Discharge: 0.4 A (CC) for 8 hours
  - Temperature: 25 degrees C

- **Discharge Characteristics of LFC40 at various temperature:**
  - Discharge Capacity vs. Temperature: 2.0 to 5.0 Ampere Hours
  - Test Condition: Charge: 0.4 A/4.1 V (CC/CD) for 8 hours
  - Discharge: 0.2 A to 2.75 V
  - Temperature: 25, 20, 10 degrees C

- **Changes in Discharge Capacity of LFC40 during Cycle Testing:**
  - Discharge Capacity vs. Number of Cycles: 0 to 50 Ampere Hours
  - Test Condition: Charge: 0.4 A/4.1 V (CC/CD) for 8 hours
  - Discharge: 0.2 A to 2.75 V
  - Temperature: 25 degrees C

**Safety and Handling information**

To insure personnel safety and specified product performance, read and understand the LFC40 Instruction Manual before handling, testing, or installing the cells. Inappropriate handling or application of the cells can result in reduced cell life and performance, electrolyte leakage, high cell temperatures, and even the possibility of smoke generation and fire.

GS Yuasa strongly recommends that LFC40 cells be utilized with appropriate battery protection circuitry. Recommended protection circuitry requirements are available upon request. GS Yuasa can also provide battery systems, complete with cell balancing, monitoring and protection electronics for your specific application.

Cell design details and specifications are subject to change without notice.

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