EAGLEPICHER TECHNOLOGIES

Concept Design

Primary CF_x Hybrid Cell

Li/CF_x-MnO_2 Primary Electrochemistry
Rate-Optimized, High Energy Pouch Cell

High-Rate, Reliable Cell for Operation at Extreme Temperatures

Specifications

Part Number	LCF-145
Dimensions with folded sides	49.8 x 58.0 x 5.2 mm (1.96 x 2.28 x 0.21 in.)
Weight	23.9 g (0.05 lb)
Continuous Current/Power[1]	8 A/20 W
Maximum Pulse Current[2]	35 A/75 W for 5 sec
Voltage Range, Nominal	3.3-1.5 V, 2.65 V
Operating Temperature	-40 to 60°C (-40 to 140°F)
Capacity/Energy	3.5 Ah/9 Wh

[1] Thermal management can improve discharge capabilities - contact EaglePicher for specific application details

[2] Maximum pulse current/power is dependent upon depth of discharge, as well as cell and ambient thermal conditions; higher pulse current/power can be achieved depending on test conditions. Contact EaglePicher for specific application details.

Features and Benefits

- Higher energy and lower weight than Li/MnO_2
- Optimized electrolyte for low-temperature performance
  - Minimal voltage delay at -40°C (-40°F)
- No maintenance required
  - No recharge infrastructure, immediately deployable
  - Low self-discharge: 0.7%/year at 20°C (68°F)
  - Long shelf-life:
    - >7 years at 20°C (68°F)
    - 5 years at ≤ 45°C (113°F)
- Shut-down separator
- Safety demonstrated to UN/DOT 38.3 and MIL-PRF-32271A
  - Altitude, thermal, vibration, shock and impact
  - External short circuit and forced discharge
  - Nail penetration, crush and impact
- Improved battery packaging efficiency over cylindrical cells

Applications

- High-power applications at low temperature
- Portable one-time use power
- Survival and emergency equipment
- Surveillance
- Vehicles: unmanned aerial (UAV), autonomous (AUV), unmanned aircraft systems (UAS) and unmanned underwater (UUV)
- Loitering missiles and munitions

Concept Design - Product Under Development

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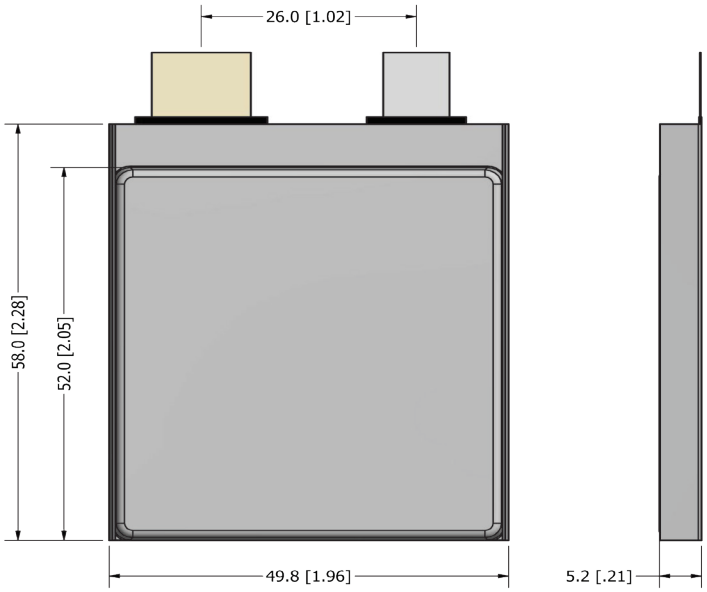
Primary CF_x Hybrid Cell

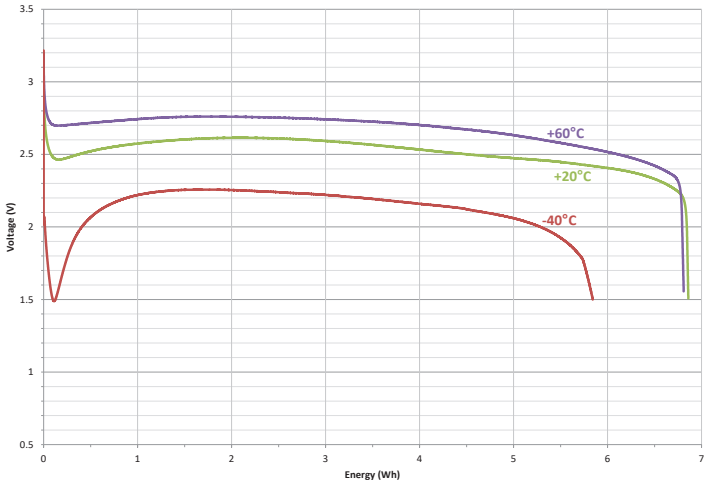


Shown with folded sides. Dimensions: mm(in.)

	Energy as a Function of Temperature[1]				
Operating Temperature °C (°F)	Discharge Rate (W)	Capacity (Ah)	Energy (Wh)	Specific Energy (Wh/kg)	Energy Density (Wh/L)
-40 (-40)	20	2.8	5.8	243	400
20 (68)	20	2.7	6.9	289	476
60 (140)	20	2.6	6.8	285	469

[1] Single-cell capability; adequate heat dissipation in the form of conductive mounting and convective airflow is required once integrated into a battery within the application (≥17W/m²K).

Energy versus 20 W Continuous Discharge Power



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