The LTC4231 Hot Swap™ controller delivers a micropower solution for safe insertion and removal of boards and batteries in energy conscious applications. Device I\textsubscript{Q} (quiescent current) is a mere 4µA while a strobed ground reduces the input voltage divider current by 50x. The system is completely protected against battery deep discharge, output overload or short-circuit, overvoltage and reverse battery connection. Placing the LTC4231 in shutdown mode reduces its I\textsubscript{Q} to 0.3µA and turns off the external N-channel power MOSFETs to disconnect downstream circuits, extending battery standby time.

**Features**
- Enables Safe Board or Battery Insertion and Removal
- Low 4µA Quiescent Current, 0.3µA in Shutdown
- 2.7V to 36V Operating Range
- Reverse Battery Protection to –40V
- Overcurrent Protection
  - Two Level: Circuit Breaker with Higher Current Limit
  - Adjustable Circuit Breaker Delay
  - 1µs (max) Fast Current Limit Response
  - Automatic Retry or Latchoff After Current Fault
- Overvoltage and Undervoltage Protection
  - Adjustable Undervoltage Hysteresis
  - Divider Strobed Ground for Reduced Current
- Controls Single or Back-to-Back N-Channel MOSFETs
- MOSFET On Status Output
- 12-Pin MSOP and 3mm × 3mm QFN Packages

**I\textsubscript{Q} vs Input Voltage**

![I\textsubscript{Q} vs Input Voltage graph](image)
Micropower Devices for Building Battery Powered Systems

**LTC2955 Pushbutton On/Off Controller with Automatic Turn-On**
- Automatic Turn-On with Voltage Monitor Input
- 1.2µA Quiescent Current
- 1.5V to 36V Operating Range
- PB Input: ±36V Range, ±25kV ESD HBM
- Simple Interface Allows Graceful μP Shutdown
- Adjustable Turn-Off Timer
- -40°C to 125°C Operation
- 10-Pin 3mm x 2mm DFN and 8-Pin ThinSOT™ Packages

**LTC2960 Nano-Current Two Input Voltage Supervisor for Reset Generation**
- 850nA Quiescent Current
- 2.5V to 36V Operating Range
- ±1.5% (Max) Threshold Accuracy
- Adjustable Reset Threshold
- Manual Reset Input
- -40°C to 125°C Operation
- 8-Pin TSOT-23 and 2mm x 2mm DFN Packages

**LTC4359 Ideal Diode Controller for Lossless Solar Panel Isolation**
- Low Loss Replacement for Power Schottky Diode
- 150µA Quiescent Current, 9µA in Shutdown
- 4V to 80V Operating Range
- On/Off Control of Forward Path
- Reverse Input Protection to –40V
- -40°C to 125°C Operation
- 8-Pin MSOP and 6-Pin 2mm x 3mm DFN Packages

**Other Battery Friendly Devices**

<table>
<thead>
<tr>
<th>Device</th>
<th>$V_{IN}$ (V)</th>
<th>$V_{IN,REV}$ (V)</th>
<th>$I_{Q}$ (µA)</th>
<th>$I_{SHDN}$ (µA)</th>
<th>Function</th>
<th>Package (mm x mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTC4361</td>
<td>2.5 to 5.5</td>
<td></td>
<td>230</td>
<td>1.5</td>
<td>Overcurrent and 80V Overvoltage Protection</td>
<td>TSOT23-8, 2 x 2 DFN-8</td>
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<tr>
<td>LTC4364</td>
<td>4 to 80</td>
<td>–40</td>
<td>483</td>
<td>10</td>
<td>Surge Stopper/Hot Swap with Ideal Diode</td>
<td>MSOP-16, SO-16, 4 x 3 DFN-14</td>
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<tr>
<td>LTC4365</td>
<td>2.5 to 34</td>
<td>–40</td>
<td>125</td>
<td>10</td>
<td>OV, UV and Reverse Input Protection</td>
<td>TSOT23-8, 3 x 2 DFN-8</td>
</tr>
<tr>
<td>LTC4417</td>
<td>2.5 to 36</td>
<td>–42</td>
<td>28</td>
<td>15</td>
<td>Prioritized Supply Selection from Three Inputs</td>
<td>SSOP-24, 4 x 4 QFN-24</td>
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</tbody>
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