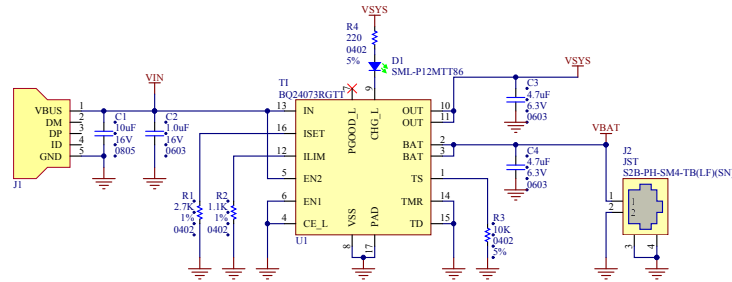


## Battery and Charge Controller



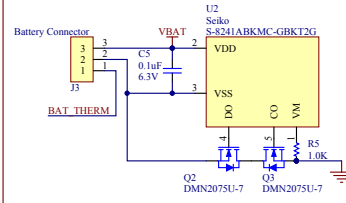
ISET sets maximum battery fast-charge current, which should not exceed C/3, where C is battery capacity in mAh.

ILIM sets maximum system input current, which is the sum of system load and charge current. This allows system load to exceed the maximum fast charge current without a battery installed.

This example shows a system with Ilim set to max, and Iset configured for a 1000 mAh battery.

ILIM = KILIM / RILIM  
 ILIM = 1610 AOhms / 1.1 kOhms = 1.46A  
 ISET = KISET / RISET  
 ISET = 890 AOhms / 2.7kOhms = 329 mA

## Over-Discharge Protection



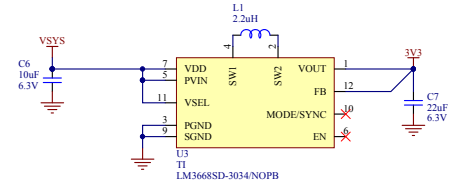
Over-discharge of a lithium-ion or lithium-polymer battery will result in decreased capacity and service life, and can cause serious damage to the battery.

The system rail is "locked out" if the battery drops below the threshold voltage (2.5V). The rail remains locked out until the battery voltage exceeds 2.9V.

While lock-out threshold is well below minimum operating voltage of the battery, this condition will occur on transients near the end of battery life. Hysteresis on the system lock-out prevents boot-looping at the end of battery life.

If your battery pack includes on-board overdischarge protection, this block can be excluded.

## 3.3V Buck/Boost Power Supply



A single lithium-ion or lithium-polymer cell operates from 4.2V down to 3.2V. A buck/boost converter allows the system to run at 3.3V even though the battery will cross this voltage during a single discharge cycle.

As buck/boost converters are more expensive and less efficient than a simple buck converter, it is highly recommended that a buck converter be used if the system can tolerate running at 3.0V or less.

See solution A for an example of a 3.0V buck converter with a lithium-ion battery.

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Design: <b>Solution B</b>	Rev: <b>1.0</b>	Electric Imp 5050 El Camino Real, #221 Los Altos, CA 94022	
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