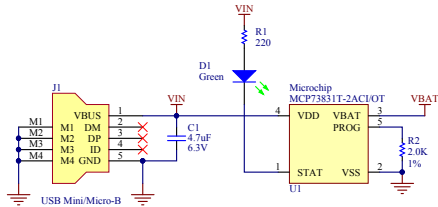


Battery and Charge Controller

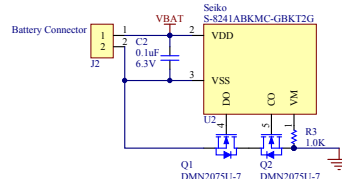


The MCP73831 is a simple linear charger and does not include PowerPath or cell temperature monitoring. For systems which need to carefully avoid continuous battery top-off when left on the charger, please see Solution A.

Rset (R2) sets preconditioning, fast charge, and termination current limits.
 $Rset = 1000 / Rset(A)$
 Rset must be within $2.0k \leq Rset \leq 67k$.

Max charge current recommended is $C/3$, where C is battery capacity in mAh. Rset is shown for $C = 1500$ mAh:
 $1500 \text{ mAh} / 3 \text{ hours} = 500 \text{ mA}$, so $Rset = 2.0k$.

Over-Discharge Protection



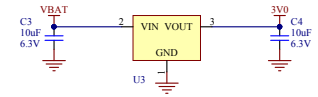
Over-discharge of a lithium-ion or lithium-polymer battery will result in decreased capacity and service life, and can cause serious damage to the battery.

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.

Power Supply



The MCP1700 is a simple 3.0V, Low-Iq LDO, capable of providing up to 250 mA of continuous current. Because the LDO is fixed at 3.0V, there is sufficient headroom to maintain drop-out.

Note that U3 uses the SOT-89 package rather than the SOT-23 package for thermal reasons.

For designs requiring more power, see Solution A for a buck power supply which can be used in place of this portion of Solution C.

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