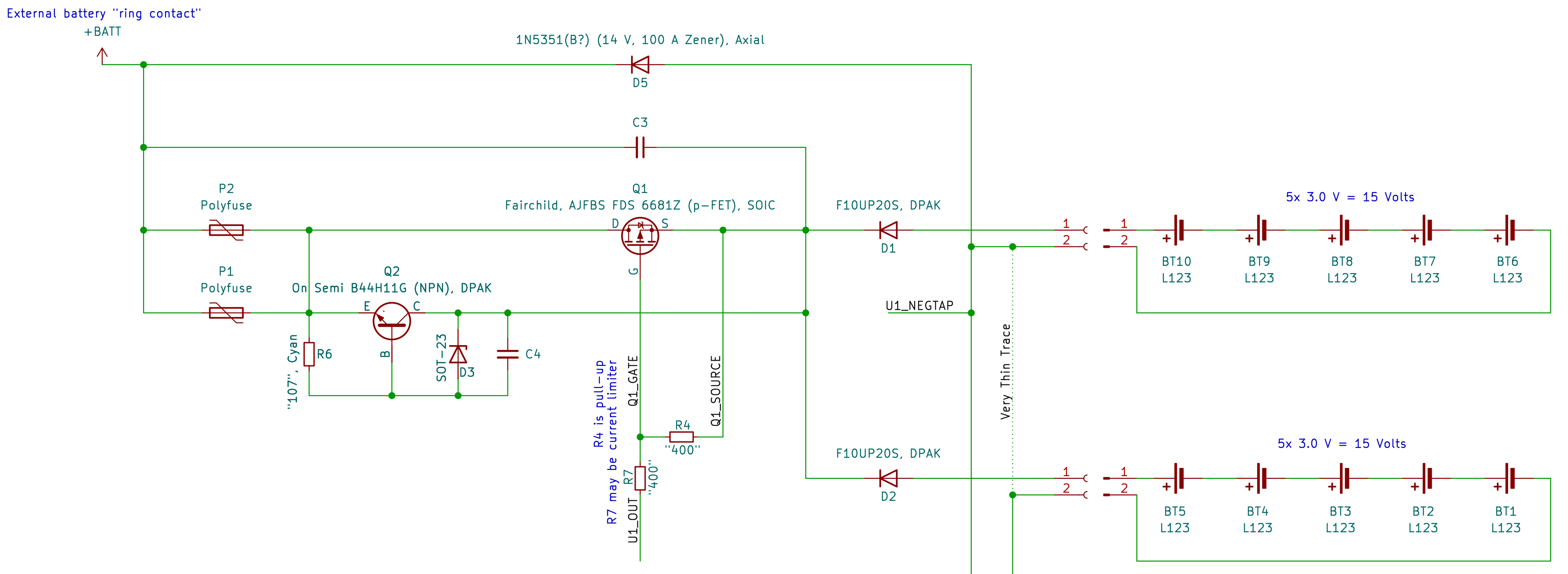

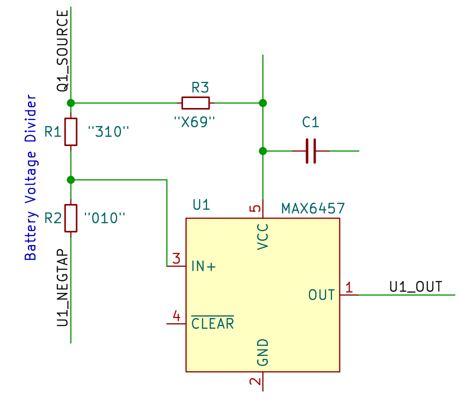

Notes:

Parts in this schematic are parts that are populated on the PCB. Empty footprints and unused traces aren't included!

D1 and D2 prevent back-feeding into each cell string, and provide a nominal voltage of "15 V". Pretty standard "power-OR" configuration.
Note the extremely thin (10 mil?) trace between the negative poles - make sure the end-application ties both "tabs" together internally.

The "original" power diode parts seem to be made by ON Semi, but ON Semi doesn't provide this part in DPAK package.
Are these parts second sourced by KOI?

The Forward Voltage of the diodes is surprisingly high for a portable electronic device.
At one amp, V_F is 0.75 V, which works out to 0.75 W of heat.

Q1 is a pretty standard p-FET, in SOIC package.
Q1 is controlled by U1 (AEAA). U1 appears to be the only "active" part on the board.
A Google search of "SOT-23-5 AEAA" returns MAX6457UKD0A-T; a Maxim Integrated "High-Voltage, Low-Current Voltage Monitors in SOT Packages".
Circuit layout and other context strongly suggests this is correct.

Q2 and the surrounding components are a bit of a mystery to me.
The printing/etching on D3 is unreadable, but given the package and the PCB silkscreen, I strongly suspect it's a Zener diode voltage regulator.
R6 is physically a different color than the rest of the resistors on the board - maybe a "high" tolerance part?
My best guess is the complex effects a crude voltage cut-off system, i.e. battery output is switched off if the cell string drops below a given voltage.
BJTs are current-driven devices (unlike FETs) so there is some analog magic going on here, lending credence to the theory that R6 is some high precision device.

But why is there a full, secondary, parallel power path? Does it serve as a "backup" for the Q1/U1 complex?
Or is this entirely vestigial, an artifact of the manufacturing process?

Potential evidence for the latter is the fact there are two identical fuses in parallel on the board.
Putting two fuses in parallel won't result in a larger hold/break current due to rating tolerance matching issues.
Fuses don't act like typical resistors; they don't "share" current. This is an extremely basic mistake.
If one needs more current transfer capability, they need to specify a larger fuse.

I wonder if this board went only part-way through the manufacturing process with a BOM for the Q2 complex, including placement of P1 fuse.
Then, for whatever reason, some number of assemblies were redirected to another line and populated with the BOM for the Q1 complex,
which included placement of the P2 fuse - which just happened to be the same part/value as P1.

The Q2 complex (and P1) may effectively do nothing, and only exists because Harris didn't want to throw away an entire production run,
or pay for manually reworking the assemblies.

D5 is presumably a reverse polarity/back-EMF protection diode. C1, C3, C4 are almost certainly some kind of decouple capacitor.

Teardown "L123 Battery Holder"
Harris 12050-2005-01, RF-5911-PS002

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