

The diagram illustrates a Battery Control system with the following components and connections:

- LM4120 (U1):** A precision cent divider. REF is connected to 5Vref, GND to GND, Enable to GND, and VIN to PACK+. VOUT is connected to J1 (Conn_01x01_Male) and C1 (0.022uF) to GND. Max Output Current is 5mA.
- Resistors:**
 - R1 (898k) and R2 (898k) are connected to 5Vref and BatTemp (TH1 TDK10k) to GND.
 - R6 (4.87k) is connected to 5Vref and HighTemp to GND.
 - R8 (898k) and R9 (28k) are connected to 5Vref and LowTemp to GND.
 - R10 (332k) and R11 (167k) are connected to PACK+ and BATdiv3 to GND.
 - R12 (1.64M) and R13 (374k) are connected to 5Vref and 933mVref to GND.
 - R14 (1.43M) and R15 (562k) are connected to 5Vref and 1.4Vref to GND.
- LM393 (U3):** A dual comparator. Out1 is connected to Vcc, In1- to BatTemp, In1+ to HighTemp, In2- to LowTemp, In2+ to BATdiv3, and Vcc- to GND. Out2 is connected to PACK+ and TempOK to 5Vref through R17 (284k).
- LM393 (U5):** A dual comparator. Out1 is connected to Vcc, In1- to ChargeOK, In1+ to BATdiv3, In2- to 1.4Vref, and In2+ to GND. Out2 is connected to PACK+ and DischargeOK to 5Vref through R22 (332k).
- SN74LVC2G08 (U7):** A 2-input CMOS NAND gate. 1A is DischargeOK, 1B is TempOK, 2Y is ChargeEnable, and 2A is TempOK. VCC is connected to PACK+ and GND to GND.
- Capacitors:**
 - C1 (0.022uF) is connected to VOUT to GND.
 - C9 (1u) is connected to PACK+ to GND (Comparator Supply Bypass Capacitor).
 - C10 (0.1u) is connected to PACK+ to GND (AND GATE Supply Bypass Capacitor).
- Connectors:**
 - J1 (Conn_01x01_Male) is connected to VOUT.
 - J3 (Conn_01x05_Male) is connected to BatTemp, HighTemp, BATdiv3, LowTemp, and TempOK.
 - J5 (Conn_01x05_Male) is connected to ChargeOK, BATdiv3, 933mVref, 1.4Vref, and DischargeOK.
 - J9 (Conn_01x06_Male) is connected to DischargeOK, TempOK, ChargeEnable, TempOK, ChargeOK, and DischargeEnable.
- Other Labels:**
 - NTCG Series Thermistor (TH1 TDK10k) is connected to BatTemp.
 - 5Vref is the reference voltage for several components.
 - PACK+ is the battery pack positive terminal.
 - GND is the ground reference.

Battery Protection, Coloumb Counter and Discharge/Charge Load switches

BQ29707 Test Points

J6 pins 1,2,3 are BQ29709 pins 1,2,3 respectively.
 J7 pins 1,2,3 are BQ29709 pins 4,5,6 respectively.

Discharge Current Threshold 3.4A

Charge Current Threshold 1.625A

Rsense = 50mV / Imax, take Imax = 3.4A

Rds_on = 11 milliOhm each
 Overcurrent triggers at 4A

Use BQ29709:
 OVP: 4.325V
 UVP: 2.5V
 Comparators should kick in first

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