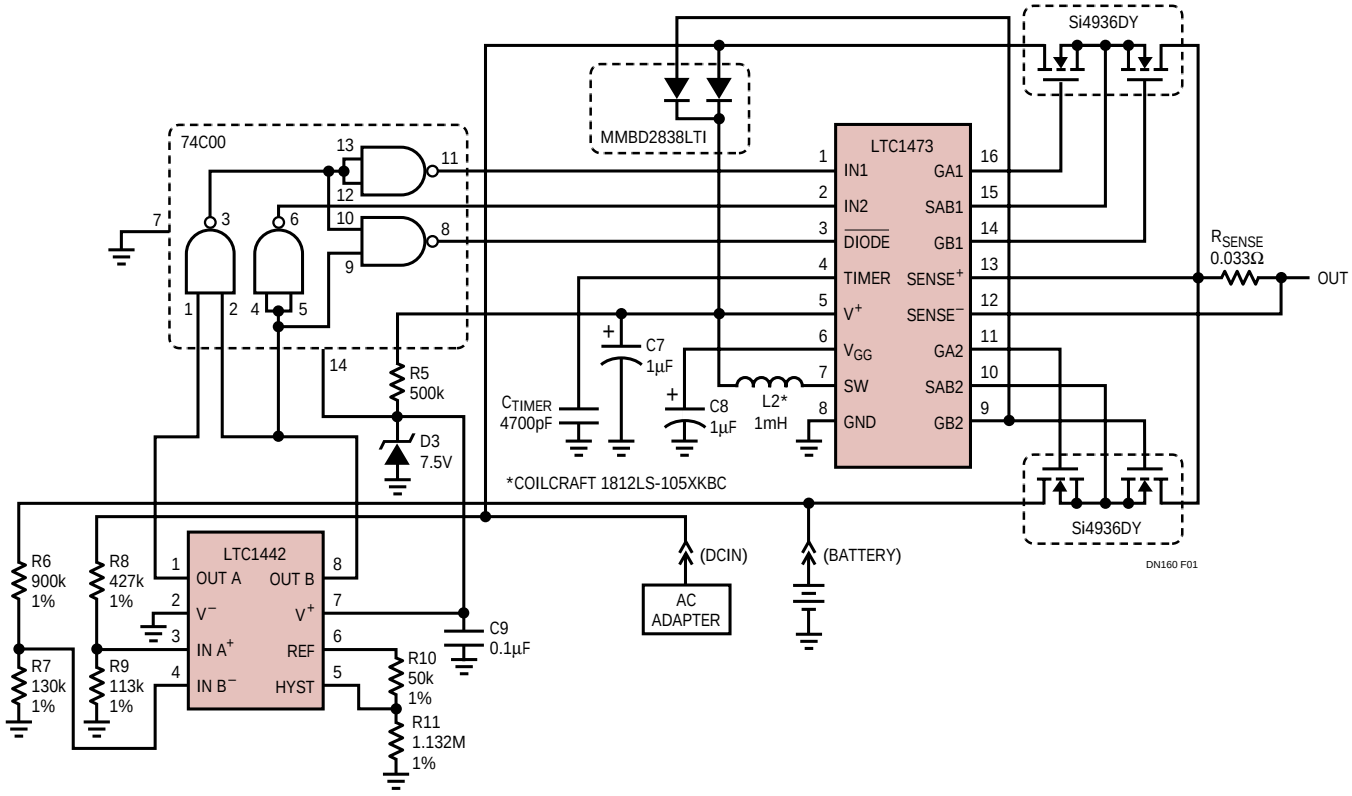
Dual PowerPath™ Controller Simplifies Power Management

As the demand for portable electronics with multiple batteries continues to grow, so does the need for simple and efficient solutions for switching between batteries. The LTC1473 simplifies the design of circuitry for switching between two batteries or a battery and an AC adapter.

This circuit provides a protected automatic switchover between a battery and a power source connected at DCIN. Under normal conditions, this circuit will route the voltage at DCIN to the output. If the voltage at DCIN drops below 9.75V, DCIN is deselected and the battery voltage is routed to the output. If the battery voltage is less than 5.9V, each switch is made to mimic a diode, allowing power to flow from the highest potential source to the output.

The inrush current is limited to 6A with a 0.033Ω R_{SENSE}. The fault timer is set to 1.1ms with a 4700pF C_{TIMER} capacitor. If a MOSFET switch is in current limit for more than 1.1ms, an internal latch in the LTC1473 is set and the MOSFET switch is turned off. An internal micropower boost regulator supplies the gate drive for the N-channel MOSFET switches.

The LTC1442 is an ultralow power dual comparator with a precision 1.182V reference. This comparator monitors the voltage at DCIN and the battery voltage and selects which MOSFET switch to turn on. Simple logic, comprising CMOS NAND gates, decodes the comparator outputs to control the inputs of the LTC1473. A 7.5V Zener shunt regulator in series with a 500k resistor supplies power for both the CMOS NAND gates and the LTC1442.



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