

## Inexpensive Power OK signal for PC

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It is often handy to have an LED indicate "Power OK" status in electronic equipment. Single supply designs need only a resistor and LED. A personal computer, on the other hand, has four supply voltages (+5V, -5V, +12V, and -12V) requiring a more sophisticated circuit.

A typical approach would use a comparator for each supply voltage. Open collector outputs can be wire-OR'ed to create the OK signal. Performance is good but the circuit is relatively costly. If accurate voltage monitoring is not needed then the simple and inexpensive circuit of Figure 1 can be used. Each supply must be operational for LED D1 to be lit.

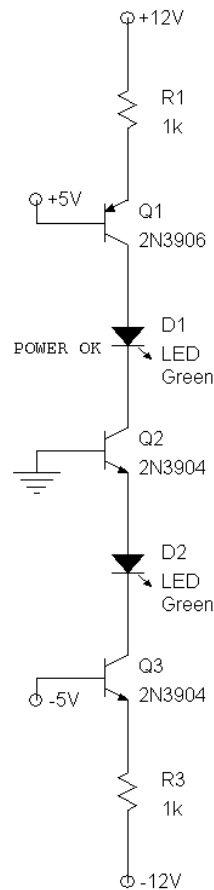


Figure 1. Schematic of PC power supply OK signal.

In normal operation Q1 and R1 create a current source of about 6.3mA (good enough for most LEDs). Similarly Q3 and R3 create a 6.3mA current sink. Q2 acts as a common base amplifier to pass the current. If the current sink is greater than the source then Q2 will saturate with the base current making up the difference. If source is greater than sink Q1 will saturate. In either case the Power OK LED D1 will be lit. As the +12V supply drops the D1 gradually gets dimmer and finally extinguishes when the supply goes below +6V. If the +5V supply drops below about 1V then D1 turns off. Operation of the negative side is similar except the threshold for the -5V supply is at about -2V. D2 can be replaced by with a diode if desired. For higher thresholds use two diodes in series for D1 and D2.