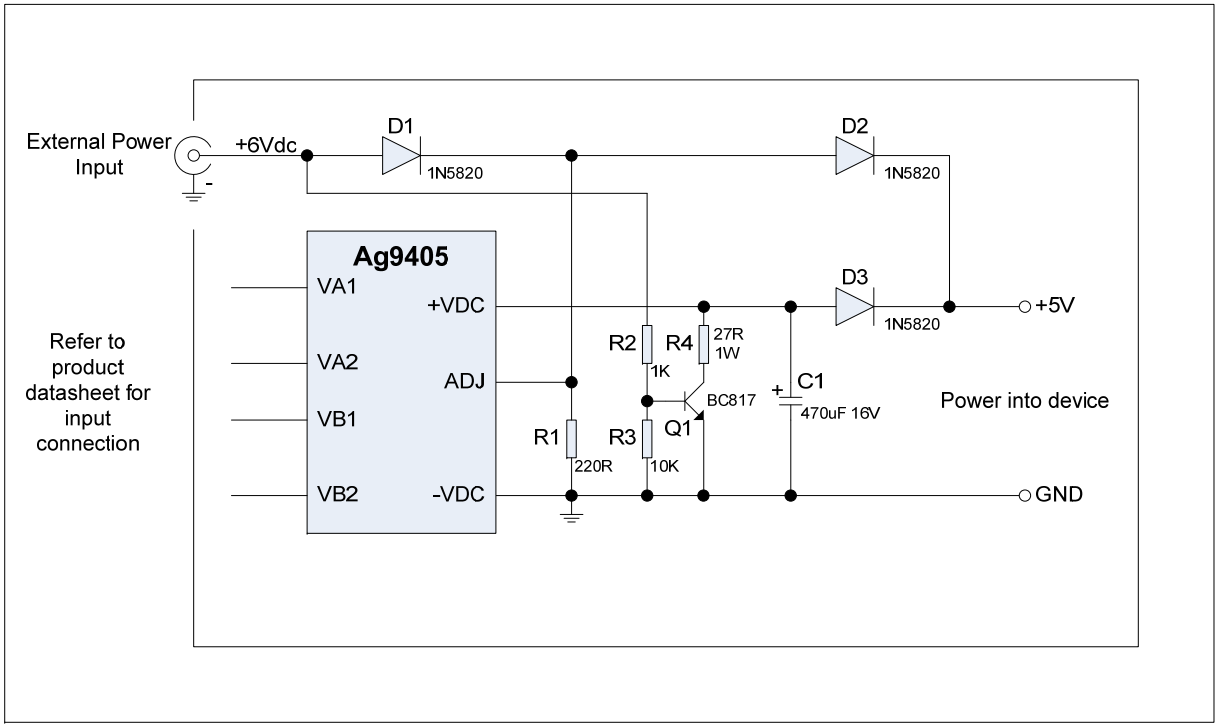
Gating an Ag9405 Output with an External Power Supply

With only the Ethernet Data & Power Input connected, the ADJ input of the Ag9405 is connected to GND via R1. This will increase the output voltage at +VDC to nominal +10% (~ +5.5V).

D3 is a 1N5820 Schottky diode with a forward voltage drop of ~ 0.5V, therefore the voltage supplied to the device will be ~ +5.0V.

If an external +6Vdc supply is also connected, D1 will take the ADJ input to ~5.5V reducing the output voltage at +VDC to nominal –10% (~ +4.5V). At the same time D2 will start to conduct maintaining the supply to the device at ~ +5.0V. The +6Vdc supply will also turn Q1 ON via R2, this will connect the load resistor R4 across the Ag9405 output to ensure the part drive its minimum load.

If the external +6Vdc supply is removed the ADJ input will go low again, +VDC will return to ~ +5.5V and the Ag9405 will resume supplying power to the device via D3. Q1 will turn OFF and the load resistor R4 will be removed.

C1 is used to remove the effect of an output load step change on the Ag9405.