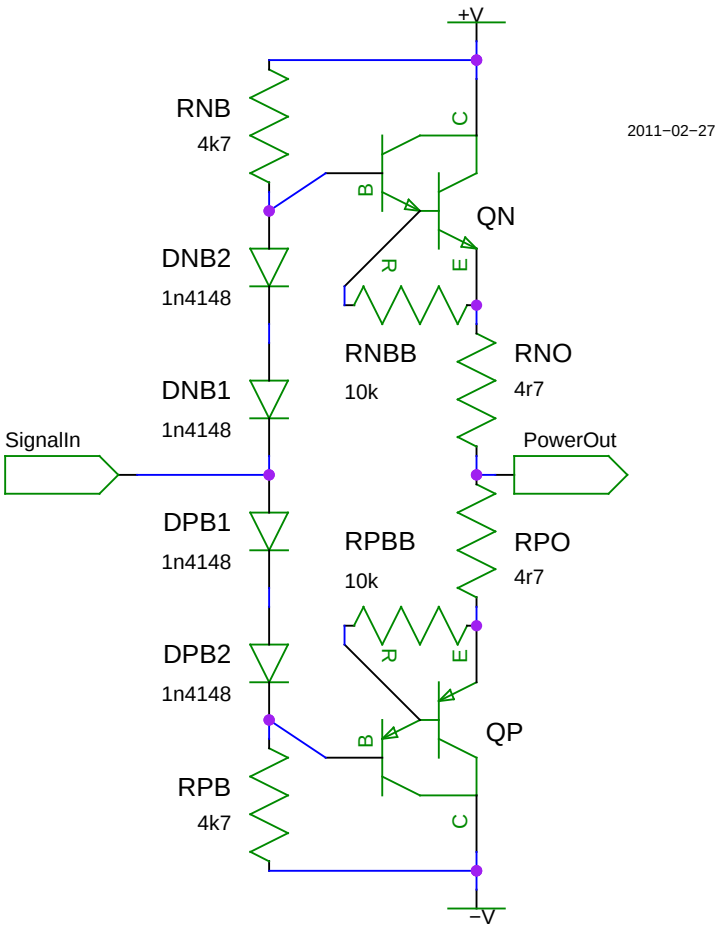
Darlington Output Boosters



Darlington output boosters are nearly identical to normal, so only part is shown. The only real difference is the "stacked" transistors, the base to emitter resistors, and the extra biasing diodes.

Pre−made Darlington's aren't overly good. It is recommended to make your own with a small signal transistor (left side) feeding into a power transistor (right side). The small signal transistor should have a high beta and enough emitter current to power the base of the power transistor.

The beta of both transistors is multiplied together for a new beta. This higher beta allows for much smaller currents to control much larger currents on the output (compared to a single transistor alone).

The base resistor is optional but will help with higher frequency handling. It helps drain the small signal transistor's emitter faster than it would going through the power transistor's base alone. It should be calculated to pull about 1% of the small signal transistor's current capacity at full voltage. Note that even with the base resistor, a Darlington cannot pull the full frequency a single transistor could because of the signal propagation delay.

The extra biasing diodes are needed because of the stacked transistors (one diode per transistor). These will cause another small voltage drop that should be accounted for.