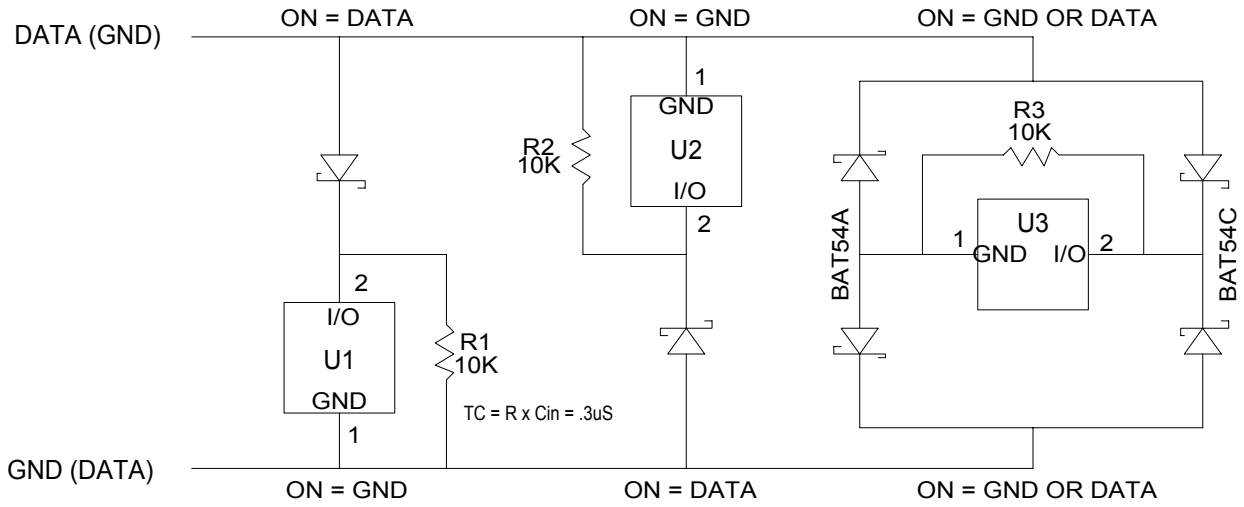
POLARITY INDEPENDENT 1-WIRE HOOKUP



If top signal is DATA and lower signal is GND, U1 and U3 are on. U2 is off.

If top signal is GND and lower signal is DATA, U2 and U3 are on. U1 is off.

The resistor across the 1-Wire device discharges the internal capacitance in TC = R x Cin = .3uS.

If the bus is connected to two ports of a microprocessor, one port could be DATA and the other GND. In this configuration, U1 and U3 are on-line. U2 is off-line. When the port pin designation is reversed, with the pin that was DATA now used as GND, and vice-versa, U2 and U3 are on-line and U1 is off-line. This technique has the advantage over simply running two separate nets from the ports in that it is able to read selected 1-Wire devices connected like U3 regardless of which microprocessor port is acting as DATA.
Effectively, this provides three nets using two wires; one net for each polarity arrangement of the port pins plus a common 1-Wire net.

This allows a division of 1-Wire parts to reduce loading on the line and decrease communication time during Search operations. It also allows 1-Wire devices such as temperature and humidity sensors that represent heavy loads to be separated from other more conventional parts to reduce interference.