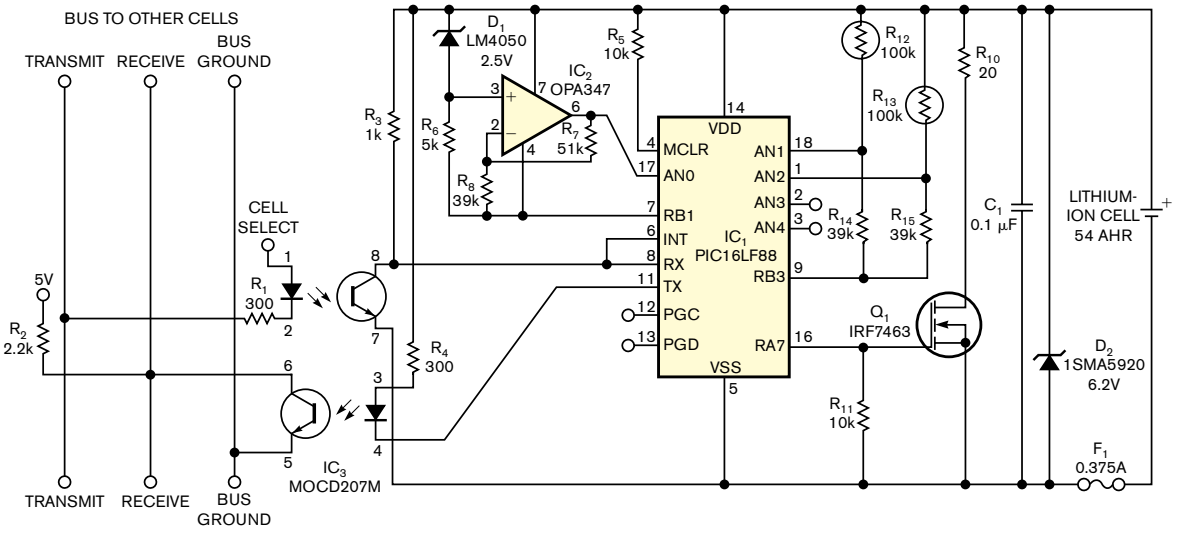

Figure 1 A microcontroller connects directly to a lithium-ion cell and a battery string to monitor the cell's voltage and temperature. This process shunts current through R_{10} under program control to equalize the cell's self-discharge. Each cell in the battery gets its own monitor. The monitors communicate with a controller through optoisolators.