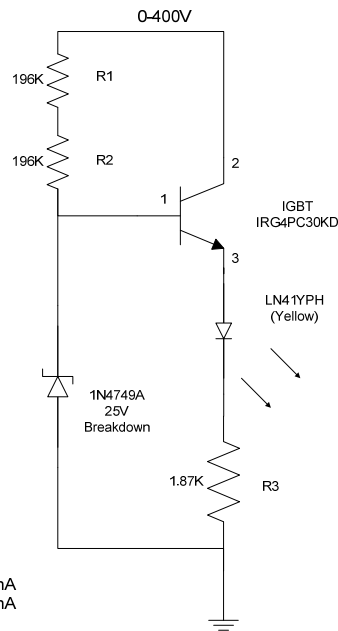


# Memorandum

**To:** Senior Management  
**From:** Alyssa Batula  
**Date:** 4/15/2009  
**Re:** RPI Indicators

## 30V Indicator Circuit

The 30V indicator light will be lit whenever 30V or higher is coming into the system from the PV array. When prototyped (with a 20V zener diode in place of the 25V zener diode) The light began to turn on at 8V and was fully on at 12V. The prototype successfully ran a test from 0-310V. The only part dissipating more than  $\frac{1}{4}$ W is the IGBT, which dissipates 3.12W. The total power used by the circuit is 3.64W.



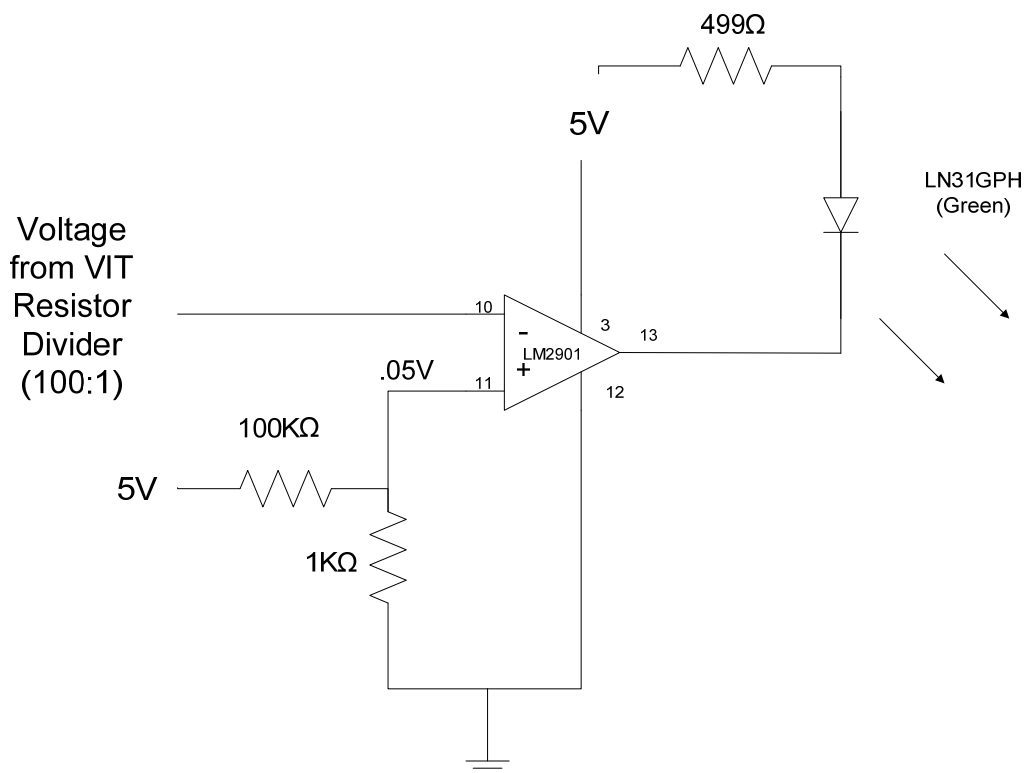
Power:

R1: P = .18W; V = 187.5; I = .96mA  
R2: P = .18W; V = 187.5; I = .96mA  
R3: P = .12W; V = 15V; I = 8mA  
IGBT: P = 3.12W; V = 390; I = 8mA  
Zener: P = .024W; V = 25V; I = .96mA  
LED: P = .016W; V = 2V; I = 8mA

Total: 3.64W

## System Power Circuit

The system power circuit will be lit whenever there is power being provided to the system from the PV array. For this circuit, system power was chosen to be 5V coming in from the array. When prototyped at low voltages, the indicator light came on when .05V (representing 5V from the PV array) was applied to the input. The total power dissipated by this circuit is .06W.



LM2901  
1.645uW from input  
.01W supply

LED  
.05W

Resistor Divider  
0.25mW power

Total: .06W