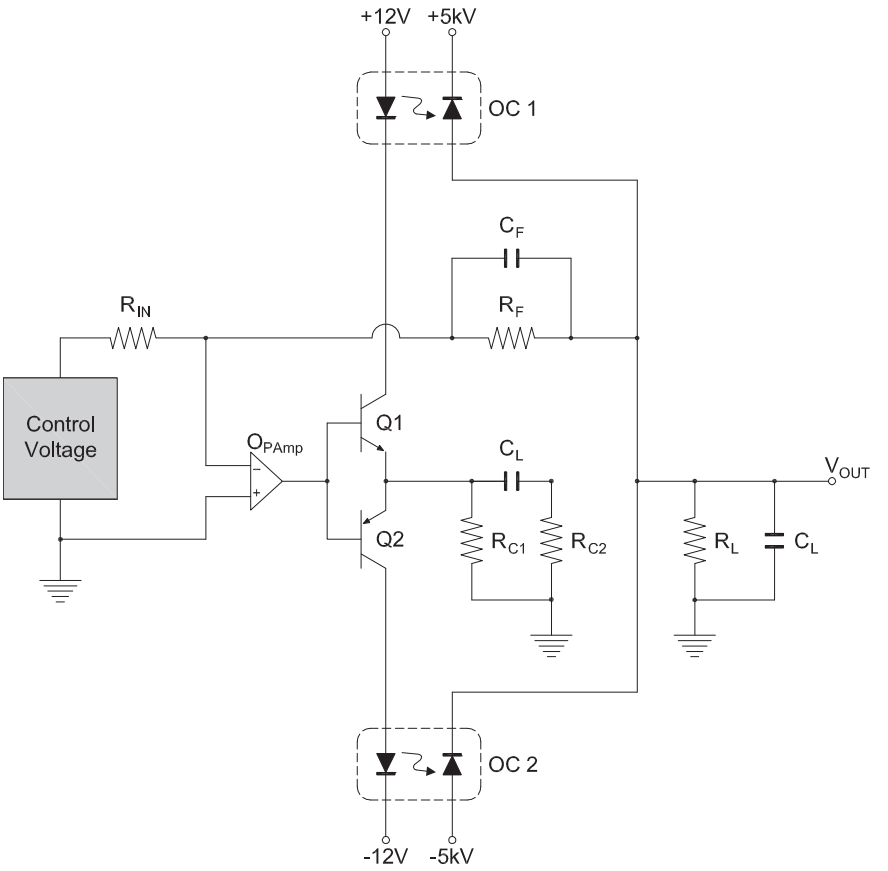
Optocoupler Application Note

Example of a High Voltage OP AMP



Circuit Notes / Application Considerations

- Complimentary transistor pair (Q1 and Q2) drives optocoupler LED's producing complimentary photo currents in optocoupler HV diodes.
- Gain of OP-AMP output set by the ratio of R_F/ R_{IN} , inverting the input voltage to the OP-AMP.
- Feedback resistor (R_F) should be as large as practically possible to reduce loading on the output stage.
- The value of C_F must be carefully controlled to optimize stability, reduce ringing, and improve frequency response. C_F should also be kept small to reduce charge stored in the capacitor that could damage the low voltage circuitry.

Dimensions: In. (mm) • All temperatures are ambient unless otherwise noted. • Data subject to change without notice.

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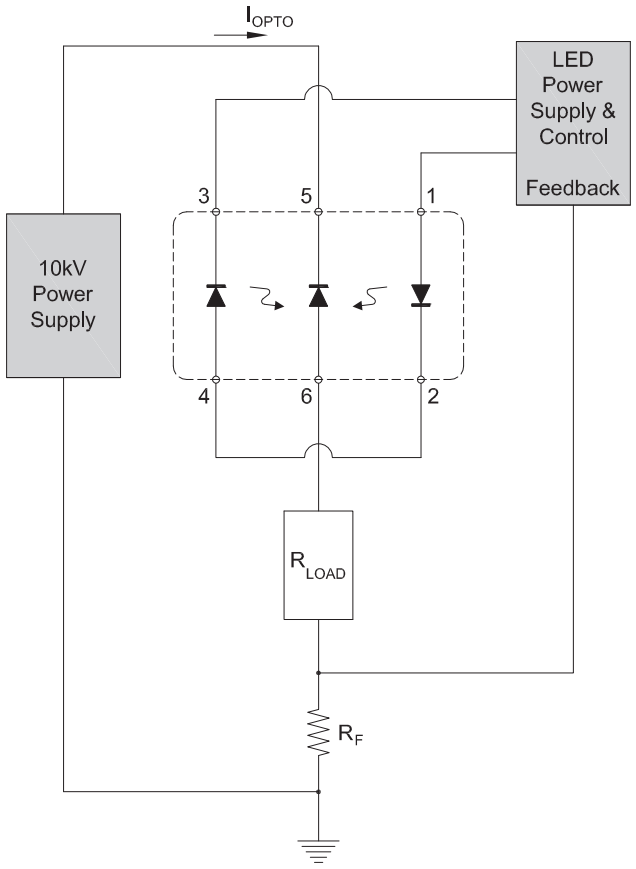
Example of a High Voltage Linear Regulator Circuit



Circuit Notes / Application Considerations

- Gain of optocoupler dependent on applied voltage and individual device charateristics.
- Output voltage can be determined with the following formula:
  $V_{LOAD} = (I_{OPTO}) * (R_{LOAD})$
  $= (I_{LED} * Gain) * (R_{LOAD})$
  For $R_F << R_{LOAD}$
- A resistor can be placed in series with the load and high voltage diode to limit the current through the HV diode and to the load.
- The LED feedback circuit is necessary to account for changes in the gain of the device that can arise from applied voltage to the HV diode, changes in device temperature, and LED aging.

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