

Avoiding Excessive Supply Current in the HS-1840ARH During Start-Up

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Description

If the supply voltages (+Vs and -Vs) and reference voltage (Vref) to the HS-1840ARH are not sequenced properly, it is possible that excessive supply current will flow during start-up. The maximum current that can flow from either supply is 30mA as long as the supply voltages are limited to $\pm 16.5V$. Up to 40mA can flow from either supply if the supply voltages reach $\pm 20V$. Although this condition is not harmful to the part, it can cause system problems if this current is not included in the power supply budget.

The internal level-shifter in the HS-1840ARH is referenced to the negative supply and requires a voltage on Vref of at least 1.2V to initialize its state. If the level-shifter circuitry is not initialized, the part can start drawing excessive supply current once the supply voltages reach about $\pm 5V$. With the previous generation HS-1840RH, the level-shifter was referenced to ground and did not require a voltage on Vref in order to initialize.

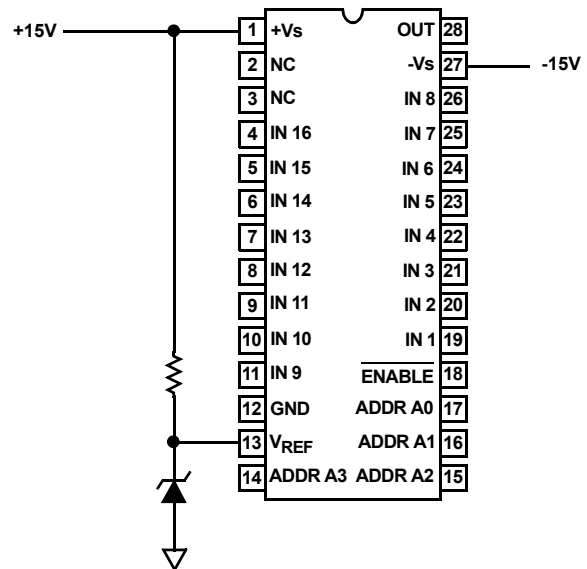
The voltage on the Vref pin sets the logic threshold level of the input address decode circuitry and should be set to $5V \pm 10\%$. Under recommended operating conditions, Vref typically consumes about $22\mu A$ of current, but to account for variations over voltage, temperature and radiation, we recommend that $50\mu A$ be allocated.

The easiest way to prevent excessive supply current during start-up is to derive the reference voltage from the positive supply voltage. This can easily be accomplished using a zener diode and a resistor as shown in the schematic diagram.

For application assistance on this or any other Intersil radiation hardened ICs, please feel free to contact us at the web address shown below.

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Schematic



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