

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

TB402
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Description

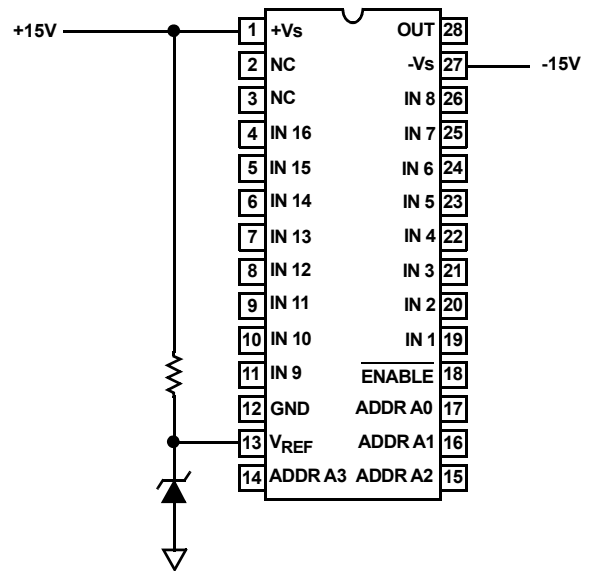
If the supply voltages (+Vs and -Vs) and reference voltage (Vref) to the HS-1840ARH are not sequenced properly, it is possible that excessive supply current will flow during start-up. The maximum current that can flow from either supply is 30mA as long as the supply voltages are limited to $\pm 16.5V$. 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.

Schematic



Revision History

Rev.	Date	Description
1.0	Feb 9, 2021	Updated description. Added Revision History section
0.0	Jan 23, 2003	Initial release

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