Application Report
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TPS62130A Differences to TPS62130

Chris Glaser *Low Power DC/DC*

ABSTRACT

The TPS62130A device differs from the TPS62130 device only in how the PG (power good) pin is controlled when the device is disabled, in UVLO, or in thermal shutdown. The TPS62130A holds the PG pin low during these conditions, while the TPS62130 sets the PG pin high impedance (floating). This is typically only a concern in a system that uses multiple voltage rails or where an output discharge function is required. The devices are pin-to-pin compatible. This application report applies to the entire family of TPS621x0A or TLV621x0A devices: TPS62130A, TPS62140A, TPS62150A, TLV62130A, and TLV62150A. Throughout this document, the abbreviation TPS62130/A refers to both the TPS62130 and TPS62130A.

PG Pin Operation Difference

Configuration 1: PG Pin Pulled Up to the Output Voltage

Figure 1 and Figure 2 show the difference in PG pin operation when the TPS62130/A is disabled without an output load. For these waveforms, the PG pin is connected to the 3.3-V output voltage through a pull-up resistor. In this configuration, there is only a difference in the time it takes for the PG pin to go low. The PG pin goes low in both cases. With an increasing output load, the PG pin goes low faster in both cases.

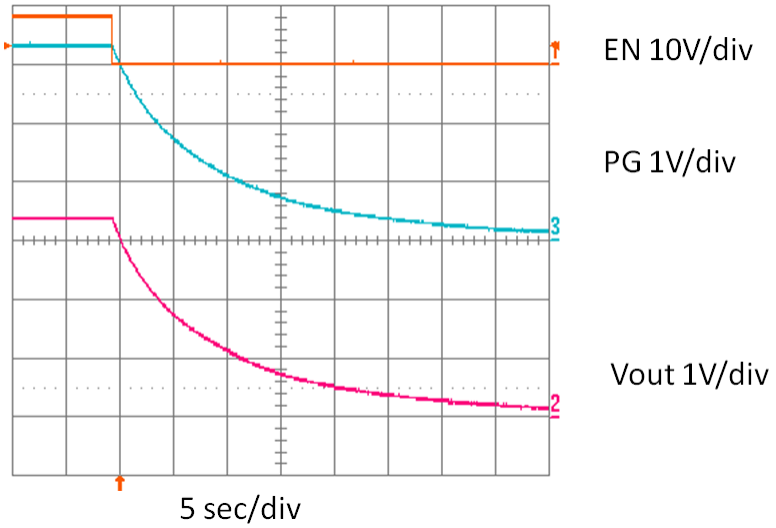

Figure 1. TPS62130 PG Behavior with PG Pulled up to the Output Voltage

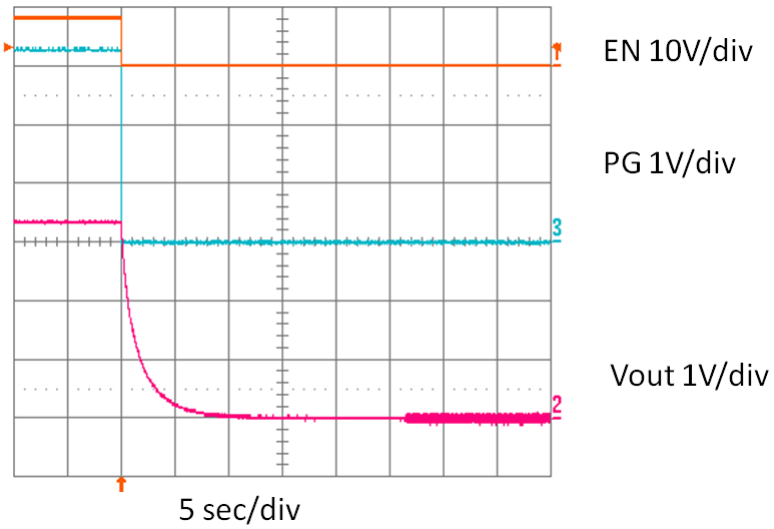

Figure 2. TPS62130A PG Behavior with PG Pulled up to the Output Voltage

Configuration 2: PG Pin Pulled Up to a System Rail

Figure 3 and Figure 4 show the difference in PG pin operation when the TPS62130/A is disabled without an output load and the PG pin is connected, through a pull-up resistor, to a 1.8-V system rail which is not the 3.3-V output voltage of the TPS62130/A. In this configuration, there is an important difference between the device's performance, as the PG pin goes low with the TPS62130A but remains high with the TPS62130.

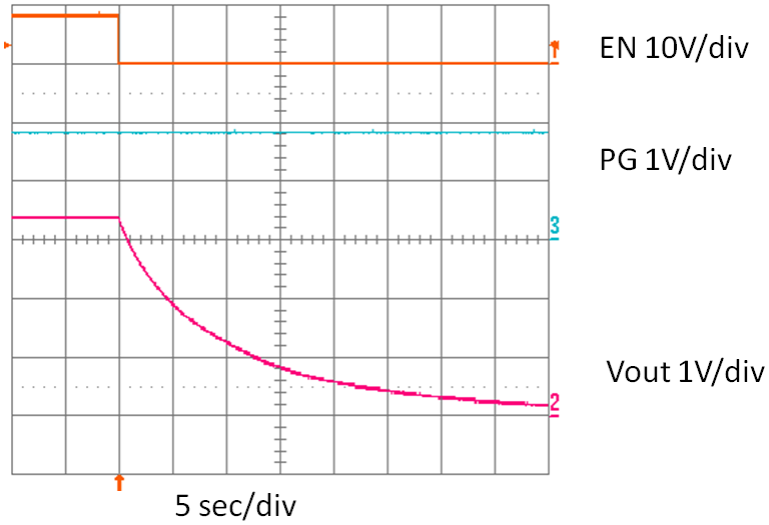

Figure 3. TPS62130 PG Behavior with PG Pulled up to a System Rail

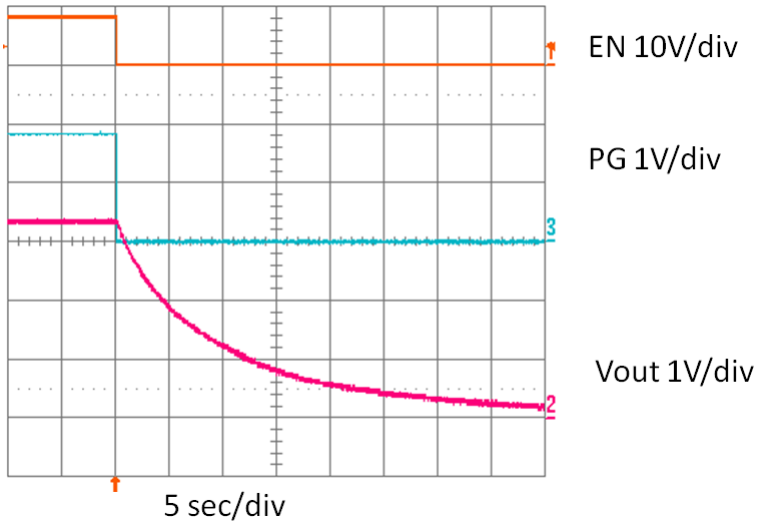

Figure 4. TPS62130A PG Behavior with PG Pulled up to a System Rail

Using the PG Pin as an Output Discharge

When the PG pin is connected to the output voltage through a pull-up resistor, it may be used as an output discharge circuit on the TPS62130A device. If this is desired, size the pull-up resistor to allow a maximum of 10 mA to flow through the PG pin from the output voltage to ground. Higher currents violate the absolute maximum rating of the PG pin.

Figure 5 shows the difference in output discharge when the TPS62130A is disabled and the PG pin is connected, through a 332-Ω pull-up resistor, to the 3.3-V output voltage. The TPS62130A discharges the output voltage to 0V much faster than with the usual 100-kΩ pull-up resistor used in Figure 2.

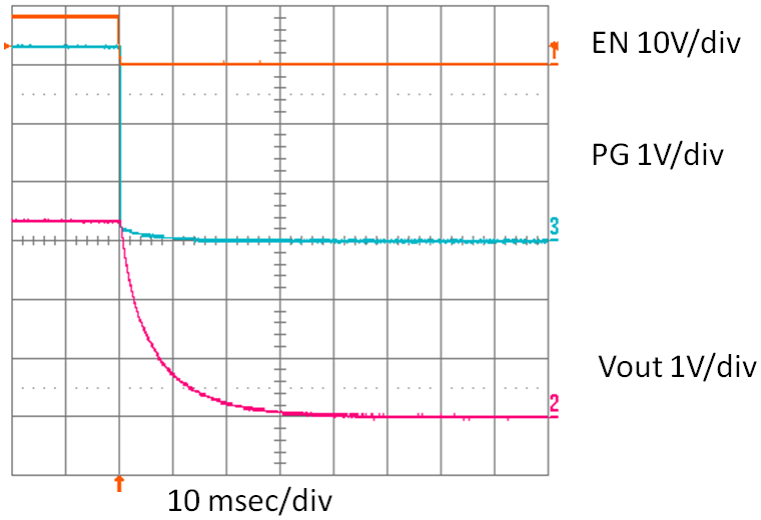

Figure 5. TPS62130A Output Discharge

Conclusion

The TPS62130A device provides some application benefits over the TPS62130 device. These include easier integration into multi-rail systems, as well as an output discharge function. For these reasons, the TPS62130A device is generally recommended over the TPS62130. The devices are pin-to-pin compatible.

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