

PTX30W Startup Circuit

This document describes how to prevent the PTX30W from supplying unregulated charging current into a deeply discharged battery during startup.

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1. Introduction

To prevent the PTX30W from supplying unregulated current into a deeply discharged battery, the battery has to remain disconnected from PTX30W until the biasing and bootup is complete. After this, the charger circuit operates as expected and provides a regulated current flow into the battery.

2. Charging Issue Description

When a battery is deeply discharged ($V_{\text{DBAT}} < 2.4\text{V}$) the system gets stuck in a reset state with the internal charge regulation transistor conducting. If a RF field is present in that situation, the battery is charged with an undefined (unregulated) charging current. Although, trickle charge should be applied. This occurs for as long as the RF field is present. The effect is due to incorrect biasing of the pass transistor on VBAT when the system is not booted.

3. Charging Issue Solution

To mitigate this incorrect charger behavior, add a load switch in between the battery and the VDBAT pin (A1) of the PTX30W (see Circuit Diagram). This load switch can be a simple PMOS transistor or a more sophisticated integrated solution, depending on the application requirements.

Once the PTX30W's internal MCU has booted properly, it activates the load switch by driving the GPO0 pin high. The GPO0 pin requires a weak external pull-down resistor, typically $1\text{M}\Omega$.

This solution is supported by SDK version 2.2.0 and above.

4. Recommended Parts

- [SLG59M1558V - GreenFET Single P-Channel Load Switch](#)
- $1\text{M}\Omega$ Pull-down Resistor

7. Revision History

Revision	Date	Description
1.00	Mar 21, 2024	Initial release.

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(Disclaimer Rev.1.01 Jan 2024)

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