

Making the Correct Choice: UCC28950-Q1 or UCC28951-Q1

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ABSTRACT

There are some differences between the UCC28950-Q1 and UCC28951-Q1 devices; this application note offers guidance to the user on how to make the best choice of device for a given application.

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1 Introduction

The Phase Shifted Full Bridge (PSFB) is a popular topology for high input voltage, high power DC-DC conversion applications, and the UCC28950-Q1 and UCC28951-Q1 devices from Texas Instruments™ are the ideal controller choices for systems using the PSFB topology. These devices build on the earlier UCC2895 device by adding enhancements such as synchronous rectifier (SR) control to offer best-in-class efficiency

2 Making the Correct Choice

In many applications, an input under voltage lockout (UVLO) circuit is used to turn off the PSFB DC-DC stage when the input voltage drops because of an AC line disconnect to a preceding PFC stage, or because of a drop in the DC input voltage as a battery source discharges. When the PSFB is supplied by a battery source, the UVLO circuit prevents the battery from being discharged beyond recommended levels to enhance lifetime and reliability.

The UCC28950-Q1 device is ideal where the application uses an external UVLO circuit to turn-off the PSFB before the input voltage levels drop to very low levels where the application may enter into a region of operation that requires maximum duty cycle and the output current could rise to overload levels.

For more demanding applications where the need is to maximize the hold up of the output voltage or there is less concern surrounding the discharge level of a battery source, the UCC28951-Q1 is the newer device and has been designed for high-power automotive applications that may have to operate at maximum duty cycles while in overload conditions.

The UCC28951-Q1 is typically the better choice, especially for applications where the system may have to operate simultaneously at a duty cycle > 90% and current limit. The UCC28951-Q1 is a fully compatible, drop-in replacement for the UCC28950-Q1. The UCC28950-Q1 is an alternative solution for applications where this operating condition does not occur because of the use of an input UVLO circuit, because of the range of duty cycles due to the transformer winding ratio chosen for the design, or where diode rectification is used.

If a customer application does not require operation at duty cycles > 90% and current limit, then the UCC28950-Q1 may be used.

Revision History

NOTE: Page numbers for previous revisions may differ from page numbers in the current version.

Date	Revision	Description
December 2017	*	Initial release.

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