Product Overview

UCC25660x Selection Guide

Figure 1. UCC256601 Device in Package

Introduction

The UCC25660x series of inductor-inductor-capacitor (LLC) controllers are designed to support wide input and output voltage applications while doubling the operating resonant frequency to increase power density. LLC controllers are typically used for 150 W to 1 kW applications. LLC controllers are not limited by the 150-W to 1-kW range. To find more information about the LLC topology, see also the LLC Topology Overview introduction video on ti.com.

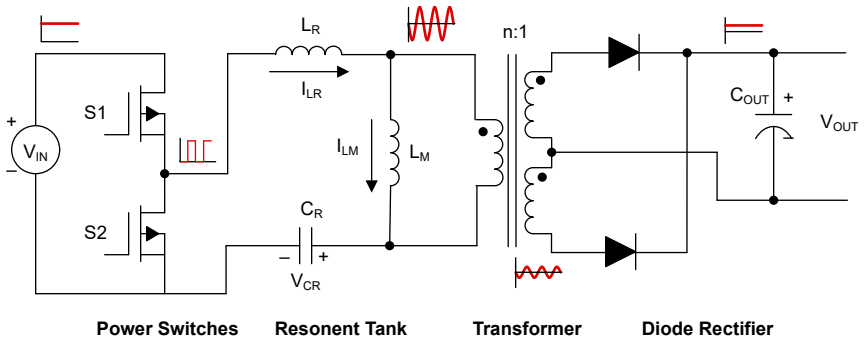

Figure 2. LLC Converter Example Block Diagram

To enable the wide input and output operating range, the UCC25660x series of controllers introduces a new form of control, the input power proportional control (IPPC). This new method minimizes the impact of the operating frequency on regulation thresholds which improves performance over the full load range in applications ranging from battery chargers to lighting.

Feature Differentiation

Table 1 shows the key differences between the UCC25660x devices. Each version is optimized for specific applications. In general, the UCC256601 is used in adapters, AIO, and gaming systems. The UCC256602 variant is optimized for lighting and appliances. The UCC256603 is typically used in industrial AC/DC supplies and the UCC256604 is popular in TV applications. Some key differentiating features are high-voltage start-up, x-cap discharge, and extended input power range.

High-Voltage (HV) Start-up means that the device can be tied directly to the high-voltage input rail. Once the device is running, the device is typically powered from an auxiliary winding of the transformer. HV Start-up helps to improve efficiency from no-load to full load.

X-Capacitor (X-Cap) Discharge is required in applications that need to comply with standards such as IEC60950 and IEC60065. X-Capacitors discharge the high-voltage input filter capacitor when unplugged from power. Integrating this function eliminates the need for bleed resistors, which impacts efficiency and standby power.

Extended Gain Range is a new feature where the LLC can operate with a nominal light load in universal VAC input applications while the PFC is disabled.

Table 1. UCC25660x Selection Guide

	UCC256601	UCC256602	UCC256603	UCC256604
Typical Applications (1)	**Generic, AIO, PC, Gaming Adapter**	**Lighting, Industrial, Battery Charger**	**Industrial, OLED TV**	**LED TV**
Application Needs	High power density, ultra-low standby power	DC Input	System with existing auxiliary system	High power density, ultra-low standby power
High-Voltage Start-up	✓	✓		✓
Extended Gain Range (Universal VAC PFC OFF)				✓
PFC ON and OFF	✓	✓		✓
X-Cap Discharge	✓			✓

(1) All options can be used in any application.

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