

## Product Overview

# UCC272xx and UCC273xx: 120V Half-Bridge Gate Drivers for High-Powered Applications



The UCC272xx and UCC273xx devices are a family of high current half-bridge drivers optimized to drive MOSFETs and IGBTs in fast switching, high-powered environments across industrial and automotive applications. The family has over 15 generic parts, each with specific differences. This product overview highlights the benefits of all the offerings and aims to assist engineers in selecting the best driver.

### Optimized

UCC272xx and UCC273xx features both 3A/3A and 3.7A/4.5A drive current options to reduce switching losses and improve overall efficiency in high-power systems. This drive capability paired with small package options, such as the 3mm × 3mm VSON, make the UCC272xx and UCC273xx family one of the most versatile families of half-bridges. The extensive GPNs and feature sets maintains that there is a good device for your application.

### Features

The UCC273xx family extends the UCC272xx devices by offering input interlock and enable functionality. Input interlock is a logic function built in to prevent shoot-through events. If both the high-side and low-side of the half bridge were to output at the same time, current "shoots through" and cause damage to the transistor. Since power FETs are not cheap, interlock is offered as a preventative measure to save the board. Enable functionality is designed via an additional pin, and thus only offered in the 10-pin DRC orderable parts. If enable is sent low, then regardless of the input signal the IC receives, the driver is prevented from outputting. An extended benefit of this feature is that UCC273xx operates at a lower quiescent current when disabled, drawing a typical of only 3uA. This decreases the power drawn from your system and helps optimize efficiency in designs.

### Robust

The UCC272xx and UCC273xx 120V  $V_{HB}$  and  $-(28V_{DD})$ V negative transient handling allows the proper headroom and buffer for the driver to exist and operate in noisy environments without the need for external components. The integrated bootstrap diode is designed to handle fast-switching, high stress environments. As mentioned, interlock logic helps prevent damage to transistors which can be a significant cost on the board.

**Table 1. Product Summary**

Product Features	Product Benefits	Key Applications
120V $V_{HB}$ , 3.7A/4.5A Drive	Robust in fast switching environments	Rack and Server Power HEV/EV On-Board Charger Bi-directional DCDC Solar Inverters Traction Inverters
$-(28V_{DD})$ Switching Transient Handling	Good for handling transients and noise in operations	
5V or 8V UVLO Options	MOSFET and IGBT applications	
3mm × 3mm Package Options	Power Density	

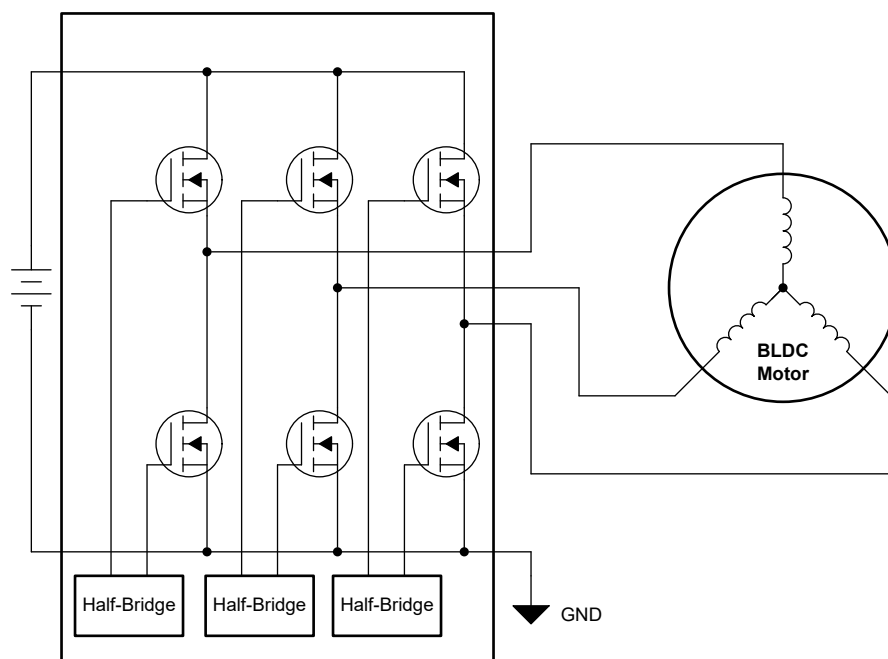
## Target End Equipments

With the product family features discussed, consider the ways that this can improve a system design.

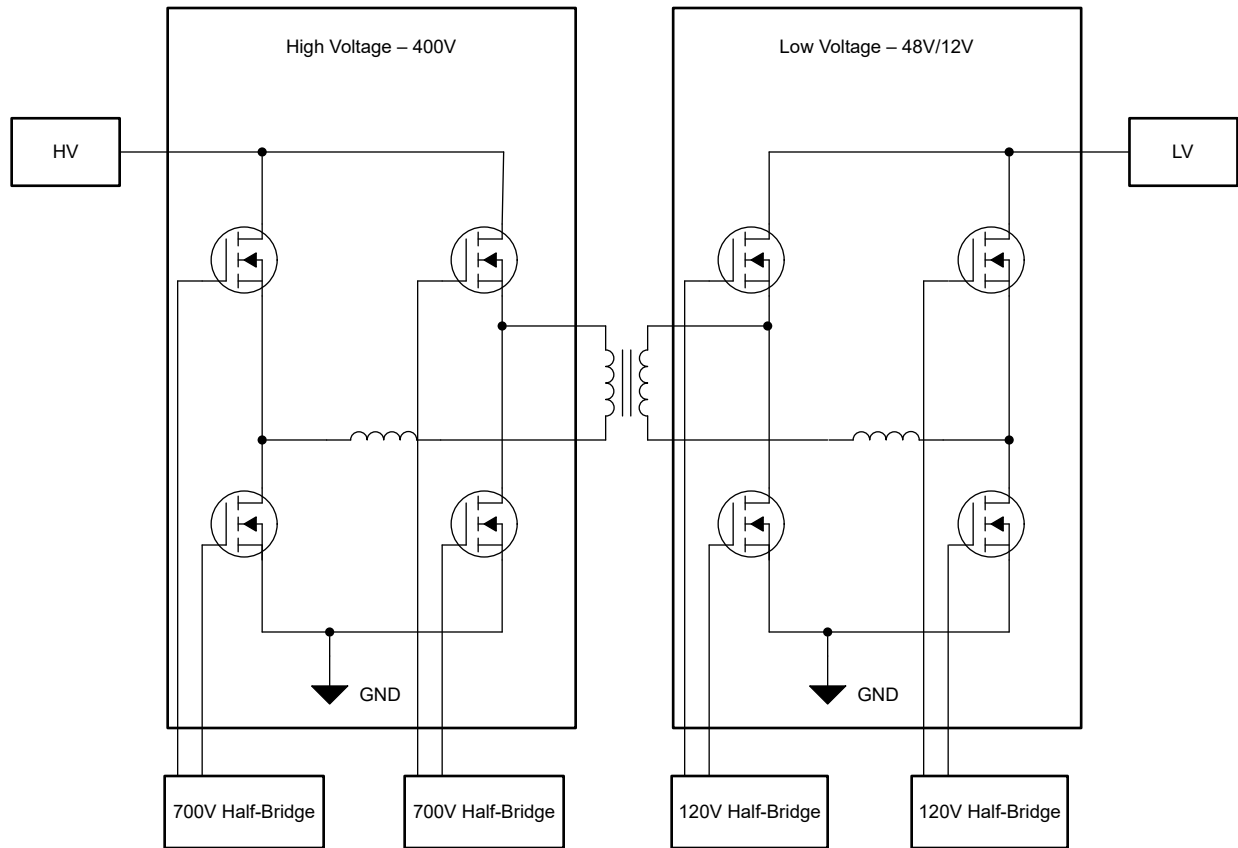
**Table 2. End Equipment Impact**

System Requirement	System Benefit
Size	3mm × 3mm packages enable small design size
Robustness	-(28V-V <sub>DD</sub> ) handling on SH allows the UCC272xx and UCC273xx to better withstand noise and transients
	High-performance integrated bootstrap diode maintains operation across fastest switching applications
Cost	The excellent transient performance reduces the need for external components such as clamping diodes
	Integrating the bootstrap diode saves BOM cost and reduces components needed
Efficiency	5V and 8V UVLO options prevent the driver from partially turning on the power switch with insufficient voltage to the FET gate
	3.7A/4.5A drive current enables reduction in switching losses
Flexibility	UVLO and package options allow maximum customization
	Interlock (UCC2730x) or non-interlock options allow choice of including feature. DRC package offers enable functionality with low current shutdown mode.

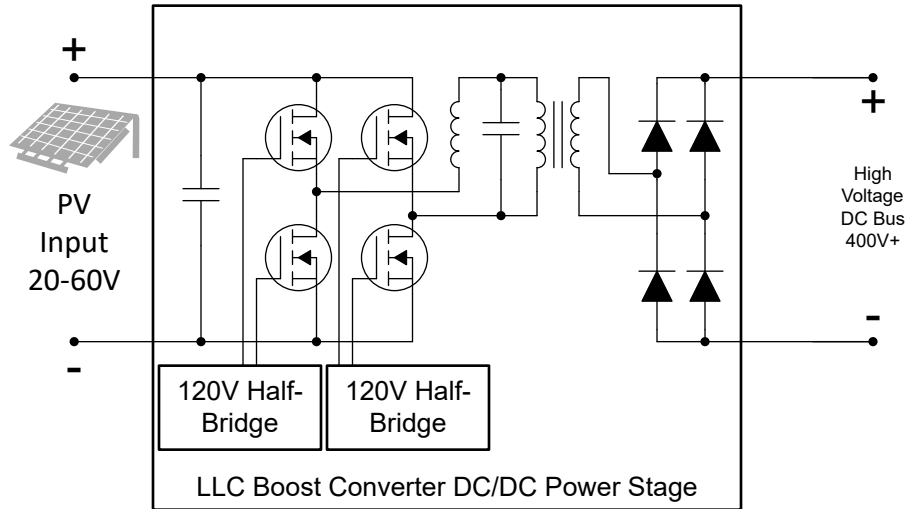
The UCC272xx and UCC273xx can be utilized in a wide variety of end equipments. [Figure 1](#) through [Figure 3](#) help explore some of the most popular use cases and respective topologies.



**Figure 1. 3-Phase Motor Drive**



**Figure 2. 48V-12V DC/DC Converter**



**Figure 3. DC/DC in Solar Application**

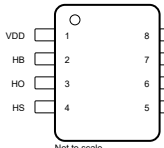
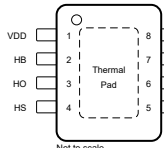
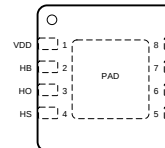
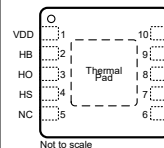
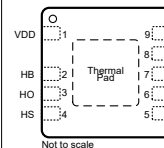
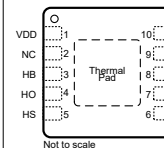
## Device Selection Guides

The UCC272xx and UCC273xx devices have distinct features, electrical specifications, and pinouts. To aid in selection, [Table 3](#) through [Table 5](#) help distinguish major differences between part numbers and variants.

**Table 3. Device Key Specs**

Part Number	UVLO	Feature	Catalog Package Options	Automotive Package Options
UCC27301A (-Q1)	8V	3.7A/4.5A, Input Interlock, Enable Pin (DRC only)	D, DRC	D, DDA, DRC
UCC27311A(-Q1)	8V	3.7A/4.5A, Enable Pin (DRC only)	DRC	DRC
UCC27302A(-Q1)	5V	3.7A/4.5A, Input Interlock, Enable Pin (DRC only)	D, DDA, DRC	D, DDA, DRC
UCC27200	8V	3A/3A, CMOS Input	DDA, DRM	N/A
UCC27200A(-Q1)	8V	3A/3A, CMOS Input	D, DPR, DRC	DDA
UCC27201A(-Q1)	8V	3A/3A, TTL Input	D, DDA, DRM, DPR	DDA, DMK
UCC27211(-Q1)	8V	3.7A/4.5A, TTL Input	D, DDA, DPR	D, DDA
UCC27211A	8V	3.7A/4.5A, TTL Input	DRM	N/A
UCC27212	5V	3.7A/4.5A, TTL Input	D, DPR	N/A
UCC27212A-Q1	5V	3.7A/4.5A, TTL Input	N/A	D, DDA

**Table 4. Pinout Maps and Availability**

					
D 4.9mm × 3.9mm SOIC-8	DDA 4.9mm × 3.9mm HSOIC-8	DRM 4mm × 4mm VSON-8	DPR 4mm × 4mm VSON-10	DRC 3mm × 3mm VSON-9	DRC 3mm × 3mm VSON-10

**Table 5. Legacy Devices Similar to UCC272xx and UCC273xx**

Legacy Device	New GPN Replacement	Pin-to-Pin?	Key Advantages
UCC27282 (+Q1)	UCC27302A (+Q1)	Yes	Increased drive current to decrease switching losses, increasing system efficiency. Optimized integrated boot diode to handle high-stress environment.
UCC27284	UCC27212	Yes	
UCC27289	UCC2711/A	Yes	
LM5101A	UCC27311A	Yes	Smaller package options allow for reduced design size

## Additional Information

**Table 6. Orderable Table**

Orderable Device	Package Type	Pins	Op Temp (°C)	Device Marking	Samples
UCC27301ADR	SOIC	8	-40 to 150	27301A	<a href="#">Samples</a>
UCC27301ADDAR	HSOIC	8	-40 to 150	27301A	<a href="#">Samples</a>
UCC27301ADRRCR	VSON	10	-40 to 150	27301A	<a href="#">Samples</a>
UCC27301AQDRQ1	SOIC	8	-40 to 150	U27301Q	<a href="#">Samples</a>
UCC27301AQDDARQ1	HSOIC	8	-40 to 150	U27301Q	<a href="#">Samples</a>

**Table 6. Orderable Table (continued)**

Orderable Device	Package Type	Pins	Op Temp (°C)	Device Marking	Samples
UCC27301AQDRCRQ1	VSON	10	-40 to 150	27301Q	<a href="#">Samples</a>
UCC27302ADR	SOIC	8	-40 to 150	27302A	<a href="#">Samples</a>
UCC27302ADDAR	HSOIC	8	-40 to 150	U27302A	<a href="#">Samples</a>
UCC27302ADRCCR	VSON	10	-40 to 150	27302A	<a href="#">Samples</a>
UCC27302AQDRQ1	SOIC	8	-40 to 150	27302Q	<a href="#">Samples</a>
UCC27302AQDDARQ1	HSOIC	8	-40 to 150	U27302Q	<a href="#">Samples</a>
UCC27302AQDRCRQ1	VSON	10	-40 to 150	27302Q	<a href="#">Samples</a>
UCC27200ADR	SOIC	8	-40 to 150	27200A	<a href="#">Samples</a>
UCC27200ADRCCR	VSON	10	-40 to 150	200A	<a href="#">Samples</a>
UCC27200DDAR	HSOIC	8	-40 to 150	27200	<a href="#">Samples</a>
UCC27200DRMR	VSON	8	-40 to 150	27200	<a href="#">Samples</a>
UCC27200QDDARQ1	HSOIC	8	-40 to 150	27200Q	<a href="#">Samples</a>
UCC27201ADDAR	HSOIC	8	-40 to 150	27201A	<a href="#">Samples</a>
UCC27201ADPRR	WSON	10	-40 to 150	UCC27201A	<a href="#">Samples</a>
UCC27201ADR	SOIC	8	-40 to 150	27201A	<a href="#">Samples</a>
UCC27201ADRCCR	VSON	10	-40 to 150	201A	<a href="#">Samples</a>
UCC27201ADRMR	WSON	10	-40 to 150	27201A	<a href="#">Samples</a>
UCC27201AQDDARQ1	HSOIC	8	-40 to 150	201AQ1	<a href="#">Samples</a>
UCC27211ADRMR	VSON	8	-40 to 150	27211A	<a href="#">Samples</a>
UCC27211AQDDARQ1	HSOIC	8	-40 to 150	27211Q	<a href="#">Samples</a>
UCC27211AQDRQ1	SOIC	8	-40 to 150	27211Q	<a href="#">Samples</a>
UCC27211DDAR	HSOIC	8	-40 to 150	27211	<a href="#">Samples</a>
UCC27211DPRR	WSON	10	-40 to 150	UCC27211	<a href="#">Samples</a>
UCC27211DR	SOIC	8	-40 to 150	27211	<a href="#">Samples</a>
UCC27212DR	SOIC	8	-40 to 150	27212	<a href="#">Samples</a>
UCC27212DPRR	WSON	10	-40 to 150	UCC27212	<a href="#">Samples</a>
UCC27212ADDARQ1	HSOIC	8	-40 to 150	27212Q	<a href="#">Samples</a>
UCC27212AQDRQ1	SOIC	8	-40 to 150	27212Q	<a href="#">Samples</a>

**Additional References:**

- [Mapping Application Requirements with the 120V Halfbridge Gate Driver](#)
- [Challenges and Solutions for Half-Bridge Gate Drivers in Bidirectional DC-DC Converters](#)
- [Half-bridge Minimum Current Calculator](#)

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