

## Product Overview

### NCP4371: HVDCP Controller for Qualcomm Quick Charge™ 3.0

For complete documentation, see the data sheet.

NCP4371 is a USB secondary side fast-charging controller, supporting Qualcomm Quick Charge™ 3.0 (QC 3.0) High Voltage Dedicated Charging Port (HVDCP) Class A and Class B specification. NCP4371 allows for selection of the output voltage of an AC-DC USB adapter based on commands from the Portable Device (PD) being powered. Selecting a higher charging voltage will reduce the charging current for a given power level resulting in reduced IR drops and increased system efficiency. Another advantage of QC3.0 is a decreased battery charging time and a reduced PD system cost thanks to the ability to select an optimum charging voltage. This eliminates the need for costly DC-DC converters within the PD. The USB-bus voltage can be controlled in discreet steps from 3.6V up to 20V. The output current is limited not to exceed maximum allowable power level.

The NCP4371 resides at the secondary (isolated) side of the adapter. It includes voltage and current feedback regulation eliminating the need for a shunt regulator such as TL431.

The NCP4371 provides charging current limits down to VBUS=2.2V protecting the portable device from excessive currents in case of a soft short-circuit condition.

The NCP4371 integrates a safe-discharge circuitry to quickly and reliably discharge output capacitors in case the USB cable is unplugged or connected to a 5V only USB port.

#### Features

- Supports Qualcomm Quick Charge™ 3.0 HVDCP Class A/B
- Output Voltage Can be Configured in Discreet Steps from Class A: 3.6V up to 12V Class B: 3.6V up to 20V
- Constant Voltage and Constant Current Regulation
- Soft Short-Circuit Current Limitation Down to VBUS = 2.2V
- USB pins ESD rated to 8 kV
- Removes a Need for the Secondary Side Shunt Regulator such as TL431
- Output Capacitor Safe-Discharge Circuitry at Cable Unplug
- Low Supply Current
- Wide Operating Input Voltage Range: 2.2V to 28V
- Compatible with USB Battery Charging Specification Revision 1.2 (USB BC1.2)

For more features, see the data sheet

#### Benefits

- Increases system efficiency and reduces charging time
- Supports a wide range of applications
- Provides current protection and system robustness
- Provides Short Circuit protection and system robustness
- Increased robustness
- Reduced BOM
- Safety
- Increases system efficiency
- Design flexibility

#### Applications

- Fast Charging AC/DC Adapters

#### End Products

- Smart Phones Adapter
- Tablets Adapter
- Portable Device Adapter

#### Part Electrical Specifications

Product	Compliance	Status	V <sub>CC</sub> Max (V)	V <sub>ref</sub> Typ (V)	I <sub>CC</sub> Max (A)	T <sub>A</sub> Min (°C)	T <sub>A</sub> Max (°C)	Package Type
NCP4371AACDR2G	Pb-free	Active	28	1.25	0.0003	-40	125	SOIC-8
	Halide free							
NCP4371AADDR2G	Pb-free	Active	28	1.25	0.0003	-40	125	SOIC-8
	Halide free							
NCP4371AAEDR2G	Pb-free	Active	28	1.25	0.0003	-40	125	SOIC-8
	Halide free							
NCP4371BBCDDR2G	Pb-free	Active						SOIC-8
	Halide free							

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