

## Product Overview

### NCP4308: Synchronous Rectifier Controller

For complete documentation, see the data sheet.

The NCP4308 is a synchronous rectifier controller for switch mode power supplies. The controller enables high efficiency designs for flyback, quasi resonant flyback and LLC topologies.

Externally adjustable minimum off-time and on-time blanking periods provides flexibility to drive various MOSFET package types and PCB layout. A reliable and noise less operation of the SR system is insured due to the Self Synchronization feature. The NCP4308 also utilizes Kelvin connection of the driver to the MOSFET to achieve high efficiency operation at full load.

The precise turn-off threshold, extremely low turn-off delay time and high sink current capability of the driver allow the maximum synchronous rectification MOSFET conduction time. The high accuracy driver and 5 V gate clamp make it ideally suited for directly driving GaN devices.

To provide more flexibility in PCB layout there are two versions of this product.  
NCP4308 does NOT have LLD function  
NCP43080 has LLD function

#### Features

- Self-Contained Control of Synchronous Rectifier in CCM, DCM and QR for Flyback or LLC Applications
  - Precise True Secondary Zero Current Detection
  - Rugged Current Sense Pin (up to 150 V)
  - Adjustable Minimum ON-Time
  - Adjustable Minimum OFF-Time with Ringing Detection
  - Adjustable Maximum ON-Time for CCM Controlling of Primary QR Controller
  - Operating Voltage Range up to  $V_{CC} = 35\text{ V}$
  - 8 A / 4 A Peak Current Sink / Source Drive Capability
  - GaN Transistor Driving Capability (options A and C)
  - Low Startup Current Consumption
- For more features, see the data sheet

#### Applications

- Notebook Adapters
- High Power Density AC/DC Power Supplies (Cell Phone Chargers)
- LCD TVs
- All SMPS with High Efficiency Requirements

#### Benefits

- Robust design during power excursion
- Provides negligible switching losses and prolongs FET life
- Robustness
- Improves efficiency and design flexibility
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- Advantage with multiple  $V_{out}$  such as smart charging or USB-PD
- higher drive strength provides higher efficiency
- GaN FET further improve efficiency and solution size
- Improves standby power consumption

#### End Products

- Notebook Adapters
- Smartphone Adapters
- Tablet Adapters
- AC-DC Power Adapters
- LCD TVs

## Part Electrical Specifications

| Product       | Pricing (\$/Unit) | 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 |
|---------------|-------------------|------------------------|--------|-------------------------|--------------------------|-------------------------|-------------------------|-------------------------|--------------|
| NCP4308ADR2G  | 0.4               | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | SOIC-8       |
| NCP4308AMTTWG | 0.4133            | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | WDFN-8       |
| NCP4308DDR2G  | 0.4               | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | SOIC-8       |
| NCP4308DMNTWG | 0.4667            | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | DFN-8        |
| NCP4308DMTTWG | 0.4133            | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | WDFN-8       |
| NCP4308QDR2G  | 0.4               | Pb-free<br>Halide free | Active | 37                      | N/A                      | 0.0056                  | -40                     | 125                     | SOIC-8       |

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