

NCP3065DR2G
2.5k units from:
€ 0.32

NCP3065MNTXG
2.5k units from:
€ 0.34

NCV3065DR2G
2.5k units from:
€ 0.35

NCP3065/NCV3065

Constant Current Switching Regulator



Eero A. Sarlin, Silica Finland

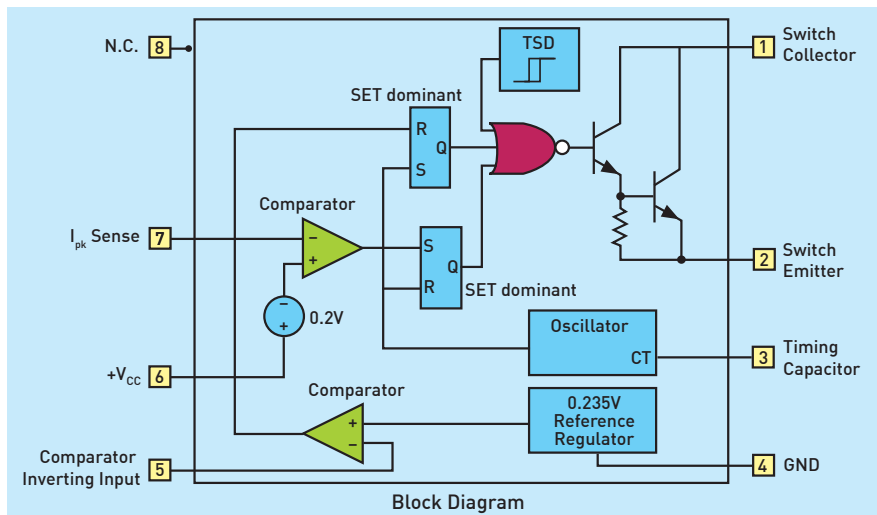
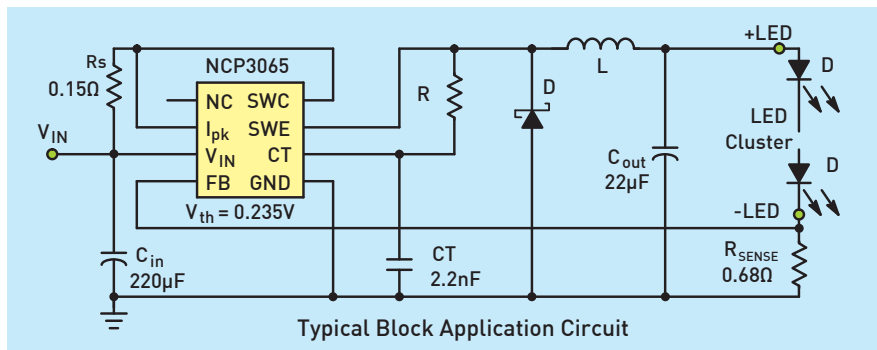
The NCP3065 is a monolithic switching regulator designed to deliver constant current for powering high brightness LEDs. The device has a very low feedback voltage of 235mV (nominal) which is used to regulate the average current of the LED string. In addition, the NCP3065 has a wide input voltage up to 40V to allow it to operate from 12V_{AC} or 12V_{DC} supplies commonly used for lighting applications as well as unregulated supplies such as Lead Acid batteries. The device can be configured in a controller topology with the addition of an external transistor to support higher LED currents beyond the 1.5A rated switch current of the internal transistor. The NCP3065 switching regulator can be configured in Step-Down (Buck) and Step-Up (boost) topologies with a minimum number of external components.

Key Features

- Integrated 1.5A Switch
- Input voltage range from 3.0...40V
- Low Feedback/Reference voltage of 0.235V
- Cycle-by-Cycle Current Limit with 0.2V threshold
- No Control Loop Compensation Required
- Maximum frequency of operation adjustable up to 250kHz
- Operates also with Ceramic output cap or no output cap
- Analog and Digital PWM dimming capability
- Internal Thermal Shutdown with hysteresis
- Available in 3 packages DIP8 SOIC-8 and 4x4mm DFN8

Key Applications

- Step-Down Step-Up constant current LED string drive



- Up to 8 White LEDs in series
- Higher currents than 700mA with external switch
- High Power LED drive
- High Brightness LED Drive
- MR16 replacements
- Similarity to NCP3063/MC34063 makes it possible to get ideas
- Can also be used as a controller Driving External MOSFET or fast bipolar to achieve up to 5A (based on 1.5W peak dissipation of current feedback resistor)
- Use Ct values from 1...2.2nF
- Use switch in common emitter configuration for lower losses
- Do not use inductive such as wirewound resistor for current measurement
- In Boost/Sepic topologies operating from Lithium-Ion rechargeable source you might want to use an external device such as NCP301LSN28T1G or MC33161 for shutdown at low V_{IN}

Key Design Tips

- Datasheet has example Schematics for Boost and Buck topologies
- Spread sheet to calculate component values for Buck or Boost: <http://www.onsemi.com/pub/Collateral/NCP3065%20DESIGN%20SPREADSHEET.XLS>

P/N	Package	Programming	Taping & Reeling	Marking
NCP3065DR2G	8-pin Narrow SOIC			
NCP3065MNTXG	8-lead DFN			
NCP3065PG	8-pin PDIP			

Service available or already delivered T&R from Manufacturer.
Tapes are available, but not stocked at Avnet Logistics due to low demand.
Device supported by or programming equipment, but the socket for this package must be provided by customer.

AMPLIFIERS
CONNECTIVITY, COMMUNICATION & INTERFACE ICs
DATA CONVERTER ICs
DIGITAL SIGNAL PROCESSORS
DISCRETES
MEMORIES
MICRO-CONTROLLERS & -PROCESSORS
OPERATING SYSTEMS
OPTOELECTRONICS & DISPLAYS
POWER MANAGEMENT ICs
PROGRAMMABLE LOGIC DEVICES
TOOLS & SERVICES