

NCP51820

High Performance, 650 V Half Bridge Gate Driver for GaN Power Switches



Product Overview

For complete documentation, see the data sheet.

The NCP51820 high-speed gate driver is designed to meet the stringent requirements of driving enhancement mode (e-mode) and gate injection transistor (GIT) GaN HEMT power switches in offline, half-bridge power topologies. The NCP51820 offers short and matched propagation delays as well as -3.5 V to +650 V (typical) common mode voltage range for the high-side drive. To fully protect the gate of the GaN power transistor against excessive voltage stress, both drive stages employ a dedicated voltage regulator to accurately maintain the gate-source drive signal amplitude. The NCP51820 offers important protection functions such as independent under-voltage lockout (UVLO) and IC thermal shutdown.

Features

- 650 V, high side and low side gate driver
- Fast propagation delay of 50 ns max
- Matched propagation delay of 5 ns max
- 200 V/ns dV/dt Rating for all SW and PGND Referenced Circuitry
- Separate source and sink output pin
- Regulated 5.2 V gate driver with independent UVLO for high side and low side output stages
- QFN 4 mm x 4 mm 15 pin packaging and optimized pin out

Benefits

- Design margin for AC/DC design
- Suitable for high frequency operation
- Increased efficiency and allow paralleling
- Robust design for high switching frequency application
- Allow control of rise and fall time for EMI tuning
- Optimum driving of GaN power switches and simplify design
- Small PCB foot print, reduced parasitic, suitable for high frequency operation

Applications

- Resonant converters
- Half bridge and full bridge converters
- Active clamp flyback converters
- Totem pole bridgeless PFC

End Products

- Power supply for OLED TV
- High power gaming adapter
- USD PD cellphone and notebook travel adapter
- Server / Cloud Data-center Offline power
- Industrial inverter and motor drive

Part Electrical Specifications

Product	Pricing (\$/Unit)	Compliance	Status	Power Switch	Number of Outputs	Topology	Isolation Type	V _{in} Max (V)	V _{CC} Max (V)	Rise Time (ns)	Fall Time (ns)	Drive Source Current Typ (A)	Drive Sink Current Typ (A)	Turn On Prop. Delay Typ (ns)	Turn Off Prop. Delay Typ (ns)	Delay Matching	Package Type
NCP51820AMN TWG	0.8598		Active	GaN	2	Half-Bridge	Junction Isolation	650	20	2	1.5	1	2	25	25	5	QFN-15