POWER X
博尔芯半导体科技

PXL1005Q

Automotive Low-Side GaN and MOSFET Driver
5V, 7A/5A

1 Features

- AEC-Q100 grade 1 qualified
- 1.25-ns typical minimum input pulse width (220-pF load)
- 3.3-ns typical rising/falling propagation delay
- Up to 100-MHz Operation
- 7-A pull-up and 5-A pull-down current
- 650-ps typical rise/fall time (220-pF load)
- 2-mm x 2-mm DFN package with Wettable Flank Plated (WFDFN)
- Inverting and non-inverting inputs
- UVLO and over-temperature protection
- Single 5-V supply voltage

2 Applications

- Automotive LiDAR
- Vehicle Occupant Detection Sensor
- Class-E Wireless Charger
- GaN-Based Synchronous Rectifier

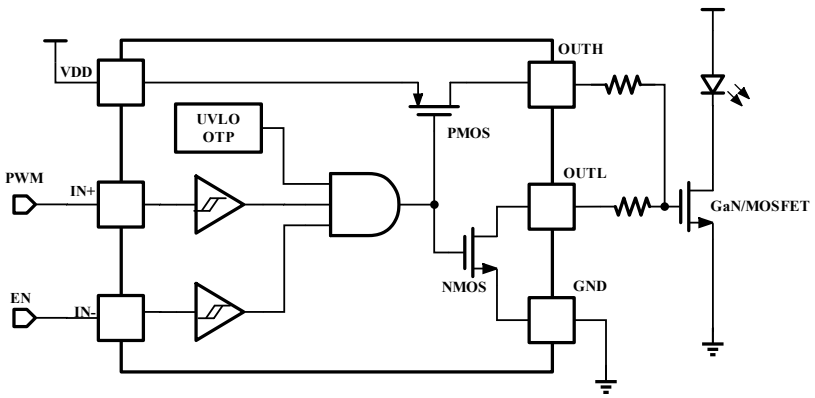
3 Description

The PXL1005Q is a single channel low-side enhancement-mode GaN FET and logic-level MOSFET driver for high switching frequency applications, including LiDAR, Time-of-Flight (ToF), and Power Converter. The very fast switching frequency combined with the ultra-narrow pulse width significantly enhance the LiDAR and ToF performance. The minimum 1-ns input pulse width makes higher power/current allowable in these applications to improve mapping range and resolution. The extremely small propagation delay of 3.3-ns significantly improves the control loop response time and thus overall performance of the power converters. Split output allows the drive strength and rise/fall time to be independently adjusted through external resistors between OUTH, OUTL, and the FET gate.

The driver features undervoltage lockout (UVLO) and over-temperature protection (OTP) to ensure the device is not damaged in overload or fault conditions.

PXL1005Q is available in 2-mm*2-mm DFN package with Wettable Flank Plated (WFDFN) to meet the size and gate loop inductance requirements for high-speed switching applications.

Typical (Simplified) System Diagram



Simplified LiDAR Driver Stage Diagram