NCP51810

High Performance, 150 V Half Bridge Gate Driver for GaN Power Switches

Product Overview
For complete documentation, see the data sheet.

The NCP51810 high-speed gate driver is designed to meet the stringent requirements of driving enhancement mode (emode) GaN HEMT power switches in offline, half-bridge power topologies. The NCP51810 offers short and matched propagation delays as well as 3.5 V to +150 V (typical) common-mode voltage range for the highside 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 NCP51810 offers important protection functions such as independent undervoltage lockout (UVLO) and IC thermal shutdown.

Features
- 150 V, high side and low side gate driver
- Fast propagation delay of 50 ns max
- Fast propagation delay of 50 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
- Support 48 V input design with sufficient safety margin
- 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
- Non isolated step down converters

End Products
- Data center 48 V to low voltage intermediate bus converter
- 48 V to PoL converter
- Industrial power module

Part Electrical Specifications

<table>
<thead>
<tr>
<th>Product</th>
<th>Pricing ($/Unit)</th>
<th>Compliance</th>
<th>Stat.</th>
<th>Power Switch</th>
<th>Num. of Outputs</th>
<th>Topology</th>
<th>Isolation Type</th>
<th>Vgs Max (V)</th>
<th>Vcc Max (V)</th>
<th>Rise Time (ns)</th>
<th>Fall Time (ns)</th>
<th>Drive Source Current Type (A)</th>
<th>Drive Sink Current Type (A)</th>
<th>Turn On Prop. Delay (ns)</th>
<th>Turn Off Prop. Delay (ns)</th>
<th>Delay Matching</th>
<th>Package Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>NCP51810AMNTWG</td>
<td>0.874</td>
<td>Active GaN</td>
<td>2</td>
<td>Half Bridge</td>
<td>Junction Isolation 150</td>
<td>20</td>
<td>2</td>
<td>1.5</td>
<td>1</td>
<td>25</td>
<td>25</td>
<td>10</td>
<td>QFN -15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>