Product brief

EiceDRIVER™ 1EDN7550 and 1EDN8550

1-channel non-isolated gate-driver IC family with truly differential inputs
Prevents false triggering of power MOSFETs and enables highest power density

Overview:
1EDNx550 non-isolated gate-driver ICs are available in small 6-pin SOT-23 and TSNP packages. Their truly differential inputs enable cost-effective solutions with exceptional power density in:
- Boost-PFC with Kelvin-source MOSFET
- Synchronous rectification stages
- Designs with long distance between control IC and gate-driver IC
- Buck-boost converters
- Low- and medium-voltage half-bridges
- High density 48 V to 12 V intermediate bus converter

Key features
- Configurable common-mode robustness
- Separate low impedance outputs:
  - Source: 4 A/0.85 Ω
  - Sink: 8 A/0.325 Ω
  - +10 ns/-7 ns propagation delay
- 4 V/8 V UVLO options
- 6-pin package options:
  - SOT-23: 2.9 mm x 2.8 mm
  - TSNP: 1.5 mm x 1.1 mm

Challenge
- Parasitic ground inductance
- Parasitic source inductance
- Ultimate power density

Application example
- Long distance between controller IC and gate-driver IC
  - Control IC on daughter card, e.g., interleaved PFC
  - 1- and 2-layer PCBs
- Hard-switching applications
  - Boost-PFC with Kelvin-source MOSFETs
  - Synchronous rectification
- 48 V to 12 V intermediate bus converter
  - Cascaded switched capacitor topology at 1.2 MHz

1EDNx550 advantages
- Design flexibility
- Short R&D time
- Cost-effectiveness
- Highest level of power density
- Design flexibility
- Increased power density

The common-mode robustness is configurable with resistors connected to the differential inputs:

<table>
<thead>
<tr>
<th>Input voltage</th>
<th>Common-mode resistor</th>
<th>DC common-mode robustness</th>
<th>AC common-mode robustness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>value</td>
<td>accuracy</td>
<td>form factor</td>
</tr>
<tr>
<td>2.5 V</td>
<td>24 kΩ</td>
<td>0.1%</td>
<td>≥0402</td>
</tr>
<tr>
<td>3.3 V</td>
<td>33 kΩ</td>
<td>0.1%</td>
<td>≥0603</td>
</tr>
<tr>
<td>5 V</td>
<td>51 kΩ</td>
<td>1%</td>
<td>≥0805</td>
</tr>
<tr>
<td>5 V</td>
<td>51 kΩ</td>
<td>0.1%</td>
<td>≥1206</td>
</tr>
<tr>
<td>12 V</td>
<td>127 kΩ</td>
<td>0.1%</td>
<td>≥1206</td>
</tr>
</tbody>
</table>

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Typical application for 4-pin Kelvin source CoolMOS™ with 1EDN8550B as a low-side gate driver

Half-bridge application with 1EDNx550 as high-side and low-side gate driver

Product portfolio

<table>
<thead>
<tr>
<th>Part number</th>
<th>Package</th>
<th>UVLO</th>
<th>OPN</th>
</tr>
</thead>
<tbody>
<tr>
<td>1EDN7550B</td>
<td>6-pin SOT-23</td>
<td>4 V</td>
<td>1EDN7550BXTSA1</td>
</tr>
<tr>
<td>1EDN8550B</td>
<td>6-pin SOT-23</td>
<td>8 V</td>
<td>1EDN8550BXTSA1</td>
</tr>
<tr>
<td>1EDN7550U</td>
<td>6-pin TSNP</td>
<td>4 V</td>
<td>1EDN7550UXTSA1</td>
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</table>

Pinout

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>IN-</td>
<td></td>
<td>GND</td>
<td></td>
<td></td>
<td>1EDN7550</td>
<td></td>
</tr>
<tr>
<td>GND</td>
<td></td>
<td>1EDN7550</td>
<td>5</td>
<td>OUT_SRC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN+</td>
<td></td>
<td></td>
<td>3</td>
<td>VDD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OUT_SNK</td>
<td></td>
<td></td>
<td></td>
<td>OUT_SRC</td>
<td>6</td>
<td></td>
</tr>
</tbody>
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