Gate Drive Couplers

Ideal for Tough Industrial Applications

Toshiba’s IGBT / MOSFET gate drive coupler portfolio includes an extensive lineup of photocouplers with an output ranging from 0.6A to the industry’s highest-level 6.0A. Thus you can select couplers that best fit your needs according to the gate capacitances of the driven IGBTs and MOSFETs.

Applications
• Industrial automation
• FA inverter
• AC servo
• Power Supply (UPS)
• Air conditioner inverter
• Photovoltaic inverter
• Home appliances
• Induction cooking

Features
• Wide range of gate drivers with extended temp range from 40°C up to +125°C
• Optical isolation with guaranteed internal galvanic isolation distance of minimum 0.4mm
• Package variety with excellent isolation performance
• Leading edge technology for best technical performance and fastest switching
• New Rail to Rail IGBT drivers
• Smart IGBT gate driver with desaturation detection and active Miller clamp

Advantages
• Products are applicable in harsh environments
• Provides best in class isolation performance without creating EMI issues
• Variety of lead forming styles with 7mm & 8mm clearance/creepage
• Devices offer highest CMTI up to 40kV/µs and integrated UVLO circuit
• Improved system efficiency
• No external protection circuit needed

Benefits
Attractive cost effects
• Fewer field failures due to higher product reliability
• Less EMI problems
• 50% less mounting space for new SO6L package compared with previous DIP8 packages
• Less external components needed
Smart performance increases
• Strong isolation for enhanced safety and high reliability
• Easy design for best performance
TLP575x and TLP577x – The best choice for new drive generations

The excellent combination of Toshiba’s high performance long life LEDs, low power consumption driver ICs with rail-to-rail output and the advanced, space saving SO6L package with a max. height of 2.3mm make Toshiba’s gate driver couplers the ideal choice for the next generations of drives.

The TLP5771, TLP5772 and TLP5774 supply peak output currents of 1A, 2.5A, and 4A. Maximum propagation delay time and propagation delay skew are guaranteed within the defined wide operation temperature range up to 110°C, making it possible to reduce dead time in the inverter circuit, which can secure higher operating efficiency. The very low threshold input current of max. 2mA allows direct drive of the device from an MCU.

TLP5751H, TLP5752H and TLP5754H are the latest devices, available in wide lead forming version (LF4) and with an extended temperature range to +125°C.

SO6L package
Toshiba’s SO6L package with 8mm clearance and creepage distances guarantees a maximum operating insulation voltage of 1230Vpk.

It’s maximum height of only 2.3mm makes it suitable for mounting on the backside of a PCB, which greatly improves the design flexibility for the front side.

SO6L wide lead forming option LF4
Toshiba’s SO6L package is available now with a wide lead forming option (LF4), which offers a pin distance of min. 9.35mm.

With the LF4 lead forming option, Toshiba’s SO6L package can be mounted directly on footprints of similar gate-driver packages on the market.

IGBT/ MOSFET gate driver coupler lineup

<table>
<thead>
<tr>
<th>Peak output current</th>
<th>Propagation delay time (max.)</th>
<th>Supply voltage Vcc</th>
<th>Threshold input current IFLH (max.)</th>
<th>Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>±6 A</td>
<td>500 ns</td>
<td>15 V ~ 30 V</td>
<td>5 mA</td>
<td>SO6</td>
</tr>
<tr>
<td>±4 A</td>
<td>150 ns</td>
<td>15 V ~ 30 V</td>
<td>4 mA / 6 mA</td>
<td>SO4L</td>
</tr>
<tr>
<td>±2.5 A</td>
<td>150 ns</td>
<td>15 V ~ 30 V</td>
<td>4 mA</td>
<td>SO6L</td>
</tr>
<tr>
<td>±1 A</td>
<td>150 ns</td>
<td>15 V ~ 30 V</td>
<td>4 mA</td>
<td>SO6L</td>
</tr>
<tr>
<td>±0.6 A</td>
<td>200 ns</td>
<td>15 V ~ 30 V</td>
<td>7.5 mA</td>
<td>SO6L</td>
</tr>
</tbody>
</table>

*1 SO6L, SO8L, SO16L and F type of DIP Photocouplers have 8mm clearance / creepage distances
Photocouplers with a maximum operating temperature of 110°C
Photocouplers with a maximum operating temperature of 125°C

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