

## Photocoupler with UVLO for switching power supplies controlled digitally and IPM drives

"TLP2735" is Toshiba Electric Device & Storage Corporation's first high speed IC photocoupler, which incorporates UVLO<sup>[1]</sup> function, for MOSFET gate signal insulation.

By adopting UVLO<sup>[1]</sup> function, the photocoupler has little influence from noise like that generated in power supply line, and can prevent malfunction when the equipment turns on.

With an isolation voltage of 5 kVrms (min) between the input and output, as well as conformity with the IEC60747-5-5<sup>[2]</sup> photocoupler safety standard, TLP2735 is also suitable for applications requiring high insulation performance.

The operating power supply voltage in the output side is 9 V to 20 V, specifications suited to MOSFET gate voltages, and the propagation delay time is 100 ns (max), fast for a photocoupler designed for MOS gate insulation. As its power supply voltage is high, it can also be used for Intelligent Power Module (IPM) input insulation.

Simply adding a buffer circuit to the subsequent stage of TLP2735, a MOSFET insulation gate drive circuit can be implemented. In addition, with its operating temperatures of -40°C to 125°C, it can also be used in a high temperature environment.

The latest Gartner market report recognizes Toshiba as the leading manufacturer of optocouplers by sales in 2015 and 2016, with 23 % of sale-based market share in CY2016. (Source: Gartner, Inc. "Market Share: Semiconductor Devices and Applications Worldwide 2016" 30 March, 2017)

Toshiba Electronic Devices & Storage Corporation will continue to develop products that meet the needs of customers by promoting the development of a diverse portfolio of photocouplers and photorelays tailored to market trends.



### Features

- Built-in UVLO<sup>[1]</sup> function with hysteresis
- High operating temperature rating:  $T_{opr (max)}=125^{\circ}\text{C}$
- SO6L package adoption with long creepage distance and thin [Height 2.3 mm (max), creepage and clearance distances 8 mm (min), supporting reinforced isolation]

### Applications

- MOSFET gate signal insulation
- Switching power supplies controlled digitally
- Industrial automation equipment (IPM signal insulation)



Power supplies


Notes:

[1] UVLO (Under Voltage Lock Out)

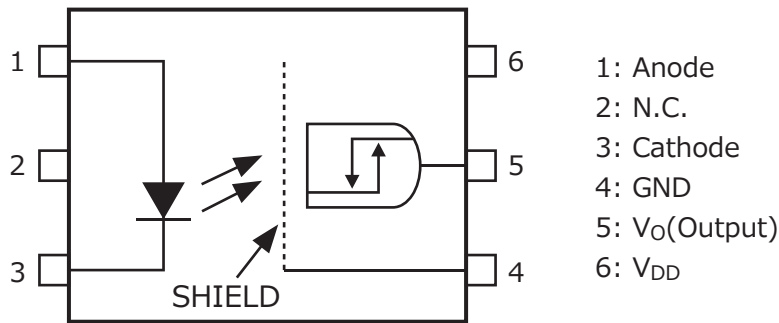
[2] IEC60747-5-5 conformity: Maximum allowable operating isolation voltage  $V_{IORM}=1140\text{ Vpeak}$

# Product Specifications

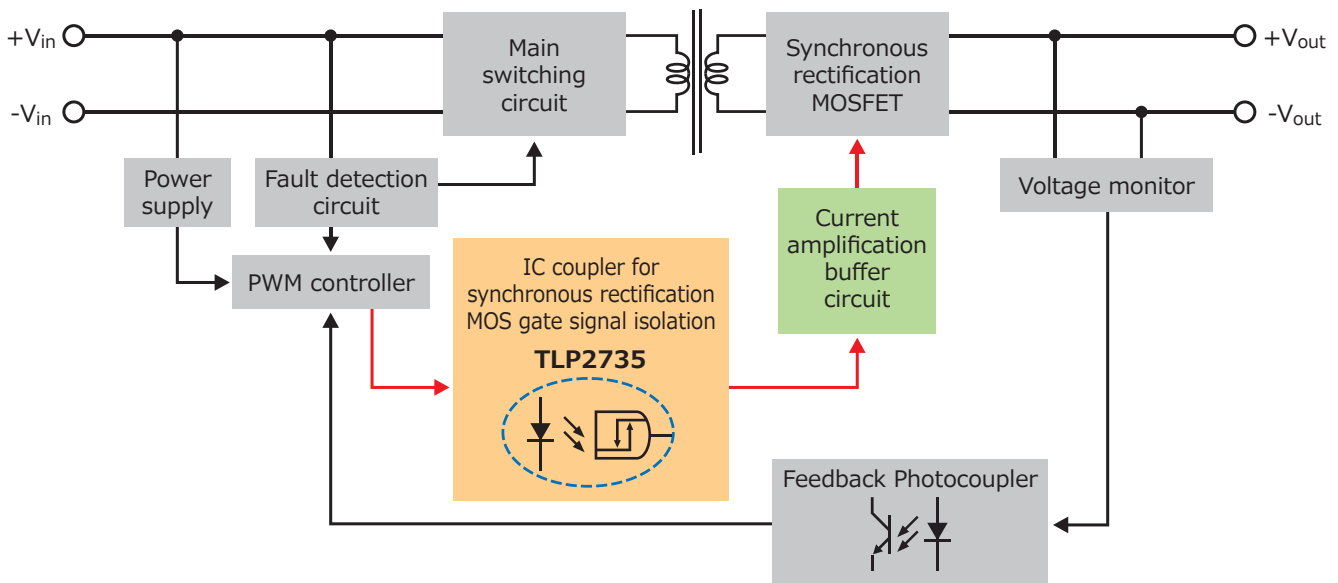
(Unless otherwise specified @T<sub>a</sub>= -40 to 125°C)

Part number	Package	Creepage distances min (mm)	Absolute maximum ratings	Isolation voltage BV <sub>s</sub> min @T <sub>a</sub> =25°C (kVrms)	Threshold input current (L→H) I <sub>FLH</sub> max (mA)	UVLO threshold voltage V <sub>UVLO+</sub> , V <sub>UVLO-</sub> typ. (V)	Propagation delay time t <sub>pHL</sub> , t <sub>pLH</sub> max (ns)	Common-mode transient immunity CM <sub>H</sub> , CM <sub>L</sub> min (kV/μs)
			Operating temperature T <sub>opr</sub> (°C)					
TLP2735	 SO6L	8	-40 to 125	5	3	8.1/7.5	100	±25

## Pin Connection



## Application Circuit Example



### Switching power supplies controlled digitally

The application circuits shown in this document are provided for reference purposes only. Thorough evaluation is required, especially at the mass-production design stage. Toshiba Electronic Devices & Storage Corporation does not grant any license to any industrial property rights by providing these examples of application circuits.

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