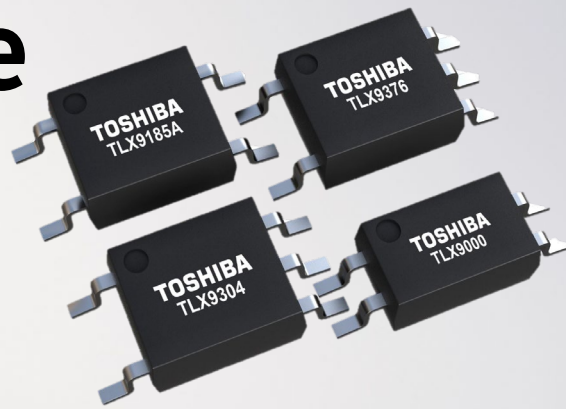


Automotive Couplers



AEC-Q101 Qualified Line-up

Toshiba offers a new generation of AEC-Q101 qualified photocopplers compliant to the requirements of most automotive applications. With more than 20 years of experience in the automotive photocopplers market, Toshiba provides suitable products for the increasing isolation requirements in today's automotive applications.

Applications

- EV/HEV
- BMS
- DC-DC converter
- Inverter

Features

- Wide range of AEC-Q qualified couplers with extended temp. range from -40°C to +125°C
- Extensive range of data rate options up to 20Mbps
- Optical isolation with guaranteed internal galvanic isolation distance of minimum 0.4mm
- Leading edge technology for highest reliability and lowest power consumption
- Packages with clearance and creepage distances of 5mm

Advantages

- Products are perfectly applicable for harsh automotive environments
- Free choice of speed options for various communication standards
- Provides best in class isolation performance
- Enables highest system performance and efficiency
- Packages meet the required safety standards

Benefits

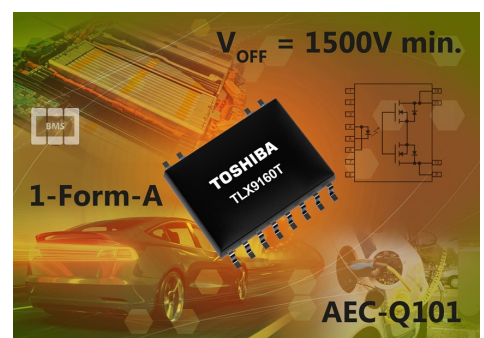
- Attractive cost effects
- High reliability of end products reduces cost of operation failures
- Ability to reduce bill of material costs due to most effective solutions
- Customers can save money through design and space optimisation
- Smart performance increases
- Reduction of end product size leads to a unique selling proposition for the customer
- Easy design for best performance

New high voltage 1500V photorelay

The new TLX9160T is Toshiba's first device with a high output withstand voltage (V_{OFF}) of at least 1500V.

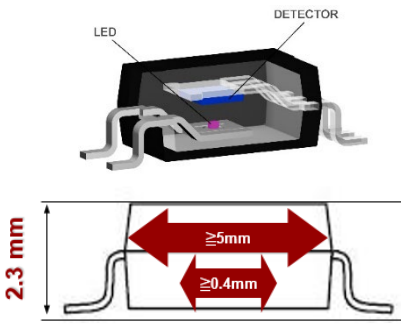
The device is fully AEC-Q101 qualified with an operating temperature (T_{opr}) from -40°C to +125°C.

For battery management system (BMS), ground fault detection and identifying faults with mechanical relays.



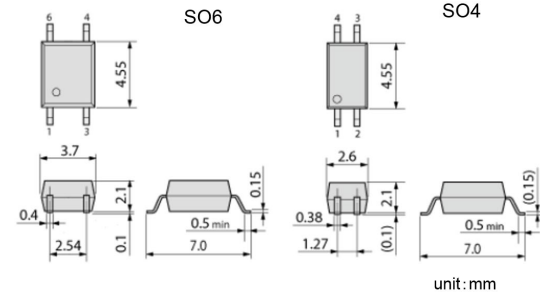
Package and construction of automotive couplers – SO6 & SO4 packages

SO6/SO4 construction



Features:

- Creepage and clearance distances $\geq 5\text{mm}$
- Internal isolation thickness $\geq 0.4\text{mm}$
- Low-profile package $\leq 2.3\text{mm}$
- Isolation voltage = 3750Vrms (min)



Photorelay

Clearance and Creepage distances				5mm min. / 8mm min.
Off-State voltage (max.) [V]	On-Resistance (max.) [Ω]	On-State current (pk) (max.) [A]	Output configuration	SO6 / SO16L
600	335	0.08		TLX9175J
1500	250	0.15		TLX9160T

Photovoltaic output

Clearance and Creepage distances			5mm min.
Open voltage Voc [V]	Short-circuit current Isc [μA]	Output configuration	SO6
9	30		TLX9905
9	30		TLX9906
17.5	18		TLX9910

IC output

Clearance and Creepage distances		5mm min.
Data rate (standard)	Output configuration	SO6
1 Mbps	Open collector (analog output) 	TLX9309
1 Mbps	Open collector 	TLX9304
5 Mbps	Totempole 	TLX9310
10 Mbps	Open collector 	TLX9378
20 Mbps	Totempole 	TLX9376

Transistor output

Clearance and Creepage distances		5mm min.	
Isolation voltage BVs [Vrms]	Output configuration	SO4	SO6
3750		TLX9000	TLX9300
		TLX9291A	TLX9185A
		High V _{CEO} 200V	NEW: TLX9188