

PHOTOCOUPLER

> PHOTORELAYS

Ideal for Industrial Applications

Photorelays are a type of photocoupler consisting of an LED optically coupled with a MOSFET. They offer many advantages over mechanical relays such as long operational life, low-current drive and fast response. Widely used for contact switching in various industrial applications, Toshiba photorelays provide low R_{ON} , low C_{OFF} , devices in various packages featuring high current and high off-state voltage.



> APPLICATIONS

- FA (Factory Automation)
- PLC (Programmable Logic Controllers)
- Security Systems
- Measurement Equipment
- HVAC (Heating Ventilation and Air Conditioning)
- BMS (Battery Management Systems)
- ATE (Automatic Test Equipment)
- Smart Meters

> FEATURES

> ADVANTAGES

> BENEFITS

No mechanical contacts, no wear and tear

No wear and tear induced degradation

Leading edge technology for best technical performance

Devices offer highest currents and fastest switching

Drive directly from MCU

Improved system efficiency, lowest power consumption

Large package variety including smallest S-VSON package

Suitable photorelay for each application and available space

Wide range of photorelays with extended temp range from -40°C up to $+110^{\circ}\text{C}$

Products are flexible applicable in harsh industrial environments

Optical isolation with guaranteed internal galvanic isolation

Provides best in class Isolation

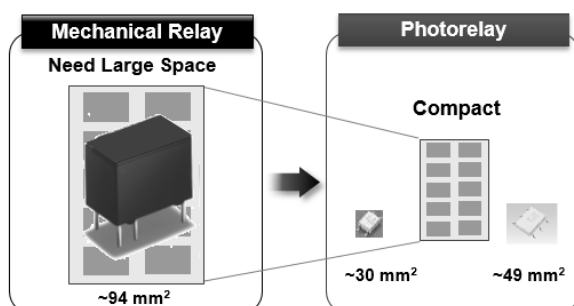
Attractive cost advantages

- Maintenance free
- Fewer field failures due to higher product reliability and lifetime
- Less EMI considerations
- Smaller footprint compared with mechanical relays

Smart performance improvements

- High speed switching
- No operational noise
- Less power consumption
- Simple design for best performance

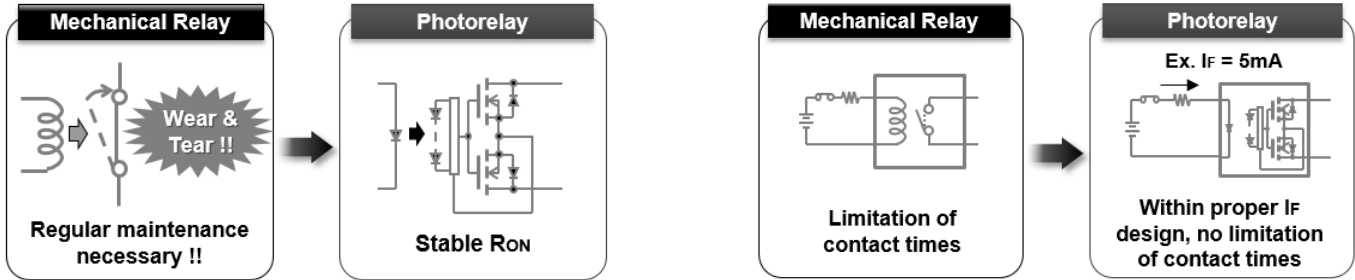
> MECHANICAL COMPARISON BETWEEN PHOTORELAYS AND MECHANICAL RELAYS



Mechanical relays need greater space on the PCBs and create noise. Photorelays are very compact and the necessary space on the PCB is only 1/2 to 1/3 compared with the space requirement of mechanical relays. Photorelays do not create any noise, which makes them ideal in applications, where silent operation is necessary.

➤ TECHNICAL ADVANTAGES OF PHOTORELAYS OVER MECHANICAL RELAYS

The excellent combination of Toshiba's high performance, long life LEDs and MOSFETs guarantee stable contact resistance R_{ON} & unlimited switching frequency, this means they are maintenance free. Photorelays guarantee low power consumption, they can be directly driven from an MCU as they operate with low input current. Additionally photorelays have excellent high-speed and low noise switching characteristics.



➤ HIGH CURRENT PHOTORELAY LINEUP

Off-State Voltage V_{OFF}	On-State Current I_{ON}	On-state resistance R_{ON} max.	Terminal Capacitance C_{OFF} typ.	Package							
				S-VSON4	VSON4	SO6	2.54SOP4	2.54SOP6	DIP4	DIP6	DIP8
Package											
600 V	0,6 A	2 Ω	4300 pF								TLP3549
400 V	0,4 A	5 Ω	410 pF								TLP3548
	0,11 A	50 Ω	30 pF			TLP172GAM H					
200 V	1,5 A	0,5 Ω	400 pF								TLP3825
	0,7 A	0,15 Ω	110 pF						TLP3558A		
	0,4 A	2 Ω	100 pF				TLP3145				
100 V	3,5 A	2 Ω	450 pF								TLP3546A
	3 A	0,6 Ω	720 pF								TLP3823
	2 A	0,2 Ω	110 pF						TLP3556A		
	2 A	0,07 Ω	500 pF					TLP3109			
	1 A	0,7 Ω	200 pF						TLP3556		
	0,65 A	0,6 Ω	50 pF	TLP3409S H							
60 V	5 A	0,05 Ω	850 pF								TLP3547
	4 A	0,06 Ω	640 pF								TLP3545A
	3,3 A	0,06 Ω	700 pF					TLP3107			
	2,5 A	0,065 Ω	400 pF								TLP3542
	2,3 A	0,07 Ω	1000 pF					TLP3103			
	2 A	0,2 Ω	250 pF						TLP3555		
	1,7 A	0,13 Ω	250 pF					TLP3127			
	1,4 A	0,25 Ω	100 pF								
	1 A	0,3 Ω	80 pF	TLP3407S H				TLP3122A H			
40 V	0,7 A	2 Ω	100 pF								TLP176AM H
	3,5 A	0,06 Ω	1000 pF								TLP3544
	2,5 A	0,06 Ω	1000 pF					TLP3102			
	2,5 A	0,15 Ω	300 pF						TLP3554		
	2 A	0,15 Ω	300 pF						TLP241A		
30 V	5 A	0,04 Ω	1100 pF								TLP3543A
	4 A	0,04 Ω	1100 pF					TLP3106			
	1,5 A	0,2 Ω	120 pF	TLP3406S H							
20 V	4 A	0,05 Ω	1000 pF								TLP3543
	3 A	0,08 Ω	300 pF						TLP3553		
	2,5 A	0,05 Ω	1000 pF					TLP3100			
	1 A	0,22 Ω	40 pF								TLP3403 H

H Photocouplers with a maximum operating temperature of 110°C