TOSHIBA Photocoupler GaAs Ired & Photo−MOS FET

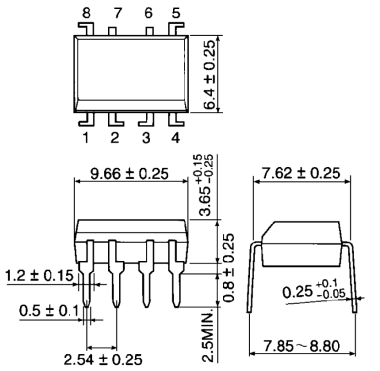
TLP3540

Memory Testers
Logic IC Testers
Data Recording Equipment
Measuring Equipment

TLP3540 is a photorelay and consists of a GaAs infrared emitting diode optically coupled to a photo−MOSFET in a 8−pin DIP package (DIP8). This photorelay has characteristics of low−on resistance when it turns on. It is suitable for 48 V power line on / off switches.

- 1−form−A
- Peak off−state voltage: 60V(min.)
- Trigger LED current: 5mA(max.)
- On−state current: 2A(max.)
- On− state resistance: 120mΩ(max.)
- Isolation voltage: 1500V_{rms}(min.)

Unit in mm



JEDEC	—
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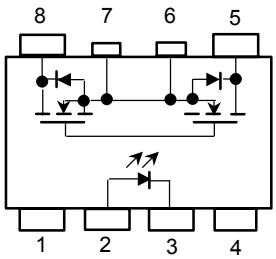
Weight: 0.54 g

Pin Configuration (top view)



1 : NC
2 : Anode
3 : Cathode
4 : NC
5 : Drain
6 : Source (shorten a pin)
7 : Source (shorten a pin)
8 : Drain

Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Junction temperature	T_j	125	°C
Detector	Off−state output voltage	V_{OFF}	60	V
	On−state current	I_{ON}	2	A
	Junction temperature	T_j	125	°C
Storage temperature		T_{stg}	−55~125	°C
Operating temperature		T_{opr}	−20~85	°C
Lead solder temperature (10 s)		T_{sol}	260	°C
Isolation voltage (AC, 1 min., R.H.≤ 60%) (Note 1)		BV_S	1500	V_{rms}

(Note 1): Device considered a two−terminal device: Pins 1, 2, 3 and 4 shorted together and pins 5 and 8 shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{OFF}	—	—	48	V
Forward current	I_F	10	—	30	mA
On−state current	I_{ON}	—	—	2	A
Operating temperature	T_{opr}	25	—	50	°C

Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	I_F = 20 mA	1.0	1.2	1.4	V
	Reverse voltage	I_R	V_R = 6 V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz	—	15	—	pF
Detector	Off−state current	I_{OFF}	V_{OFF} = 20V, Ta = 50°C	—	1.0	4.0	nA
	Capacitance	C_{OFF}	V = 0, f = 1MHz	—	600	1400	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	MIn.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	I_{ON} = 1 A	—	—	5	mA
On−state resistance	R_{ON}	I_{ON} = 1 A, I_F = 10mA	—	—	0.12	Ω

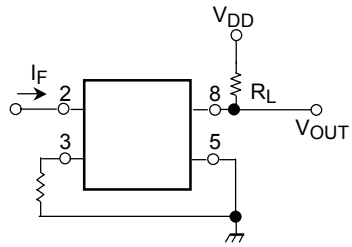
Isolation Characteristics (Ta = 25°C)

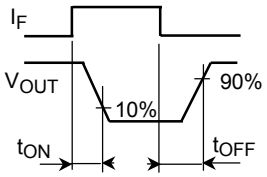
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C_S	V_S = 0V, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S = 500 V, R.H. ≤ 60%	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	Vdc

Switching Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn−on time	t_{ON}	R_L = 200Ω (Note2) V_{DD} = 20 V, I_F = 15 mA	—	—	5	ms
Turn−off time	t_{OFF}		—	—	3	

(Note 2): Switching time test circuit





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