TENTATIVE

TOSHIBA PHOTOCOUPLER PHOTO RELAY

TLP3542

TESTERS DATA RECORDING EQUIPMENT MEASURING EQUIPMENT

The TOSHIBA TLP3542 series consist of a aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a plastic DIP package.

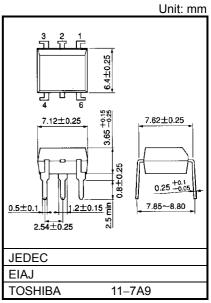
The TLP3452 series are a bi-directional switch, which can replace mechanical relays in many applications.

• 6 pin DIP (DIP6)

• 1-Form-A

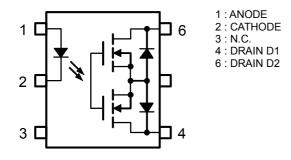
Peak Off-State Voltage : 60 V (MIN.)
 Trigger LED Current : 3 mA (MAX.)
 On-State Current : 2.5 A (MAX.)
 On-State Resistance : 100 mΩ (MAX.)
 Isolation Voltage : 2500 Vrms (MIN.)

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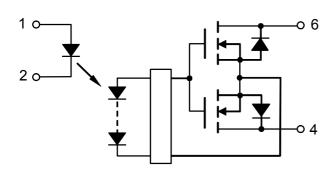


Weight: 0.4 g

PIN CONFIGURATION (TOL VIEW)



SCHEMATIC



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MAXIMUM RATINGS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
	Forward Current	ΙF	30	mA
	Forward Current Derating (Ta ≥ 25°C)	ΔI _F /°C	-0.3	mA/°C
LED	Peak Forward Current (100 μs pulse, 100 pps)	I _{FP}	1	Α
	Reverse Voltage	V _R	5	V
	Junction Temperature	Tj	125	°C
DETECTOR	Off-State Output Terminal Voltage	V _{OFF}	60	V
	On-State Current	I _{ON}	2.5	Α
	On-State Current Derating(Ta ≥ 40°C)	Δl _{ON} /°C	22	mA/°C
	Junction Temperature	Tj	125	°C
Storage Temperature Range		T _{stg}	-40 ~ 125	°C
Oper	ating Temperature Range	T _{opr}	-20~85	°C
Lead	Soldering Temperature (10 s)	T _{sol}	260	°C
Isolat	tion Voltage (AC, 1 minute, R.H. \leq 60%) (NOTE1)	BV _S	2500	Vrms

(NOTE1) :Device considered a two-terminal device : Pins 1, 2 and 3 shorted together, and pins 4 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{DD}	_	_	48	V
Forward Current	l _F	10	_	20	mA
On-State Current	I _{ON}	_	_	2.5	Α
Operating Temperature	T _{opr}	25	_	60	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
	Forward Voltage	V _F	I _F = 10 mA	1.18	1.33	1.48	V
LED	Reverse Current	I _R	V _R = 5 V	_	_	10	μА
	Capacitance	C _T	V = 0, f = 1 MHz	_	30	_	pF
DETECTOR	Off-State Current I _{OFF}	lorr	V _{OFF} = 20 V, Ta = 25°C	_	0.1	1.5	nA
		V _{OFF} = 60 V, Ta = 25°C	_	1.0	10	nA	
	Capacitance	C _{OFF}	V = 0, f = 1 MHz	_	400	600	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	I _{ON} = 1.0 A	_	1	3	mA
Return LED Current	I _{FC}	I _{OFF} = 10 μA	0.1	_	_	mA
On-State Resistance	R _{ON}	I _{ON} = 2.0 A, I _F = 10 mA, t = 10 ms	_	65	100	mΩ

ISOLATION CHARACTERISTICS (Ta = 25°C)

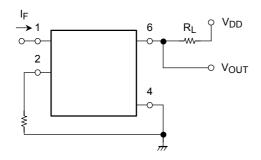
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	Cs	V _S = 0 V, f = 1 MHz	_	0.8	_	pF
Isolation Resistance	R _S	V _S = 500 V, R.H. ≦ 60%	5 × 10 ¹⁰	10 ¹⁴	_	Ω
		AC, 1 minute	2500	_	_	Vrms
Isolation Voltage	BV_S	AC, 1 second (in oil)	_	5000		VIIIIS
		DC, 1 minute (in oil)	_	5000		Vdc

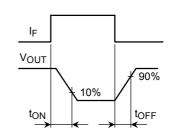
SWITCHING CHARACTERISTICS (Ta = 25°C)

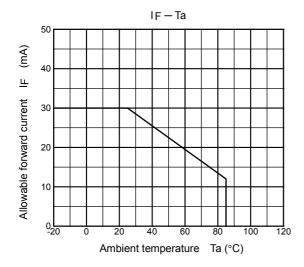
CHARACTERISTIC SYMBOL TEST CONDITION		MIN.	TYP.	MAX.	UNIT	
Turn-on Time	t _{ON}	$R_L = 200 \Omega$ (NOTE 2)	_	1.0	1.5	ms
Turn-off Time	t _{OFF}	$V_{DD} = 20 \text{ V}, I_F = 10 \text{ mA}$	_	0.2	0.4	1115

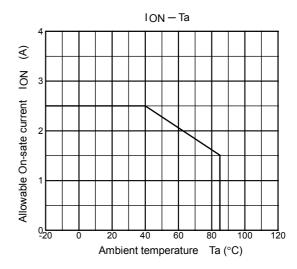
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(NOTE 2): SWITCHING TIME TEST CIRCUIT









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