Preliminary

TOSHIBA Photocoupler Photorelay

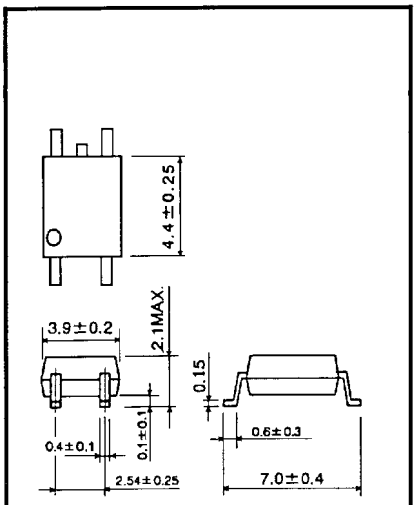
T L P 3 1 1 4

Measurement Instruments

Logic IC Testers/memory Testers

Board Testers/Scanners

Unit in mm



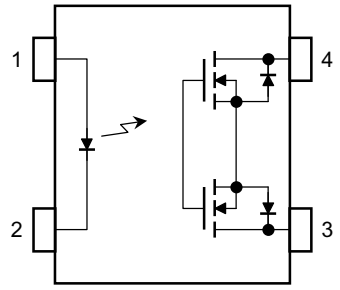
JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 0.1 g

The Toshiba TLP3114 SOP photorelay is a small-outline photorelay, suitable for surface-mount assembly. The TLP3114 consists of a GaAs infrared-emitting diode optically coupled to a photo-MOSFET and housed in a 4-pin 2.1-mm high SOP.
Its characteristics include low OFF-state current and low output pin capacitance, enabling it to be used in high-frequency measuring instruments.

- SOP (2.54SOP4): 2.1 mm high, 2.54-mm pitch
- 1 Form A
- Peek OFF-State Voltage: 40 V (min)
- Trigger LED Current: 4 mA (max)
- ON-State Current: 300 mA (max)
- ON-State Resistance: 3.0 Ω (max), 2.0 Ω (typ.)
- Output Capacitance: 7.0 pF (max), 5.0 pF (typ.)
- Isolation Voltage: 1500 Vrms (min)

Pin Configuration (top view)



1: ANODE
2: CATHODE
3: DRAIN
4: DRAIN

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Maximum Ratings (Ta = 25°C)

Characteristics		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}	40	V
	ON-state Current	I_{ON}	300	mA
	Peak ON-state Current (t = 100 ms, 1 shot)	I_{PEAK}	0.9	A
	Junction Temperature	T_j	125	°C
Storage Temperature		T_{stg}	−55~125	°C
Operating Temperature		T_{opr}	−20~85	°C
Lead Soldering Temperature (10 s)		T_{sol}	260	°C
Isolation Voltage (AC, 1 min, R.H. ≦ 60%) (Note 1)		BV_S	1500	Vrms

Note 1: Device considered a two-pin device: Pins 1 and 2 shorted together, and pins 3 and 4 shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply Voltage	V_{OFF}	—	—	32	V
Forward Current	I_F	10	—	30	mA
ON-state Current	I_{ON}	—	—	300	mA
Operating Temperature	T_{opr}	25	—	60	°C

Individual Electrical Characteristics (Ta = 25°C)

Characteristics		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
DETE-CTOR	OFF-state Current	I_{OFF}	V_{OFF} = 30 V, Ta = 50°C	—	—	1000	pA
	Output Capacitance	C_{OFF}	V = 0, f = 100 MHz	—	5.0	7.0	pF

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Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED Current	I_{FT}	I_{ON} = 100 mA	—	—	4	mA
Close LED Current	I_{FC}	I_{OFF} = 10 μA	0.2	0.75	—	mA
ON-state Resistance	R_{ON}	I_{ON} = 100 mA, I_F = 5 mA	—	2.0	3.0	Ω

Isolation Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance Input to Output	C_S	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
Isolation Voltage	BV_S	AC, 1 minute	1500	—	—	Vrms
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	Vdc

Switching Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Turn-ON Time	t_{ON}	R_L = 200 Ω (Note 2) V_{DD} = 20 V, I_F = 10 mA	—	—	500	μs
Turn-OFF Time	t_{OFF}		—	—	500	

Note 2: Switching Time Test Circuit