

UNDER DEVELOPMENT  
PRELIMINARY

TOSHIBA PHOTOCOUPLER    PHOTO RELAY

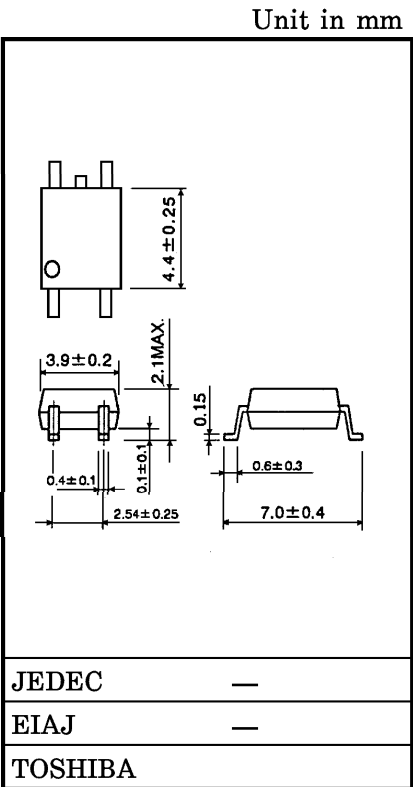
TLP3113

MEASUREMENT INSUTRUMENTS

- LOGIC IC TESTERS / MEMORY TESTERS
- BOARD TESTERS / SCANNERS

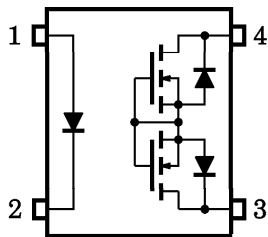
The Toshiba TLP3113 Mini-flat photorelay is a small-outline photorelay, suitable for surface-mount assembly. The TLP3113 consists of a GaAs infrared-emitting diode optically coupled to a photo-MOSFET and housed in a 4-pin package. Its characteristics include low OFF-state current and low output pin capacitance, enabling it to be used in high-frequency measuring instruments.

- SOP (2.54SOP4) : 2.1 mm high, 2.54-mm pitch
- 1 Form A
- Peak OFF-State Voltage : 40 V (min)
- Trigger LED Current : 4 mA (max)
- ON-State Current : 100 mA (max)
- ON-State Resistance : 35 Ω (max)
- Output Capacitance : 0.9 pF (max)
- Isolation Voltage : 1500 Vrms (min)



Weight : 0.1 g

PIN CONFIGURATION (TOP VIEW)



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

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● Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.

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## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I <sub>F</sub>	50	mA
	Reverse Voltage	V <sub>R</sub>	6	V
	Junction Temperature	T <sub>j</sub>	125	°C
DETECTOR	OFF-State Output Voltage	V <sub>OFF</sub>	40	V
	ON-State Current	I <sub>ON</sub>	100	mA
	Peak ON-State Current (t = 100 ms, 1 shot)	I <sub>peak</sub>	0.3	A
	Junction Temperature	T <sub>j</sub>	125	°C
Storage Temperature		T <sub>stg</sub>	−55~125	°C
Operating Temperature		T <sub>opr</sub>	−20~85	°C
Lead Soldering Temperature (10 s)		T <sub>sol</sub>	260	°C
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)		BV <sub>S</sub>	1500	Vrms

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

## RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN	TYP.	MAX	UNIT
Supply Voltage	V <sub>OFF</sub>	—	—	32	V
Forward Current	I <sub>F</sub>	10	—	30	mA
ON-State Current	I <sub>ON</sub>	—	—	100	mA
Operating Temperature	T <sub>opr</sub>	25	—	60	°C

## INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
LED	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> = 20 mA	1.0	1.2	1.4	V
	Reverse Voltage	I <sub>R</sub>	V <sub>R</sub> = 6 V	—	—	10	μA
	Capacitance	C <sub>T</sub>	V = 0, f = 1 MHz	—	15	—	pF
DETECTOR	OFF-State Current	I <sub>OFF</sub>	V <sub>OFF</sub> = 30 V, Ta = 50°C	—	—	1000	pA
	Output Capacitance	C <sub>OFF</sub>	V = 0, f = 100 MHz	—	0.6	0.9	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Trigger LED Current	IFT	ION = 100 mA	—	—	4	mA
ON-State Resistance	RON	ION = 100 mA, IF = 5 mA	—	25	35	Ω

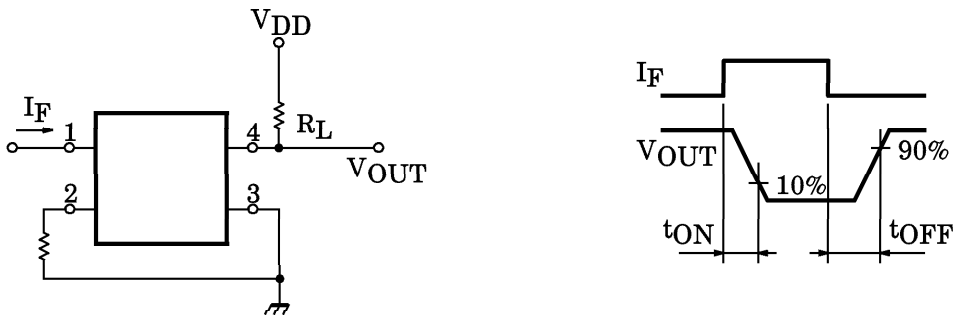
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Capacitance Input to Output	CS	VS = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	RS	VS = 500 V, R.H. ≤ 60%	5 × 10 <sup>10</sup>	10 <sup>14</sup>	—	Ω
Isolation Voltage	BVS	AC, 1 min	1500	—	—	Vrms
		AC, 1 s (in oil)	—	3000	—	
		DC, 1 min (in oil)	—	3000	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Turn-on Time	tON	RL = 200 Ω (Note 2)	—	—	1	ms
Turn-off Time	tOFF	VDD = 20 V, IF = 10 mA	—	—	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT



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