

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

TLP3111

MEASUREMENT INSTRUMENTS

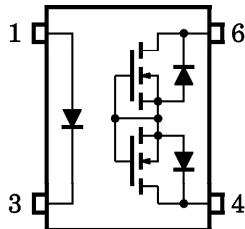
LOGIC IC TESTERS/MEMORY TESTERS

BOARD TESTERS/SCANNERS

The TOSHIBA MINI FLAT PHOTO RELAY TLP3111 is a small outline photo relay, suitable for surface mount assembly. The TLP3111 consists of a GaAs infrared emitting diode optically coupled to a photo-MOSFET in a 4 pin lead package (MFSOP6), and has characteristics of small off-state current and small output terminal capacitance, which enable the TLP3111 to be applied to measurement instruments. (especially to high-frequency measurements)

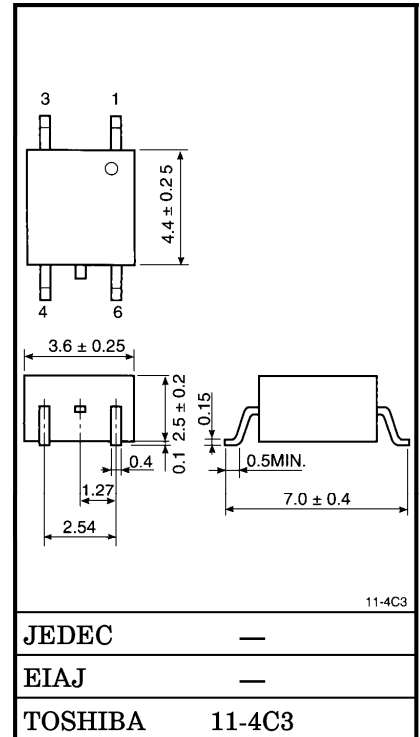
- 1-Form-A
- Peak Off-State Voltage : 80 V (MIN.)
- Trigger LED Current : 4 mA (MAX.)
- On-State Current : 100 mA (MAX.)
- On-State Resistance : 20 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)

PIN CONFIGURATION (TOP VIEW)



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

Unit in mm



Weight : 0.1 g

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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}	80	V
	On-State Current	I _{ON}	100	mA
	Junction Temperature	T _j	125	°C
Storage Temperature		T _{stg}	-40~125	°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 and 3 shorted together, and pins 4 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{OFF}	—	—	64	V
Forward Current	I _F	10	—	30	mA
On-State Current	I _{ON}	—	—	100	mA
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} = 30 V, Ta = 50°C	—	0.05	1	nA
	Capacitance	C _{OFF}	V = 0, f = 1 MHz	—	11	15	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	I _{ON} = 100 mA	—	—	4	mA
ON-State Resistance	R _{ON}	I _{ON} = 100 mA, I _F = 5 mA	—	16	20	Ω

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	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	—	—	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 = 200 Ω (Note 2)	—	—	1	ms
Turn-OFF Time	t _{OFF}	V _{DD} = 20 V, I _F = 10 mA	—	—	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT

