TOSHIBA Photocoupler GaAs Ired & Photo−MOS FET

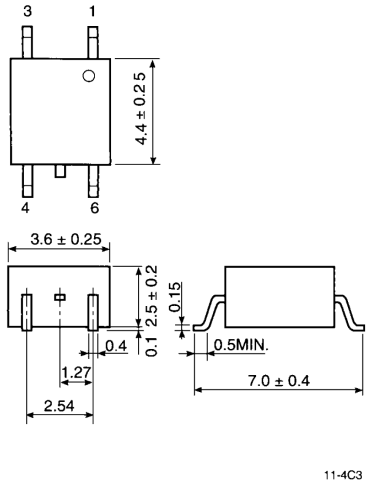
TLP3111

Measurement Instruments

Logic IC Testers / Memory Testers

Board Testers / Scanners

Unit in mm



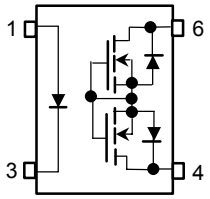
JEDEC	—
EIAJ	—
TOSHIBA	11−4C3

Weight: 0.1 g

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: 80V(min.)
- Trigger LED current: 4mA(max.)
- On−state current: 100mA(max.)
- On−state resistance: 20Ω(max.)
- Isolation voltage: 1500V_{rms}(min.)

Pin Configurations (top view)



1 : Anode
3 : Cathode
4 : Drain
6 : 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}	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

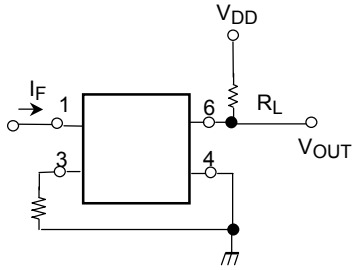
Isolation Characteristics (Ta = 25°C)

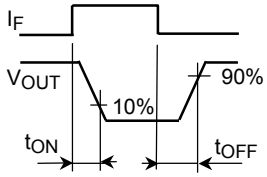
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C_S	V_S = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S = 500 V, R.H. ≤ 60%	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)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

Switching Characteristics (Ta = 25°C)

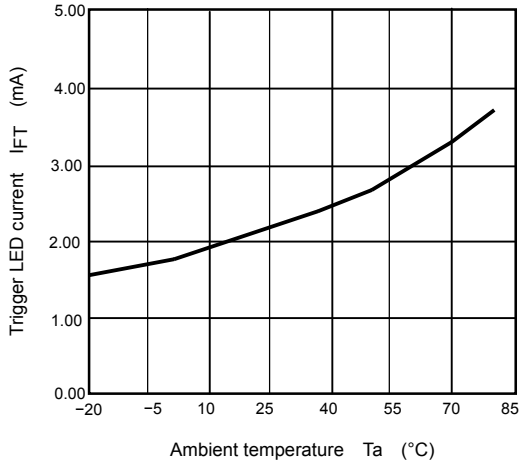
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn−on time	t_{ON}	R_L = 200 Ω (Note2) V_{DD} = 20 V, I_F = 10 mA	—	—	1	ms
Turn−off time	t_{OFF}		—	—	1	

(Note2): Switching time test circuit

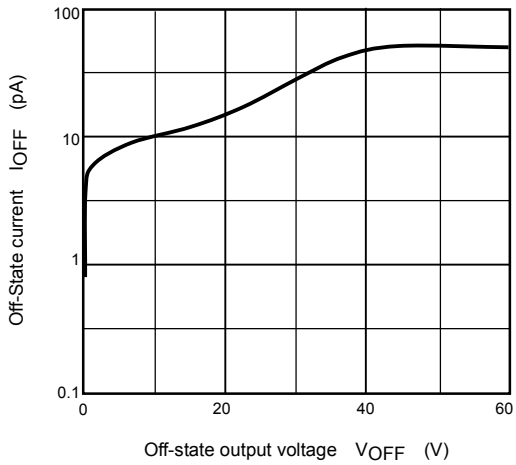




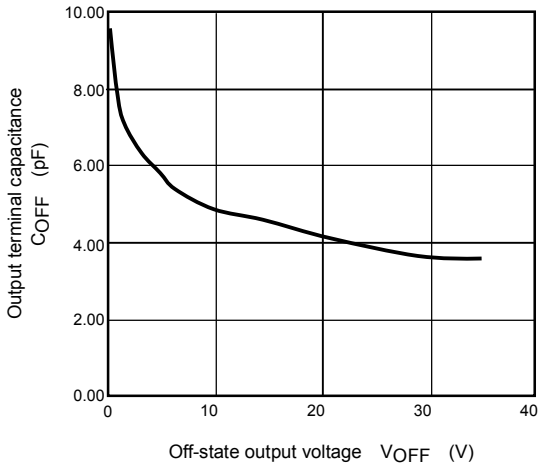
$I_{FT} - T_a$



$I_{OFF} - V_{OFF}$



$C_{OFF} - V_{OFF}$



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