TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

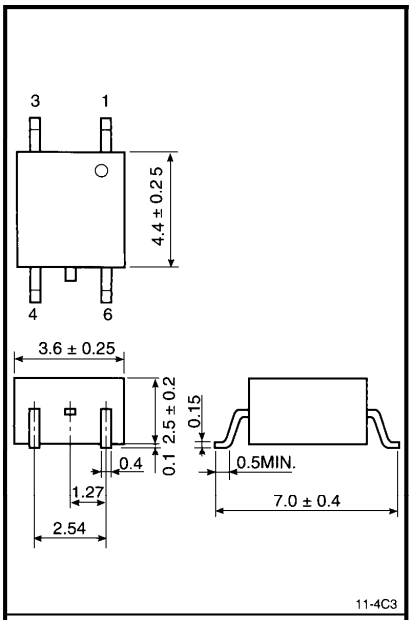
TLP3110

MEASUREMENT INSTRUMENTS

LOGIC IC TESTERS / MEMORY TESTERS

BOARD TESTERS / SCANNERS

Unit in mm



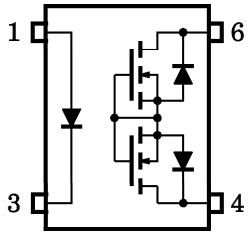
JEDEC	—
EIAJ	—
TOSHIBA	11-4C3

Weight : 0.1 g

The TOSHIBA MINI FLAT PHOTO RELAY TLP3110 is a small outline photo relay, suitable for surface mount assembly.
The TLP3110 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 TLP3110 to be applied to measurement instruments.

- 1-Form-A
- Peak Off-State Voltage : 60 V (MIN.)
- Trigger LED Current : 4 mA (MAX.)
- On-State Current : 350 mA (MAX.)
- On-State Resistance : 1.2 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)

PIN CONFIGURATION (TOP VIEW)



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

980910EBC1

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}	60	V
	On-State Current	I_{ON}	350	mA
	Junction Temperature	T_j	125	°C
Storage Temperature		T_{stg}	−40~125	°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	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}	—	—	48	V
Forward Current	I_F	10	—	30	mA
On-State Current	I_{ON}	—	—	350	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	—	0.4	1	nA
	Capacitance	C_{OFF}	V = 0, f = 1 MHz	—	100	150	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	I_{ON} = 350 mA	—	—	4	mA
ON-State Resistance	R_{ON}	I_{ON} = 350 mA, I_F = 5 mA	—	0.9	1.2	Ω

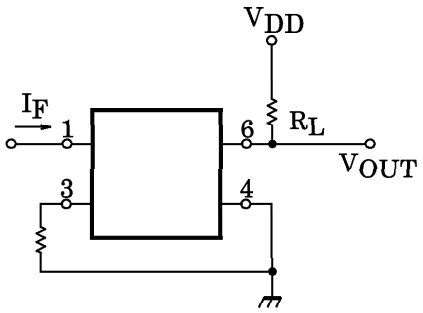
ISOLATION CHARACTERISTICS (Ta = 25°C)

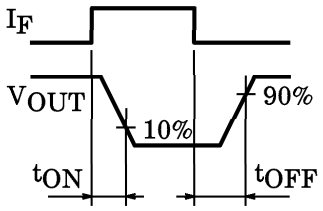
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500 V, R.H. ≦ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

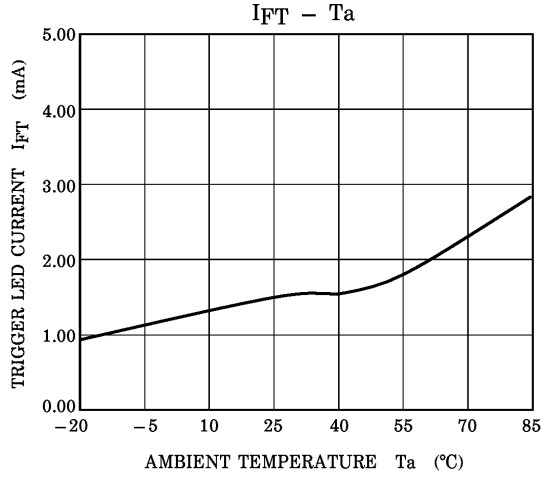
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-ON Time	t_{ON}	R_L = 200 Ω (Note 2)	—	—	1	ms
Turn-OFF Time	t_{OFF}	V_{DD} = 20 V, I_F = 10 mA	—	—	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT

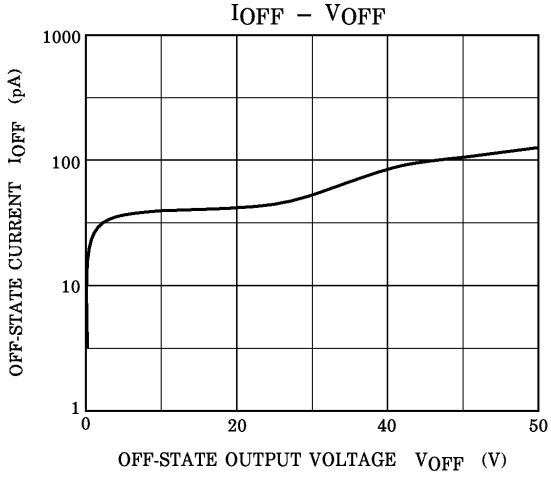




I_{FT} – Ta



I_{OFF} – V_{OFF}



C_{OFF} – V_{OFF}