

TLP3110

MEASUREMENT INSTRUMENTS

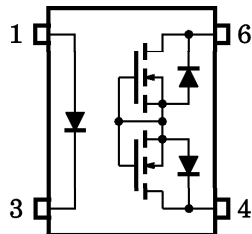
LOGIC IC TESTERS / MEMORY TESTERS

BOARD TESTERS / SCANNERS

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.

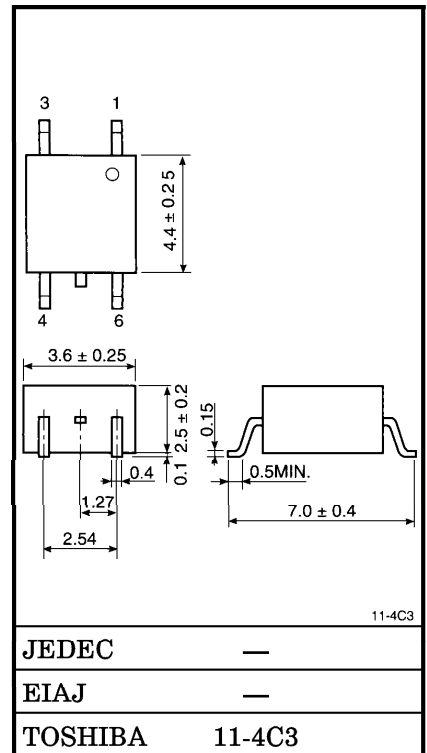
- 1-Form-A
- Peak Off-State Voltage : 60 V (MIN.)
- Trigger LED Current : 4 mA (MAX.)
- On-State Current : 350 mA (MAX.)
- On-State Resistance : 1.2 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)

PIN CONFIGURATION (TOP VIEW)



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

Unit in mm



Weight : 0.1 g

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 | $I_F = 20 \text{ mA}$ | 1.0 | 1.2 | 1.4 | V |
| | Reverse Voltage | I_R | $V_R = 6 \text{ V}$ | — | — | 10 | μA |
| | Capacitance | C_T | $V = 0, f = 1 \text{ MHz}$ | — | 15 | — | pF |
| DETECTOR | Off-State Current | I_{OFF} | $V_{OFF} = 30 \text{ V}, T_a = 50^\circ\text{C}$ | — | 0.4 | 1 | nA |
| | Capacitance | C_{OFF} | $V = 0, f = 1 \text{ MHz}$ | — | 100 | 150 | pF |

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

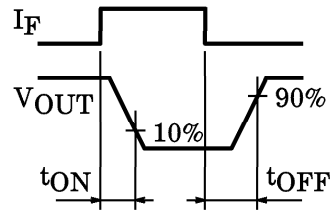
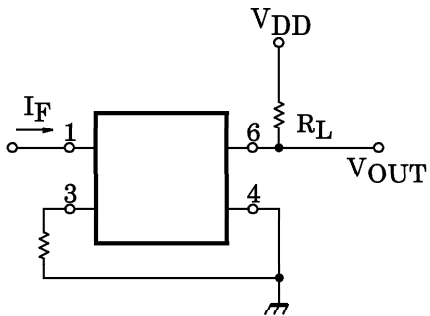
ISOLATION CHARACTERISTICS (Ta = 25°C)

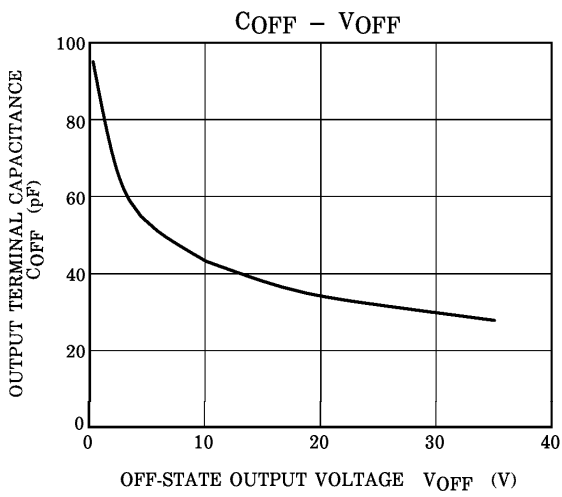
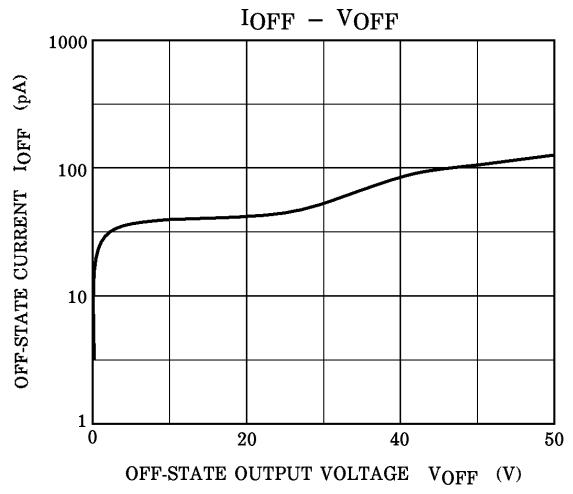
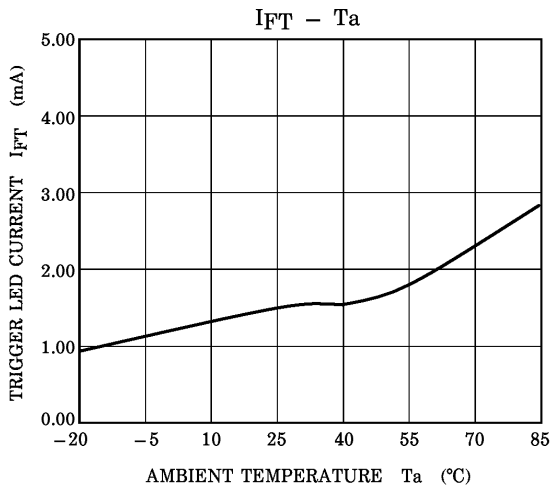
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|-----------------------------|-----------------|------------------------------------|----------------------|------------------|------|------------------|
| Capacitance Input to Output | C _S | V _S = 0 V, f = 1 MHz | — | 0.8 | — | 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 | — | V _{rms} |
| | | 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 (Note 2) | — | — | 1 | ms |
| Turn-OFF Time | t _{OFF} | V _{DD} = 20 V, I _F = 10 mA | — | — | 1 | |

(Note 2) : SWITCHING TIME TEST CIRCUIT





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