**UNDER DEVELOPMENT**
**PRELIMINARY**

TOSHIBA PHOTOCOUPLER PHOTORELAY

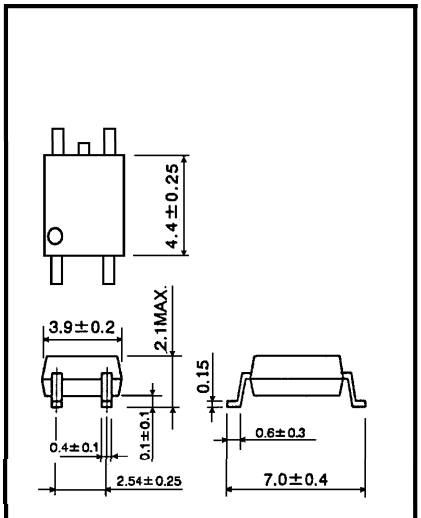
# TLP3113

MEASUREMENT INSUTRUMENTS

LOGIC IC TESTERS / MEMORY TESTERS

BOARD TESTERS / SCANNERS

Unit in mm



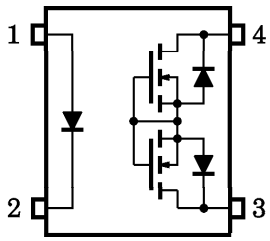

| | |
|---|---|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | |

Weight : 0.1 g

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)

PIN CONFIGURATION (TOP VIEW)




1 : ANODE
2 : CATHODE
3 : DRAIN
4 : 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 | $V_{OFF}$ | 40 | V |
| | ON-State Current | $I_{ON}$ | 100 | mA |
| | Peak ON-State Current (t = 100 ms, 1 shot) | $I_{peak}$ | 0.3 | A |
| | Junction Temperature | $T_j$ | 125 | °C |
| Storage Temperature | | $T_{stg}$ | −55~125 | °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 | 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 | $V_{OFF}$ | — | — | 32 | V |
| Forward Current | $I_F$ | 10 | — | 30 | mA |
| ON-State Current | $I_{ON}$ | — | — | 100 | mA |
| Operating Temperature | $T_{opr}$ | 25 | — | 60 | °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 | — | — | 1000 | pA |
| | Output Capacitance | $C_{OFF}$ | 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 | $I_{FT}$ | $I_{ON}$ = 100 mA | — | — | 4 | mA |
| ON-State Resistance | $R_{ON}$ | $I_{ON}$ = 100 mA, $I_F$ = 5 mA | — | 25 | 35 | Ω |

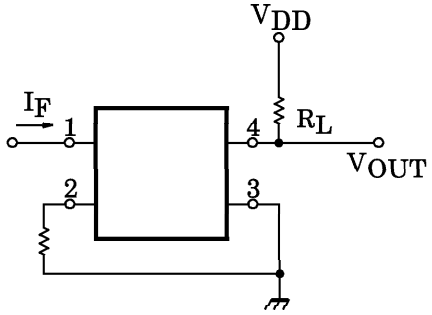
ISOLATION CHARACTERISTICS (Ta = 25°C)

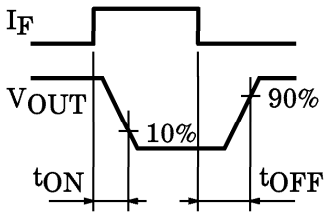
| CHARACTERISTIC | SYMBOL | TEST CONDITION | MIN | TYP. | MAX | UNIT |
|---|---|---|---|---|---|---|
| Capacitance Input to Output | $C_S$ | $V_S$ = 0 V, f = 1 MHz | — | 0.8 | — | pF |
| Isolation Resistance | $R_S$ | $V_S$ = 500 V, R.H. ≦ 60% | $5 \times 10^{10}$ | $10^{14}$ | — | Ω |
| Isolation Voltage | $BV_S$ | 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 | $t_{ON}$ | $R_L$ = 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




PRELIMINARY

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