

# TLP3122

## MEASUREMENT INSTRUMENTS

## LOGIC TESTERS / MEMORY TESTERS

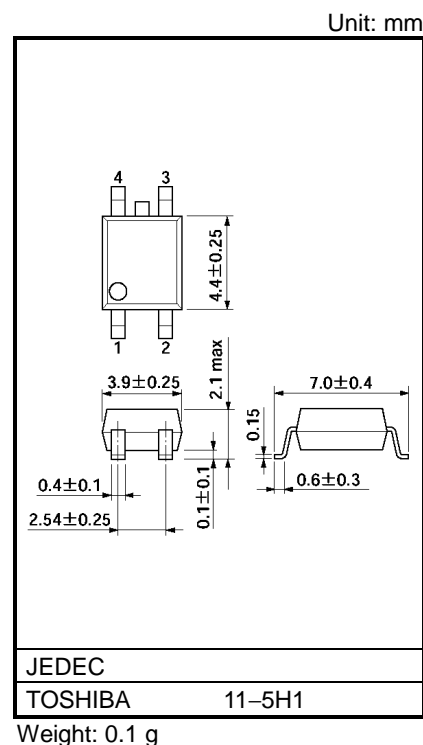
## BOARD TESTERS / SCANNERS

## POWER LINE CONTROL

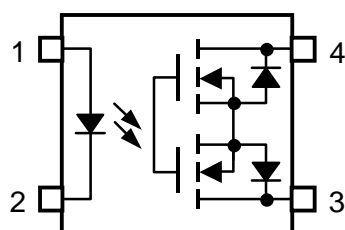
## FA

The TOSHIBA TLP3122 consist of a gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a plastic SOP package. The TLP3122 is a bi-directional switch, which can replace mechanical relays in many applications. And its its high on-state current maximum rating is suitable to control a power line.

- 4 pin SOP (2.54SOP4) : 2.1 mm high, 2.54 mm pitch
- 1-Form-A
- Peak Off-State Voltage : 60 V (MIN.)
- Trigger LED Current : 3 mA (MAX.)
- On-State Current : 1A (MAX.)
- On-State Resistance : 0.25 ohm (Typ)
- Off-state Capacitance : 90 pF (Typ)
- Off-state Current : 100nA (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
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	Reverse Voltage	$V_R$	5	V
	Junction Temperature	$T_j$	125	°C
DETECTOR	Off-State Output Terminal Voltage	$V_{OFF}$	60	V
	On-State Current	$I_{ON}$	1	A
	On-State Current Derating (Ta ≥ 50°C)	$\Delta I_{ON}/^\circ\text{C}$	-13.3	mA/°C
	Junction Temperature	$T_j$	125	°C
Storage Temperature Range		$T_{stg}$	-40~125	°C
Operating Temperature Range		$T_{opr}$	-20~85	°C
Lead Soldering Temperature (10 s)		$T_{sol}$	260	°C
Isolation Voltage (AC, 1 minute, R.H. ≤ 60%) (NOTE1)		$BV_S$	1500	Vrms

(NOTE1) : Device considered a two-terminal device : LED side pins shorted together, and DETECTOR side pins shorted together.

**RECOMMENDED OPERATING CONDITIONS**

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{DD}$	—	—	48	V
Forward Current	$I_F$	5	10	20	mA
On-State Current	$I_{ON}$	—	—	1	A
Operating Temperature	$T_{opr}$	25	—	60	°C

**INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse Current	$I_R$	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	$C_T$	$V = 0, f = 1 \text{ MHz}$	—	15	—	pF
DETECTOR	Off-State Current	$I_{OFF}$	$V_{OFF} = 60 \text{ V}$	—	0.2	100	nA
	Capacitance	$C_{OFF}$	$V = 0, f = 1 \text{ MHz}$	—	90	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	IFT	ION = 100 mA	—	1	3	mA
Return LED Current	IFC	IOFF = 100 μA	0.1	0.8	—	mA
On-State Resistance	RON	ION = 1 A, IF = 5 mA		0.25	0.7	ohm

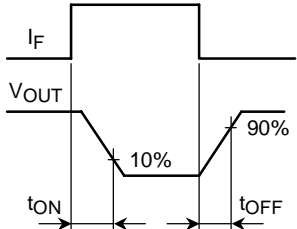
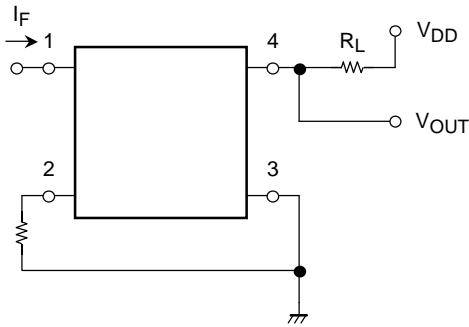
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	CS	VS = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	RS	VS = 500 V, R.H. ≤ 60%	5 × 10 <sup>10</sup>	10 <sup>14</sup>	—	ohm
Isolation Voltage	BVS	AC, 1 minute	1500	—	—	Vrms
		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	tON	RL = 200 Ω (NOTE 2) VDD = 20 V, IF = 5mA	—	1.4	3	ms
Turn-off Time	tOFF		—	0.6	1	

(NOTE 2) : SWITCHING TIME TEST CIRCUIT



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