

TLP199D

MEASUREMENT INSTRUMENTS

LOGIC IC TESTERS / MEMORY TESTERS

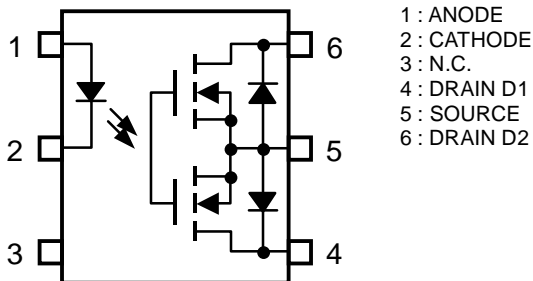
BOARD TESTERS / SCANNERS

The TOSHIBA TLP199D consist of a gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a plastic SOP package. Its characteristics include low OFF-state current and low output pin capacitance, enabling it to be used in high-frequency measurement instruments.

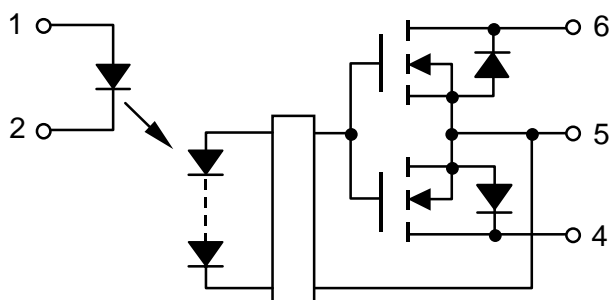
FEATURES

- 6 pin SOP (2.54SOP6) : 2.1 mm high, 2.54 mm pitch
- 1-Form-A
- Peak Off-State Voltage : 200 V (min)
- Trigger LED Current : 3 mA (max)
- On-State Current : 50 mA (max)
- On-State Resistance : 50 ohm (max)
- Output Capacitance : 20 pF (max)
- Isolation Voltage : 1500 Vrms (min)

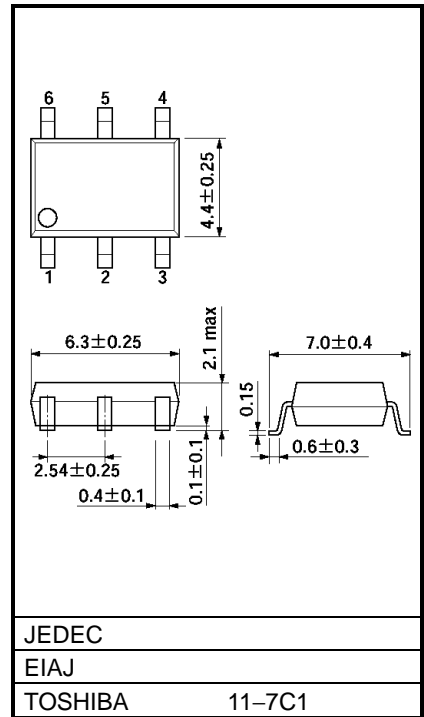
PIN CONFIGURATION (TOL VIEW)



SCHEMATIC



Unit: mm



Weight: 0.13 g

MAXIMUM RATINGS (Ta = 25°C)

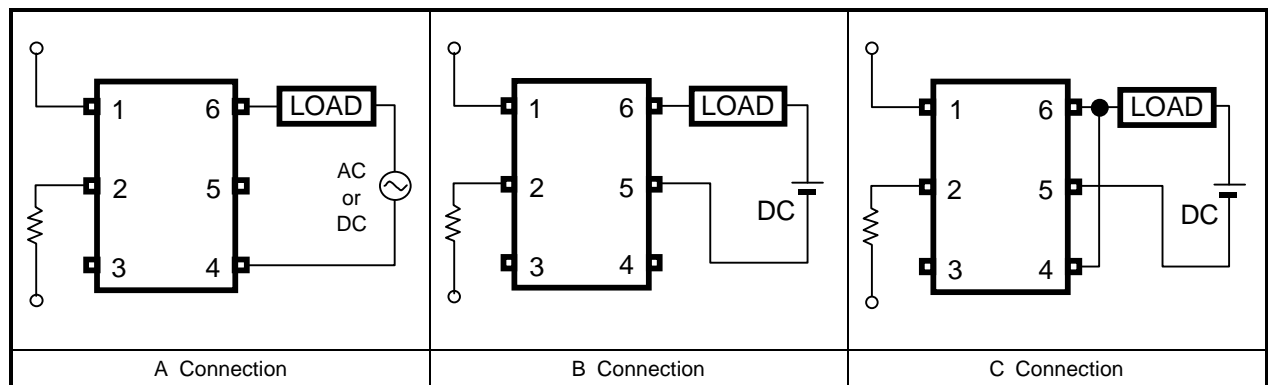
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	I_F	50	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
DETECTOR	Off-State Output Terminal Voltage	V_{OFF}	200	V	
	On-State Current	A Connection	I_{ON}	50	mA
		B Connection		50	
		C Connection		100	
	On-State Current Derating (Ta ≥ 25°C)	A Connection	$\Delta I_{ON}/^\circ\text{C}$	-0.5	mA/°C
		B Connection		-0.5	
		C Connection		-1.0	
Junction Temperature		T_j	125	°C	
Storage Temperature Range		T_{stg}	-55~125	°C	
Operating Temperature Range		T_{opr}	-40~85	°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 are shorted together, and DETECTOR side pins are shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	Min	Typ.	Max	UNIT
Supply Voltage	V_{DD}	—	—	160	V
Forward Current	I_F	5	7.5	15	mA
On-State Current	I_{ON}	—	—	50	mA
Operating Temperature	T_{opr}	-20	—	60	°C

CIRCUIT CONNECTIONS



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	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 160 \text{ V}$	—	—	1	nA
	Capacitance	C_{OFF}	$V = 0, f = 1 \text{ MHz}$	—	15	20	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Trigger LED Current		I_{FT}	$I_{ON} = 50 \text{ mA}$	—	1	3	mA
Return LED Current		I_{FC}	$I_{OFF} = 100 \mu\text{A}$	0.1	—	—	mA
On-State Resistance	A Connection	R_{ON}	$I_{ON} = 50 \text{ mA}, I_F = 5 \text{ mA}$	—	40	50	Ω
	B Connection		$I_{ON} = 50 \text{ mA}, I_F = 5 \text{ mA}$	—	30	40	
	C Connection		$I_{ON} = 100 \text{ mA}, I_F = 5 \text{ mA}$	—	15	—	

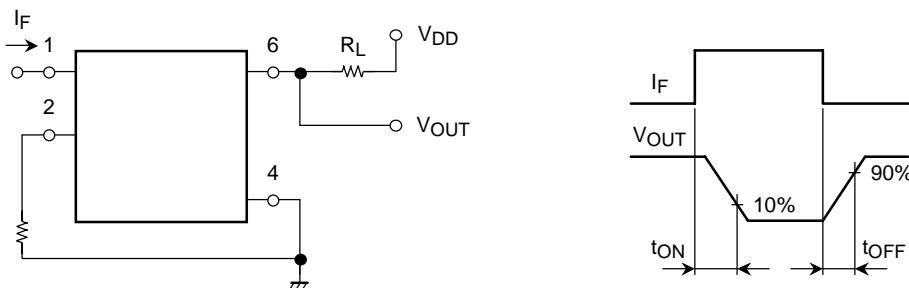
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Capacitance Input to Output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	1500	—	—	Vrms
		AC, 1 second (in oil)	—	3000	—	—
		DC, 1 minute (in oil)	—	3000	—	—

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Turn-on Time	t_{ON}	$R_L = 200 \Omega$ (NOTE 2) $V_{DD} = 10 \text{ V}, I_F = 5 \text{ mA}$	—	—	0.5	ms
Turn-off Time	t_{OFF}		—	—	0.2	

(NOTE 2) : SWITCHING TIME TEST CIRCUIT



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