

TLP179D

MEASUREMENT INSTRUMENTS

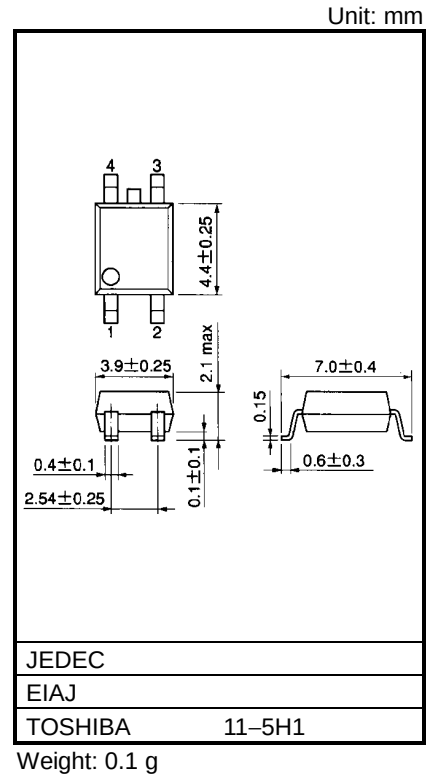
LOGIC IC TESTERS / MEMORY TESTERS

BOARD TESTERS / SCANNERS

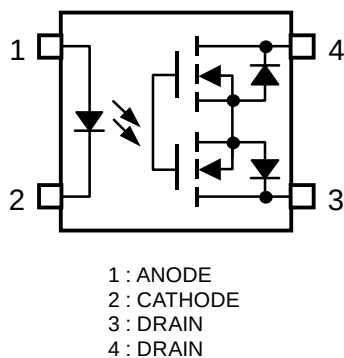
The TOSHIBA TLP179D Mini-flat photorelay is a small-outline photorelay, suitable for surface-mount assembly. The TLP179D consists of a GaAs infrared-emitting diode optically coupled to a photo-MOS FET and housed in a 4-pin package. Its characteristics include low OFF-state current and low output pin capacitance, enabling it to be used in high-frequency measuring instruments.

FEATURES

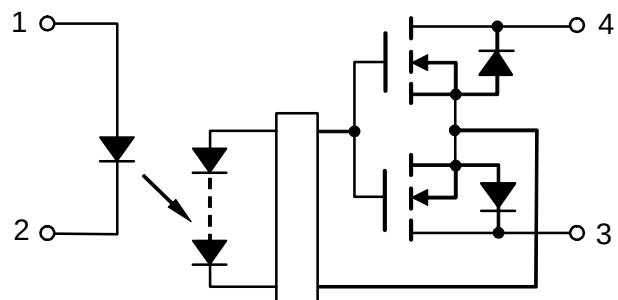
- 4 pin SOP (2.54SOP4) : 2.1 mm high, 2.54 mm pitch
- 1-Form-A
- Peak Off-State Voltage : 200 V (MIN.)
- Trigger LED Current : 3 mA (MAX.)
- On-State Current : 50 mA (MAX.)
- On-State Resistance : 50 Ω (MAX.), 40 Ω (TYP.)
- Output Capacitance : 20 pF (MAX.), 15 pF (TYP.)
- Isolation Voltage : 1500 Vrms (MIN.)



PIN CONFIGURATION (TOP VIEW)



SCHEMATIC



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	I_{ON}	50	mA
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_{ON}/^\circ\text{C}$	-0.5	mA/°C
	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 : Pins 1 and, 2 shorted together, and pins 3 and 4 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}	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	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 160 \text{ V}$	—	—	1	nA
	Capacitance	C_{OFF}	$V = 0, f = 100 \text{ MHz}, t < 10 \text{ s}$	—	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}	$I_{OFF} = 100\text{ }\mu\text{A}$	0.1	—	—	mA
On-State Resistance	R_{ON}	$I_{ON} = 50\text{ mA}$, $I_F = 5\text{ mA}$, $t < 1\text{ s}$	—	30	50	Ω

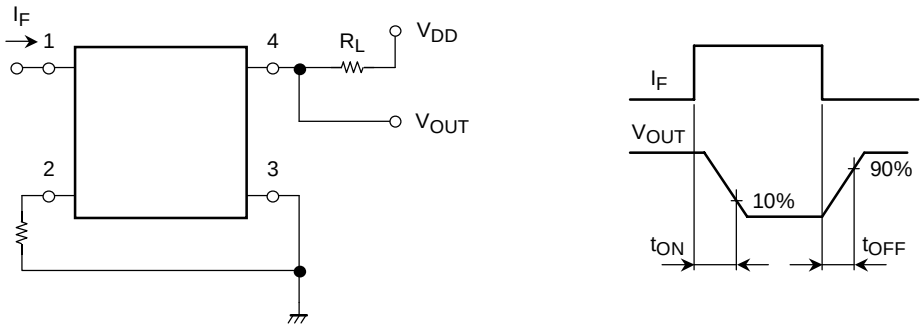
ISOLATION CHARACTERISTICS (Ta = 25°C)

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	$V_S = 500\text{ V}$, 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	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	$R_L = 200\text{ }\Omega$ (NOTE 2) $V_{DD} = 10\text{ V}$, $I_F = 5\text{ mA}$	—	0.03	0.5	ms
Turn-off Time	t_{OFF}		—	0.07	0.2	

(NOTE 2) : SWITCHING TIME TEST CIRCUIT



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