

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3051, TLP3052

- OFFICE MACHINE
- HOUSEHOLD USE EQUIPMENT
- TRIAC DRIVER
- SOLID STATE RELAY

The TOSHIBA TLP3051 and TLP3052 consist of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

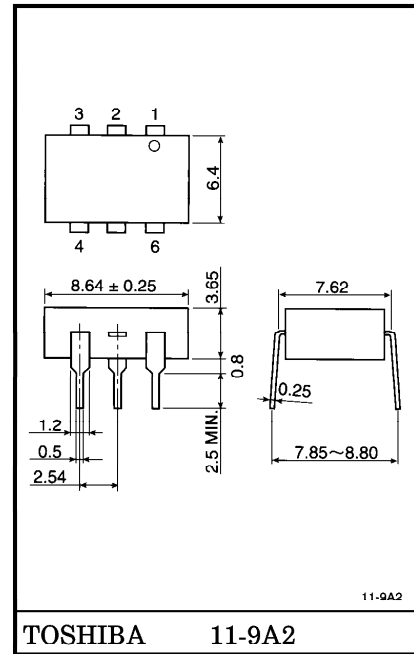
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3051)
10mA (Max.) (TLP3052)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type
VDE Approved : DIN VDE0884/08.87,
Certificate No. 68329

Maximum Operating Insulation Voltage : 630V_{PK}
Highest Permissible Over Voltage : 6000V_{PK}

(Note) When a VDE0884 approved type is needed, please designate the "Option (D4)"

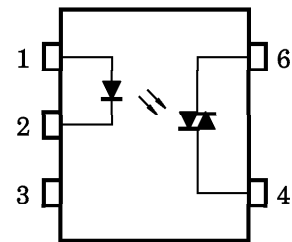
- | | 7.62mm pich
<u>standard type</u> | 10.16mm pich
<u>(LF2) type</u> |
|--------------------------|-------------------------------------|-----------------------------------|
| ● Creepage Distance : | 7.0mm (Min.) | 8.0mm (Min.) |
| ● Clearance : | 7.0mm (Min.) | 8.0mm (Min.) |
| ● Insulation Thickness : | 0.5mm (Min.) | 0.5mm (Min.) |

Unit in mm



Weight : 0.44g

PIN CONFIGURATION (TOP VIEW)



- 1 : ANODE
- 2 : CATHODE
- 3 : NC
- 4 : TERMINAL 1
- 6 : TERMINAL 2

961001EBC2

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating (Ta ≥ 53°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C
	Peak Forward Current (100μs pulse, 100pps)	I_{FP}	1	A
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_D / ^\circ\text{C}$	-1.0	mW / °C
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage	V_{DRM}	600	V
	On-State RMS Current	Ta = 25°C	100	mA
		Ta = 70°C	50	
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ\text{C}$	-1.1	mA / °C
	Peak On-State Current (100μs pulse, 120pps)	I_{TP}	2	A
	Peak Nonrepetitive Surge Current (P _w =10ms, DC=10%)	I_{TSM}	1.2	A
	Power Dissipation	P_D	300	mW
	Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_D / ^\circ\text{C}$	-4.0	mW / °C
	Junction Temperature	T_j	115	°C
Storage Temperature Range	T_{stg}	-55~150	°C	
Operating Temperature Range	T_{opr}	-40~100	°C	
Lead Soldering Temperature (10s)	T_{sol}	260	°C	
Total Package Power Dissipation	P_T	330	mW	
Total Package Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_T / ^\circ\text{C}$	-4.4	mW / °C	
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)	BV_S	5000	V _{rms}	

(Note 1) Device considered a two terminal device : Pins 1, 2 and 3 shorted together and pins 4 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	V _{ac}
Forward Current	I_F^*	15	20	25	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	-25	—	85	°C

※ In the case of TLP3052

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V _F	I _F = 10mA	1.0	1.15	1.3	V
	Reverse Current	I _R	V _R = 5V	—	—	10	μA
	Capacitance	C _T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Peak Off-State Current	I _{DRM}	V _{DRM} = 600V	—	10	1000	nA
	Peak On-State Voltage	V _{TM}	I _{TM} = 100mA	—	1.7	3.0	V
	Holding Current	I _H	—	—	1.0	—	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	V _{in} = 240Vrms, Ta = 85°C (Fig.1)	—	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (c)	V _{in} = 60Vrms, I _T = 15mA (Fig.1)	—	0.2	—	V / μs

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	TLP3051	I _{FT}	V _T = 6V	—	—	15	mA
	TLP3052			—	5	10	
Capacitance Input to Output	C _S		V _S = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R _S		V _S = 500V (R.H. ≤ 60%)	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation Voltage	BV _S		AC, 1 minute	5000	—	—	Vrms
			AC, 1 second, in oil	—	10000	—	
			DC, 1 minute, in oil	—	10000	—	V _{dc}

Fig. 1 dv/dt TEST CIRCUIT

