

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.

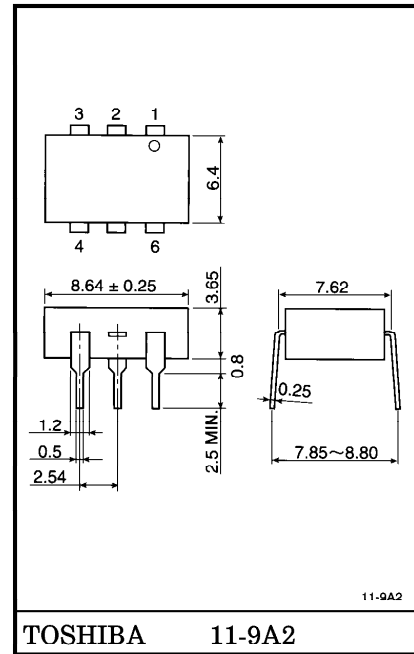
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3051)
10mA (Max.) (TLP3052)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type
VDE Approved : DIN VDE0884/08.87,
Certificate No. 68329

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)"

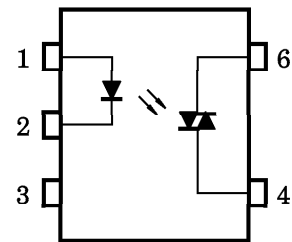
- | | 7.62mm pich
<u>standard type</u> | 10.16mm pich
<u>(LF2) type</u> |
|--------------------------|-------------------------------------|-----------------------------------|
| ● Creepage Distance : | 7.0mm (Min.) | 8.0mm (Min.) |
| ● Clearance : | 7.0mm (Min.) | 8.0mm (Min.) |
| ● Insulation Thickness : | 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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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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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)	ΔI _F / °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)	ΔP _D / °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)	ΔI _T / °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)	ΔP _D / °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)	ΔP _T / °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

