

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.

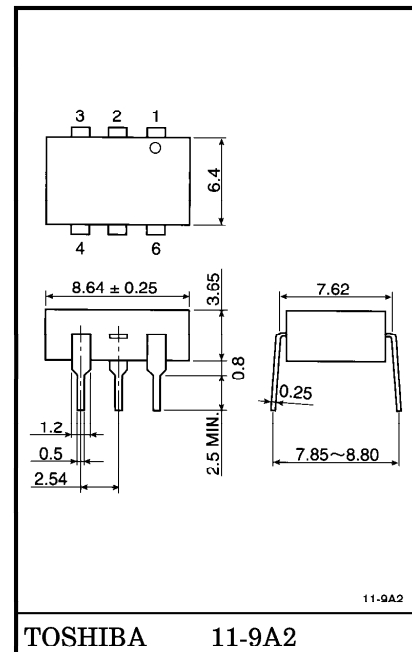
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3051)
10mA (Max.) (TLP3052)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type
VDE Approved : DIN VDE0884/08.87,
Certificate No. 68329

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)"

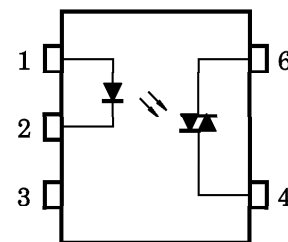
- | | 7.62mm pitch
standard type | 10.16mm pitch
(LF2) type |
|------------------------|-------------------------------|-----------------------------|
| ● Creepage Distance | : 7.0mm (Min.) | 8.0mm (Min.) |
| ● Clearance | : 7.0mm (Min.) | 8.0mm (Min.) |
| ● Insulation Thickness | : 0.5mm (Min.) | 0.5mm (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)	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	I _T (RMS)	100	mA
	Ta = 25°C 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	$I_F=10\text{mA}$	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	Peak Off-State Current	I_{DRM}	$V_{\text{DRM}}=600\text{V}$	—	10	1000	nA
	Peak On-State Voltage	V_{TM}	$I_{\text{TM}}=100\text{mA}$	—	1.7	3.0	V
	Holding Current	I_H	—	—	1.0	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{\text{in}}=240\text{Vrms}, T_a=85^\circ\text{C}$ (Fig.1)	—	500	—	$\text{V}/\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{\text{in}}=60\text{Vrms}, I_T=15\text{mA}$ (Fig.1)	—	0.2	—	$\text{V}/\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	TLP3051	I_{FT}	$V_T=6\text{V}$	—	—	15	mA
	TLP3052			—	5	10	
Capacitance Input to Output		C_S	$V_S=0, f=1\text{MHz}$	—	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	5000	—	—	Vrms
			AC, 1 second, in oil	—	10000	—	
			DC, 1 minute, in oil	—	10000	—	Vdc

Fig. 1 dv/dt TEST CIRCUIT

