

(TLP3061)

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

The TOSHIBA TLP3061, TLP3062 and TLP3063 consist of a zero voltage crossing turn-on photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

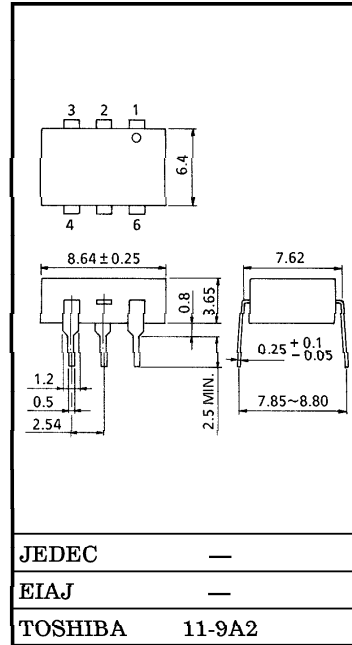
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3061)  
10mA (Max.) (TLP3062)  
5mA (Max.) (TLP3063)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349  
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type VDE Approved : DIN VDE0884/08.87,  
Certificate No. 68329

Maximum Operating Insulation Voltage : 630V<sub>PK</sub>  
 Highest Permissible Over Voltage : 6000V<sub>PK</sub>

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

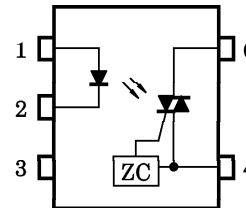
- |                        | 7.62mm pich<br><u>standard type</u> | 10.16mm pich<br><u>(LF2) type</u> |
|------------------------|-------------------------------------|-----------------------------------|
| ● Creepage Distance :  | 7.0mm (Min.)                        | 8.0mm (Min.)                      |
| 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 : N.C.
- 4 : TERMINAL 1
- 6 : TERMINAL 2

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**TOSHIBA CORPORATION**

(TLP3061)

MAXIMUM RATINGS (Ta = 25°C)

| CHARACTERISTIC                                       |  | SYMBOL               | RATING    | UNIT  |    |
|--|--|----------------------|-----------|-------|----|
| LED  | Forward Current  | I <sub>F</sub>       | 50        | mA    |    |
|  | Forward Current Derating (Ta ≥ 53°C)                               | ΔI <sub>F</sub> /°C  | -0.7      | mA/°C |    |
|  | Peak Forward Current (100μs pulse, 100pps)                         | I <sub>FP</sub>      | 1         | A     |    |
|  | Power Dissipation  | P <sub>D</sub>       | 100       | mW    |    |
|  | Power Dissipation Derating (Ta ≥ 25°C)                             | ΔP <sub>D</sub> /°C  | -1.0      | mW/°C |    |
|  | Reverse Voltage  | V <sub>R</sub>       | 5         | V     |    |
|  | Junction Temperature   | T <sub>j</sub>       | 125       | °C    |    |
| DETECTOR   | Off-State Output Terminal Voltage                                  | V <sub>DRM</sub>     | 600       | V     |    |
|  | On-State RMS Current   | I <sub>T</sub> (RMS) | Ta = 25°C | 100   | mA |
|  |  |                      | Ta = 70°C | 50    |    |
|  | On-State Current Derating (Ta ≥ 25°C)                              | ΔI <sub>T</sub> /°C  | -1.1      | mA/°C |    |
|  | Peak On-State Current (100μs pulse, 120pps)                        | I <sub>TP</sub>      | 2         | A     |    |
|  | Peak Nonrepetitive Surge Current (P <sub>w</sub> = 10ms, DC = 10%) | I <sub>TSM</sub>     | 1.2       | A     |    |
|  | Power Dissipation  | P <sub>D</sub>       | 300       | mW    |    |
|  | Power Dissipation Derating (Ta ≥ 25°C)                             | ΔP <sub>D</sub> /°C  | -4.0      | mW/°C |    |
|  | Junction Temperature   | T <sub>j</sub>       | 115       | °C    |    |
| Storage Temperature Range                            | T <sub>stg</sub>   | -55~150              | °C        |       |    |
| Operating Temperature Range                          | T <sub>opr</sub>   | -40~100              | °C        |       |    |
| Lead Soldering Temperature (10s)                     | T <sub>sol</sub>   | 260                  | °C        |       |    |
| Total Package Power Dissipation                      | P <sub>T</sub>   | 330                  | mW        |       |    |
| Total Package Power Dissipation Derating (Ta ≥ 25°C) | ΔP <sub>T</sub> /°C  | -4.4                 | mW/°C     |       |    |
| Isolation Voltage (AC, 1min., R.H. ≤ 60%)            | (Note 1) BV <sub>S</sub>   | 5000                 | Vrms      |       |    |

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

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INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

| CHARACTERISTIC |  | SYMBOL           | TEST CONDITION  | MIN. | TYP. | MAX. | UNIT   |
|----------------|--|------------------|---|------|------|------|--------|
| LED            | Forward Voltage                              | V <sub>F</sub>   | I <sub>F</sub> = 10mA                                   | 1.0  | 1.15 | 1.3  | V      |
|                | Reverse Current                              | I <sub>R</sub>   | V <sub>R</sub> = 5V                                     | —    | —    | 10   | μA     |
|                | Capacitance                                  | C <sub>T</sub>   | V = 0, f = 1MHz   | —    | 10   | —    | pF     |
| DETECTOR       | Peak Off-State Current                       | I <sub>DRM</sub> | V <sub>DRM</sub> = 600V                                 | —    | 10   | 1000 | nA     |
|                | Peak On-State Voltage                        | V <sub>TM</sub>  | I <sub>TM</sub> = 100mA                                 | —    | 1.7  | 3.0  | V      |
|                | Holding Current                              | I <sub>H</sub>   | —   | —    | 0.6  | —    | mA     |
|                | Critical Rate of Rise of Off-State Voltage   | dv / dt          | V <sub>in</sub> = 240Vrms, Ta = 85°C (Fig.1)            | 200  | 500  | —    | V / μs |
|                | Critical Rate of Rise of Commutating Voltage | dv / dt (c)      | V <sub>in</sub> = 60Vrms, I <sub>T</sub> = 15mA (Fig.1) | —    | 0.2  | —    | V / μs |

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

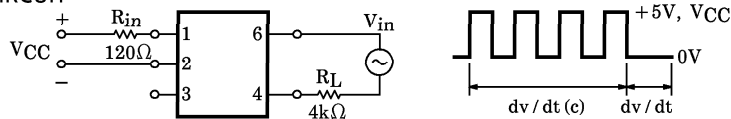
| CHARACTERISTIC              |                 | SYMBOL  | TEST CONDITION       | MIN.             | TYP. | MAX.            | UNIT |
|-----------------------------|-----------------|---|----------------------|------------------|------|-----------------|------|
| Trigger LED Current         | TLP3061         | I <sub>FT</sub>   | V <sub>T</sub> = 6V  | —                | —    | 15              | mA   |
|                             | TLP3062         |   |                      | —                | 5    | 10              |      |
|                             | TLP3063         |   |                      | —                | —    | 5               |      |
| Inhibit Voltage             | V <sub>IH</sub> | I <sub>F</sub> = Rated I <sub>FT</sub>  | —                    | —                | 50   | V               |      |
| Leakage in Inhibited State  | I <sub>IH</sub> | I <sub>F</sub> = Rated I <sub>FT</sub><br>V <sub>T</sub> = Rated V <sub>DRM</sub> | —                    | 100              | 300  | μA              |      |
| Capacitance Input to Output | C <sub>S</sub>  | V <sub>S</sub> = 0, f = 1MHz  | —                    | 0.8              | —    | pF              |      |
| Isolation Resistance        | R <sub>S</sub>  | V <sub>S</sub> = 500V (R.H. ≤ 60%)  | 5 × 10 <sup>10</sup> | 10 <sup>14</sup> | —    | Ω               |      |
| Isolation Voltage           | BV <sub>S</sub> | AC, 1 minute  | 5000                 | —                | —    | Vrms            |      |
|                             |                 | AC, 1 second, in oil  | —                    | 10000            | —    |                 |      |
|                             |                 | DC, 1 minute, in oil  | —                    | 10000            | —    | V <sub>dc</sub> |      |

RECOMMENDED OPERATING CONDITIONS

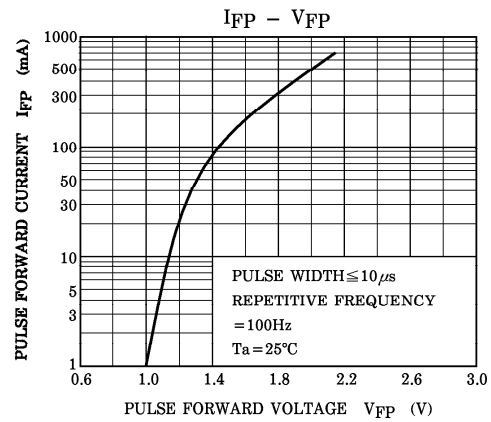
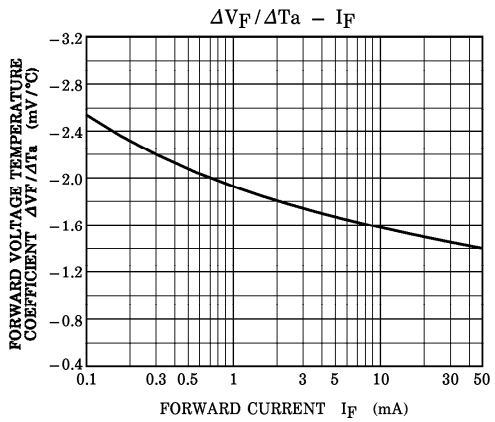
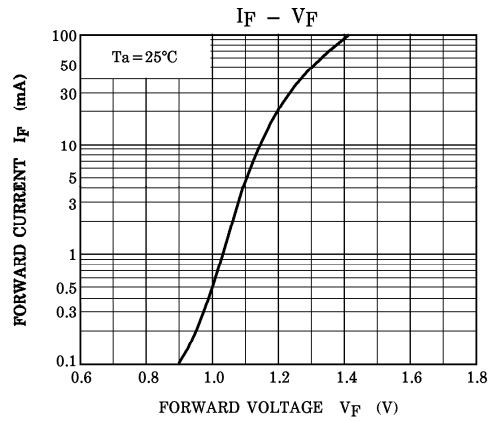
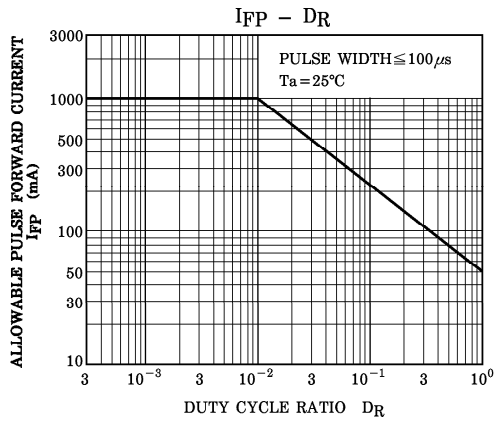
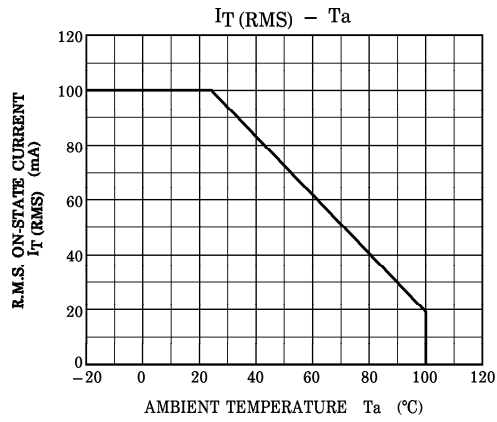
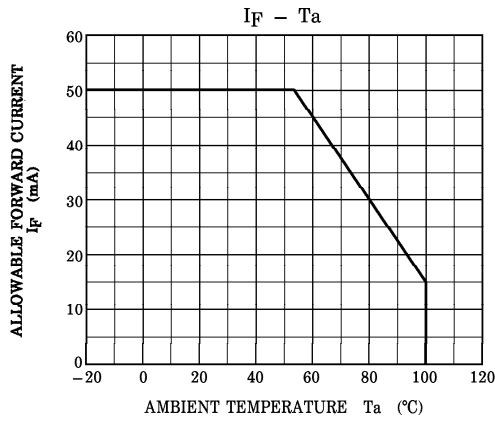
| CHARACTERISTIC        | SYMBOL           | MIN. | TYP. | MAX. | UNIT            |
|-----------------------|------------------|------|------|------|-----------------|
| Supply Voltage        | V <sub>AC</sub>  | —    | —    | 240  | V <sub>ac</sub> |
| Forward Current       | I <sub>F</sub> * | 15   | 20   | 25   | mA              |
| Peak On-State Current | I <sub>TP</sub>  | —    | —    | 1    | A               |
| Operating Temperature | T <sub>opr</sub> | -25  | —    | 85   | °C              |

\* In the case of TLP3062

Fig. 1 dv/dt TEST CIRCUIT



(TLP3061)



(TLP3061)

