

(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.

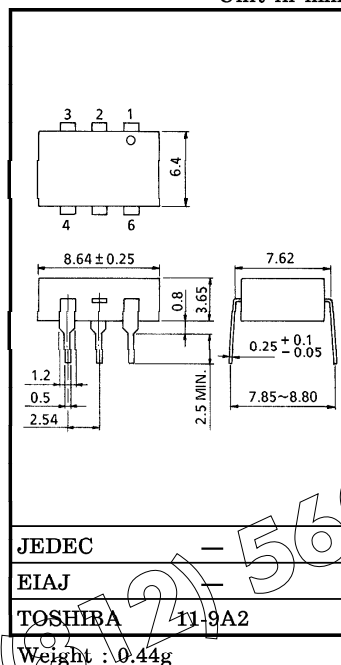
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3061)  
10mA (Max.) (TLP3062)  
5mA (Max.) (TLP3063)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349  
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type VDE Approved : DIN VDE0884/08.87,  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

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

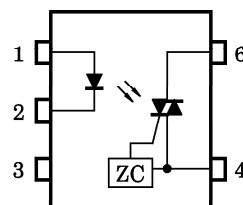
(Note) When a VDE0884 approved type is needed,  
please designate the "Option (D4)"

|                      | 7.62mm pitch<br>standard type | 10.16mm pitch<br>(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



PIN CONFIGURATION (TOP VIEW)



- 1 : ANODE
- 2 : CATHODE
- 3 : N.C.
- 4 : TERMINAL 1
- 6 : TERMINAL 2

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(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) | 100     | mA               |
|                                                      |                                                                    |                      | 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    | V <sub>rms</sub> |

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                              | $V_F$            | $I_F = 10\text{mA}$                                                 | 1.0  | 1.15 | 1.3  | V                      |
|                | Reverse Current                              | $I_R$            | $V_R = 5\text{V}$                                                   | —    | —    | 10   | $\mu\text{A}$          |
|                | Capacitance                                  | $C_T$            | $V = 0, f = 1\text{MHz}$                                            | —    | 10   | —    | pF                     |
| DETECTOR       | Peak Off-State Current                       | $I_{\text{DRM}}$ | $V_{\text{DRM}} = 600\text{V}$                                      | —    | 10   | 1000 | nA                     |
|                | Peak On-State Voltage                        | $V_{\text{TM}}$  | $I_{\text{TM}} = 100\text{mA}$                                      | —    | 1.7  | 3.0  | V                      |
|                | Holding Current                              | $I_H$            | —                                                                   | —    | 0.6  | —    | mA                     |
|                | Critical Rate of Rise of Off-State Voltage   | $dv/dt$          | $V_{\text{in}} = 240\text{Vrms}, T_a = 85^\circ\text{C}$<br>(Fig.1) | 200  | 500  | —    | $\text{V}/\mu\text{s}$ |
|                | Critical Rate of Rise of Commutating Voltage | $dv/dt(c)$       | $V_{\text{in}} = 60\text{Vrms}, I_T = 15\text{mA}$<br>(Fig.1)       | —    | 0.2  | —    | $\text{V}/\mu\text{s}$ |

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

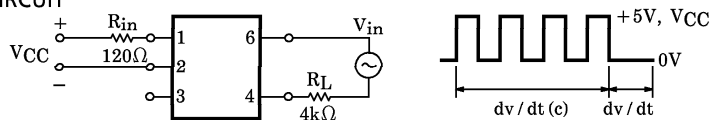
| CHARACTERISTIC              |         | SYMBOL          | TEST CONDITION                                                              | MIN.               | TYP.      | MAX. | UNIT          |
|-----------------------------|---------|-----------------|-----------------------------------------------------------------------------|--------------------|-----------|------|---------------|
| Trigger LED Current         | TLP3061 | $I_{\text{FT}}$ | $V_T = 6\text{V}$                                                           | —                  | —         | 15   | mA            |
|                             | TLP3062 |                 |                                                                             | —                  | 5         | 10   |               |
|                             | TLP3063 |                 |                                                                             | —                  | —         | 5    |               |
| Inhibit Voltage             |         | $V_{\text{IH}}$ | $I_F = \text{Rated } I_{\text{FT}}$                                         | —                  | —         | 50   | V             |
| Leakage in Inhibited State  |         | $I_{\text{IH}}$ | $I_F = \text{Rated } I_{\text{FT}}$<br>$V_T = \text{Rated } V_{\text{DRM}}$ | —                  | 100       | 300  | $\mu\text{A}$ |
| Capacitance Input to Output |         | $C_S$           | $V_S = 0, f = 1\text{MHz}$                                                  | —                  | 0.8       | —    | pF            |
| Isolation Resistance        |         | $R_S$           | $V_S = 500\text{V (R.H. } \leq 60\%)$                                       | $5 \times 10^{10}$ | $10^{14}$ | —    | $\Omega$      |
| Isolation Voltage           |         | $BV_S$          | AC, 1 minute                                                                | 5000               | —         | —    | Vrms          |
|                             |         |                 | AC, 1 second, in oil                                                        | —                  | 10000     | —    |               |
|                             |         |                 | DC, 1 minute, in oil                                                        | —                  | 10000     | —    | Vdc           |

RECOMMENDED OPERATING CONDITIONS

| CHARACTERISTIC        | SYMBOL           | MIN. | TYP. | MAX. | UNIT             |
|-----------------------|------------------|------|------|------|------------------|
| Supply Voltage        | $V_{\text{AC}}$  | —    | —    | 240  | Vac              |
| Forward Current       | $I_F^*$          | 15   | 20   | 25   | mA               |
| Peak On-State Current | $I_{\text{TP}}$  | —    | —    | 1    | A                |
| Operating Temperature | $T_{\text{opr}}$ | -25  | —    | 85   | $^\circ\text{C}$ |

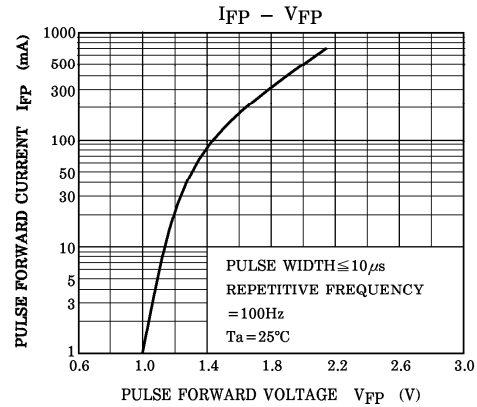
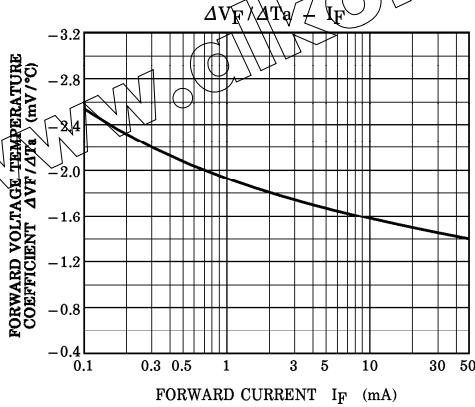
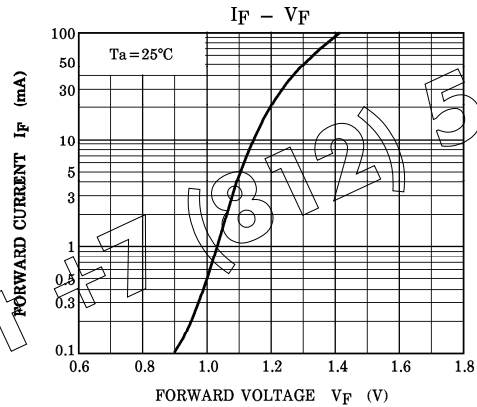
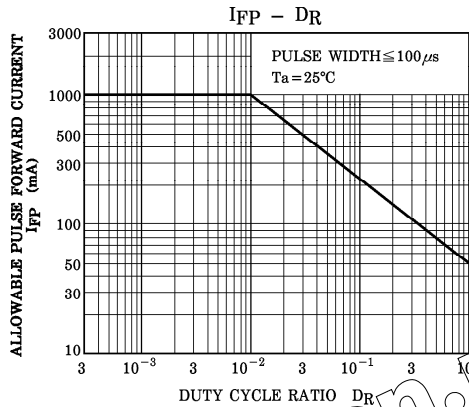
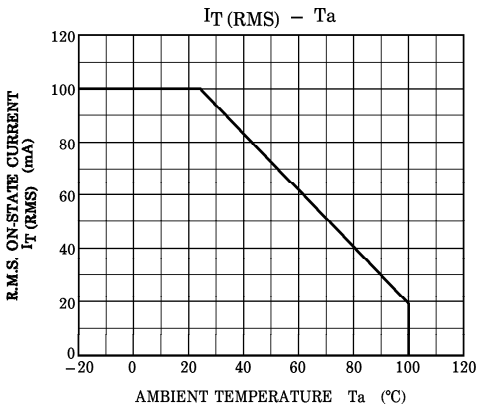
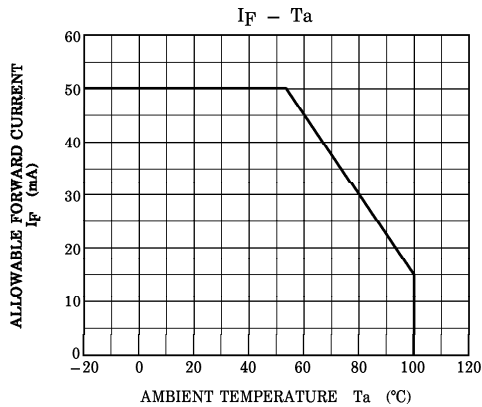
\* In the case of TLP3062

Fig. 1  $dv/dt$  TEST CIRCUIT

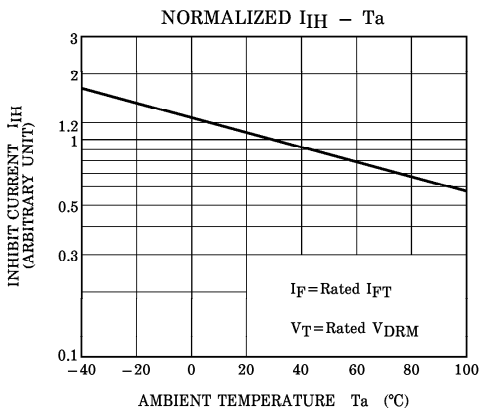
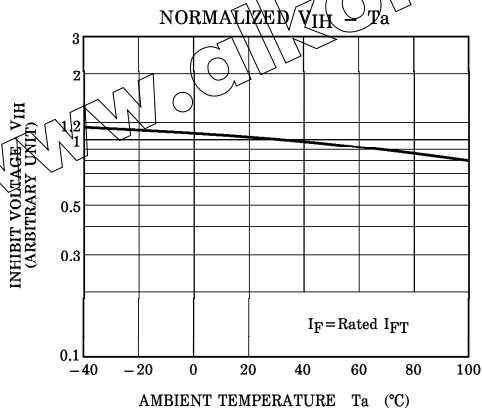
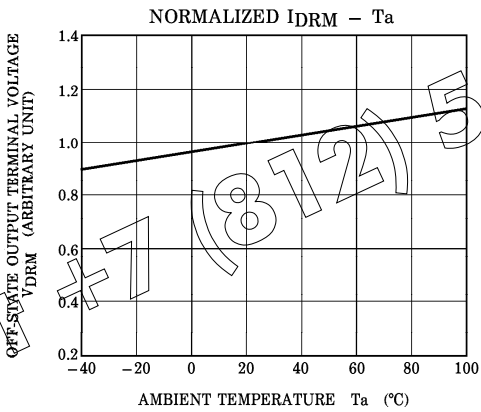
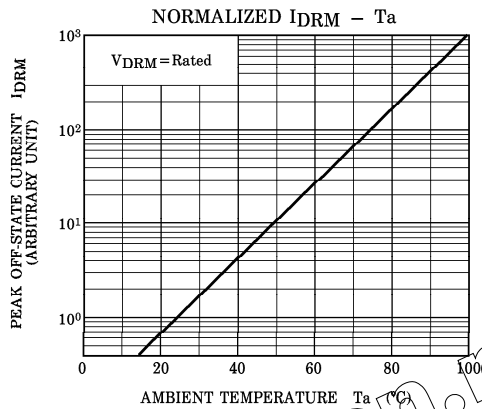
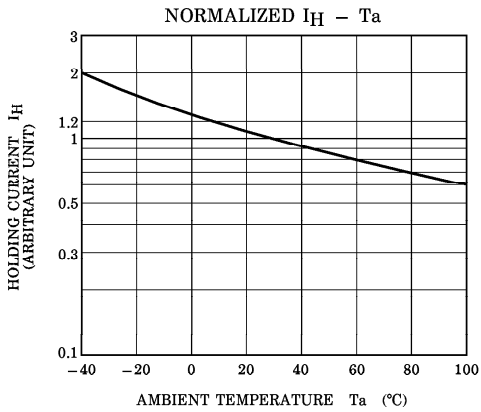
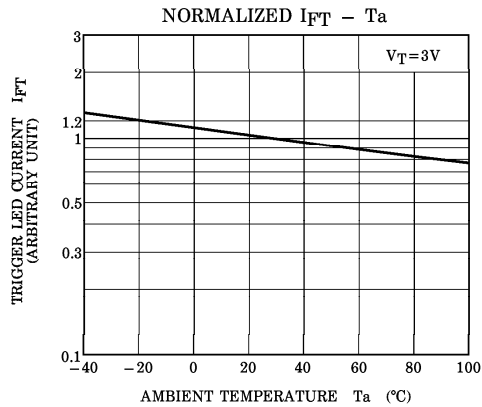


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