

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

TLP3051(S), TLP3052(S)

OFFICE MACHINE
HOUSEHOLD USE EQUIPMENT
TRIAC DRIVERSOLID STATE RELAY

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

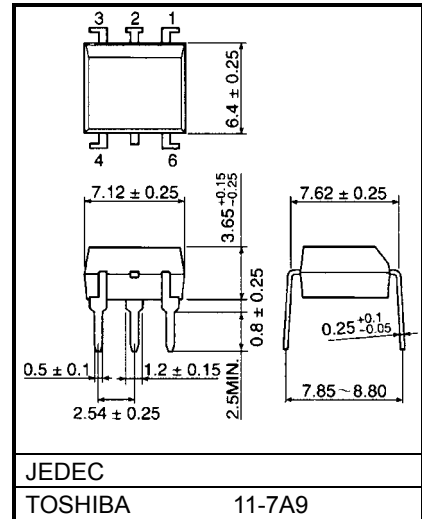
- Peak Off-State Voltage : 600V(Min)
 - Trigger LED Current : 15mA(Max)TLP3051
10mA(Max)TLP3052
 - On-State Current : 100mA(Max)
 - Isolation Voltage : 5000Vrms(Min)
 - UL Recognized :UL1577,File No.E67349
 - SEMKO Approved :SS EN60065
SS EN60950, File No.9841102
 - BSI Approved :BS EN60065, File No.8385
BS EN60950, File No.8386
- Option(D4)type
VDE Approved :DIN VDE0884
Certificate No.68329
- Maximum Operating Insulation Voltage :890V_{PK}
Highest Permissible Over Voltage :8000 V_{PK}

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

- Construction Mechanical Rating

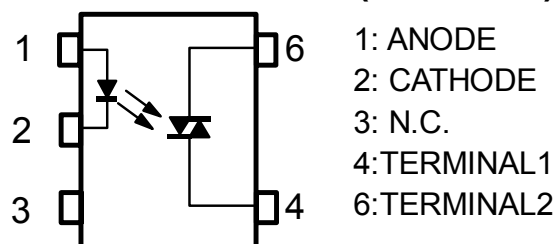
| | 7.62 mm pich standard type | 10.16 mm pich TLPXXXF type |
|----------------------|-------------------------------|-------------------------------|
| Creepage Distance | 7.0 mm (Min) | 8.0 mm (Min) |
| Clearance | 7.0 mm (Min) | 8.0 mm (Min) |
| Insulation Thickness | 0.5 mm (Min) | 0.5 mm (Min) |

Unit in mm



Weight: 0.39 g

PIN CONFIGURATION (TOP VIEW)



MAXIMUM RATINGS(Ta=25°C)

| CHARACTERISTIC | | SYMBOL | RATING | UNIT |
|--|---|-------------------------|---------|---------|
| LED | Forward Current | I_F | 50 | mA |
| | Forward Current Derating (Ta≥53°C) | $\Delta I_F / ^\circ C$ | -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) | $\Delta P_D / ^\circ C$ | -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) | $\Delta I_T / ^\circ C$ | -1.1 | mA / °C |
| | Peak On-State Current (100μs pulse, 120pps) | I_{TP} | 2 | A |
| | Peak Nonrepetitive Surge Current (Pw=10ms,DC=10%) | I_{TSM} | 1.2 | A |
| | Power Dissipation | P_D | 300 | mW |
| | Power Dissipation Derating (Ta≥25°C) | $\Delta P_D / ^\circ C$ | -4.0 | mW/°C |
| | Junction Temperature | T_J | 115 | °C |
| | Operating Temperature Range | T_{opr} | -40~100 | °C |
| Storage Temperature Range | T_{stg} | -55~150 | °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) | $\Delta P_T / ^\circ C$ | -4.4 | mW/°C | |
| Isolation Voltage (AC,1min. , R.H.≤60%) | (Note 2) BV_S | 5000 | Vrms | |

(Note 2) Device considered a two terminal device : Pins1,2 and 3 shorted together and pin4 and pin6 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

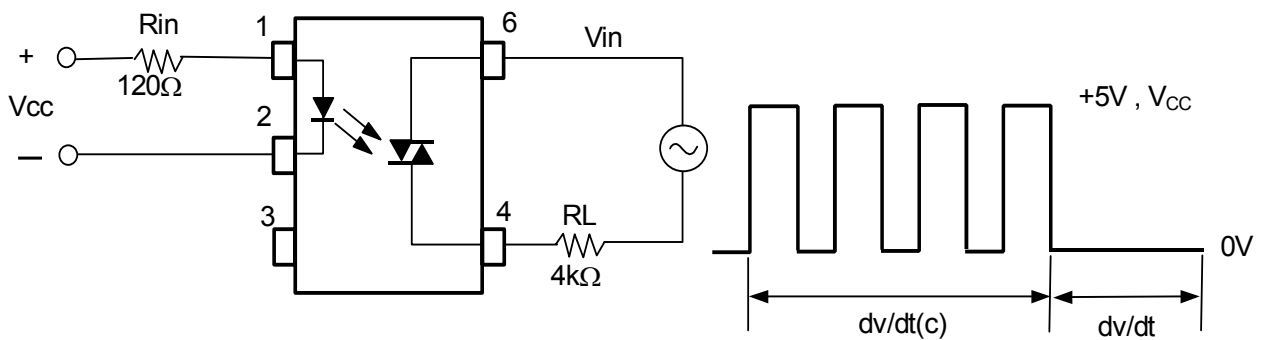
INDIVIDUAL ELECTRICAL CHARACTERISTICS(Ta=25°C)

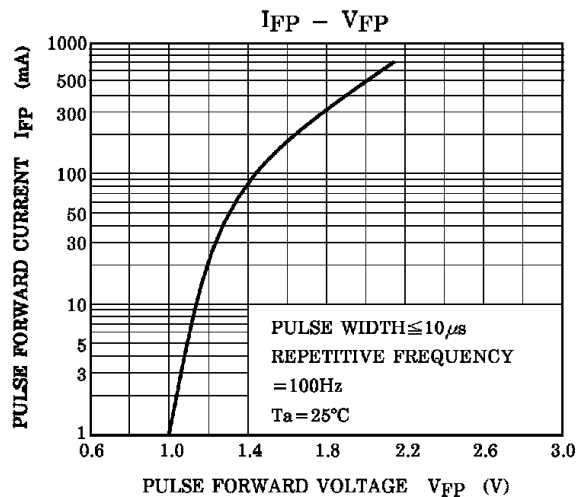
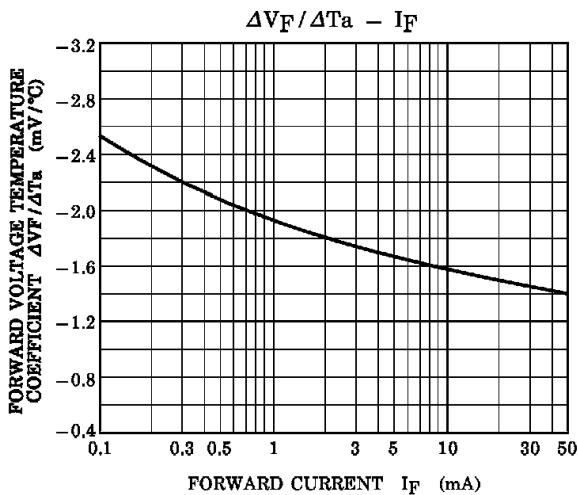
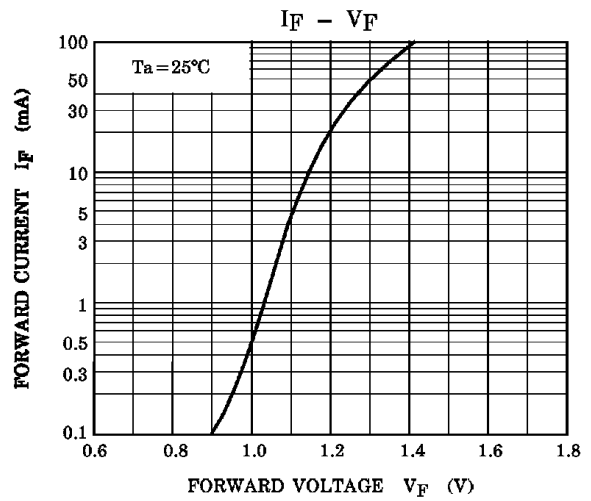
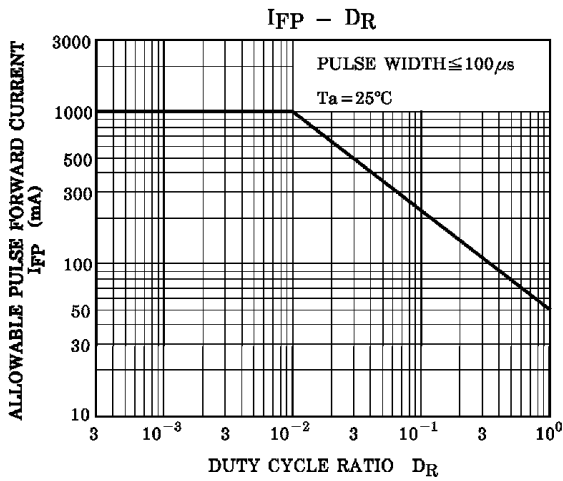
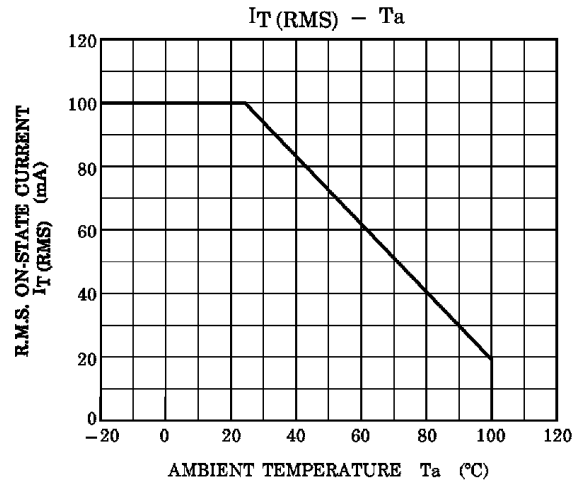
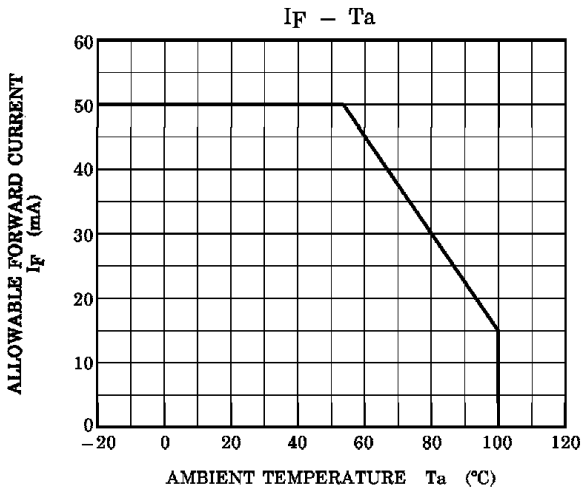
| CHARACTERISTIC | | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|----------------|--|------------|---|------|------|------|------------------------|
| LED | Forward Voltage | V_F | $I_F = 10 \text{ mA}$ | 1.0 | 1.15 | 1.3 | V |
| | Reverse Current | I_R | $V_R = 5 \text{ V}$ | — | — | 10 | μA |
| | Capacitance | C_T | $V = 0, f=1\text{MHz}$ | — | 30 | — | pF |
| DETECTOR | Peak Off-State Current | I_{DRM} | $V_{DRM}=600\text{V}$ | — | 10 | 1000 | nA |
| | Peak On-State Voltage | V_{TM} | $I_{TM}=100\text{mA}$ | — | 1.7 | 3.0 | V |
| | Holding Current | I_H | — | — | 1.0 | — | mA |
| | Critical Rate of Rise of Off-State Voltage | dv/dt | $V_{in}=240\text{Vrms}, T_a=85^\circ\text{C}$ (Note3) | — | 500 | — | $\text{V}/\mu\text{s}$ |
| | Critical Rate of Rise of Commutating Voltage | $dv/dt(c)$ | $V_{in}=60\text{Vrms}, I_T=15\text{mA}$ (Note3) | — | 0.2 | — | $\text{V}/\mu\text{s}$ |

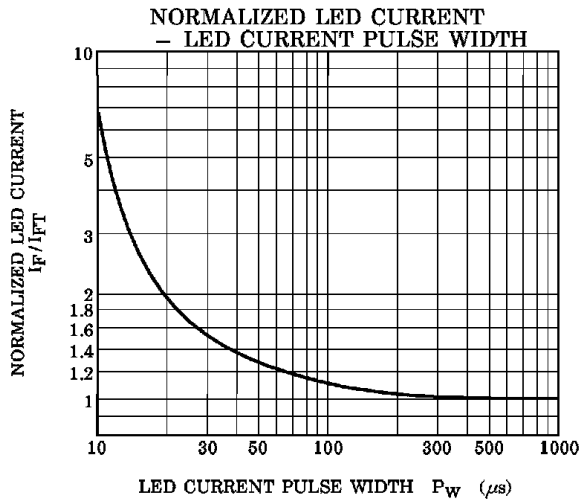
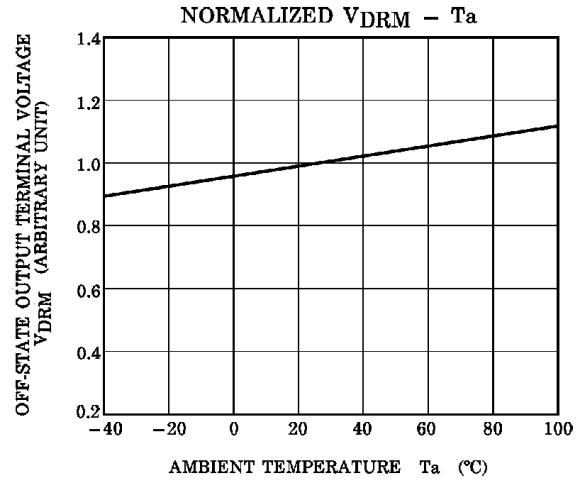
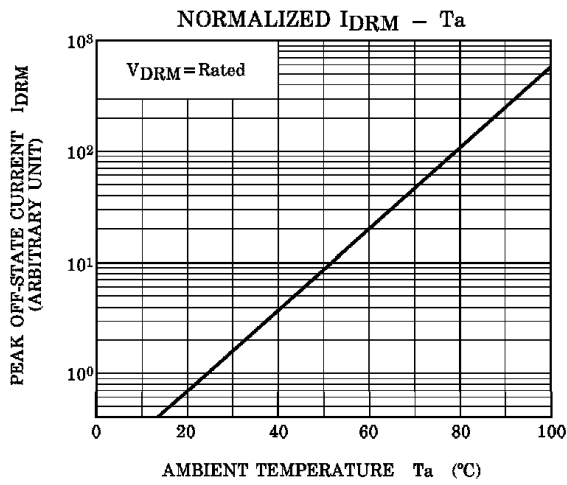
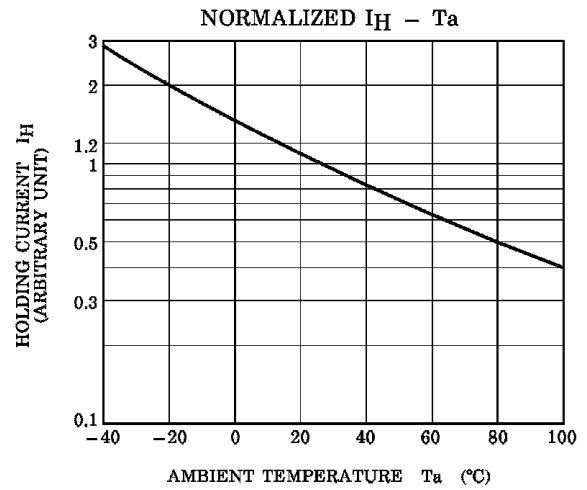
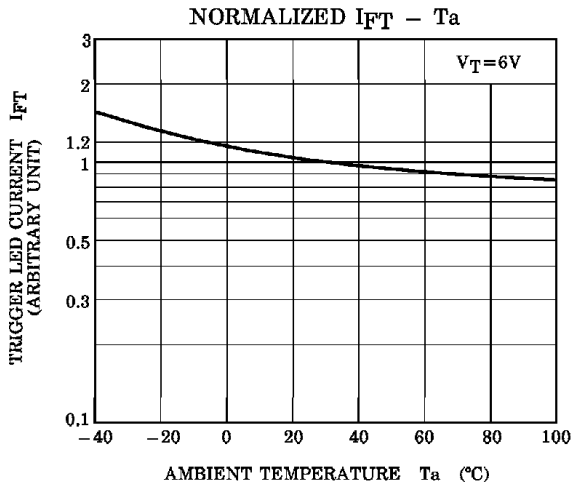
COUPLED ELECTRICAL CHARACTERISTICS(Ta=25°C)

| 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 | $V_S=500\text{V}(\text{R.H.}\leq 60\%)$ | 5×10^{10} | 10^{14} | — | Ω |
| Isolation Voltage | | BV_S | AC, 1minute | 5000 | — | — | Vrms |
| | | | AC, 1second, in oil | — | 10000 | — | |
| | | | DC, 1minute, in oil | — | 10000 | — | Vdc |

(Note 3) dv/dt TEST CIRCUIT







RESTRICTIONS ON PRODUCT USE

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