

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.

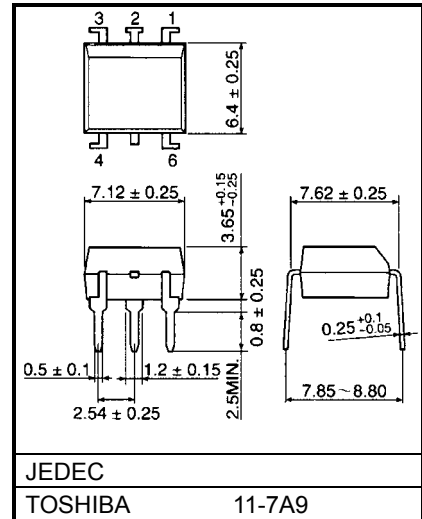
- Peak Off-State Voltage : 600V(Min)
  - Trigger LED Current : 15mA(Max)TLP3051  
10mA(Max)TLP3052
  - On-State Current : 100mA(Max)
  - Isolation Voltage : 5000Vrms(Min)
  - UL Recognized :UL1577,File No.E67349
  - SEMKO Approved :SS EN60065  
SS EN60950, File No.9841102
  - BSI Approved :BS EN60065,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

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

- Construction Mechanical Rating

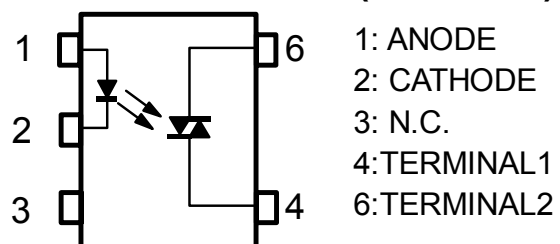
	7.62 mm pich standard type	10.16 mm pich TLPXXXF type
Creepage Distance	7.0 mm (Min)	8.0 mm (Min)
Clearance	7.0 mm (Min)	8.0 mm (Min)
Insulation Thickness	0.5 mm (Min)	0.5 mm (Min)

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

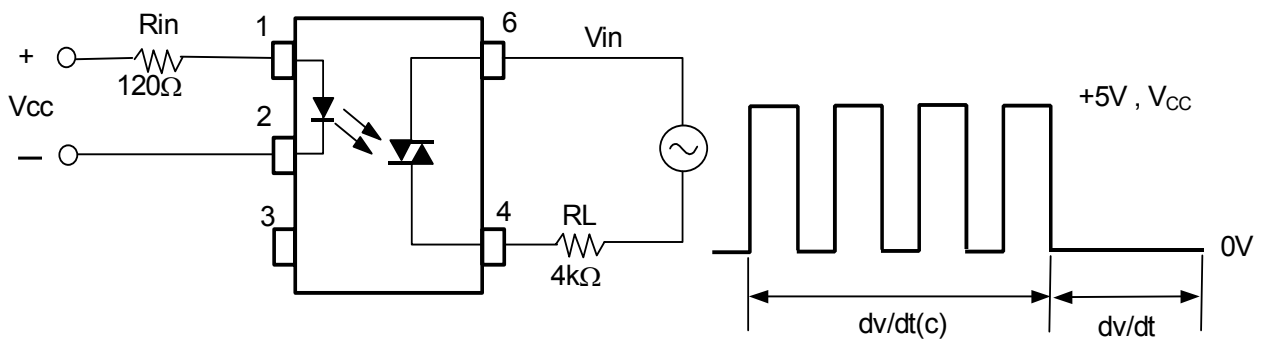
## INDIVIDUAL ELECTRICAL CHARACTERISTICS(Ta=25°C)

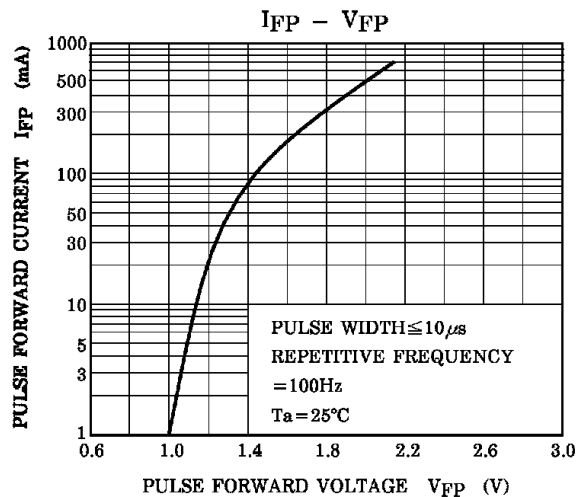
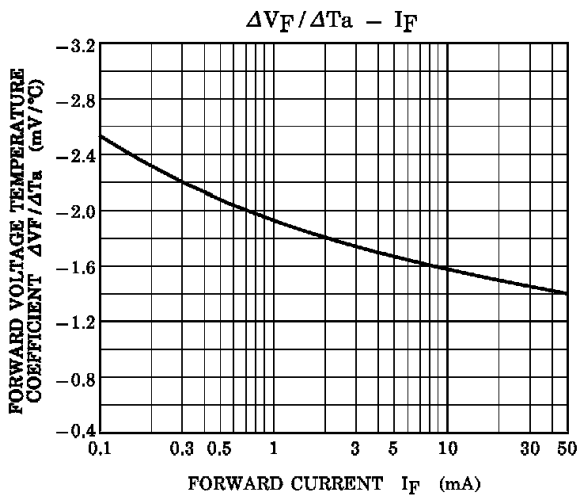
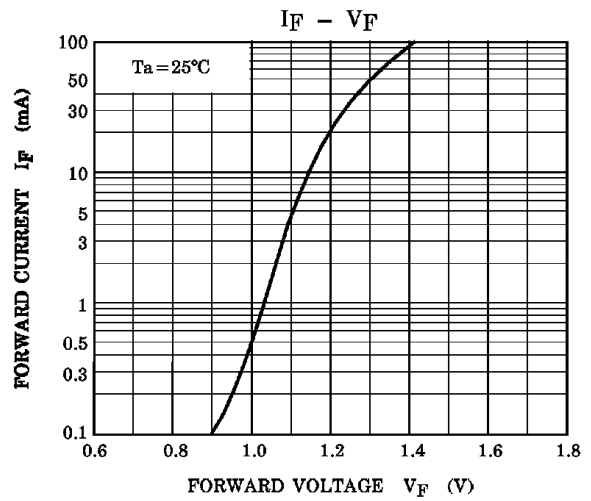
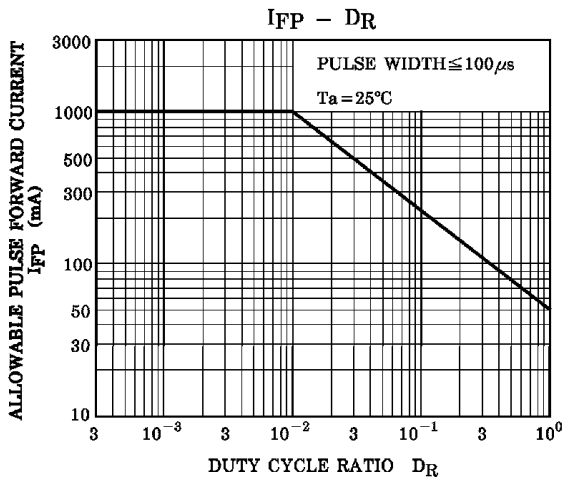
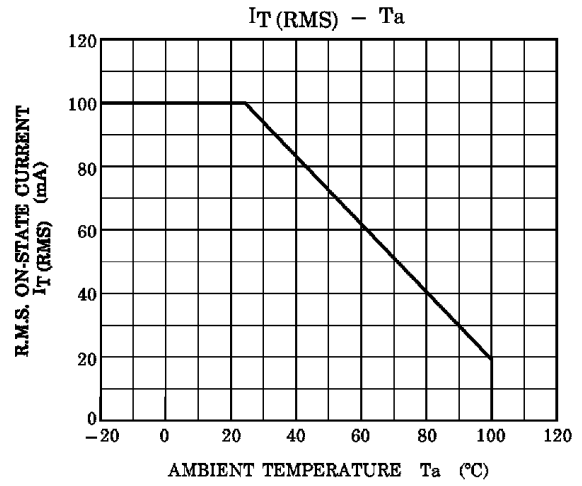
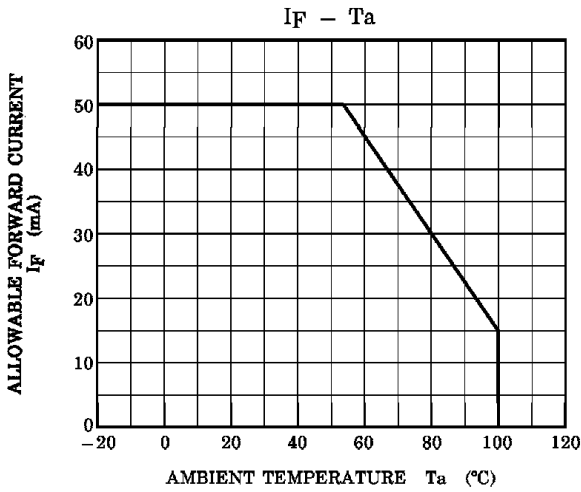
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse Current	$I_R$	$V_R = 5 \text{ V}$	—	—	10	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f=1\text{MHz}$	—	30	—	pF
RECTOR	Peak Off-State Current	$I_{DRM}$	$V_{DRM}=600\text{V}$	—	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	—	$\text{V}/\mu\text{s}$

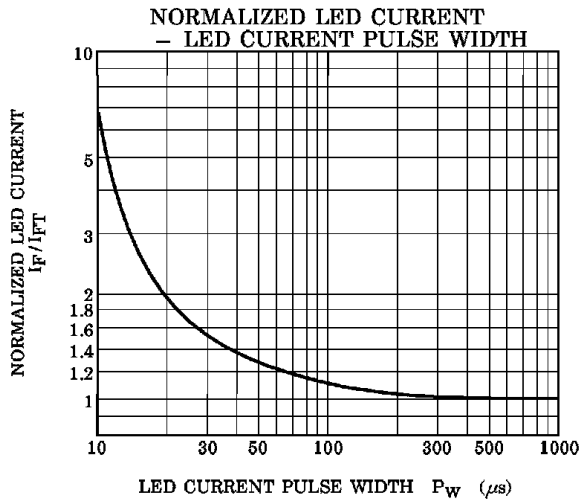
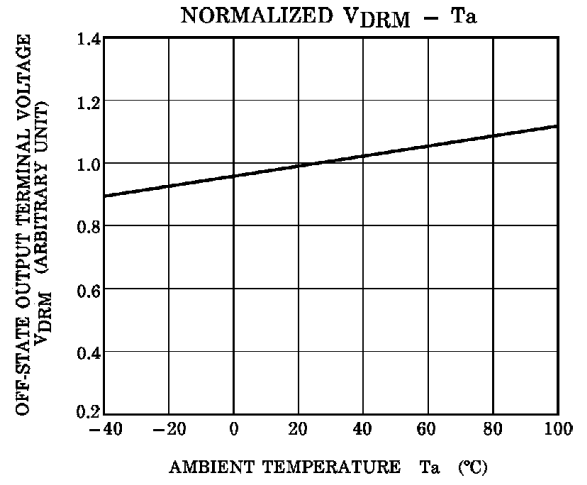
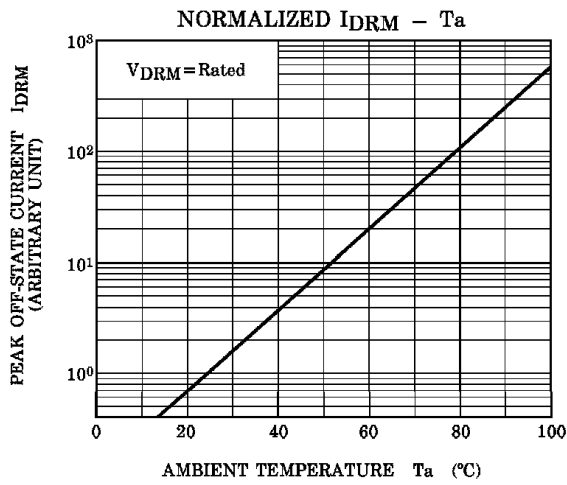
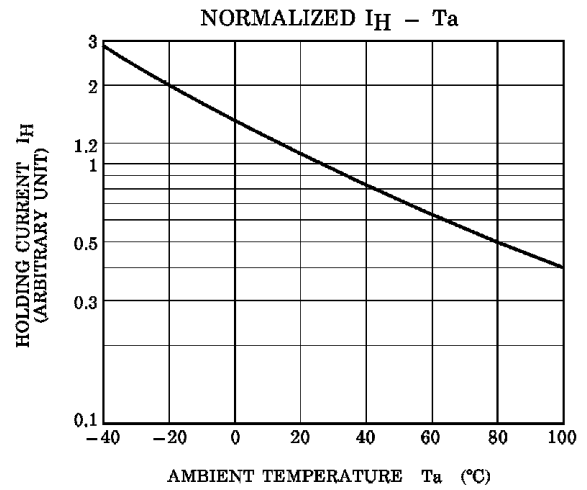
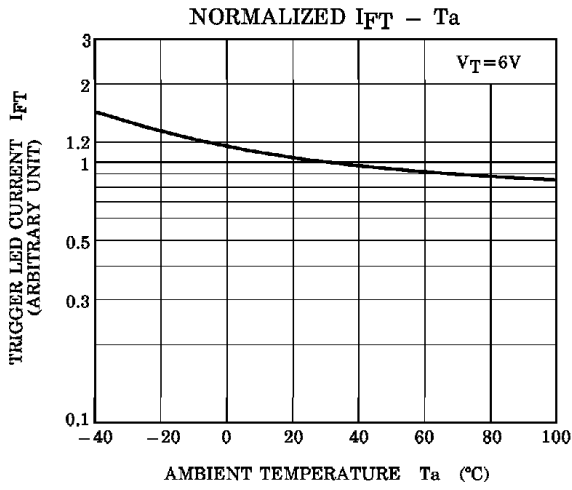
## COUPLED ELECTRICAL CHARACTERISTICS(Ta=25°C)

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		$R_s$	$V_S=500\text{V}(\text{R.H.}\leq 60\%)$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
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







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