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.

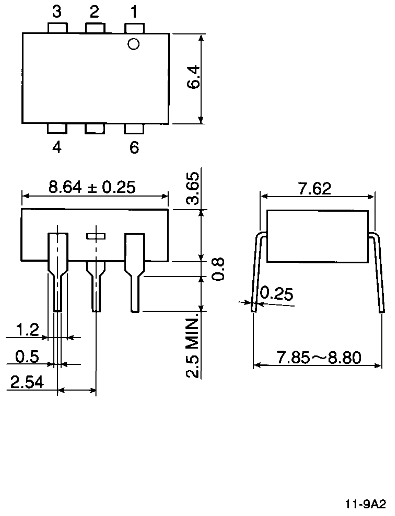
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 15mA (Max.) (TLP3051)
  10mA (Max.) (TLP3052)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
  Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type
  VDE Approved : DIN VDE0884 / 08.87,
  Certificate No. 68329

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 pich standard type	10.16mm pich (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.)

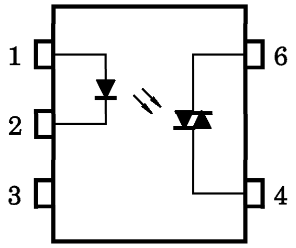
Unit in mm



TOSHIBA 11-9A2

Weight : 0.44g

PIN CONFIGURATION (TOP VIEW)



1 : ANODE
2 : CATHODE
3 : NC
4 : TERMINAL 1
6 : TERMINAL 2

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	Ta = 25°C	$I_{T\,(RMS)}$	100	mA
		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	Vrms

(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	Vac
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

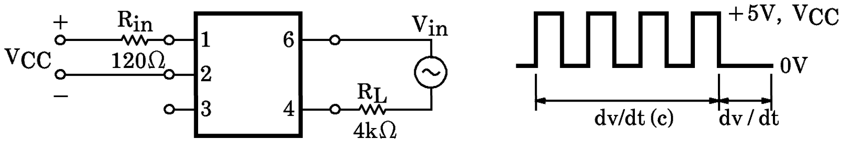
INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

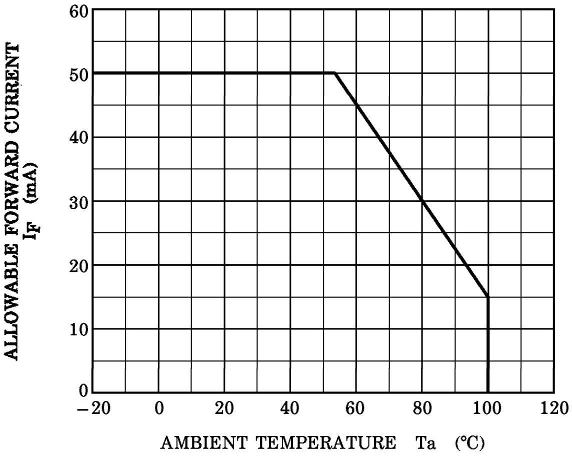
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F=10mA$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R=5V$	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	$V_{DRM}=600V$	—	10	1000	nA
	Peak On-State Voltage	V_{TM}	$I_{TM}=100mA$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

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

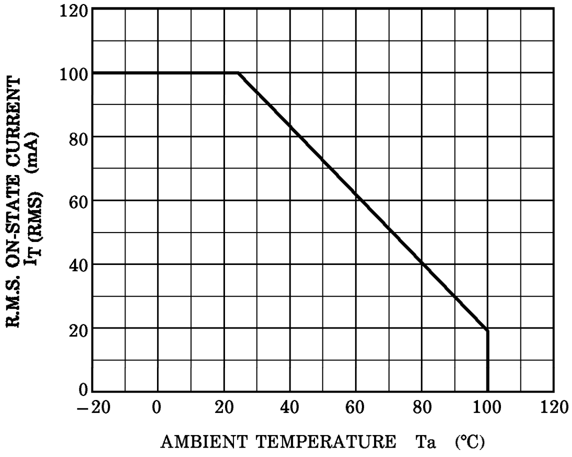
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	TLP3051	I_{FT}	$V_T=6V$	—	—	15	mA
	TLP3052			—	5	10	
Capacitance Input to Output		C_S	$V_S=0$, f = 1MHz	—	0.8	—	pF
Isolation Resistance		R_S	$V_S=500V$ (R.H. ≦ 60%)	5×10^{10}	10^{14}	—	Ω
Isolation Voltage		BV_S	AC, 1 minute	5000	—	—	Vrms
			AC, 1 second, in oil	—	10000	—	
			DC, 1 minute, in oil	—	10000	—	V_{dc}

Fig. 1 dv/dt TEST CIRCUIT

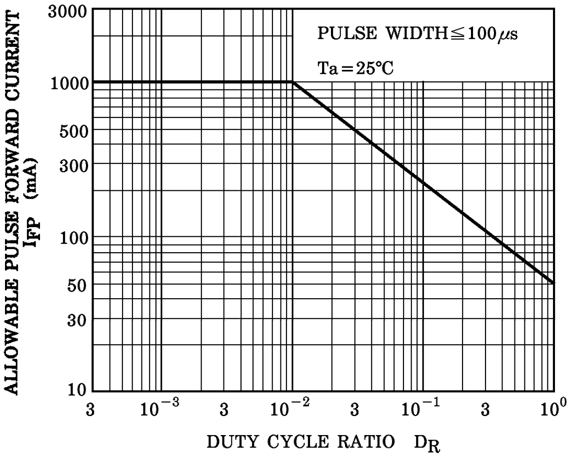




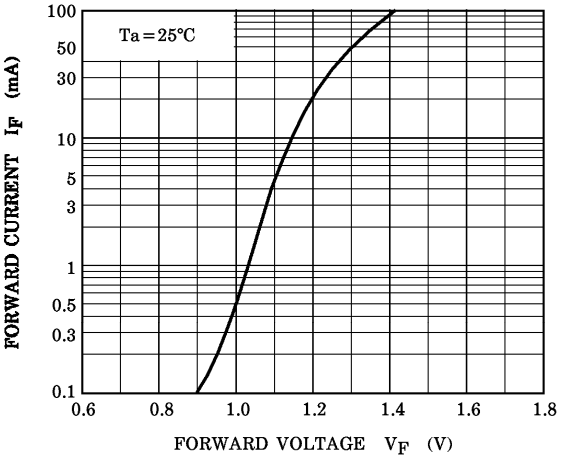
I_F – Ta



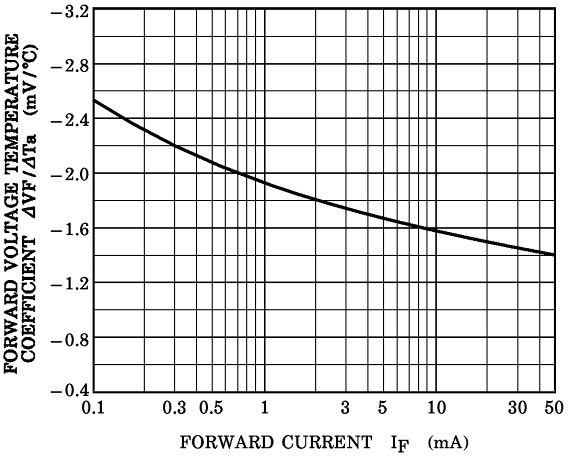
$I_{T\,(RMS)}$ – Ta



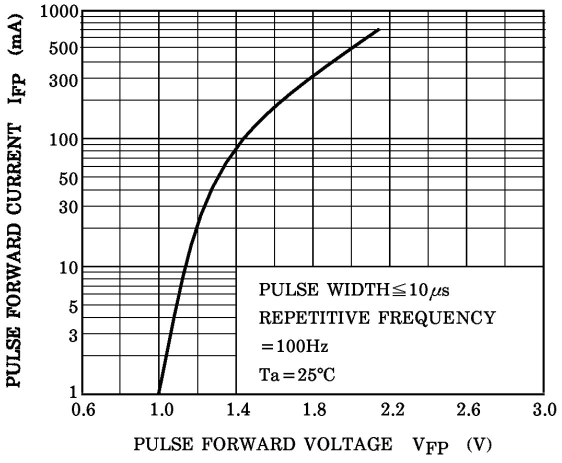
I_{FP} – D_R



I_F – V_F

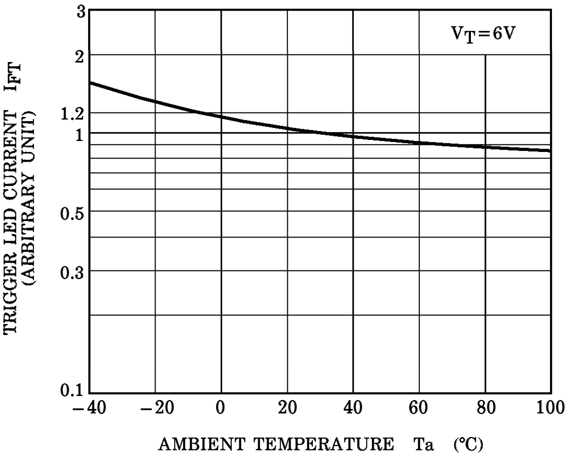


$\Delta V_F / \Delta Ta$ – I_F

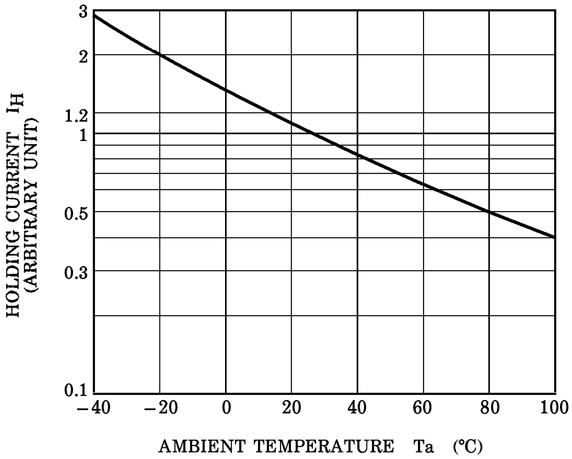


I_{FP} – V_{FP}

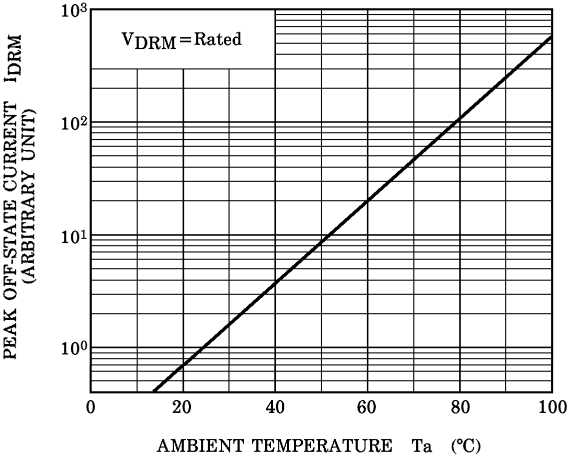
NORMALIZED I_{FT} – Ta



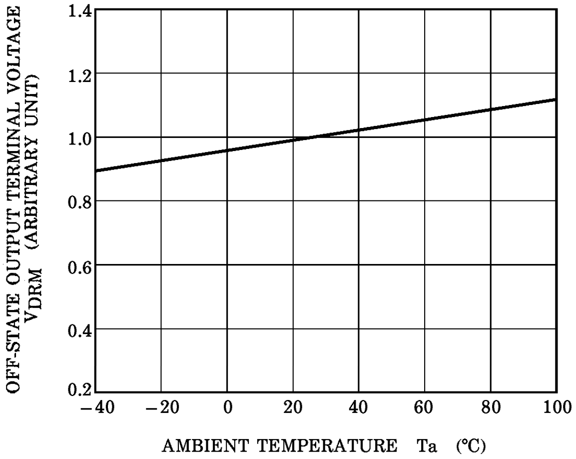
NORMALIZED I_H – Ta



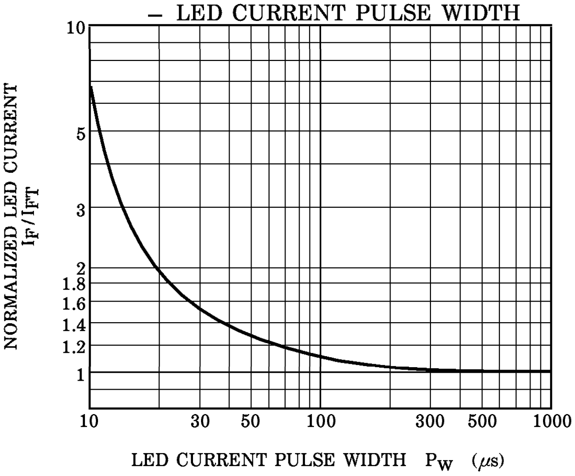
NORMALIZED I_{DRM} – Ta



NORMALIZED V_{DRM} – Ta



NORMALIZED LED CURRENT – LED CURRENT PULSE WIDTH



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