

(TLP3020)

OFFICE MACHINE

HOUSEHOLD USE EQUIPMENT

TRIAC DRIVER

SOLID STATE RELAY

The TOSHIBA TLP3020, TLP3021, TLP3022 and TLP3023 consist of a photo-triac optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

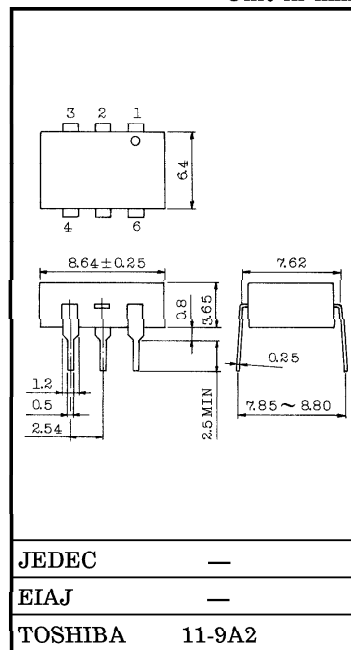
- Peak Off-State Voltage : 400V (Min.)
- Trigger LED Current : 30mA (Max.) (TLP3020)
15mA (Max.) (TLP3021)
10mA (Max.) (TLP3022)
5mA (Max.) (TLP3023)
- On-State Current : 100mA (Max.)
- UL Recognized : UL1577, File No. E67349
Isolation Voltage : 5000Vrms (Min.)
- Option (D4) type
VDE Approved : DIN VDE0884 / 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)"

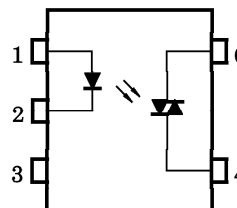
- | | 7.62mm pitch
standard type | 10.16mm pitch
(LF2) type |
|------------------------|-------------------------------|-----------------------------|
| ● Creepage Distance : | 7.0mm (Min.) | 8.0mm (Min.) |
| Clearance : | 7.0mm (Min.) | 8.0mm (Min.) |
| Insulation Thickness : | 0.5mm (Min.) | 0.5mm (Min.) |

Unit in mm



Weight : 0.44g

PIN CONFIGURATION (TOP VIEW)



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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I _F	50	mA
	Forward Current Derating (Ta≥53℃)		ΔI _F /℃	−0.7	mA/℃
	Peak Forward Current (100μs pulse, 100pps)		I _{FP}	1	A
	Power Dissipation		P _D	100	mW
	Power Dissipation Derating (Ta≥25℃)		ΔP _D /℃	−1.0	mW/℃
	Reverse Voltage		V _R	5	V
	Junction Temperature		T _j	125	℃
DETECTOR	Off-State Output Terminal Voltage		V _{DRM}	400	V
	On-State RMS Current	Ta=25℃	I _T (RMS)	100	mA
		Ta=70℃		50	
	On-State Current Derating (Ta≥25℃)		ΔI _T /℃	−1.1	mA/℃
	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℃)		ΔP _D /℃	−4.0	mW/℃
Junction Temperature		T _j	115	℃	
Storage Temperature Range			T _{stg}	−55~150	℃
Operating Temperature Range			T _{opr}	−40~100	℃
Lead Soldering Temperature (10s)			T _{sol}	260	℃
Total Package Power Dissipation			P _T	330	mW
Total Package Power Dissipation Derating (Ta≥25℃)			ΔP _T /℃	−4.4	mW/℃
Isolation Voltage (AC, 1 min., R.H.≤60%) (Note 1)			BV _S	5000	V _{rms}

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	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	10	—	pF
DETECTOR	Peak Off-State Current	I_{DRM}	$V_{DRM} = 400\text{V}$	—	10	100	nA
	Peak On-State Voltage	V_{TM}	$I_{TM} = 100\text{mA}$	—	1.7	3.0	V
	Holding Current	I_H	—	—	0.6	—	mA
	Critical Rate of Rise of Off-State Voltage	dv/dt	$V_{in} = 120\text{Vrms}, T_a = 85^\circ\text{C}$ (Fig.1)	200	500	—	$\text{V} / \mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{in} = 30\text{Vrms}, I_F = 15\text{mA}$ (Fig.1)	—	0.2	—	$\text{V} / \mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

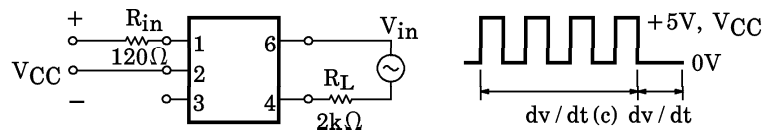
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	TLP3020	I_{FT}	$V_T = 3\text{V}$	—	—	30	mA
	TLP3021			—	—	15	
	TLP3022			—	5	10	
	TLP3023			—	—	5	
Capacitance Input to Output		C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance		R_S	$V_S = 500\text{V} (\text{R.H.} \leq 60\%)$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage		B_{VS}	AC, 1 minute	—	—	—	V_{rms}
			AC, 1 second (in oil)	—	10000	—	V_{dc}
			DC, 1 minute (in oil)	—	10000	—	

RECOMMENDED OPERATING CONDITIONS

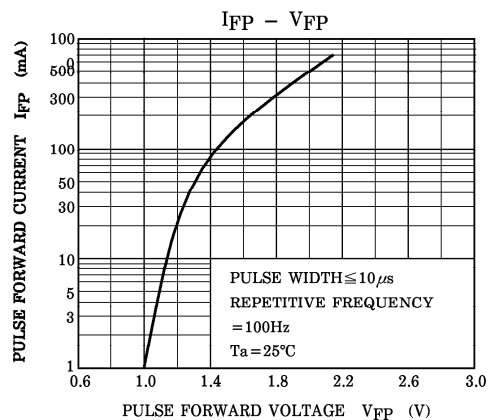
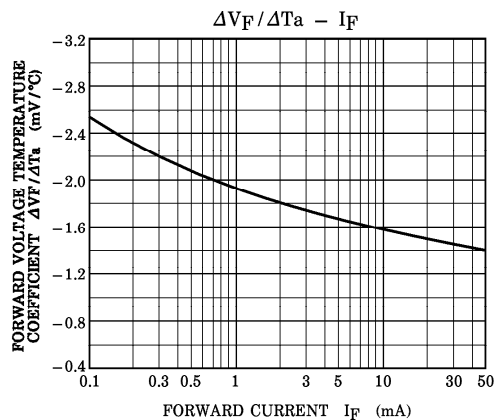
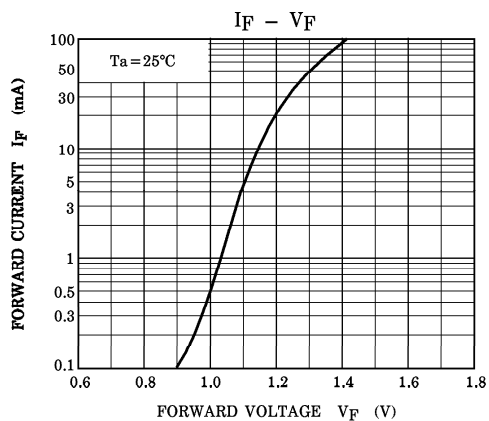
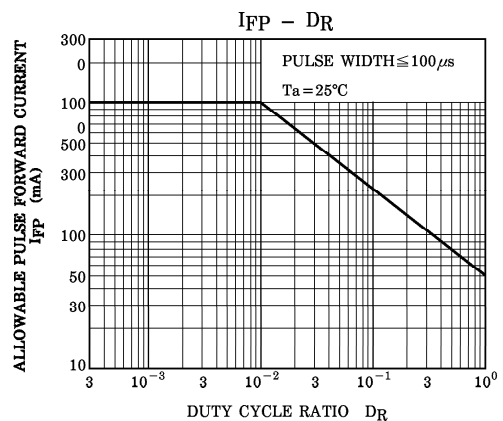
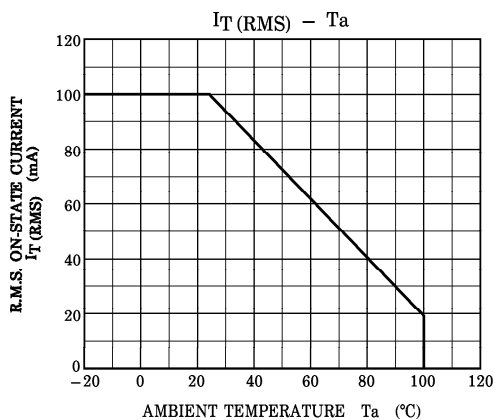
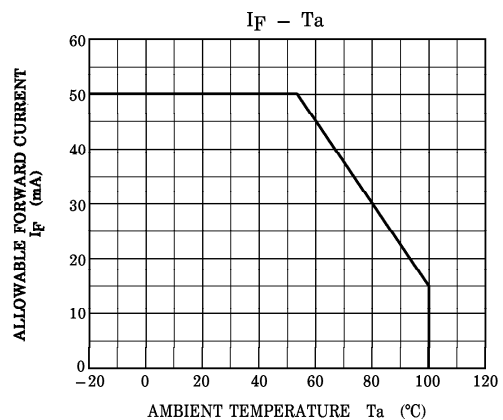
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	120	V _{ac}
Forward Current	I_F^*	15	20	25	mA
Peak On-State Current	I_{TP}	—	—	1	A
Operating Temperature	T_{opr}	-25	—	85	°C

* In the case of TLP3022

Fig.1 dv/dt TEST CIRCUIT



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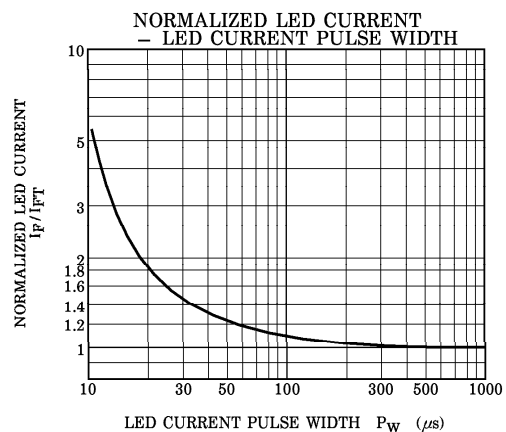
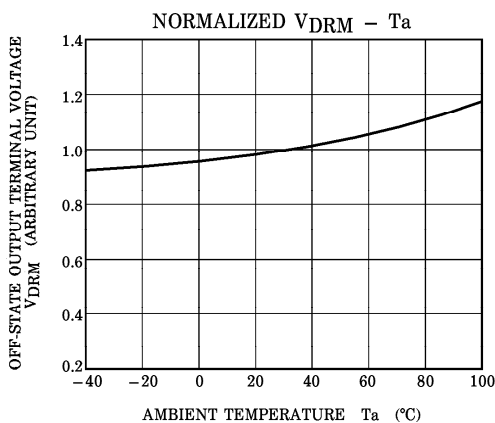
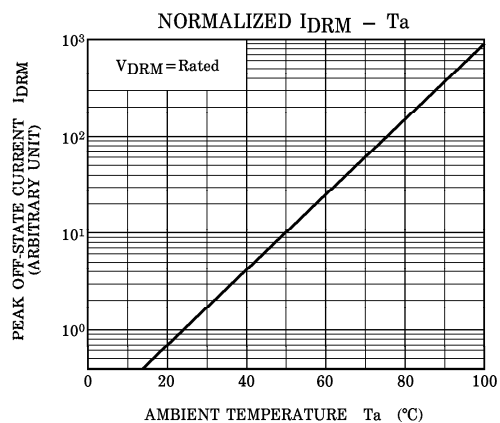
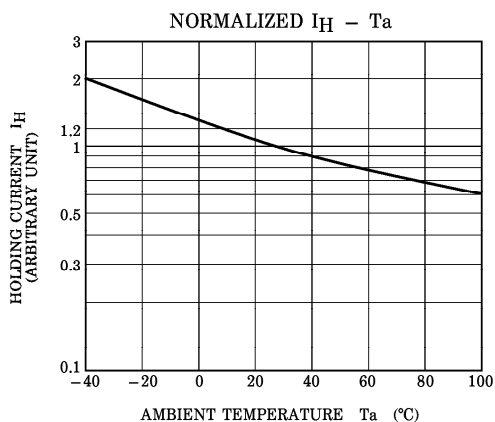
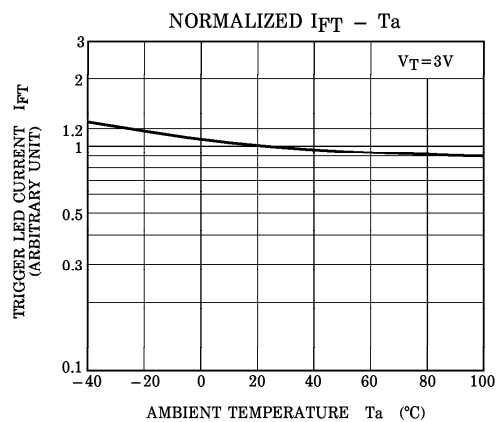


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