

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-TRIAC

# TLP668J

OFFICE MACHINE.

HOUSEHOLD USE EQUIPMENT.

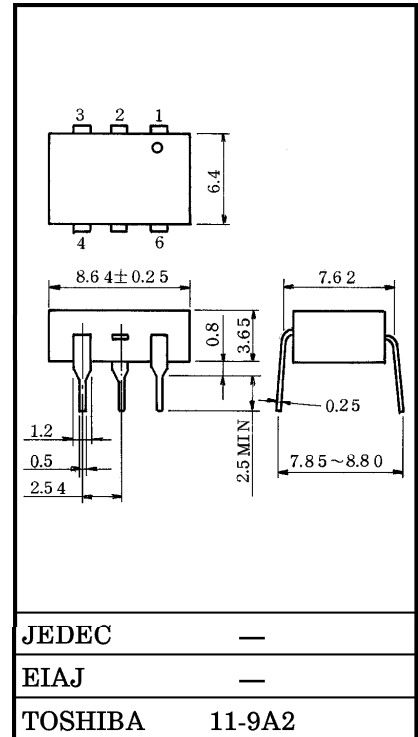
TRIAC DRIVER.

SOLID STATE RELAY.

The TOSHIBA TLP668J consists of a zero voltage crossing turn-on photo-triac optically coupled to a GaAs infrared emitting diode in a six lead plastic DIP package.

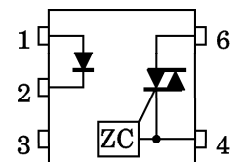
- Peak Off-State Voltage : 600V (Min.)
- Trigger LED Current : 3mA (Max.)
- On-State Current : 100mA (Max.)
- Isolation Voltage : 5000Vrms (Min.)
- UL Recognized : UL1577, File No. E67349

Unit in mm



Weight : 0.44g

**PIN CONFIGURATIONS (TOP VIEW)**



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

(Z, C, : Zero-cross Circuit)

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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	30	mA
	Forward Current Derating (Ta = 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.3	mA / °C
	Peak Forward Current (100 $\mu\text{s}$ pulse, 100pps)	$I_{FP}$	1	A
	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)	$\Delta I_T / ^\circ\text{C}$	-1.1	mA / °C
	Peak On-State Current (100 $\mu\text{s}$ pulse, 120pps)	$I_{TP}$	2	A
	Peak Nonrepetitive Surge Current (PW = 10ms, DC = 10%)	$I_{TSM}$	1.2	A
	Junction Temperature	$T_j$	110	°C
	Storage Temperature Range	$T_{stg}$	-55~150	°C
Operating Temperature Range	$T_{opr}$	-40~100	°C	
Lead Soldering Temperature (10sec.)	$T_{sold}$	260	°C	
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.

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

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	$V_F$	$I_F = 10\text{mA}$	1.2	1.4	1.7	V
	Reverse Current	$I_R$	$V_R = 3\text{V}$	—	—	10	$\mu\text{A}$
	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	$V_{TM}$	$I_{TM} = 100\text{mA}$	—	—	3.0	V
	Holding Current	$I_H$	—	—	0.2	—	mA
	Critical Rate of Rise of Off-State Voltage	$dv/dt$	$V_{in} = 240\text{rms}$ $T_a = 85^\circ\text{C}$	—	500	—	V / $\mu\text{s}$
	Critical Rate of Rise of Commutating Voltage	$dv/dt(c)$	$V_{in} = 60\text{Vrms}$ $I_T = 15\text{mA}$	—	0.2	—	V / $\mu\text{s}$

COUPLED ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	$I_{FT}$	$V_T = 6\text{V}$ , Resistive Load	—	—	3	mA
Inhibit Voltage	$V_{IH}$	$I_F = \text{Rated } I_{FT}$	—	—	50	V
Leakage in Inhibited State	$I_{IH}$	$I_F = \text{Rated } I_{FT}$ $V_T = \text{Rated } V_{DRM}$	—	—	600	$\mu\text{A}$
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	$V_{AC}$	—	—	240	Vac
Forward Current	$I_F$	4.5	6	7.5	mA
Peak On-State Current	$I_{TP}$	—	—	1	A
Operating Temperature	$T_{opr}$	-10	—	85	$^\circ\text{C}$

