

TENTATIVE

TOSHIBA PHOTOCOUPLER GaAlAs IRED & PHOTO-TRIAC

TLP168J

TRIAC DRIVE
 PROGRAMMABLE CONTROLLERS
 AC-OUTPUT MODULE
 SOLID STATE RELAY

The TOSHIBA MINI FLAT COUPLER TLP168J is a small outline coupler, suitable for surface mount assembly.
 The TLP168J consists of a photo triac, optically coupled to a GaAlAs infrared emitting diode.

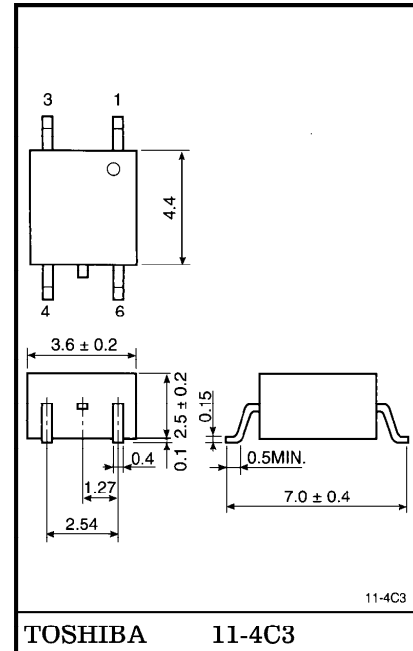
- Zero-Voltage Crossing Turn-on
- Peak Off-State Voltage : 600V (MIN.)
- Trigger LED Current : 3mA (MAX.)
- On-State Current : 70mA (MAX.)
- Isolation Voltage : 2500Vrms (MIN.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	20	mA
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ C$	-0.2	mA / °C
	Peak Forward Current (100µs 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	70	mA
		Ta = 70°C	40	
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ C$	-0.67	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
	Junction Temperature	T_j	115	°C
Storage Temperature Range	T_{stg}	-55~125	°C	
Operating Temperature Range	T_{opr}	-40~100	°C	
Lead Soldering Temperature (10s)	T_{sol}	260	°C	
Isolation Voltage (AC, 1min., R.H. ≤ 60%) (Note)	BVS	2500	Vrms	

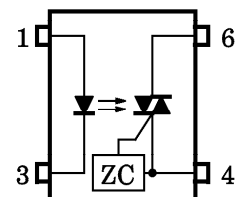
(Note) Device considered a two terminal device : Pins 1 and 3 shorted together and pins 4 and 6 shorted together.

Unit in mm



Weight : 0.09g

PIN CONFIGURATIONS



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

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● TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{AC}	—	—	240	V _{ac}
Forward Current	I _F	4.5	6	7.5	mA
Peak On-State Current	I _{TP}	—	—	1	A
Operating Temperature	T _{opr}	-10	—	85	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V _F	I _F = 10mA	1.2	1.4	1.7	V
	Reverse Current	I _R	V _R = 3V	—	—	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} = 70mA	—	1.7	2.8	V
	Holding Current	I _H	—	—	0.6	—	mA
	Critical Rate of Rise of Off-State Voltage	dv / dt	V _{in} = 240Vrms, Ta = 85°C	200	500	—	V / μs
	Critical Rate of Rise of Commutating Voltage	dv / dt (c)	V _{in} = 60Vrms, I _T = 15mArms	—	0.2	—	V / μs

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I _{FT}	V _T = 6V	—	—	3	mA
Inhibit Voltage	V _{IH}	I _F = Rated I _{FT}	—	—	50	V
Leakage in Inhibited State	I _{IH}	I _F = Rated I _{FT} V _T = Rated V _{DRM}	—	200	600	μA
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	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc

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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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