

TLP747J

OFFICE MACHINE
HOUSEHOLD USE EQUIPMENT
SOLID STATE RELAY
SWITCHING POWER SUPPLY

The TOSHIBA TLP747J consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

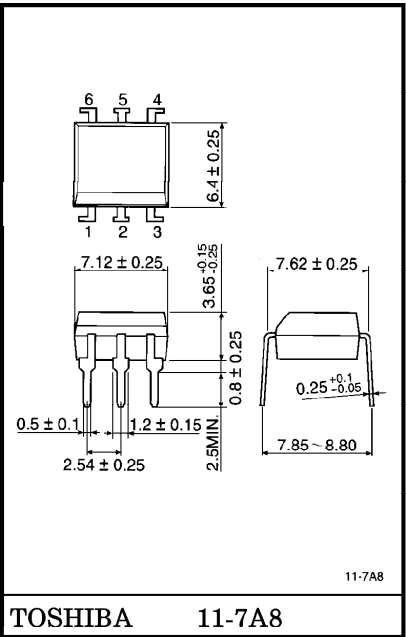
- Peak Off-State Voltage: 600V Min.
- Trigger LED Current : 15mA Max.
- On-State Current : 150mA Max.
- UL Recognized : UL1577, File No. E67349
- BSI Approved : BS EN60065 : 1994, Certificate No. 7364
BS EN60950 : 1992, Certificate No. 7365
- SEMKO Approved : SS4330784, Certificate No. 9325163, 9522142
- Isolation Voltage : 4000Vrms Min.
- Option (D4) type
- VDE Approved : DIN VDE0884 / 06.92 Certificate No. 74286, 91808

Maximum Operating Insulation Voltage : 630, 890V_{PK}
Highest Permissible Over Voltage : 6000, 8000V_{PK}

(Note) When a VDE0884 approved type is needed, Please designate the “Option (D4)”

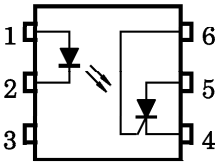
	7.62mm pich standard type	10.16mm pich TLP×××F type
• Creepage Distance	: 7.0mm (Min.)	8.0mm (Min.)
• Clearance	: 7.0mm (Min.)	8.0mm (Min.)
• Isolation Thickness	: 0.5mm (Min.)	0.5mm (Min.)

Unit in mm



Weight : 0.42g

PIN CONFIGURATIONS (TOP VIEW)



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

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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.

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
L E D	Forward Current	I_F	60	mA
	Forward Current Derating (Ta $\geq$ 39°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C
	Peak Forward Current (100 μ s pulse, 100pps)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
R O C T O R	Peak Forward Voltage ($R_{GK} = 27k\Omega$)	V_{DRM}	600	V
	Peak Reverse Voltage ($R_{GK} = 27k\Omega$)	V_{RRM}	600	V
	On-State Current	$I_T (\text{RMS})$	150	mA
	On-State Current Derating (Ta $\geq$ 25°C)	$\Delta I_T / ^\circ\text{C}$	-2.0	mA / °C
	Peak On-State Current (100 μ s pulse, 120pps)	I_{TP}	3	A
	Peak One Cycle Surge Current	I_{TSM}	2	A
	Peak Reverse Gate Voltage	V_{GM}	5	V
	Power Dissipation	P_D	150	mW
	Power Dissipation Derating (Ta $\geq$ 25°C)	$\Delta P_D / ^\circ\text{C}$	-2.0	mW / °C
	Junction Temperature	T_j	100	°C
	Storage Temperature Range	T_{stg}	-55~125	°C
	Operating Temperature Range	T_{opr}	-40~100	°C
D E T E C T O R	Lead Soldering Temperature (10s)	T_{sol}	260	°C
	Total Package Power Dissipation	P_T	250	mW
	Total Package Power Dissipation Derating (Ta $\geq$ 25°C)	$\Delta P_T / ^\circ\text{C}$	-3.3	mW / °C
	Isolation Voltage (AC, 1min., R. H. $\leq$ 60%) (Note)	BV_S	4000	Vrms

(Note) Device considered a two terminal device : Pins 1, 2 and 3 shorted together, and pins 4, 5 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{AC}	—	—	240	Vac
Forward Current	I_F	20	—	25	mA
Operating Temperature	T_{opr}	-25	—	85	°C
Gate to Cathode Resistance	R_{GK}	—	10	27	k Ω
Gate to Cathode Capacity	C_{GK}	—	0.01	0.1	μF

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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.
- The products described in this document are subject to foreign exchange and foreign trade control laws.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
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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	$V = 0, f = 1\text{MHz}$		—	30	—	pF
DETECTOR	Off-State Current	I_{DRM}	$V_{AK} = 400\text{V}$ $R_{GK} = 27\text{k}\Omega$	Ta = 25°C	—	10	5000	nA
				Ta = 85°C	—	1	100	μA
	Reverse Current	I_{RRM}	$V_{KA} = 400\text{V}$ $R_{GK} = 27\text{k}\Omega$	Ta = 25°C	—	10	5000	nA
				Ta = 85°C	—	1	100	μA
	On-State Voltage	V_{TM}	$I_{TM} = 100\text{mA}$		—	0.9	1.3	V
	Holding Current	I_H	$R_{GK} = 27\text{k}\Omega$		—	0.2	—	mA
	Off-State dv/dt	dv/dt	$V_{AK} = 280\text{V}, R_{GK} = 27\text{k}\Omega$		5	10	—	V / μs
	Capacitance	C_j	$V = 0,$ $f = 1\text{MHz}$	Anode to Gate	—	20	—	pF
				Gate to Cathode	—	350	—	

COUPLED CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_{AK} = 6\text{V}, R_{GK} = 27\text{k}\Omega$	—	—	15	mA
Turn-on Time	t_{ON}	$I_F = 30\text{mA}, V_{AA} = 50\text{V}$ $R_{GK} = 27\text{k}\Omega$	—	10	—	μs
Coupled dv/dt	dv/dt	$V_S = 500\text{V}, R_{GK} = 27\text{k}\Omega$	500	—	—	V / μs
Capacitance (Input to Output)	C_S	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500\text{V}, R. H. \leq 60\%$	1×10^{12}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	4000	—	—	V_{rms}
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc

