

TLP747G

OFFICE MACHINE  
HOUSEHOLD USE EQUIPMENT  
SOLID STATE RELAY  
SWITCHING POWER SUPPLY

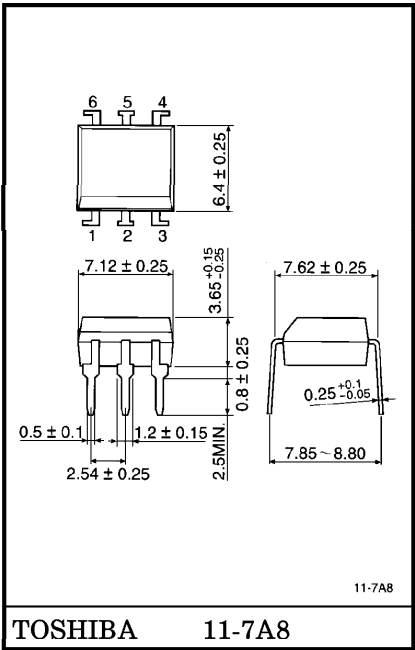
The TOSHIBA TLP747G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP.

- Peak Off-State Voltage : 400V (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<sub>PK</sub>  
Highest Permissible Over Voltage : 6000, 8000V<sub>PK</sub>

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

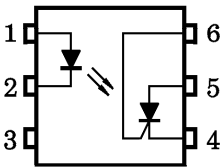
	7.62mm pich standard type	10.16mm pich TLP×××F type
● Creepage Distance	: 7.0mm (Min.)	8.0mm (Min.)
Clearance	: 7.0mm (Min.)	8.0mm (Min.)
Insulation Thickness	: 0.5mm (Min.)	0.5mm (Min.)

Unit in mm



Weight : 0.42g

PIN CONFIGURATIONS (TOP VIEW)



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

## MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	60	mA
	Forward Current Derating (Ta ≥ 39°C)	$\Delta I_F / ^\circ\text{C}$	-0.7	mA / °C
	Peak Forward Current (100 $\mu$ s pulse, 100pps)	$I_{FP}$	1	A
	Reverse Voltage	$V_R$	5	V
	Junction Temperature	$T_j$	125	°C
DETECTOR	Peak Forward Voltage ( $R_{GK} = 27k\Omega$ )	$V_{DRM}$	400	V
	Peak Reverse Voltage ( $R_{GK} = 27k\Omega$ )	$V_{RRM}$	400	V
	On-State Current	$I_T (\text{RMS})$	150	mA
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ\text{C}$	-2.0	mA / °C
	Peak On-State Current (100 $\mu$ 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 ≥ 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
Lead Soldering Temperature (10s)		$T_{sol}$	260	°C
Total Package Power Dissipation		$P_T$	250	mW
Total Package Power Dissipation Derating (Ta ≥ 25°C)		$\Delta P_T / ^\circ\text{C}$	-3.3	mW / °C
Isolation Voltage (AC, 1min., R.H. ≤ 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

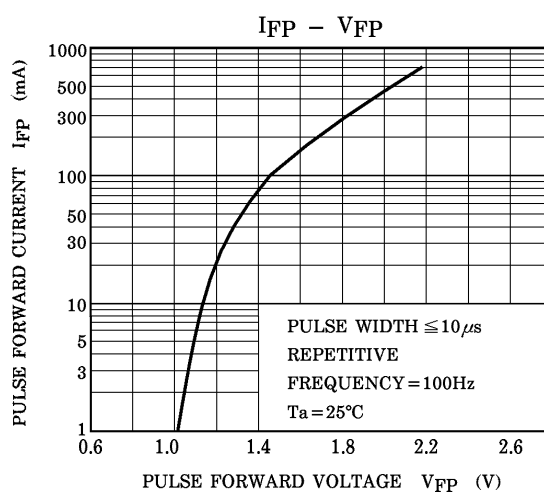
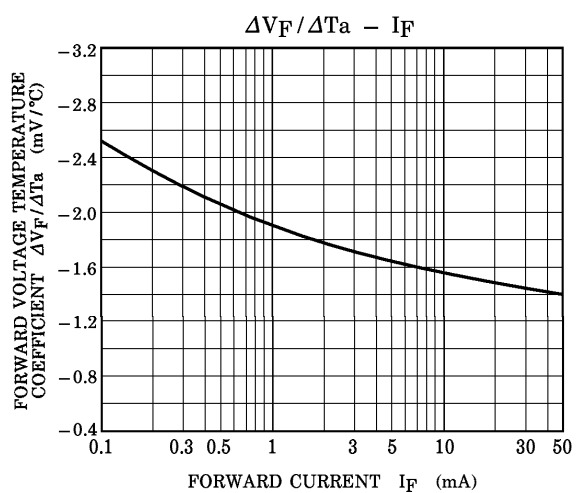
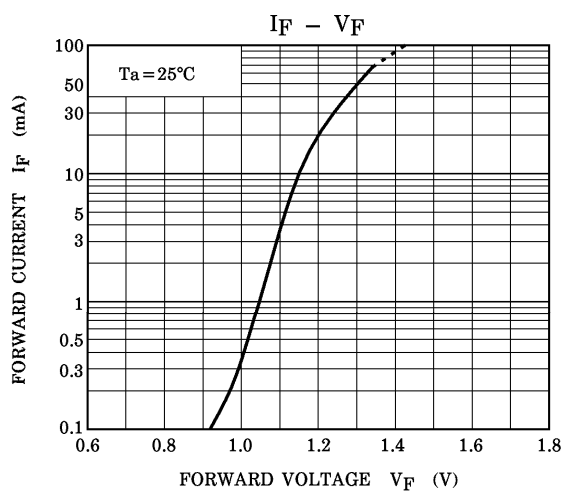
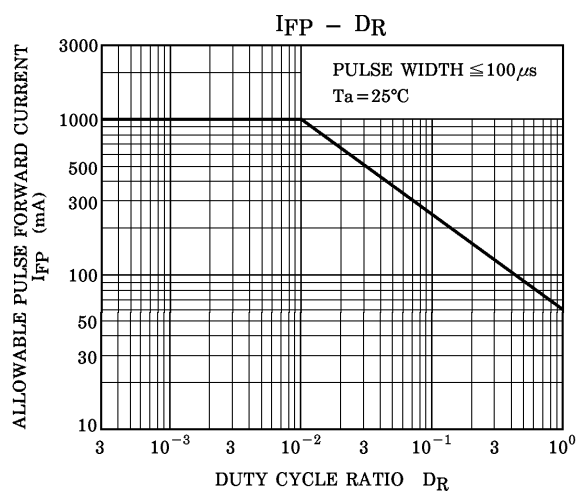
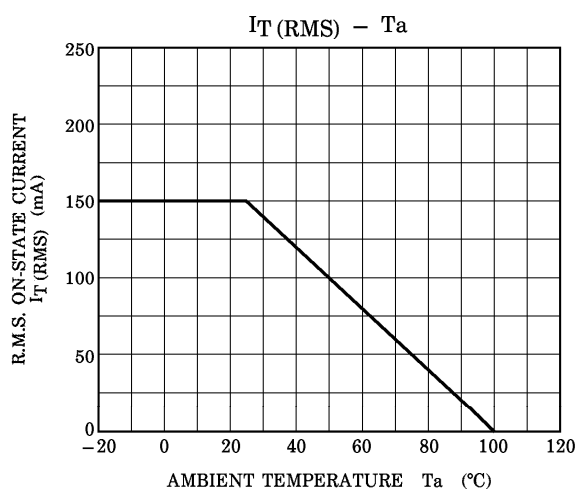
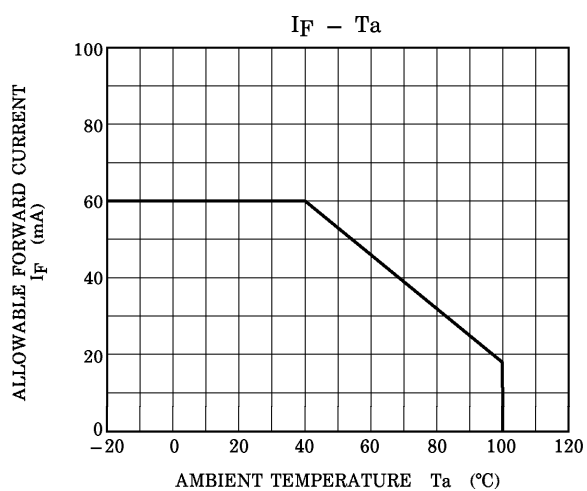
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	$V_{AC}$	—	—	120	Vac
Forward Current	$I_F$	20	—	25	mA
Operating Temperature	$T_{opr}$	-25	—	85	°C
Gate to Cathode Resistance	$R_{GK}$	—	27	33	k $\Omega$
Gate to Cathode Capacity	$C_{GK}$	—	0.01	0.1	$\mu\text{F}$

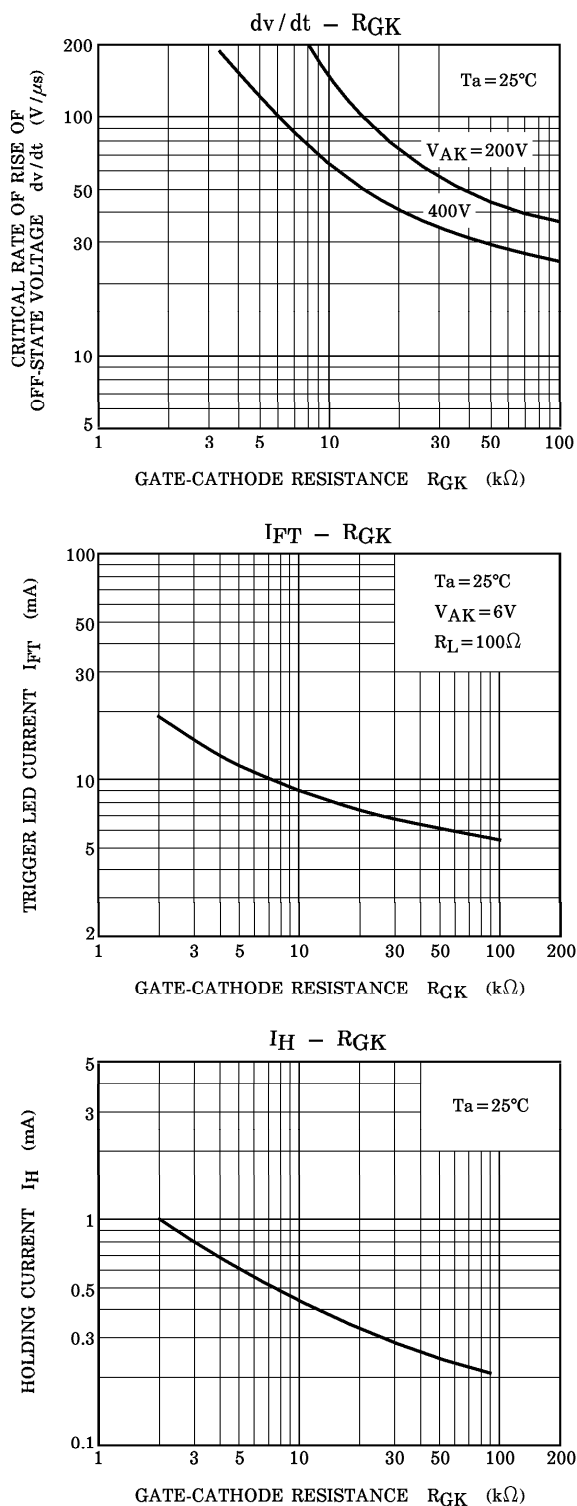
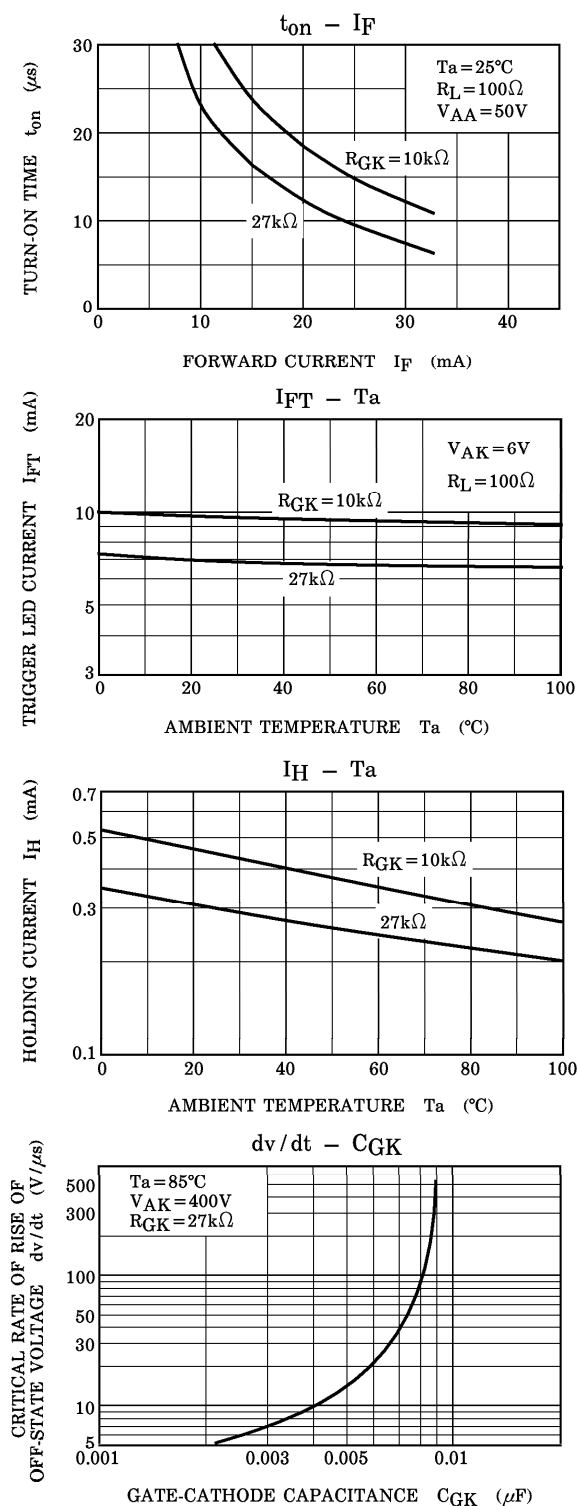
## INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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	$\mu\text{A}$
	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 = 100°C	—	1	100	$\mu\text{A}$
	Reverse Current	$I_{RRM}$	$V_{KA} = 400\text{V}$ $R_{GK} = 27\text{k}\Omega$	Ta = 25°C	—	10	5000	nA
				Ta = 100°C	—	1	100	$\mu\text{A}$
	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 / $\mu\text{s}$
	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	—	$\mu\text{s}$
Coupled dv / dt	dv / dt	$V_S = 500\text{V}, R_{GK} = 27\text{k}\Omega$	500	—	—	V / $\mu\text{s}$
Capacitance(Input to Output)	$C_S$	$V_S = 0, f = 1\text{MHz}$	—	0.8	—	pF
Isolation Resistance	$R_S$	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	$1 \times 10^{12}$	$10^{14}$	—	$\Omega$
Isolation Voltage	$BV_S$	AC, 1 minute	4000	—	—	Vrms
		AC, 1 second, in oil	—	10000	—	
		DC, 1 minute, in oil	—	10000	—	Vdc





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