

TLP647G

GaAs IRED & PHOTO-THYRISTOR

(TLP647G)

OFFICE MACHINE.
HOUSEHOLD USE EQUIPMENT.
SOLID STATE RELAY.
SWITCHING POWER SUPPLY.

The TOSHIBA TLP647G consists of a photo-thyristor 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 : 15mA (MAX.)
- On-State Current : 150mA (MAX.)
- UL Recognized : UL1577, File No. E67349
- BSI Approved : BS415 : 1990, BS7002 : 1989 (EN60950)
Certificate No. 7123
- SEMKO Approved : SS4330784,
Certificate No. 8937148
- Isolation Voltage : 4000Vrms (MIN.)
- Option (D4) type
VDE Approved : DIN VDE0884 / 08.87,
Certificate No. 68367

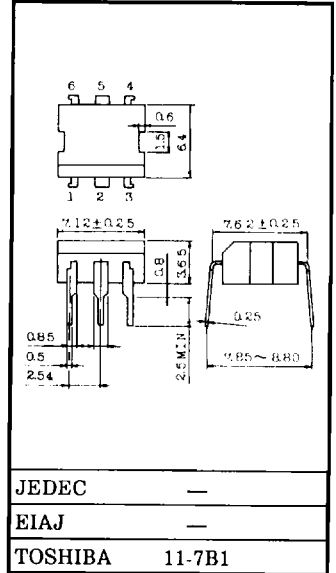
Maximum Operating Insulation Voltage : 630V_{PK}

Highest Permissible Over Voltage : 6000V_{PK}

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

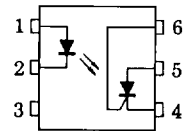
	7.62mm pich standard type	10.16mm pich (LF2) type
• Creepage Distance	: 7.0mm (MIN.)	: 8.0mm (MIN.)
Clearance	: 7.0mm (MIN.)	: 8.0mm (MIN.)
Internal Creepage Pass	: 4.0mm (MIN.)	: 4.0mm (MIN.)
Insulation Thickness	: 0.5mm (MIN.)	: 0.5mm (MIN.)

Unit in mm



Weight : 0.37g

PIN CONFIGURATIONS (TOP VIEW)



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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	60	mA
	Forward Current Derating (Ta ≧ 39°C)	ΔI _F /°C	-0.7	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	Peak Forward Voltage (R _{GK} = 27kΩ)	V _{DRM}	400	V
	Peak Reverse Voltage (R _{GK} = 27kΩ)	V _{RDM}	400	V
	On-State Current	I _{T (RMS)}	150	mA
	On-State Current Derating (Ta ≧ 25°C)	ΔI _T /°C	-2.0	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I _{TP}	3	A
	Peak One Cycle Surge Current	I _{TSM}	2	A
	Peak Reverse Gate Voltage	V _{GM}	5	V
	Junction Temperature	T _j	100	°C
Storage Temperature Range		T _{stg}	-55~150	°C
Operating Temperature Range		T _{opr}	-55~100	°C
Lead Soldering Temperature (10sec.)		T _{sol}	260	°C
Isolation Voltage (AC, 1min., R.H. ≦ 60%) (Note 1)		BV _S	4000	Vrms

Note 1 : Device considered a two terminal device : Pins 1, 2 and 3 shorted together, and Pins 4, 5 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	$V = 0, f = 1\text{MHz}$	—	30	—	pF	
DETECTOR	Off-State Current	I_{DRM}	$V_{AK} = 400\text{V}$ $R_{GK} = 27\text{k}\Omega$	$T_a = 25^\circ\text{C}$	—	10	5000	nA
				$T_a = 100^\circ\text{C}$	—	1	100	μA
	Reverse Current	I_{RRM}	$V_{KA} = 400\text{V}$ $R_{GK} = 27\text{k}\Omega$	$T_a = 25^\circ\text{C}$	—	10	5000	nA
				$T_a = 100^\circ\text{C}$	—	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 Gate to Cathode	—	20	—	pF		
			—	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	$V_S = 500\text{V}$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	4000	—	—	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}	—	—	120	Vac
Forward Current	I_F	20	—	25	mA
Operating Temperature	T_{opr}	-25	—	85	$^\circ\text{C}$
Gate to Cathode Resistance	R_{GK}	—	27	33	$\text{k}\Omega$
Gate to Cathode Capacitance	C_{GK}	—	0.01	0.1	μF

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