

TLP647J

GaAs IRED & PHOTO-THYRISTOR

(TLP647J)

OFFICE MACHINE.

HOUSEHOLD USE EQUIPMENT.

SOLID STATE RELAY.

SWITCHING POWER SUPPLY.

The TOSHIBA TLP647J 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 : 600V (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

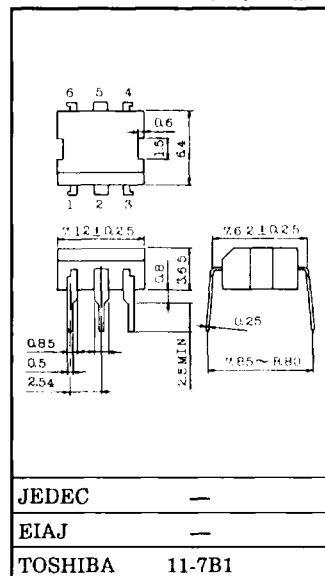
Maximum Operating Insulation Voltage : 630V_{PK}

Highest Permissible Over Voltage : 6000V_{PK}

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

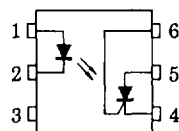
	7.62mm pitch standard type	10.16mm pitch (LF2) type
• Creepage Distance	: 7.0mm (MIN.)	8.0mm (MIN.)
Clearance	: 7.0mm (MIN.)	8.0mm (MIN.)
Internal Creepage Pass	: 4.0mm (MIN.)	4.0mm (MIN.)
Insulation Thickness	: 0.5mm (MIN.)	0.5mm (MIN.)

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 $\geq$ 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
DETECTOR	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
	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. $\leq$ 60%) (Note 1)		BVS	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 = 10mA	1.0	1.15	1.3	V
	Reverse Current	I _R	V _R = 5V	—	—	10	μA
	Capacitance	C _T	V = 0, f = 1MHz	—	30	—	pF
DETECTOR	Off-State Current	I _{DRM}	V _{AK} = 600V R _{GK} = 27kΩ	Ta = 25°C	—	10	5000 nA
				Ta = 85°C	—	1	150 μA
	Reverse Current	I _{RRM}	V _{KA} = 600V R _{GK} = 27kΩ	Ta = 25°C	—	10	5000 nA
				Ta = 85°C	—	1	150 μA
	On-State Voltage	V _{TM}	I _{TM} = 100mA	—	0.9	1.3	V
	Holding Current	I _H	R _{GK} = 27kΩ	—	0.2	—	mA
	Off-State dv/dt	dv/dt	V _{AK} = 420V, R _{GK} = 27kΩ	5	10	—	V/μs
	Capacitance	C _j	V = 0, f = 1MHz 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} = 6V, R _{GK} = 27kΩ	—	—	15	mA
Turn-on Time	t _{on}	I _F = 30mA, V _{AA} = 50V R _{GK} = 27kΩ	—	10	—	μs
Coupled dv/dt	dv/dt	V _S = 500V, R _{GK} = 27kΩ	500	—	—	V/μs
Capacitance (Input to Output)	C _S	V _S = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R _S	V _S = 500V	5 × 10 ¹⁰	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	—	V _{dc}

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{AC}	—	—	240	V _{ac}
Forward Current	I _F	20	—	25	mA
Operating Temperature	T _{opr}	−25	—	85	°C
Gate to Cathode Resistance	R _{GK}	—	10	27	kΩ
Gate to Cathode Capacitance	C _{GK}	—	0.01	0.1	μF

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