

TLP611J

GaAs IRED & PHOTO-THYRISTOR

The TOSHIBA TLP611J consists of a photo-thyristor connected inverse parallel optically coupled to a gallium arsenide infrared emitting diode in an eight lead plastic DIP package.

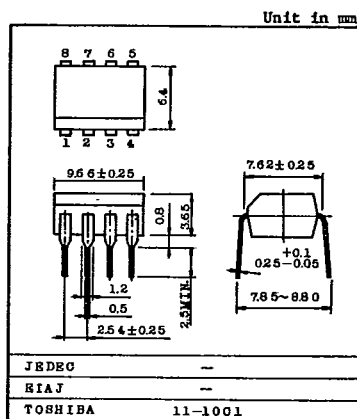
- Peak Off-State Voltage : 600V Min.
- Trigger LED Current : 10mA Max.
- On-State Current : 200mA Max.
- Isolation Voltage : 5000Vrms Min.
- UL Recognized : File No. E67349

MAXIMUM RATINGS (Ta = 25 °C)

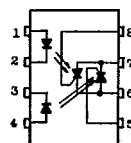
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	50	mA
	Forward Current Derating (Ta≥25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C
	Peak Forward Current (100µs pulse, 100pps)	I_{FP}	1	A
	Power Dissipation	P_D	100	mW
	Power Dissipation Derating (Ta≥25°C)	$\Delta P_D/^\circ\text{C}$	-1.0	mW/°C
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Peak Forward Voltage (R _{GK} =27kΩ)	V_{DRM}	600	V
	Peak Reverse Voltage (R _{GK} =27kΩ)	V_{RRM}	600	V
	On-State Current	$I_T(\text{RMS})$	200	mA
	On-State Current Derating (Ta≥25°C)	$\Delta I_T/^\circ\text{C}$	-2.7	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
	Power Dissipation	P_D	200	mW
	Power Dissipation Derating (Ta≥25°C)	$\Delta P_D/^\circ\text{C}$	-2.7	mW/°C
	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_{sold}	260	°C
Total Package Power Dissipation	P_T	300	mW	
Total Package Power Dissipation Derating (Ta≥25°C)	$\Delta P_T/^\circ\text{C}$	-4.0	mW/°C	
Isolation Voltage (AC, 1 min, RH≤60%)	BV_S	5000	Vrms	

COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$V_{AK}=6V, R_{GK}=27k\Omega$	-	5	10	mA
Turn-on Time	t_{on}	$I_F=30mA, V_{AA}=50V, R_{GK}=27k\Omega$	-	10	-	µs
Coupled dv/dt	dv/dt	$V_S=500V, R_{GK}=27k\Omega$	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	5000	-	-	Vrms
		AC, 1 second	-	10000	-	Vrms
		DC, 1 minute	-	10000	-	Vdc



PIN CONFIGURATION (TOP VIEW)



- 1, 4: ANODE
- 2, 3: CATHODE
- 5, 8: GATE
- 6: CATHODE, ANODE
- 7: ANODE, CATHODE

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 _{TH}	I _{TH} =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	-	10	-	V/μs		
Capacitance	C _j	V=0, f=1MHz Anode to Gate Gate to Cathode	-	20	-	-	pF	
			-	350	-	-	pF	

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{AC}	-	-	240	V _{ac}
Forward Current	I _F	15	20	25	mA
Operating Temperature	T _{opr}	-25	-	85	°C
Gate to Cathode Resistance	R _{GK}	-	10	27	kΩ
Gate to Cathode Capacity	C _{GK}	-	0.01	0.1	μF

