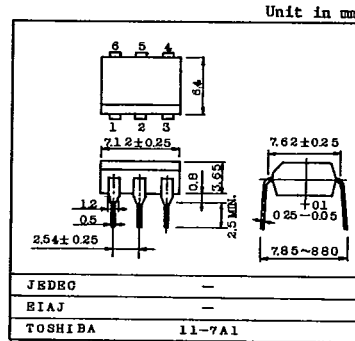


# TLP641G

## GaAs IRED & PHOTO-THYRISTOR

The TOSHIBA TLP641G consists of a photo-thyristor optically coupled to a gallium arsenide infrared emitting diode in a six lead plastic DIP package.

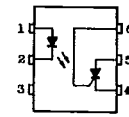
- Peak Off-State Voltage : 400V Min.
- Trigger LED Current : 7mA Max.
- On-State Current : 150mA Max.
- Isolation Voltage : 5000Vrms Min.
- UL Recognized : File No.E67349



### MAXIMUM RATINGS (Ta = 25 °C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	60	mA
	Forward Current Derating (Ta ≥ 39°C)	$\Delta I_F / ^\circ C$	-0.7	mA/°C
	Peak Forward Current (100µs pulse, 100pps)	$I_{FP}$	1	A
	Power Dissipation	$P_D$	100	mW
	Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_D / ^\circ C$	-1.0	mW/°C
	Reverse Voltage	$V_R$	5	V
	Junction Temperature	$T_j$	125	°C
DETECTOR	Peak Forward Voltage (R <sub>GK</sub> =27kΩ)	$V_{DRM}$	400	V
	Peak Reverse Voltage (R <sub>GK</sub> =27kΩ)	$V_{RRM}$	400	V
	On-State Current	$I_T (RMS)$	150	mA
	On-State Current Derating (Ta ≥ 25°C)	$\Delta I_T / ^\circ C$	-2.0	mA/°C
	Peak On-State Current (100 µ 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)	$\Delta P_D / ^\circ C$	-2.0	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	$P_T$	250	mW	
Total Package Power Dissipation Derating (Ta ≥ 25°C)	$\Delta P_T / ^\circ C$	-3.3	mW/°C	
Isolation Voltage (AC, 1 min, RH ≤ 60%)	$BVS$	5000	V <sub>rms</sub>	

### PIN CONFIGURATIONS (TOP VIEW)



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

### COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	$I_{FT}$	$V_{AK}=6V, R_{GK}=27k\Omega$	1	4	7	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	$R_S$	$V_S=500V$	$5 \times 10^{10}$	10 <sup>14</sup>	-	Ω
Isolation Voltage	$BVS$	AC, 1 minute	5000	-	-	V <sub>rms</sub>
		AC, 1 second	-	10000	-	-
		DC, 1 minute	-	10000	-	-

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =10mA	1.0	1.15	1.3	V
	Reverse Current	I <sub>R</sub>	V <sub>R</sub> =5V	-	-	10	μA
	Capacitance	C <sub>T</sub>	V=0, f=1MHz	-	30	-	pF
DETECTOR	Off-State Current	I <sub>DRM</sub>	V <sub>AK</sub> =400V R <sub>GK</sub> =27kΩ	Ta=25°C		5000	nA
				Ta=100°C		100	μA
	Reverse Current	I <sub>RRM</sub>	V <sub>KA</sub> =400V R <sub>GK</sub> =27kΩ	Ta=25°C		5000	nA
				Ta=100°C		100	μA
	On-State Voltage	V <sub>TM</sub>	I <sub>TM</sub> =100mA	-	0.9	1.3	V
	Holding Current	I <sub>H</sub>	R <sub>GK</sub> =27kΩ	-	0.2	-	mA
	Off-State dv/dt	dv/dt	V <sub>AK</sub> =280V, R <sub>GK</sub> =27kΩ	5	10	-	V/μs
Capacitance	C <sub>j</sub>	V=0, f=1MHz Anode to Gate Gate to Cathode	-	20 350	-	pF	

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>AC</sub>	-	-	120	V <sub>ac</sub>
Forward Current	I <sub>F</sub>	14	16	25	mA
Operating Temperature	T <sub>opr</sub>	-25	-	85	°C
Gate to Cathode Resistance	R <sub>GK</sub>	-	27	33	kΩ
Gate to Cathode Capacity	C <sub>GK</sub>	-	0.01	0.1	μF

