

9097250 TOSHIBA (DISCRETE/OPTO)

99D 17423 D

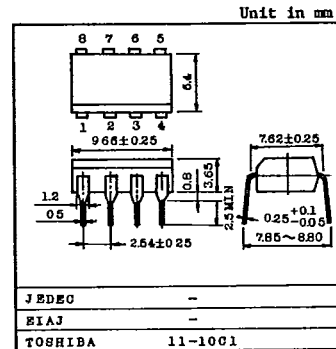
T-41-87

# TLP511GA

## GaAs IRED & PHOTO-THYRISTOR

The TOSHIBA TLP511GA consists of a photo-thyristor connected inverse parallel optically coupled to a gallium arsenide infrared emitting diode in an eight lead plastic DIP package.

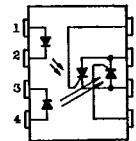
- Peak Off-State Voltage: 400V Min.
- Trigger LED Current : 7mA Max.
- On-State Current : 200mA Max.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : File No. E67349



### MAXIMUM RATINGS (Ta = 25 °C)

	CHARACTERISTIC	SYMBOL	RATING	UNIT
LED	Forward Current	I <sub>F</sub>	50	mA
	Forward Current Derating (Ta>25°C)	ΔI <sub>F</sub> /°C	-0.5	mA/°C
	Peak Forward Current (100μs pulse, 100pps)	I <sub>FP</sub>	1	A
	Power Dissipation	P <sub>D</sub>	100	mW
	Power Dissipation Derating (Ta>25°C)	ΔP <sub>D</sub> /°C	-1.0	mW/°C
	Reverse Voltage	V <sub>R</sub>	5	V
	Junction Temperature	T <sub>j</sub>	125	°C
DETECTOR	Peak Forward Voltage (R <sub>GK</sub> =27KΩ)	V <sub>DRM</sub>	400	V
	Peak Reverse Voltage (R <sub>GK</sub> =27KΩ)	V <sub>RRM</sub>	400	V
	On-State Current	I <sub>T</sub> (RHS)	200	mA
	On-State Current Derating (Ta>25°C)	ΔI <sub>T</sub> /°C	-2.7	mA/°C
	Peak On-State Current (100μs pulse, 120pps)	I <sub>TP</sub>	3	A
	Peak One Cycle Surge Current	I <sub>TSM</sub>	2	A
	Peak Reverse Gate Voltage	V <sub>GH</sub>	5	V
	Power Dissipation	P <sub>D</sub>	200	mW
	Power Dissipation Derating (Ta>25°C)	ΔP <sub>D</sub> /°C	-2.7	mW/°C
	Junction Temperature	T <sub>j</sub>	100	°C
	Storage Temperature Range	T <sub>stg</sub>	-55~150	°C
	Operating Temperature Range	T <sub>opr</sub>	-55~100	°C
	Lead Soldering Temperature (10sec.)	T <sub>sold</sub>	260	°C
Total Package Power Dissipation	P <sub>T</sub>	300	mW	
Total Package Power Dissipation Derating (Ta>25°C)	ΔP <sub>T</sub> /°C	-4.0	mW/°C	
Isolation Voltage (AC, 1 min, RH:60%)	BVs	2500	V <sub>rms</sub>	

### PIN CONFIGURATION (TOP VIEW)



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

### RECOMMENDED OPERATING CONDITIONS

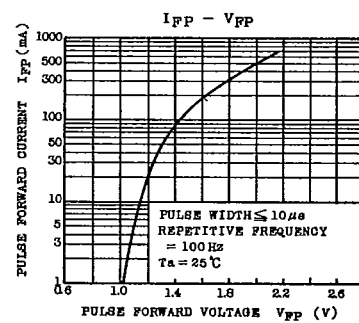
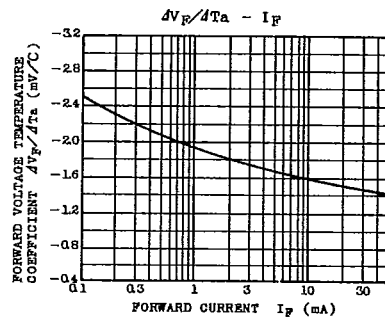
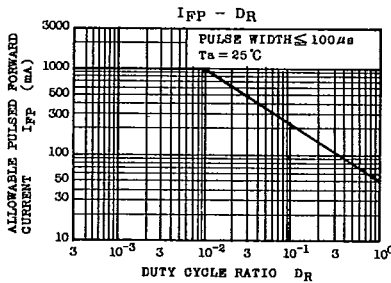
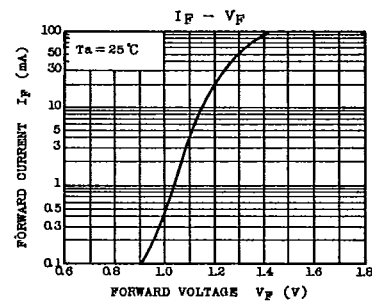
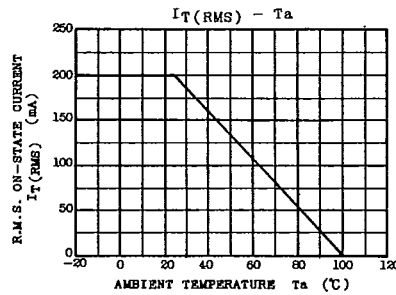
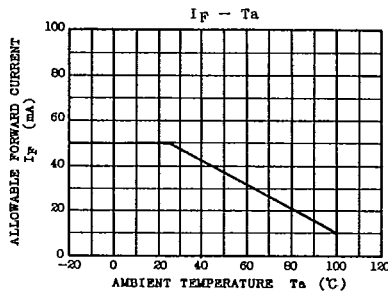
CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V <sub>AC</sub>	-	-	120	V <sub>ac</sub>
Forward Current	I <sub>F</sub>	14	16	25	mA
Operating Temperature	T <sub>opr</sub>	-25	-	85	°C
Gate to Cathode Resistance	R <sub>GK</sub>	-	27	33	kΩ
Gate to Cathode Capacity	C <sub>GK</sub>	-	0.01	0.1	μF

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 Gate to Cathode	-	20	-	pF		

COUPLED CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	$I_{FT}$	$V_{AK}=6\text{V}, R_{GK}=27\text{k}\Omega$	1	4	7	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	$R_S$	$V_S=500\text{V}$	$5 \times 10^{10}$	10 <sup>14</sup>	-	$\Omega$
Isolation Voltage	$BV_S$	AC, 1 minute	2500	-	-	$V_{rms}$
		AC, 1 second	-	5000	-	
		DC, 1 minute	-	5000	-	$V_{dc}$



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