

9097250 TOSHIBA (DISCRETE/OPTO)

99D 17423 D

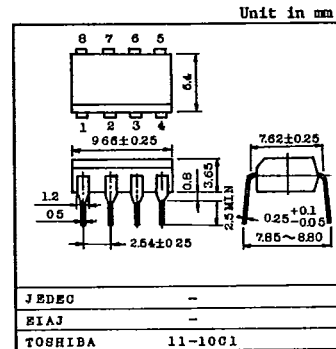
T-41-87

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.

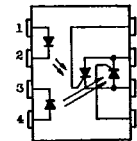
- Peak Off-State Voltage: 400V Min.
- Trigger LED Current : 7mA Max.
- On-State Current : 200mA Max.
- Isolation Voltage : 2500Vrms Min.
- UL Recognized : File No. E67349



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_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}	400	V
	Peak Reverse Voltage (R _{GK} =27KΩ)	V_{RRM}	400	V
	On-State Current	$I_T(RMS)$	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_{sld}	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%)		BVS	2500	Vrms

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_{AC}	-	-	120	Vac
Forward Current	I_F	14	16	25	mA
Operating Temperature	T_{opr}	-25	-	85	°C
Gate to Cathode Resistance	R_{GK}	-	27	33	kΩ
Gate to Cathode Capacity	C_{GK}	-	0.01	0.1	µF

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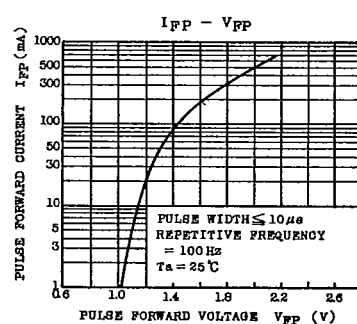
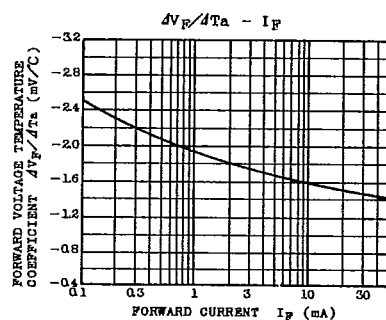
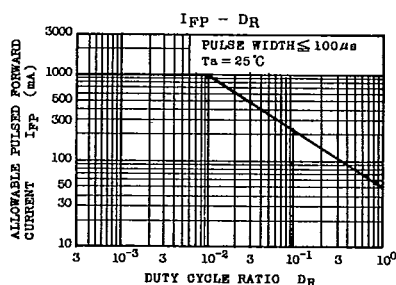
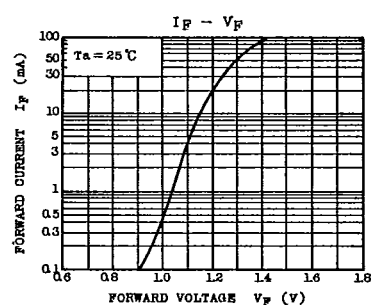
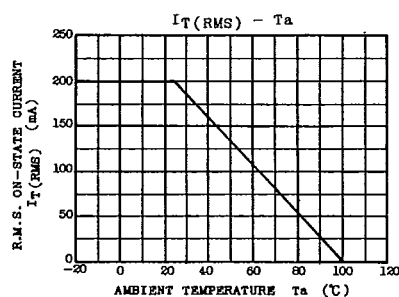
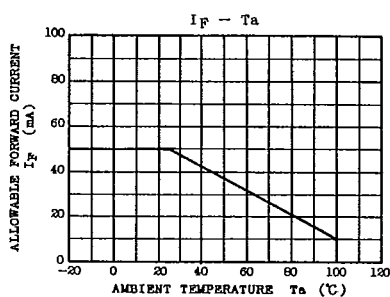
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INDIVIDUAL ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$)

	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}	$V_{AK}=400\text{V}$ $R_{GK}=27\text{k}\Omega$	$T_a=25^\circ\text{C}$ $T_a=100^\circ\text{C}$	10 1	5000 100	nA μA
	Reverse Current	I_{RRM}	$V_{KA}=400\text{V}$ $R_{GK}=27\text{k}\Omega$	$T_a=25^\circ\text{C}$ $T_a=100^\circ\text{C}$	10 1	5000 100	nA 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	-	20 350	-	pF

COUPLED CHARACTERISTICS ($T_a=25^\circ\text{C}$)

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	-	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	2500	-	-	V _{rms}
		AC, 1 second	-	5000	-	V _{rms}
		DC, 1 minute	-	5000	-	V _{dc}



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