

TOSHIBA

TLP594G

TOSHIBA PHOTOCOUPLER PHOTO RELAY

TLP594G

MODEMS

PBXes

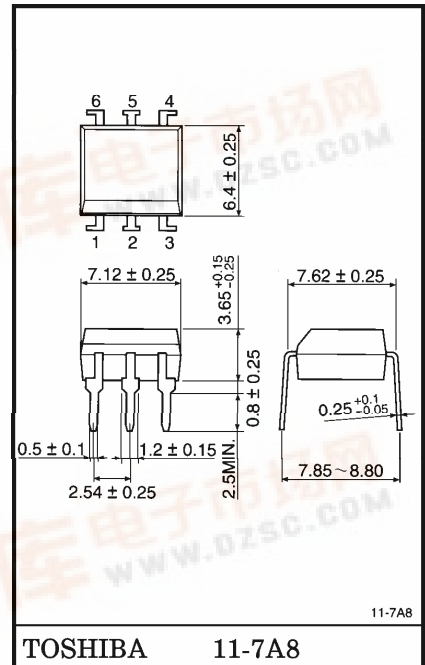
TELECOMMUNICATIONS

Unit in mm

The TOSHIBA TLP594G consists of a gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a DIP (DIP6), which is suitable for equipment for high tech communications, including modems.

The TLP594G complies with FCC part 68 rules with current limiting function.

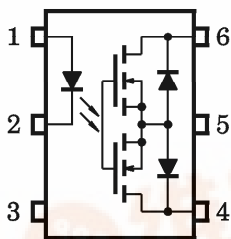
- Peak Off-State Voltage : 350 V (min)
- Trigger LED Current : 3 mA (max)
- On-State Current : 120 mA (max)
- Load Current Limiting : 150 mA~300 mA (t = 5 ms)
- On-State Resistance : 35 Ω (max)
- Isolation Voltage : 2500 Vrms (min)
- UL Recognized : UL1577, File No. E67349



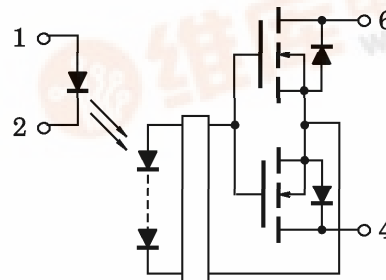
Weight : 0.4 g

PIN CONFIGURATION (TOP VIEW)

SCHEMATIC



- 1. : ANODE
- 2. : CATHODE
- 3. : NC
- 4. : DRAIN D1
- 6. : DRAIN D2



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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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MAXIMUM RATINGS (Ta = 25°C)

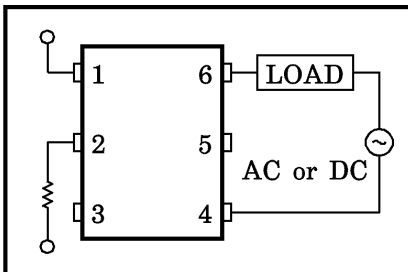
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta ≥ 25°C)	ΔI _F / °C	-0.5	mA / °C
	Peak Forward Current (100 μs pulse, 100 pps)	I _{FP}	1	A
	Reverse Voltage	V _R	5	V
	Junction Temperature	T _j	125	°C
DETECTOR	Off-State Output Terminal Voltage	V _{OFF}	350	V
	On-State RMS Current	I _{ON}	120	mA
	On-State Current Derating (Ta ≥ 25°C)	ΔI _{ON} / °C	-1.2	mA / °C
	Junction Temperature	T _j	125	°C
Storage Temperature Range		T _{stg}	-55~125	°C
Operating Temperature Range		T _{opr}	-40~85	°C
Lead Soldering Temperature (10 s)		T _{sol}	260	°C
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note 1)		BV _S	2500	V _{rms}

(Note 1) : Device considered a two-terminal device : pins 1, 2 and 3 shorted together and pins 4, 5 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN	TYP.	MAX	UNIT
Supply Voltage	V _{DD}	—	—	280	V
Forward Current	I _F	5	7.5	25	mA
On-State Current	I _{ON}	—	—	120	mA
Operating Temperature	T _{opr}	-20	—	65	°C

CIRCUIT CONNECTIONS



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	μA
	Capacitance	C_T	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 350 \text{ V}$	—	—	1	μA
	Capacitance	C_{OFF}	$V = 0, f = 1 \text{ MHz}$	—	40	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Trigger LED Current	I_{FT}	$I_{ON} = 120 \text{ mA}$	—	—	3	mA
On-State Resistance	R_{ON}	$I_{ON} = 120 \text{ mA}, I_F = 5 \text{ mA}$	—	22	35	Ω
		$I_{ON} = 20 \sim 120 \text{ mA}, I_F = 5 \text{ mA}$	—	26	40	Ω
Load Current Limiting	I_{LIM}	$I_F = 5 \text{ mA}, V_{DD} = 5 \text{ V}, t = 5 \text{ ms}$	150	—	300	mA

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Capacitance Input to Output	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second, in oil	—	5000	—	V_{rms}
		DC, 1 minute, in oil	—	5000	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Turn-on Time	t_{ON}	$R_L = 200 \Omega$ (Note 2)	—	—	1	ms
Turn-off Time	t_{OFF}	$V_{DD} = 20 \text{ V}, I_F = 5 \text{ mA}$	—	—	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT

