SEMICONDUCTOR

TOSHIBA

TECHNICAL DATA

TOSHIBA PHOTOCOUPLER

TLP597G

PHOTO RELAY

TENTATIVE DATA
(TLP597G)

CORDLESS TELEPHONE

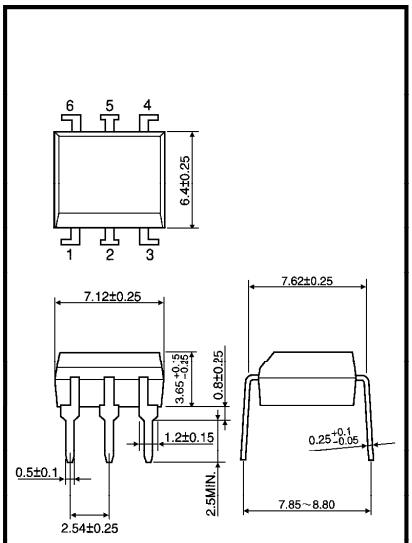
PABX

MODEM

The TOSHIBA TLP597G consists of a gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package.
The TLP597G is a bi-directional switch which can replace mechanical relay in many applications.

- Peak Off-State Voltage : 350V (MIN.)
- Trigger LED Current : 5mA (MAX.)
- On-State Current : 120mA (MAX.) (A Connection)
- On-State Resistance : 35Ω (MAX.) (A Connection)
- Isolation Voltage : $2500V_{rms}$ (MIN.)
- UL Recognized : UL1577, File No. E67349

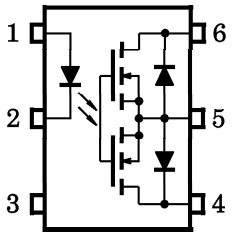
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	11-7A8

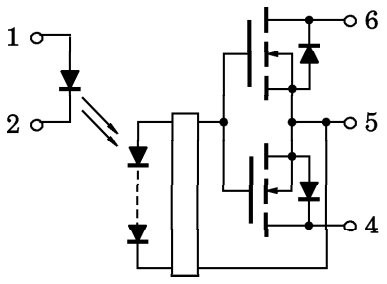
Weight : 0.4g

PIN CONFIGURATION (TOP VIEW)



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

SCHEMATIC



(TLP597G)

MAXIMUM RATINGS (Ta = 25°C)

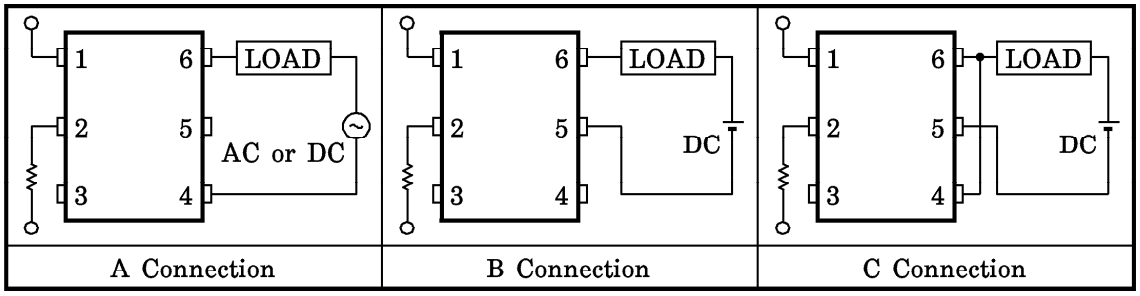
CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I_F	50	mA
	Forward Current Derating (Ta ≧ 25°C)		ΔI_F / °C	−0.5	mA / °C
	Peak Forward Current (100 μs pulse, 100pps)		I_{FP}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V_{OFF}	350	V
	On-State RMS Current	A Connection	I_{ON}	120	mA
		B Connection		120	
		C Connection		160	
	On-State Current Derating (Ta ≧ 25°C)	A Connection	ΔI_{ON} / °C	−1.2	mA / °C
		B Connection		−1.2	
		C Connection		−1.6	
	Junction Temperature		T_j	125	°C
Storage Temperature Range			T_{stg}	−55~100	°C
Operating Temperature Range			T_{opr}	−20~85	°C
Lead Soldering Temperature (10s)			T_{sol}	260	°C
Isolation Voltage (AC, 1min., 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	7.5	15	25	mA
On-State Current	I_{ON}	—	—	120	mA
Operating Temperature	T_{opr}	−20	—	65	°C

CIRCUIT CONNECTIONS



A Connection | B Connection | C Connection

(TLP597G)

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
LED	Reverse Current	I_R	V_R=5V	—	—	10	μA
LED	Capacitance	C_T	V=0, f=1MHz	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	V_{OFF}=350V	—	—	1	μA
DETECTOR	Capacitance	C_{OFF}	V=0, f=1MHz	—	—	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current		I_{FT}	I_{ON}=120mA	—	2	5	mA
On-State Resistance	A Connection	R_{ON}	I_{ON}=120mA, I_F=10mA	—	22	35	Ω
			I_{ON}=20~120mA, I_F=10mA	—	26	40	Ω
	B Connection		I_{ON}=120mA, I_F=10mA	—	13	20	Ω
	C Connection		I_{ON}=160mA, I_F=10mA	—	7	10	Ω

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S=0, f=1MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S=500V, R.H.≦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=200Ω Note 1	—	—	4	ms
Turn-off Time	t_{OFF}	V_{DD}=20V, I_F=10mA	—	—	4	ms

Note 1 SWITCHING TIME TEST CIRCUIT