

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

TLP197G

MODEM

FAX

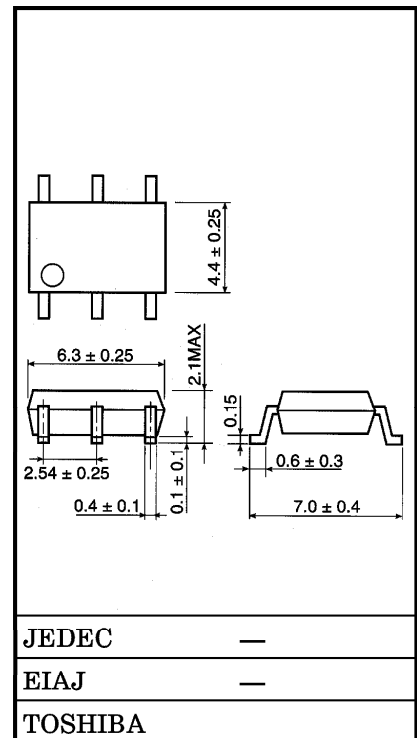
PBX

MEASUREMENT INSTRUMENTATION

The TOSHIBA MINI FLAT PHOTO RELAY TLP197G is a small outline photo relay, suitable for surface mount assembly. The TLP197G consists of an gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead 2.1 mm height package, which enable TLP197G to be applied in CARD MODEMS. The TLP197G is a bi-directional switch which can replace mechanical relays in FAX machines and MODEMS etc.

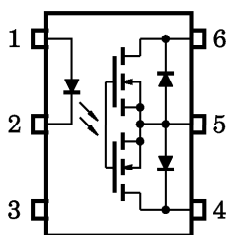
- SOP 6pin (2.54SOP6) : 1-Form-A
- Peak Off-State Voltage : 350 V (MIN.)
- Trigger LED Current : 3m A (MAX.)
- On-State Current : 120 mA (MAX.)
(A Connection)
- On-State Resistance : 35 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)
- UL Recognized : UL1577, File No. /E67349
- BSI Approved : BS EN60065 : 1994, Certificate No. 8273
BS EN60950 : 1992, Certificate No. 8274
- Option (V4) type
TUV Approved : DIN VDE0884 / 06.92,
Certificate No. R9850580

Unit in mm



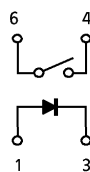
Weight : 0.13 g

PIN CONFIGURATION (TOP VIEW)

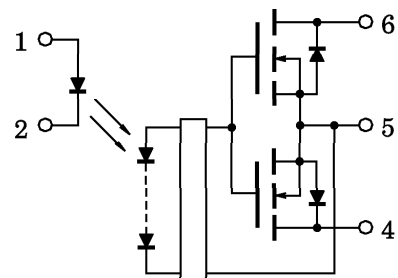


- 1. : ANODE
- 2. : CATHODE
- 3. : NC
- 4. : DRAIN D1
- 5. : SOURCE
- 6. : DRAIN D2

1 Form A



SCHEMATIC



980910EBC2

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MAXIMUM RATINGS (Ta = 25°C)

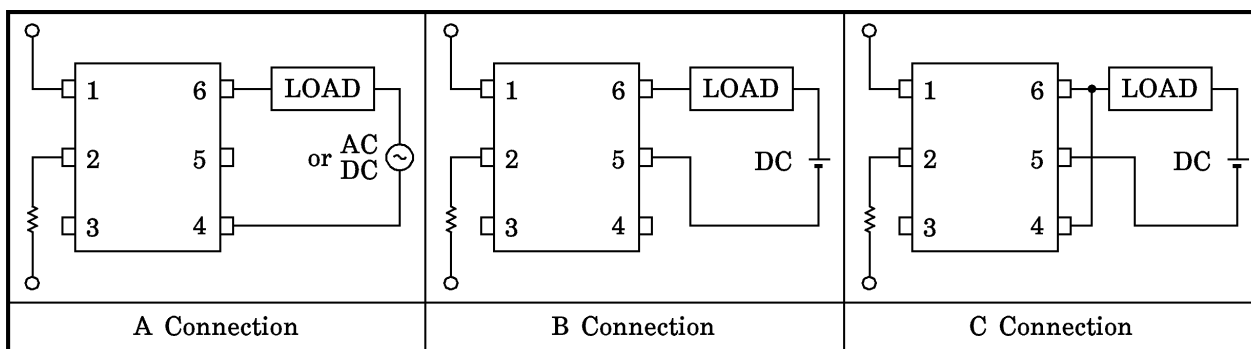
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	I_F	50	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ C$	-0.5	mA / °C	
	Peak Forward Current (100 μs pulse, 100 pps)	I_{FP}	1	A	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
DETECTOR	Off-State Output Terminal Voltage	V_{OFF}	350	V	
	On-State Current	A Connection	I_{ON}	120	mA
		B Connection			
		C Connection			
	On-State Current Derating (Ta ≥ 25°C)	A Connection	$\Delta I_{ON} / ^\circ C$	-1.2	mA / °C
		B Connection			
C Connection					
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_{sold}	260	°C		
Isolation Voltage (AC, 1 min., R.H. ≤ 60%)	(Note 1) BV_S	1500	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_{OFF}	—	—	280	V
Forward Current	I_F	5	7.5	25	mA
On-State Current (A Connection)	I_{ON}	—	—	100	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}	$I_{ON} = 120 \text{ mA}$	—	1	3	mA
On-State Resistance	A Connection	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	

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	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	V_{DC}

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Time	t_{ON}	$R_L = 200 \Omega$ (Note 2)	—	0.3	1	ms
Turn-Off Time	t_{OFF}	$V_{CC} = 20 \text{ V}, I_F = 5 \text{ mA}$	—	0.1	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT

