

# TLP197G

Modem

Fax

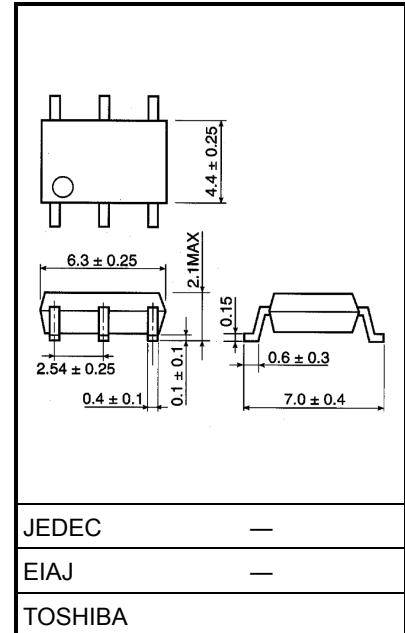
PBX

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 2.1mm 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.

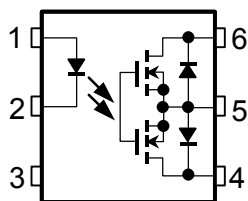
- SOP 6pin(2.54SOP6): 1-form-A
- Peak off-state voltage: 350V (min)
- Trigger LED current: 3mA (max)
- On-state current: 120mA(max)  
(A connection)
- On-state resistance: 35Ω(max)
- Isolation voltage: 1500Vrms (min)
- UL recognized: UL1577, file No./E67349
- BSI approved: BS EN60065: 1994, certificate No.8273  
BS EN60950: 1992, certificate No.8274
- SEMKO approved: SS EN60065  
SS EN60950
- Option(V4)type  
TUV approved: DIN VDE0884 / 06.92,  
certificate no.R9850580

Unit in mm



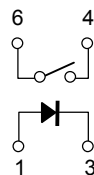
Weight: 0.13g

## Pin Configuration (top view)

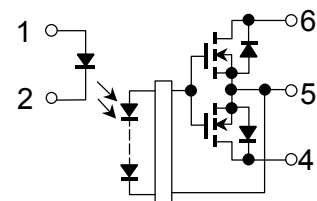


- 1 : Anode
- 2 : Cathode
- 3 : NC
- 4 : Drain D1
- 5 : Source
- 6 : Drain D2

## 1-Form-a



## Schematic



## Maximum Ratings (Ta = 25°C)

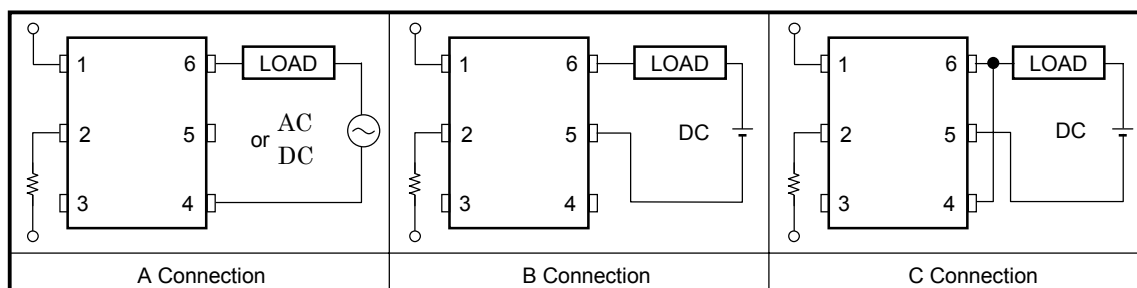
Characteristics		Symbol	Rating	Unit	
Led	Forward current	$I_F$	50	mA	
	Forward current derating (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.5	mA/°C	
	Pulse forward current (100µs pulse, 100pps)	$I_{FP}$	1	A	
	Reverse voltage	$V_R$	5	V	
	Junction temperature	$T_j$	125	°C	
Detector	Off-state output terminal voltage	$V_{OFF}$	350	V	
	On-state current	A connection	$I_{ON}$	120	mA
		B connection			
		C connection			
	On-state current derating (Ta ≥ 25°C)	A connection	$\Delta I_{ON}/^\circ\text{C}$	-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)	$T_{sol}$	260	°C		
Isolation voltage (AC, 1 min., RH ≤ 60%)	(Note 1) $BV_S$	1500	Vrms		

(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	$\mu\text{A}$
	Capacitance	$C_T$	$V=0, f=1\text{MHz}$	—	30	—	pF
Detector	Off-state current	$I_{OFF}$	$V_{OFF}=350\text{V}$	—	—	1	$\mu\text{A}$
	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	$\Omega$
			$I_{ON}=20\sim 120\text{mA}, I_F=5\text{mA}$	—	26	40	

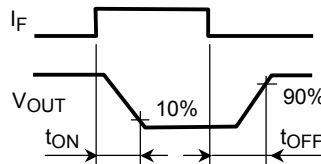
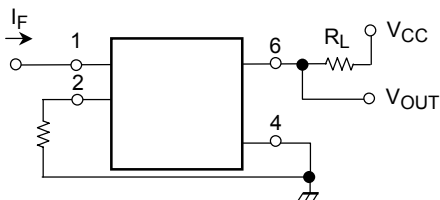
## Isolation Characteristics (Ta = 25°C)

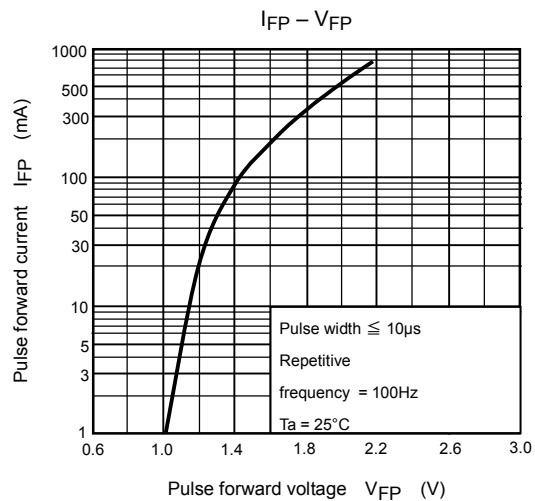
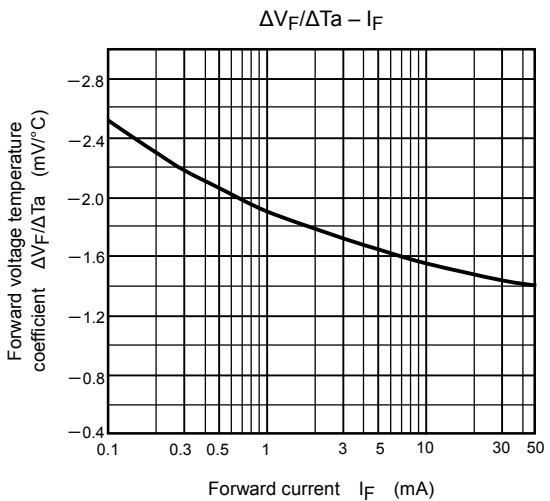
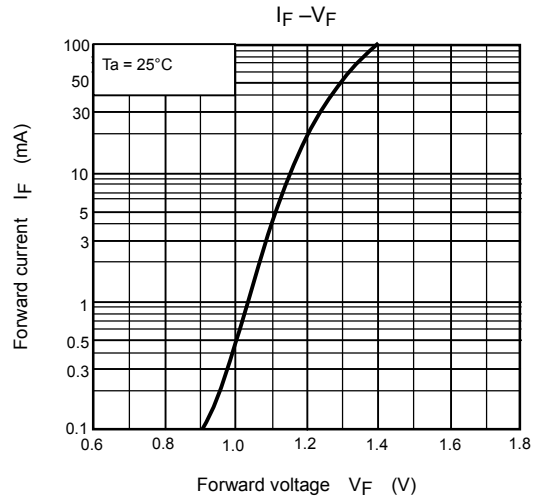
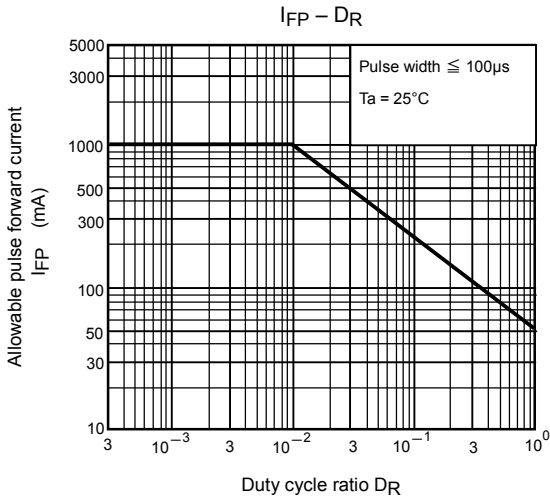
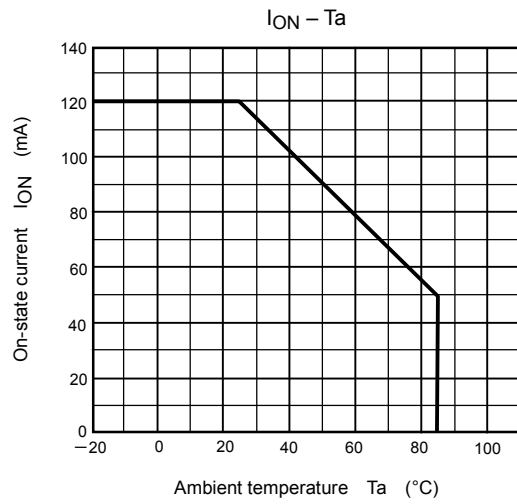
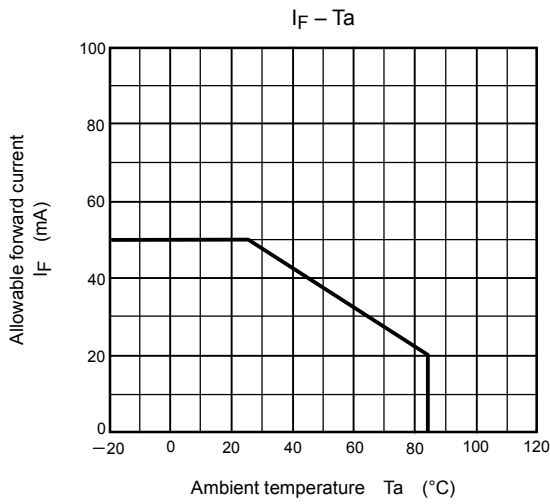
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	$C_S$	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation resistance	$R_S$	$V_S=500\text{V}, \text{R.H.} \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation voltage	$BV_S$	AC, 1minute	1500	—	—	$V_{rms}$
		AC, 1second (in oil)	—	3000	—	
		DC, 1minute (in oil)	—	3000	—	$V_{dc}$

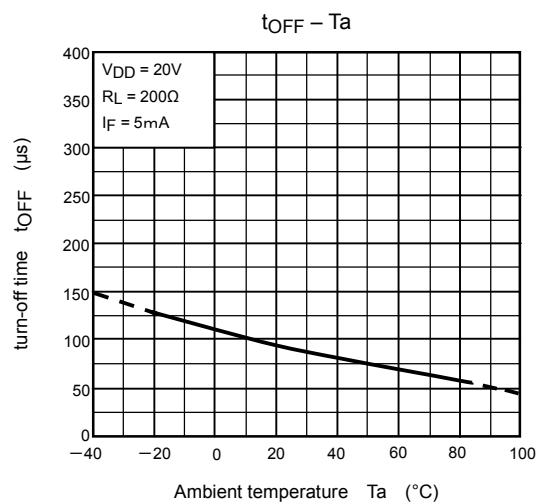
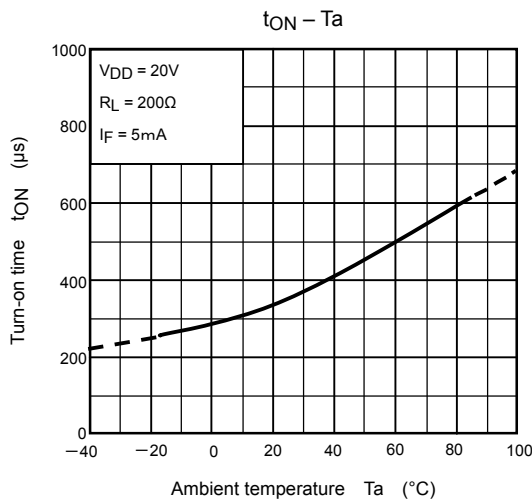
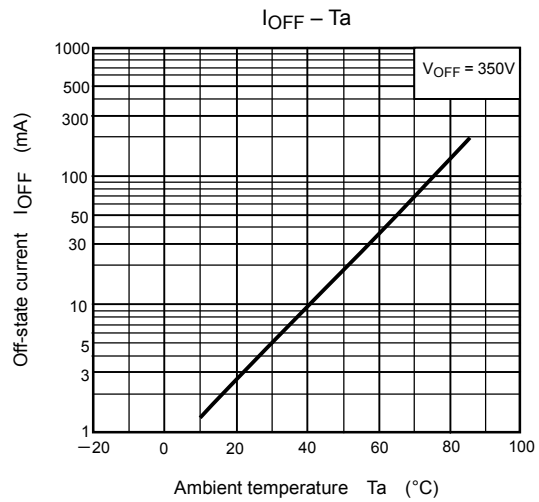
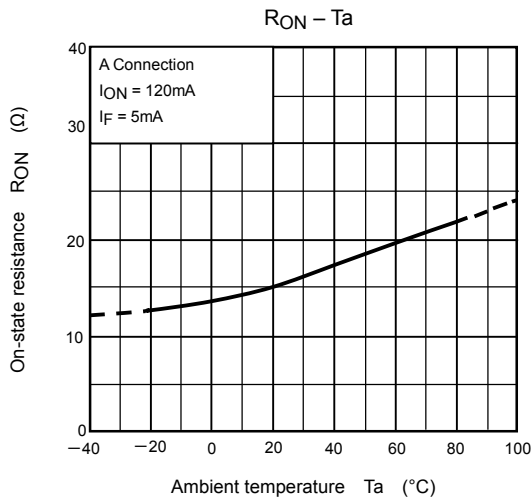
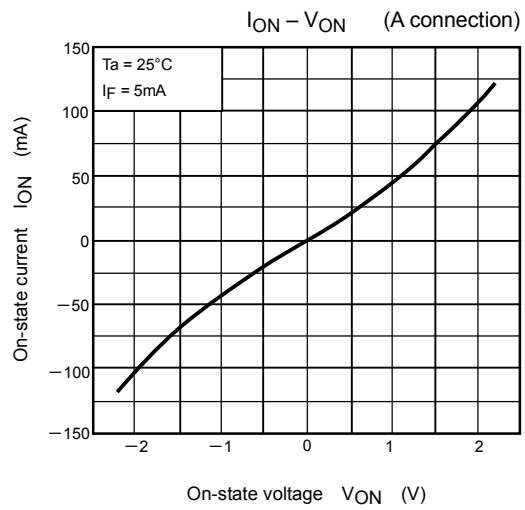
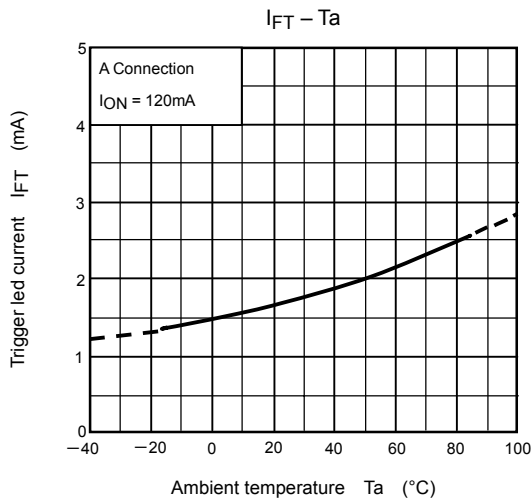
## Switching Characteristics (Ta = 25°C)

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	

(Note2): Switching time test circuit







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