

TOSHIBA Photocoupler GaAs Ired & Photo-MOS FET

TLP197G

Modem

Fax

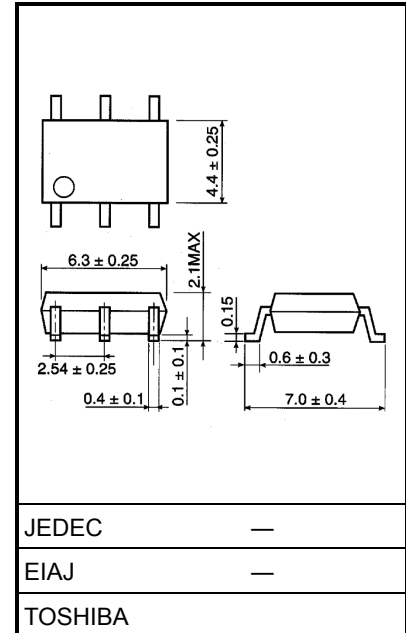
PBX

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 2.1mm 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.

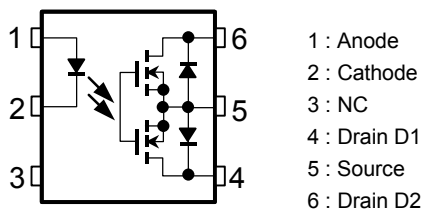
- SOP 6pin(2.54SOP6): 1-form-A
- Peak off-state voltage: 350V (min)
- Trigger LED current: 3mA (max)
- On-state current: 120mA(max)
(A connection)
- On-state resistance: 35Ω(max)
- Isolation voltage: 1500Vrms (min)
- UL recognized: UL1577, file No./E67349
- BSI approved: BS EN60065: 1994, certificate 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

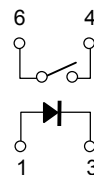


Weight: 0.13g

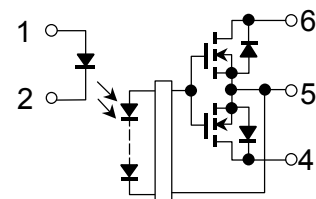
Pin Configuration (top view)



1-Form-a



Schematic



Maximum Ratings (Ta = 25°C)

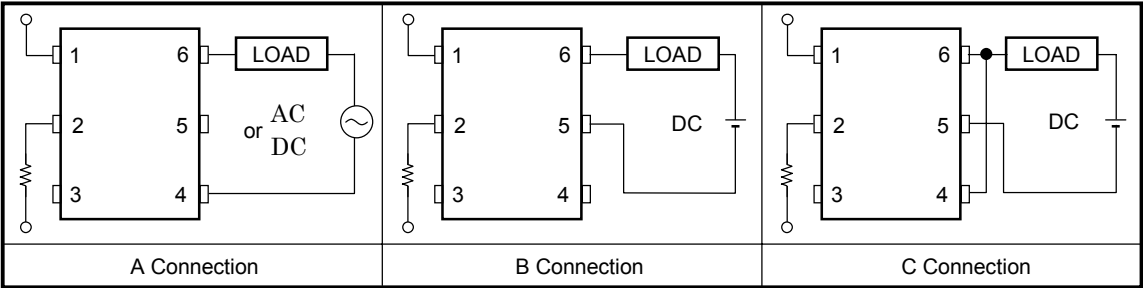
Characteristics			Symbol	Rating	Unit
Led	Forward current		I _F	50	mA
	Forward current derating (Ta ≥ 25°C)		ΔI _F /°C	−0.5	mA/°C
	Pulse forward current (100μs pulse,100pps)		I _{FP}	1	A
	Reverse voltage		V _R	5	V
	Junction temperature		T _j	125	°C
Detector	Off-state output terminal voltage		V _{OFF}	350	V
	On-state current	A connection	I _{ON}	120	mA
		B connection			
		C connection			
	On-state current derating (Ta ≥ 25°C)	A connection	ΔI _{ON} /°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: Pins1,2 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
			$I_{ON}=20\sim120\text{mA}, I_F=5\text{mA}$	—	26	40	

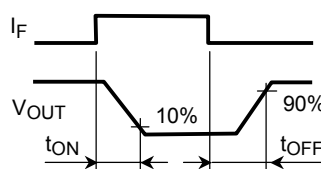
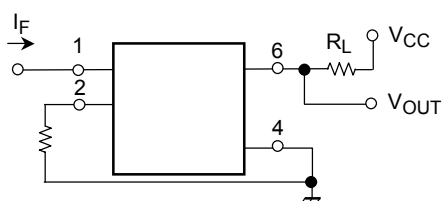
Isolation Characteristics (Ta = 25°C)

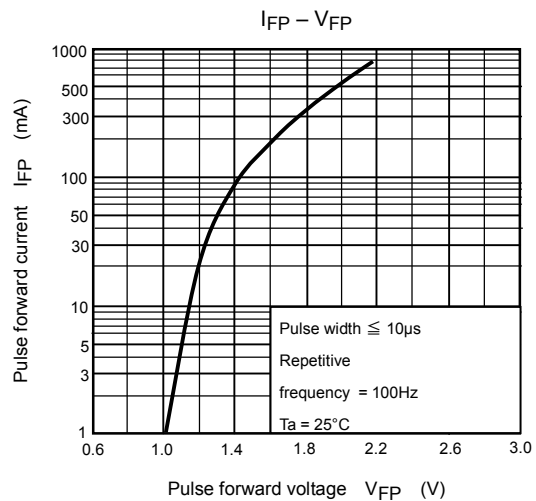
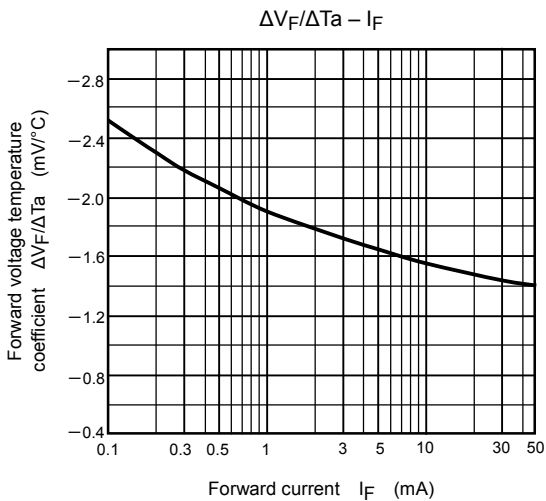
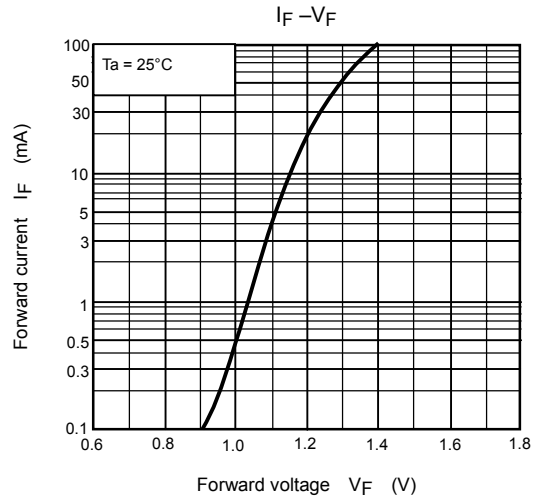
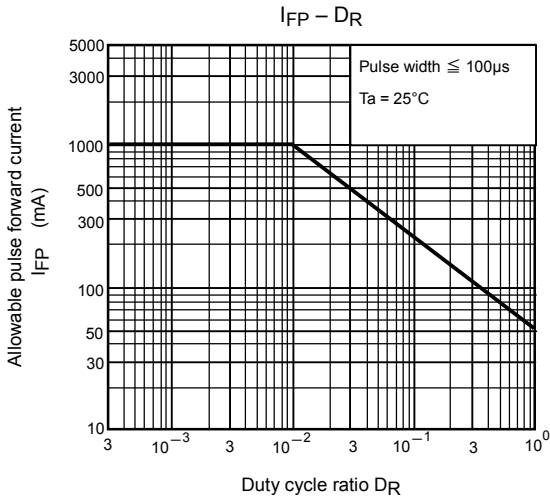
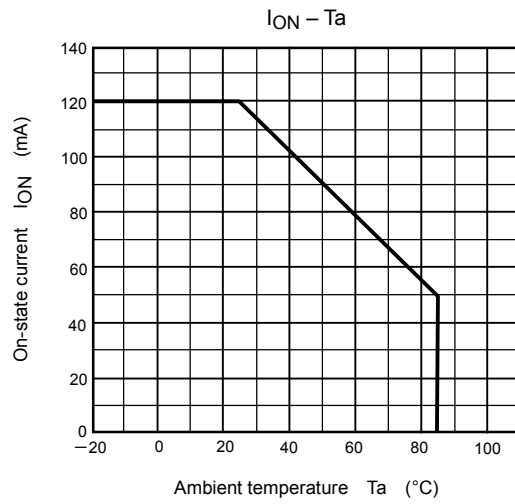
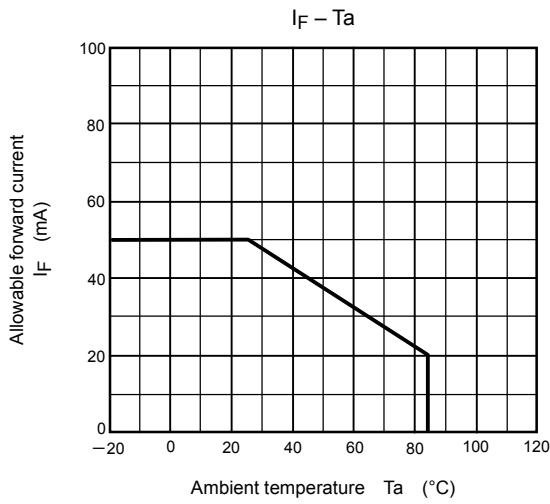
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C_S	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S=500\text{V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1minute	1500	—	—	V_{rms}
		AC, 1second (in oil)	—	3000	—	
		DC,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

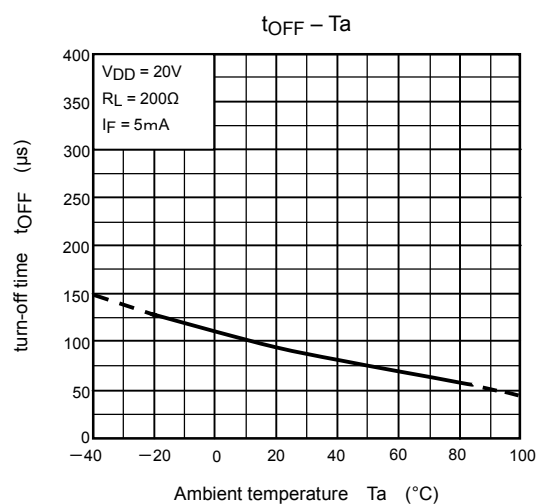
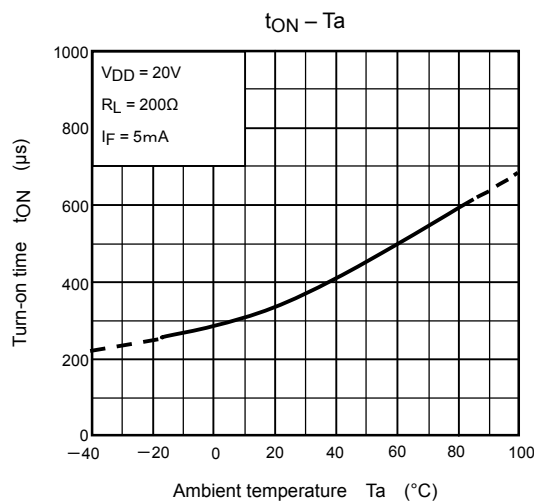
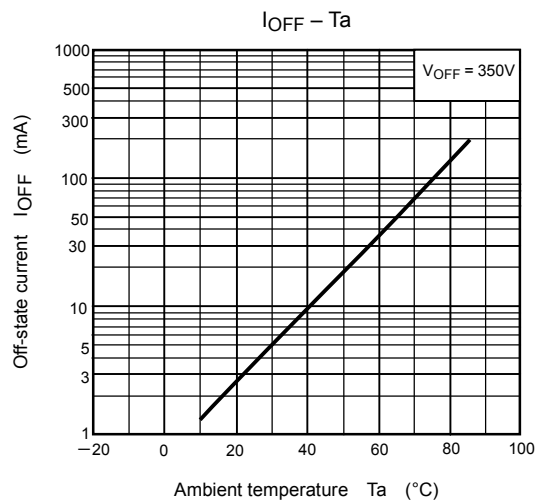
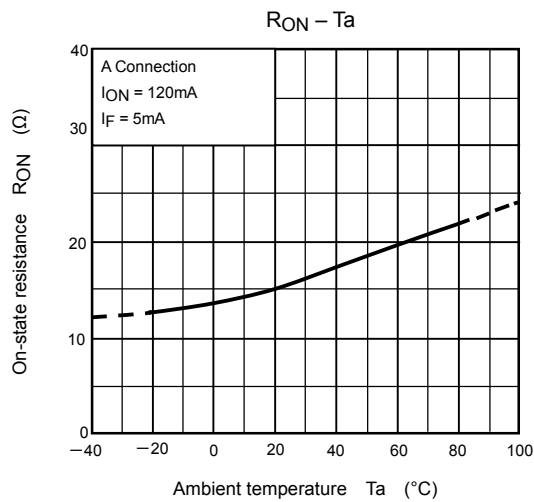
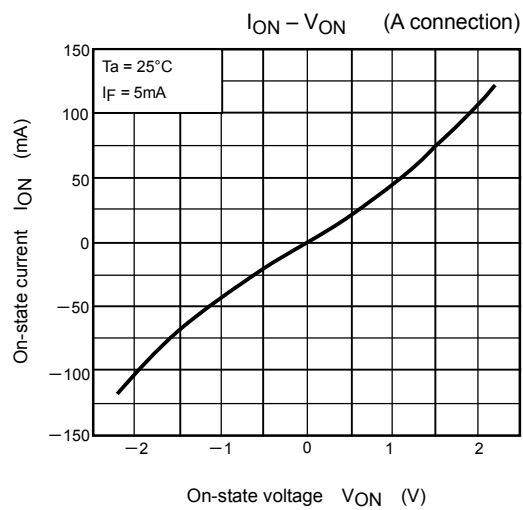
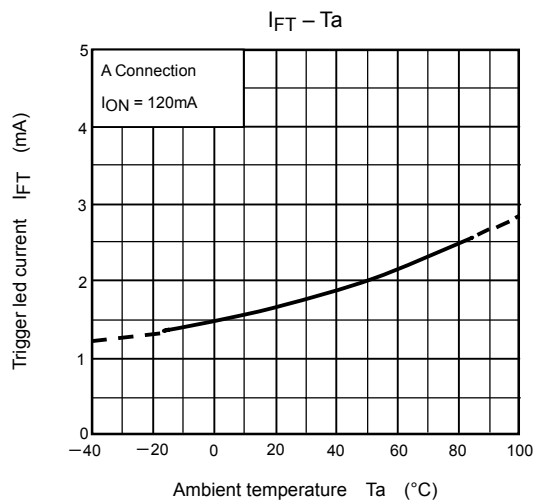
Switching Characteristics (Ta = 25°C)

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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