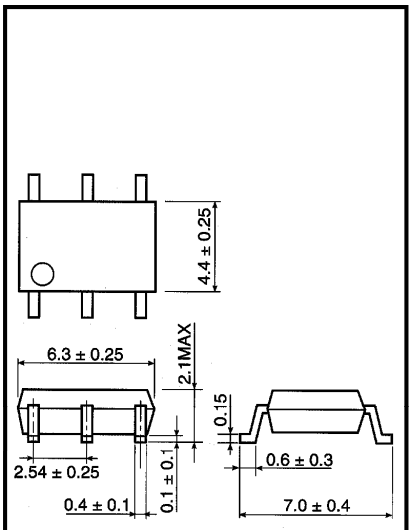
TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

TLP197G

MODEM
FAX
PBX
MEASUREMENT INSTRUMENTATION

Unit in mm



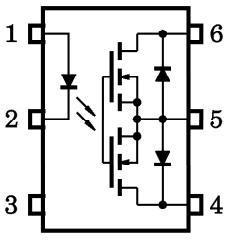
JEDEC	—
EIAJ	—
TOSHIBA	

Weight : 0.13 g

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.

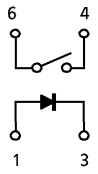
- SOP 6pin (2.54SOP6) : 1-Form-A
- Peak Off-State Voltage : 350 V (MIN.)
- Trigger LED Current : 3m A (MAX.)
- On-State Current : 120 mA (MAX.)
  (A Connection)
- On-State Resistance : 35 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)
- UL Recognized : UL1577, File No. / E67349
- BSI Approved : BS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

PIN CONFIGURATION (TOP VIEW)

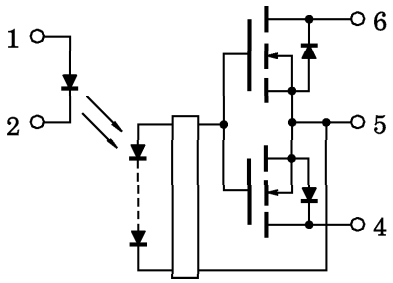


1. : ANODE
2. : CATHODE
3. : NC
4. : DRAIN D1
5. : SOURCE
6. : DRAIN D2

1 Form A



SCHEMATIC



980910EBC2

MAXIMUM RATINGS (Ta = 25°C)

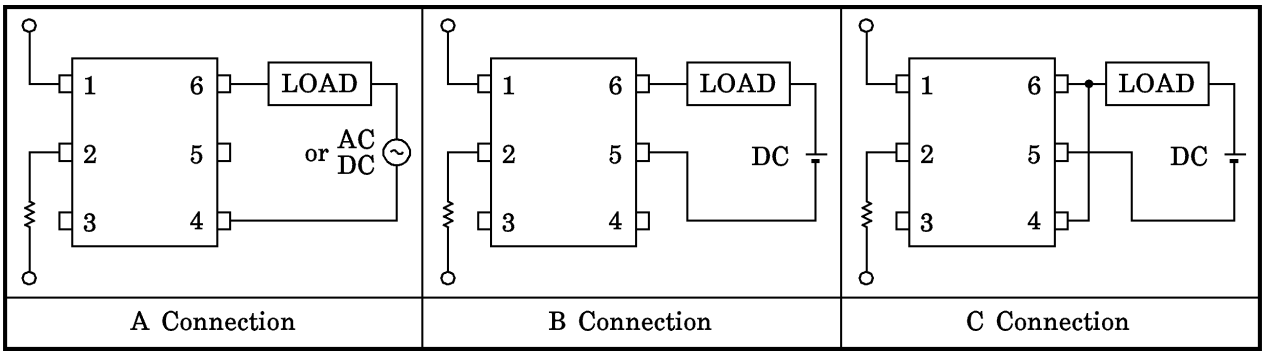
	CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current		I_F	50	mA
	Forward Current Derating (Ta ≧ 25°C)		ΔI_F / °C	−0.5	mA / °C
	Peak Forward Current (100 μs pulse, 100 pps)		I_{FP}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V_{OFF}	350	V
	On-State 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_{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



A Connection B Connection C Connection

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F = 10 mA	1.0	1.15	1.3	V
	Reverse Current	I_R	V_R = 5 V	—	—	10	μA
	Capacitance	C_T	V = 0, f = 1 MHz	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	V_{OFF} = 350 V	—	—	1	μA
	Capacitance	C_{OFF}	V = 0, f = 1 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 mA	—	1	3	mA
On-State Resistance	A Connection	R_{ON}	I_{ON} = 120 mA, I_F = 5 mA	—	22	35	Ω
			I_{ON} = 20~120 mA, I_F = 5 mA	—	26	40	

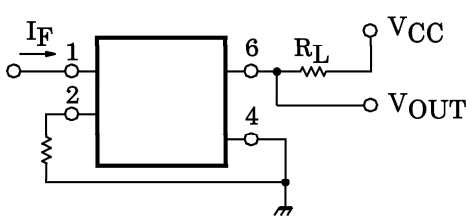
ISOLATION CHARACTERISTICS (Ta = 25°C)

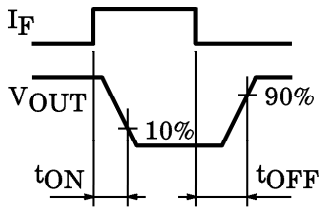
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S = 0, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500 V, R.H. ≦ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	V_{DC}

SWITCHING CHARACTERISTICS (Ta = 25°C)

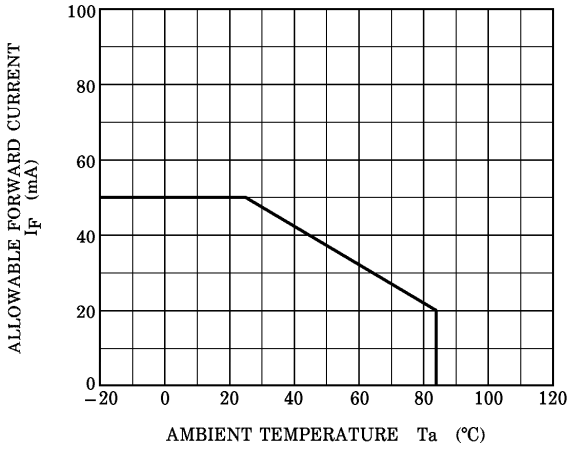
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Time	t_{ON}	R_L = 200 Ω (Note 2)	—	0.3	1	ms
Turn-Off Time	t_{OFF}	V_{CC} = 20 V, I_F = 5 mA	—	0.1	1	

(Note 2) : SWITCHING TIME TEST CIRCUIT

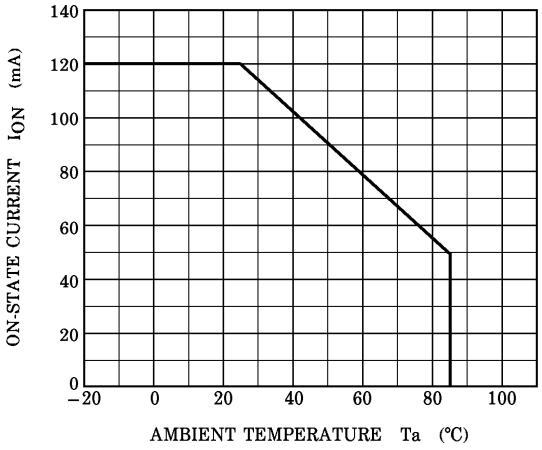




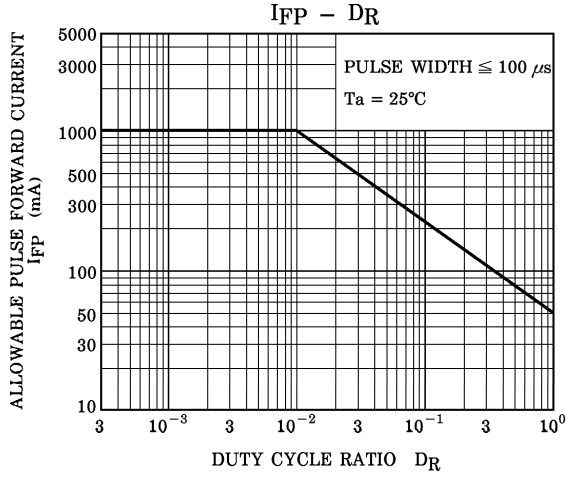
I_F – Ta



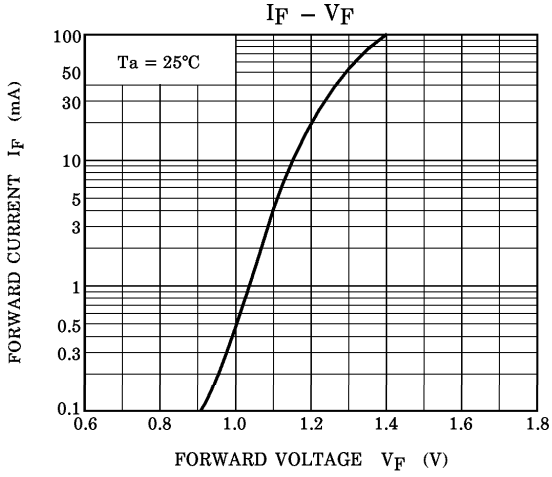
I_{ON} – Ta



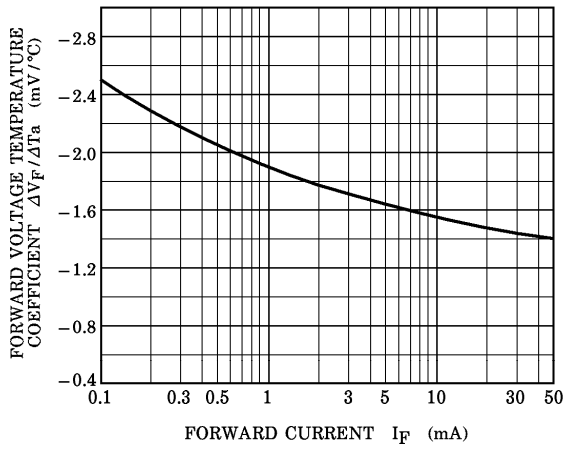
I_{FP} – D_R



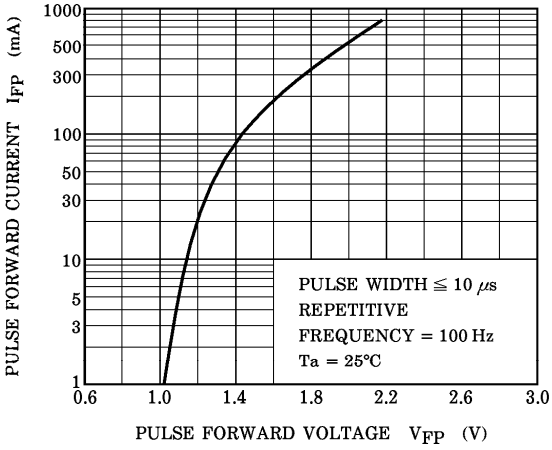
I_F – V_F



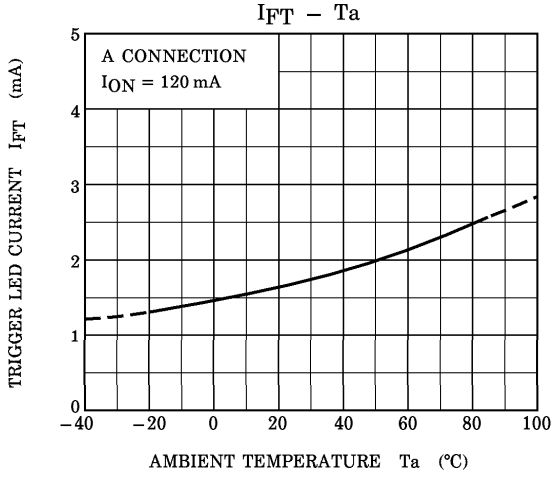
$\Delta V_F / \Delta Ta$ – I_F



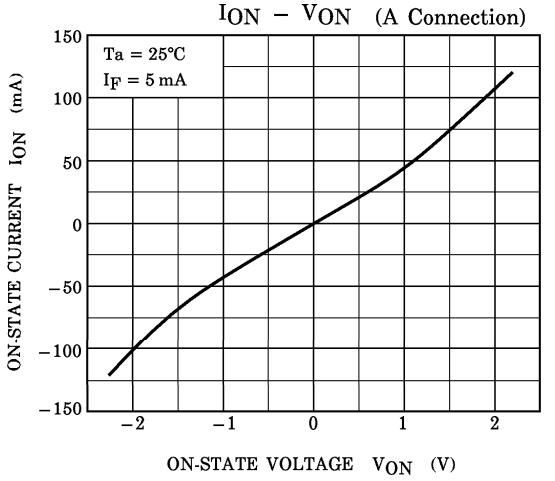
I_{FP} – V_{FP}



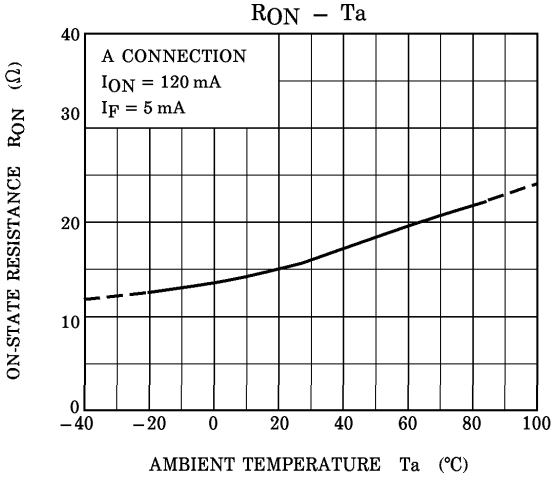
I_{FT} – Ta



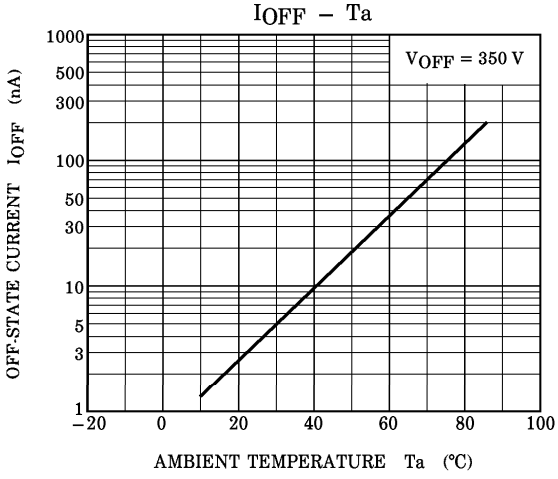
I_{ON} – V_{ON} (A Connection)



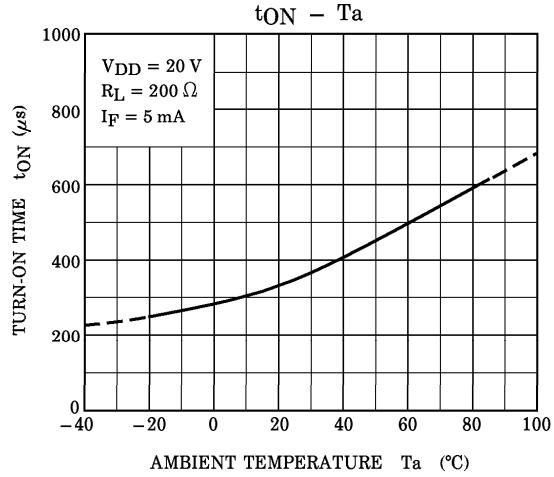
R_{ON} – Ta



I_{OFF} – Ta



t_{ON} – Ta



t_{OFF} – Ta