

TLP197G

Modem

Fax

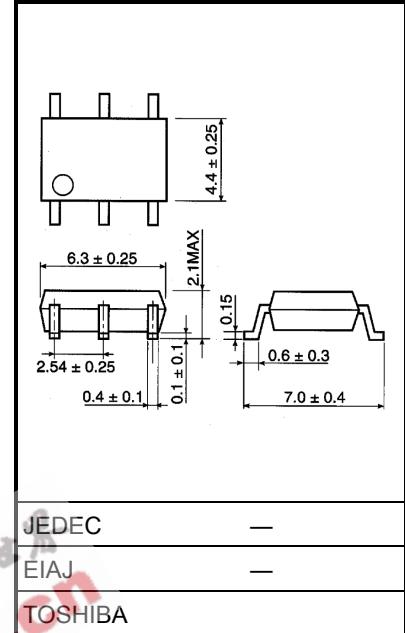
PBX

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.

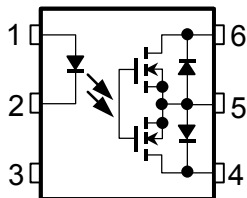
- SOP 6pin(2.54SOP6): 1-form-A
- Peak off-state voltage: 350V (min)
- Trigger LED current: 3mA (max)
- On-state current: 120mA(max)
(A connection)
- On-state resistance: 35Ω(max)
- Isolation voltage: 1500Vrms (min)
- UL recognized: UL1577, file No./E67349
- BSI approved: BS EN60065: 1994, certificate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



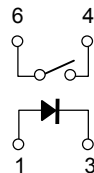
Weight: 0.13g

Pin Configuration (top view)

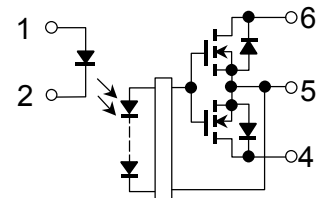


- 1: Anode
- 2: Cathode
- 3: NC
- 4: Drain D1
- 5: Source
- 6: Drain D2

1-Form-a



Schematic



Maximum Ratings (Ta = 25°C)

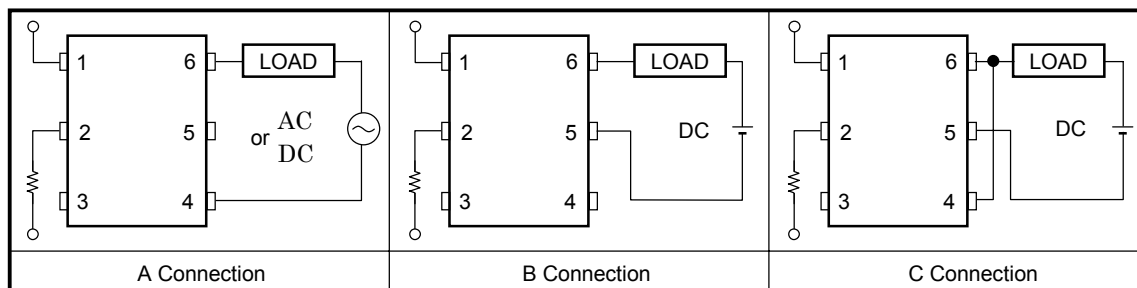
| Characteristics | | Symbol | Rating | Unit | |
|--|---|-----------------------------|--------------------------------|-------|-------|
| Led | Forward current | I_F | 50 | mA | |
| | Forward current derating (Ta ≥ 25°C) | $\Delta I_F/^\circ\text{C}$ | -0.5 | mA/°C | |
| | Pulse forward current (100µs 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 | 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 | |

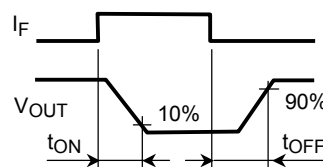
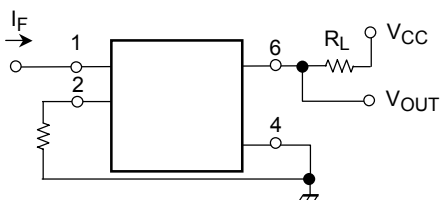
Isolation Characteristics (Ta = 25°C)

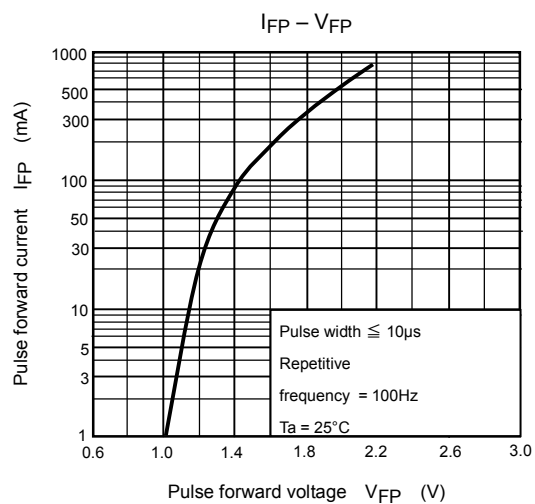
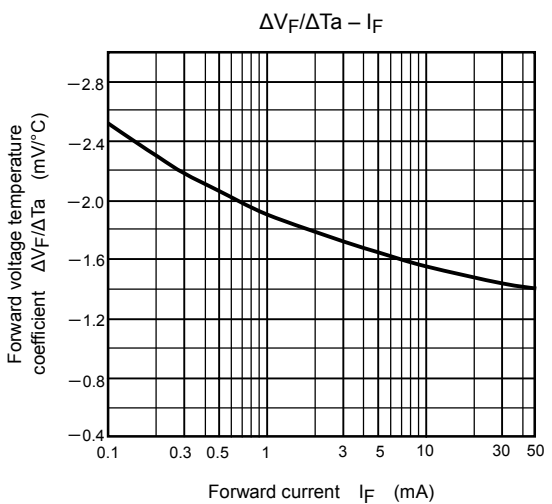
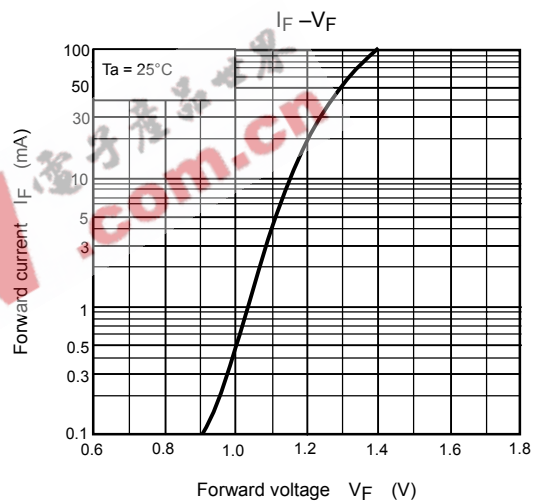
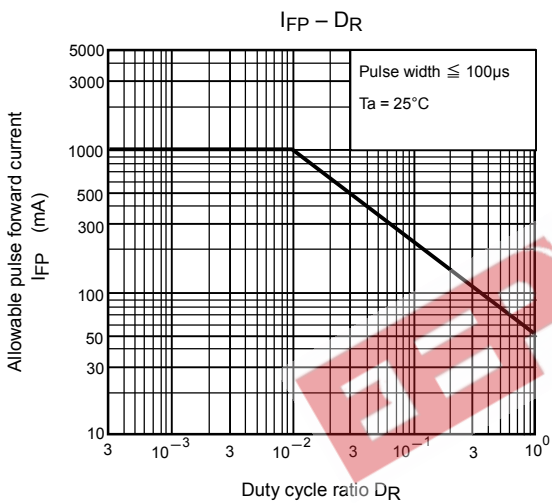
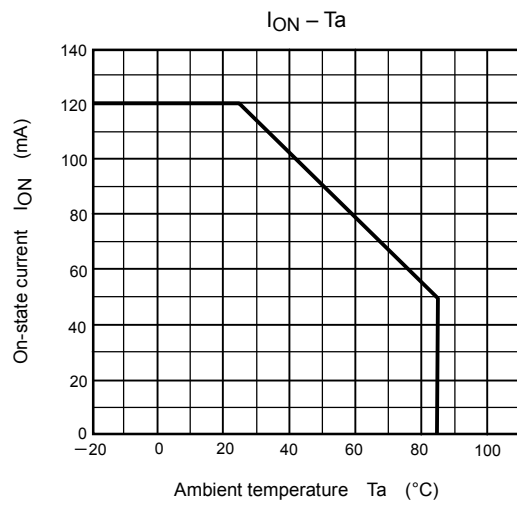
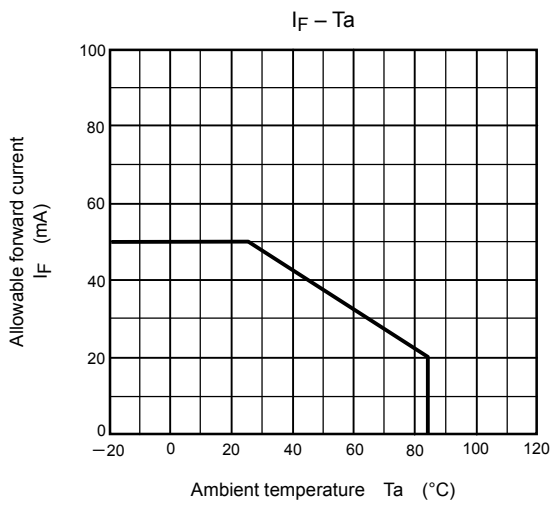
| Characteristic | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|-----------------------------|--------|-----------------------------------|--------------------|-----------|------|-----------|
| Capacitance input to output | C_S | $V_S=0, f=1\text{MHz}$ | — | 0.8 | — | pF |
| Isolation resistance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

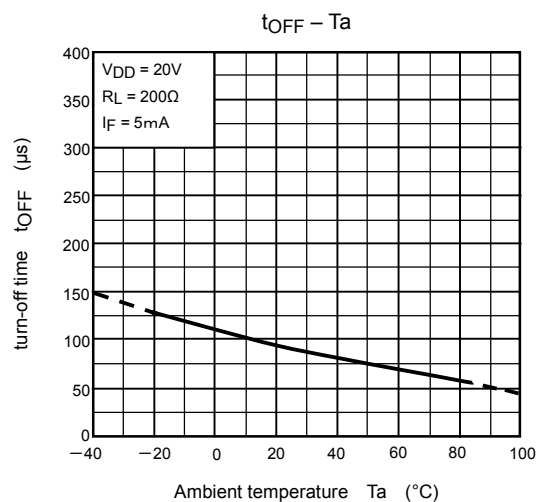
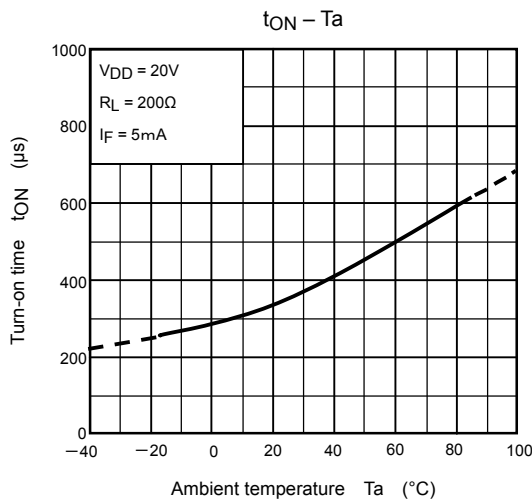
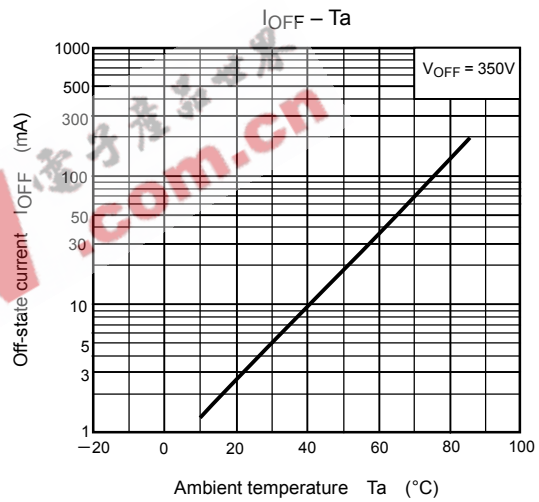
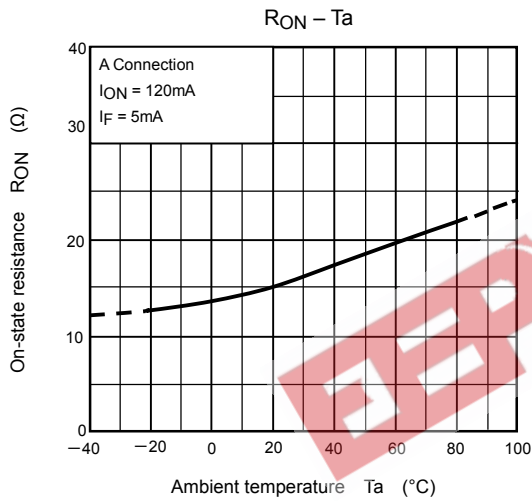
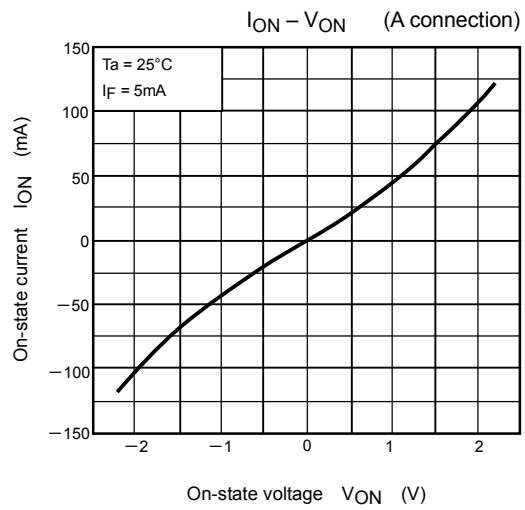
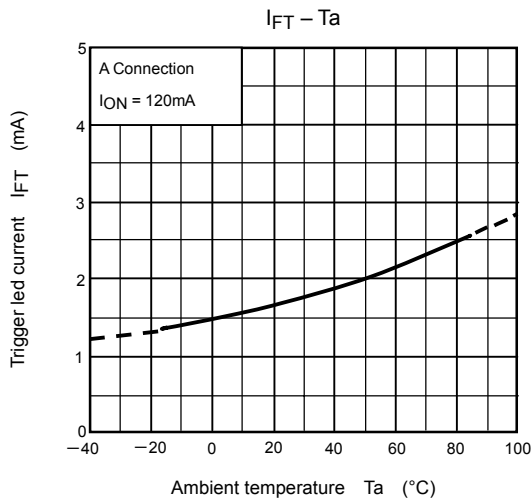
Switching Characteristics (Ta = 25°C)

| 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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