TOSHIBA Photocoupler Photo Relay

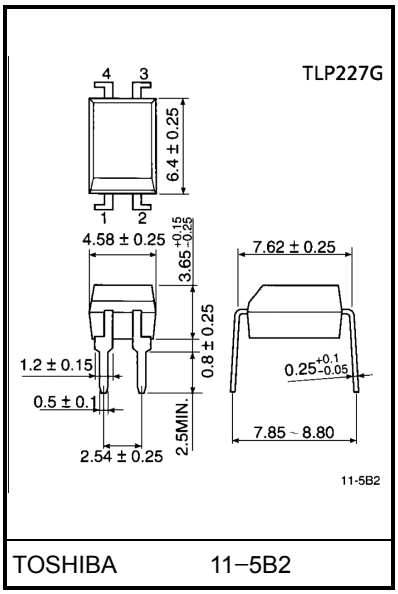
TLP227G,TLP227G−2

Cordless Telephone

PBX

Modem

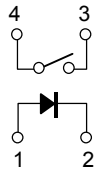
Unit in mm



TOSHIBA 11−5B2

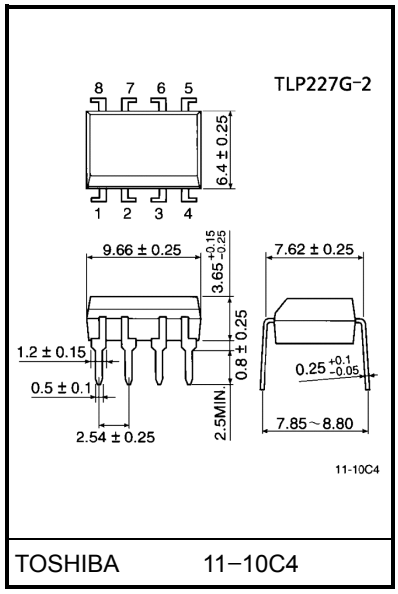
Weight: 0.26g

1 Form A



The TOSHIBA TLP227G series consist of a gallium arsenide infrared emitting diode optically coupled to a photo−MOS FET in a plastic DIP package.
The TLP227G series are a bi−directional switch which can replace mechanical relays in many applications.

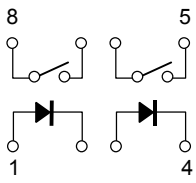
- TLP227G: 4 pin DIP(DIP4),1 channel type(1 form A)
- TLP227G−2: 8 pin DIP(DIP8),2 channel type(2 form A)
- Peak off−state voltage: 350V(min.)
- Trigger LED current: 3mA(max.)
- On−state current: 120mA(max.)
- On−state resistance: 35Ω(max.)
- Isolation voltage: 2500Vrms (min.)
- Isolation thickness: 0.4mm(min.)
- BSI approved: BS EN60065: 1994,certificate no.8275
  BS EN60950: 1992,certificate no.8276
- Option(D4) type
  TUV approved: DIN VDE0884 / 06.92,
  certificate no.9850585



TOSHIBA 11−10C4

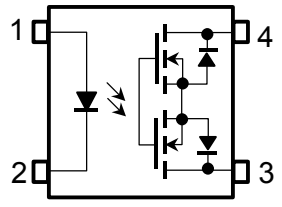
Weight: 0.54g

2 Form A



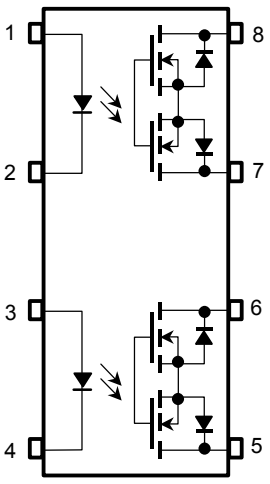
Pin Configuration (top view)

TLP227G



1: Anode
2: Cathode
3: Drain 1
4: Drain 2

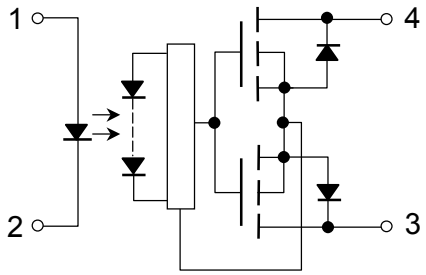
TLP227G-2



1, 3: Anode
2, 4: Cathode
5: Drain 1
6: Drain 2
7: Drain 3
8: Drain 4

Internal Circuit

(TLP227G)



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(100μs pulse, 100pps)			I_{FP}	1	A
	Reverse voltage			V_R	5	V
	Junction temperature			T_j	125	°C
	Off-state output terminal voltage			V_{OFF}	350	V
Detector	On-state current	TLP227G		I_{ON}	120	mA
		TLP227G−2	One channel		120	
			Both channel (Note 1)		100	
	On-state current derating(Ta ≥ 25°C)	TLP227G		ΔI_{ON} / °C	−1.2	mA / °C
		TLP227G−2	One channel		−1.2	
			Both channel (Note 1)		−1.0	
	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., R.H.≤ 60%) (Note 2)				BV_S	2500	V_{rms}

(Note 1): Two channels operating simultaneously.

(Note 2): Device considered a two-terminal device: LED side pins shorted together.and detector side pins shorted together.

Recommended Operating Conditions

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}	—	—	280	V
Forward current	I_F	5	7.5	25	mA
On-state current	I_{ON}	—	—	100	mA
Operating temperature	T_{opr}	−20	—	65	°C

Individual Electrical Characteristics (Ta = 25°C)

	Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V_F	I_F=10mA	1.0	1.15	1.3	V
LED	Reverse current	I_R	V_R=5V	—	—	10	μA
LED	Capacitance	C_T	V=0,f=1MHz	—	30	—	pF
Detector	Off−state current	I_{OFF}	V_{OFF}=350V	—	—	1	μA
Detector	Capacitance	C_{OFF}	V=0,f=1MHz	—	40	—	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I_{FT}	I_{ON}=120mA	—	2	3	mA
On−state resistance	R_{ON}	I_{ON}=120mA,I_F=5mA	—	22	35	Ω
		I_{ON}=20~120mA, I_F=5mA	—	26	40	

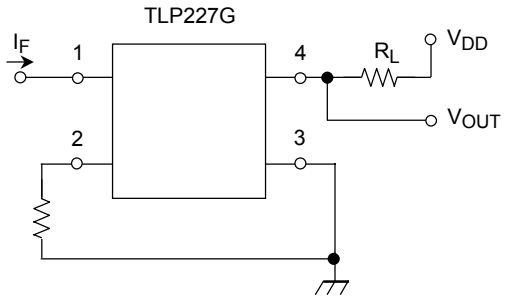
Isolation Characteristics (Ta = 25°C)

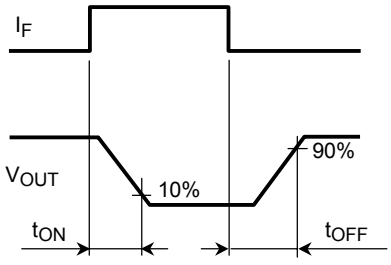
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C_S	V_S=0,=1MHz	—	0.8	—	pF
Isolation resistance	R_S	V_S=500V,R.H.≤ 60%	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC,1 minute	2500	—	—	V_{rms}
		AC,1 second(in oil)	—	5000	—	
		DC,1 minute(in oil)	—	5000	—	V_{dc}

Switching Characteristics (Ta = 25°C)

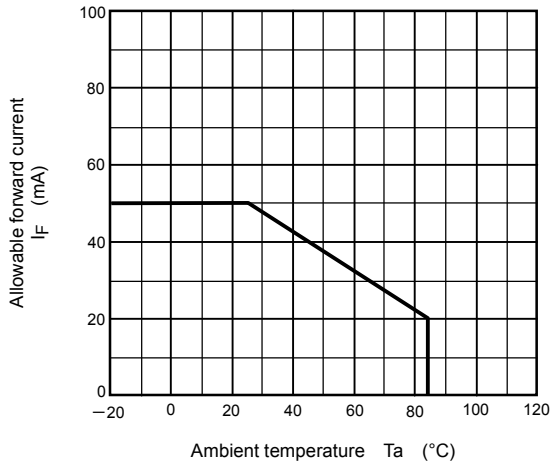
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn−on time	t_{ON}	R_L=200Ω	—	0.3	1	ms
Turn−off time	t_{OFF}	V_{DD}=20V,I_F=5mA	—	0.1	1	

Switching Time Test Circuit

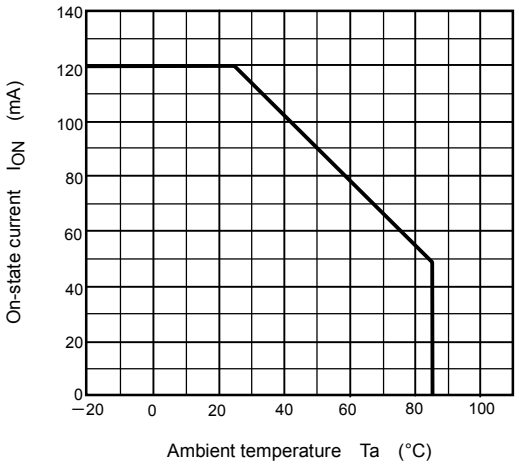




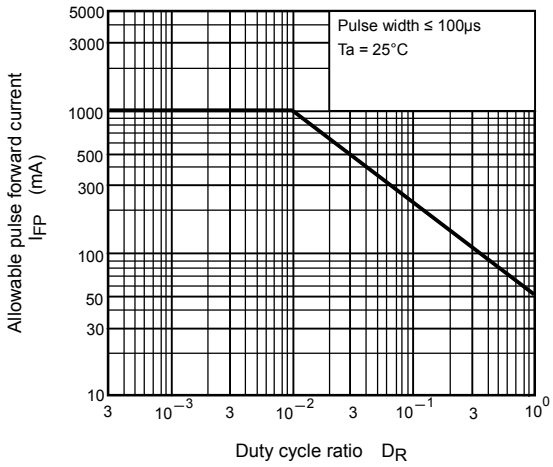
I_F – Ta



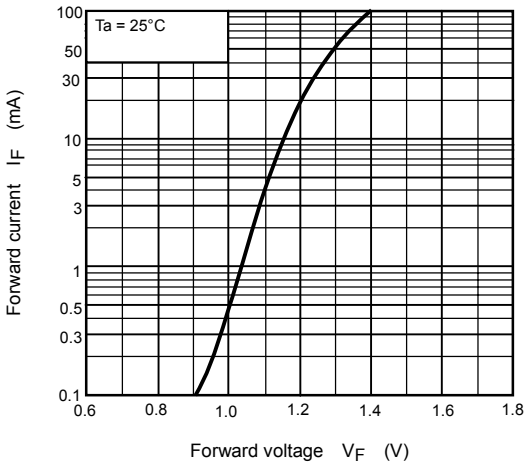
I_{ON} – Ta



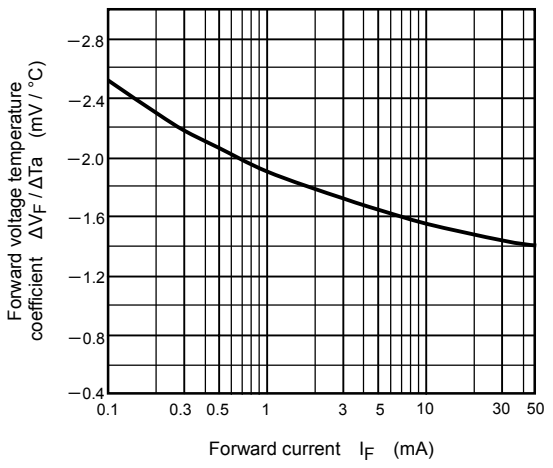
I_{FP} – D_R



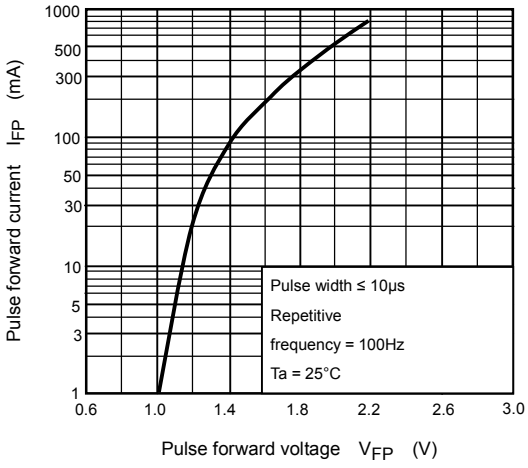
I_F –V_F



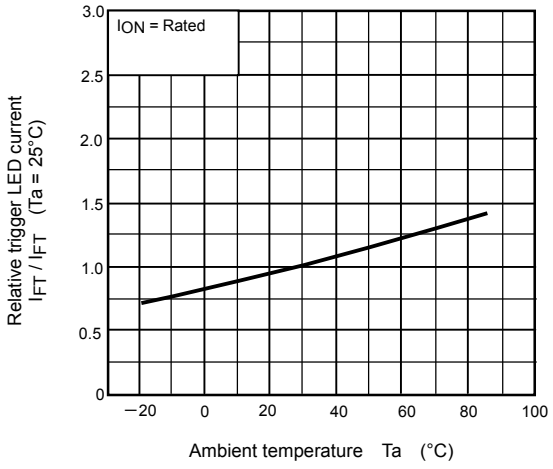
$\Delta V_F / \Delta Ta$ – I_F



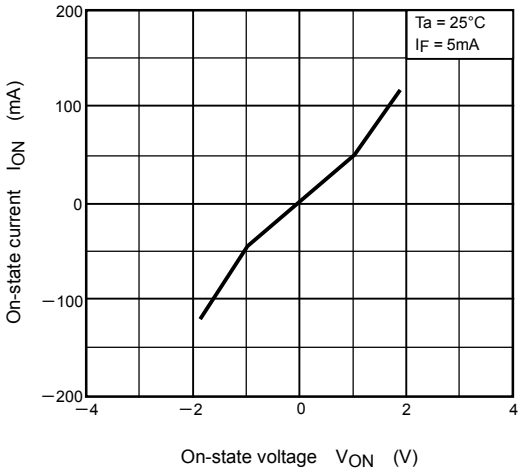
I_{FP} – V_{FP}



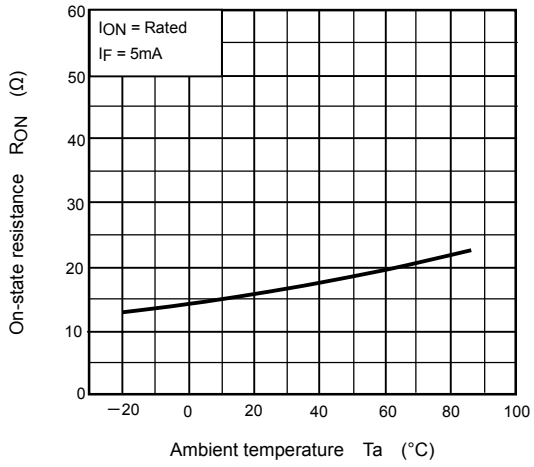
I_{FT} – Ta



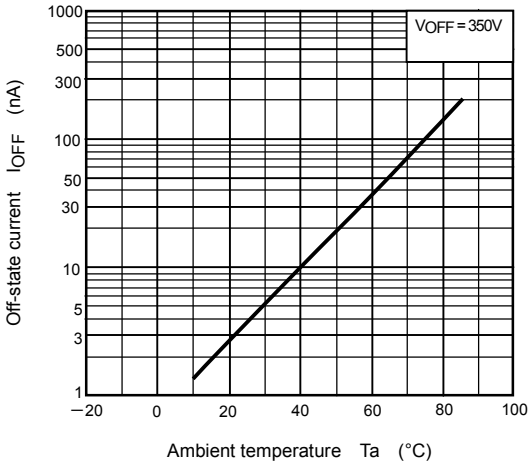
I_{ON} – V_{ON}



R_{ON} – Ta



I_{OFF} – Ta



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