

TOSHIBA Photocoupler Photo Relay

TLP227G, TLP227G-2

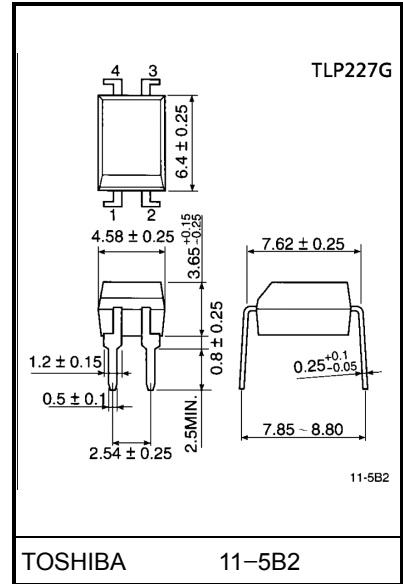
Cordless Telephone
PBX
Modem

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.

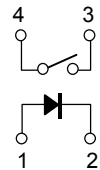
- TLP227G: 4 pin DIP(DIP4), 1 channel type(1 form A)
- TLP227G-2: 8 pin DIP(DIP8), 2 channel type(2 form A)
- Peak off-state voltage: 350V(min.)
- Trigger LED current: 3mA(max.)
- On-state current: 120mA(max.)
- On-state resistance: 35Ω(max.)
- Isolation voltage: 2500Vrms (min.)
- Isolation thickness: 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

Unit in mm

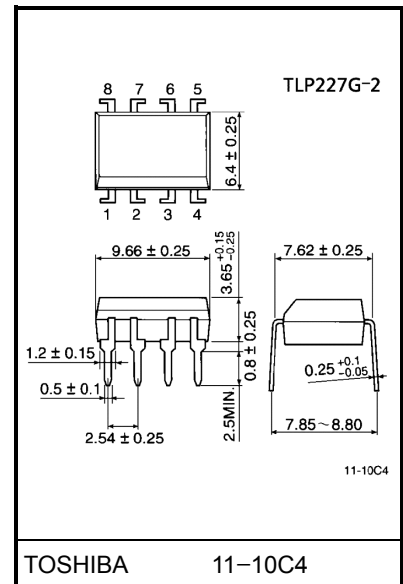
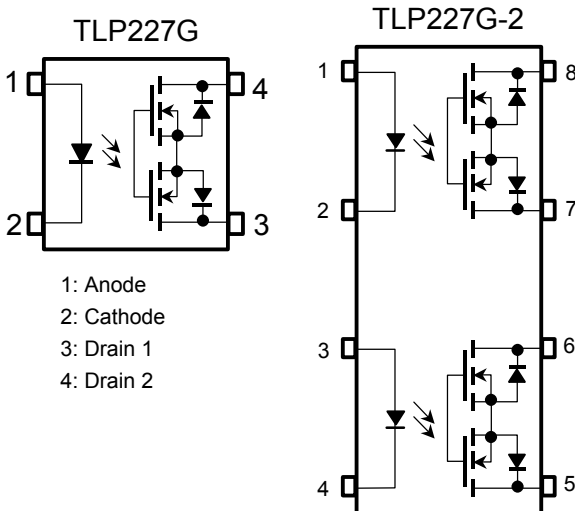


Weight: 0.26g

1 Form A

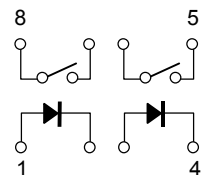


Pin Configuration (top view)



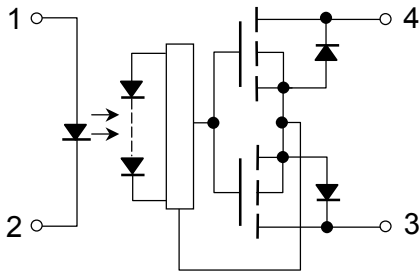
Weight: 0.54g

2 Form A



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)	$\Delta I_F / ^\circ\text{C}$	-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	120	mA
		TLP227G-2	One channel	
	Both channel (Note 1)	100		
	On-state current derating (Ta ≥ 25°C)	TLP227G	-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	$I_F=10\text{mA}$	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}	$I_{ON}=120\text{mA}$	—	2	3	mA
On-state resistance	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	

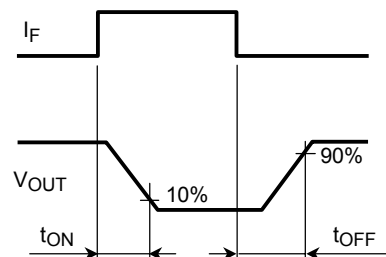
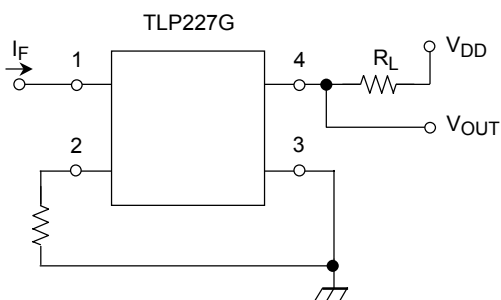
Isolation Characteristics (Ta = 25°C)

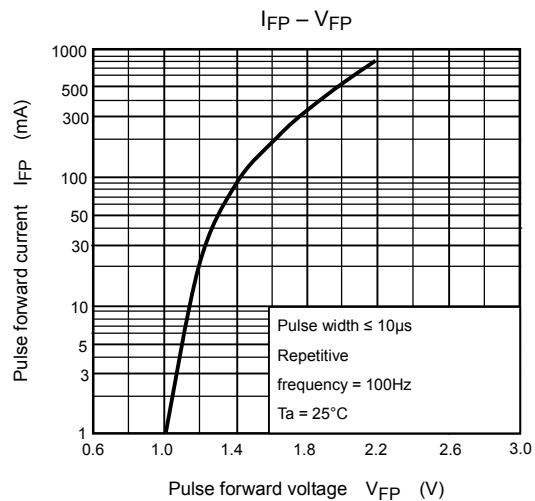
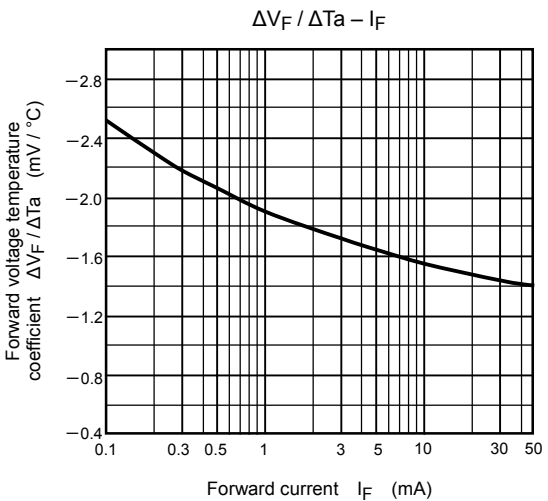
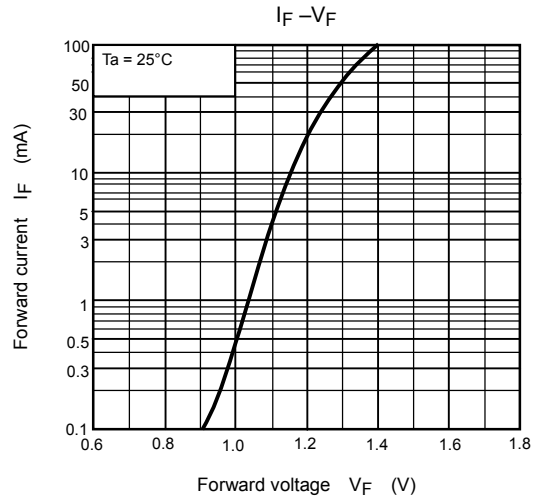
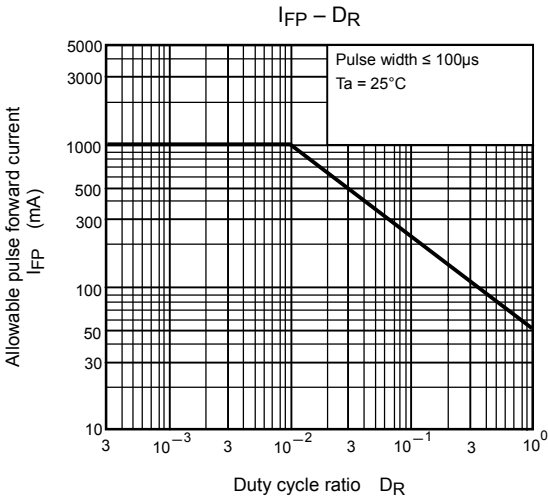
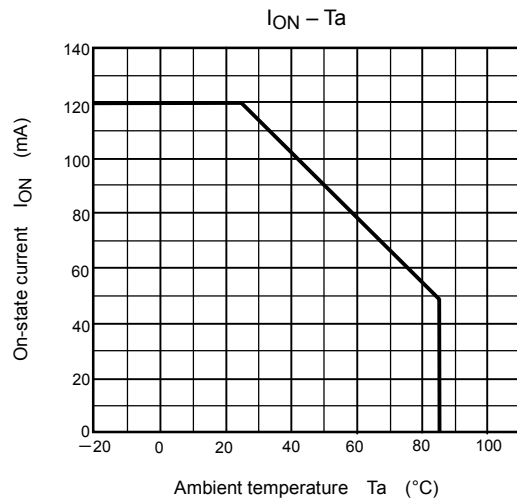
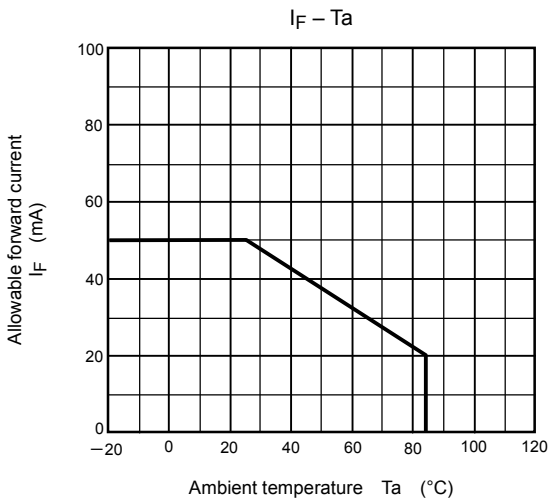
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C_S	$V_S=0, f=1\text{MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S=500\text{V}, R.H.\leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second(in oil)	—	5000	—	V_{dc}
		DC,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

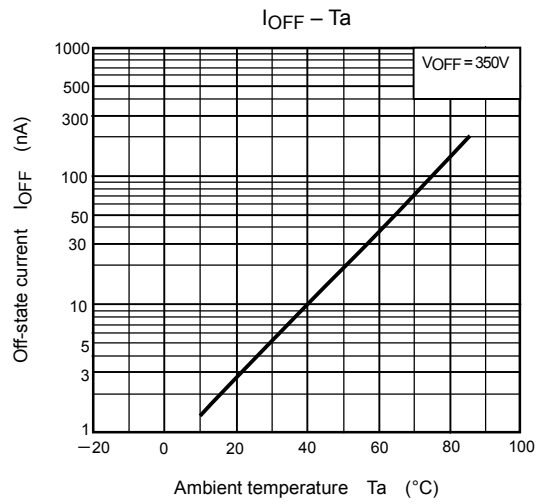
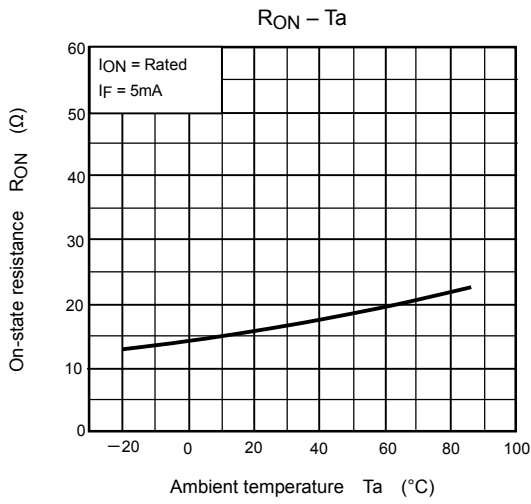
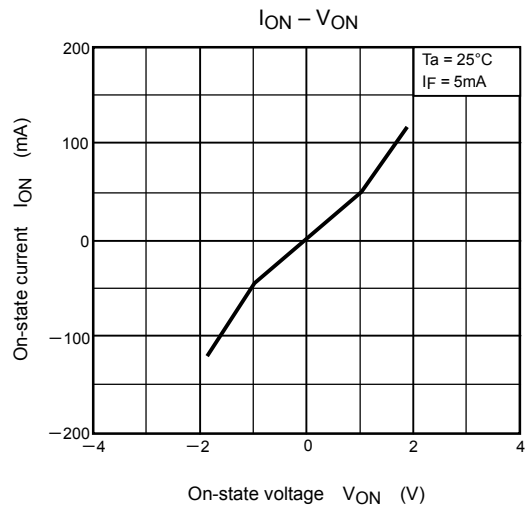
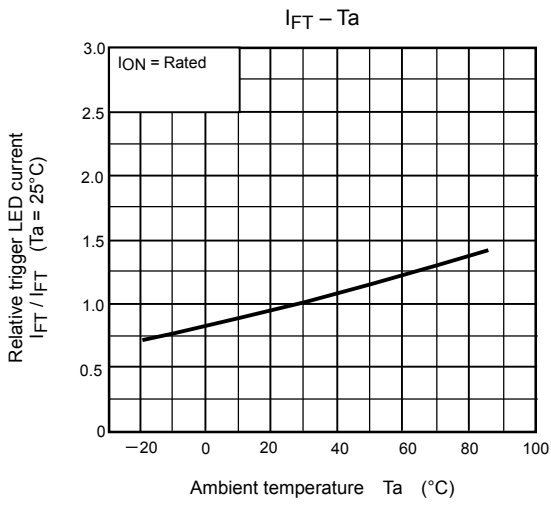
Switching Characteristics (Ta = 25°C)

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

Switching Time Test Circuit







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