

TLP4227G, TLP4227G-2

PBX

Telecommunication

Modem • FAX Cards, Modems In PC

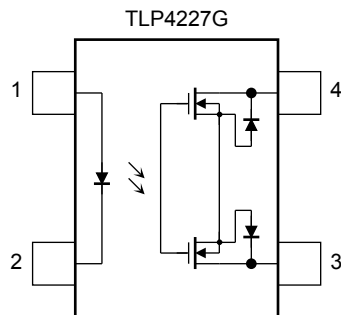
Measurement Instrumentation

The TOSHIBA TLP4227G series consist of an infrared emitting diode optically coupled to a photo-MOSFET in a plastic DIP package.

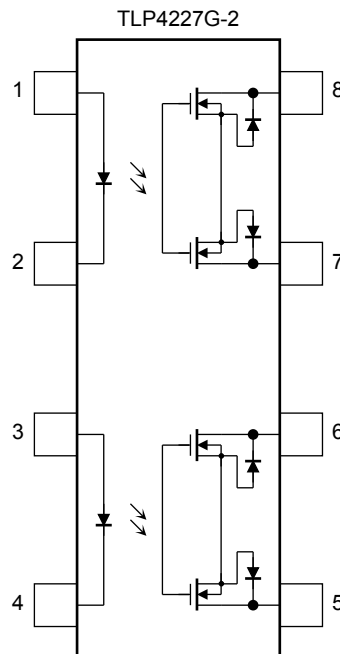
The TLP4227G series are a bi-directional switch, which can replace mechanical relays in many applications.

- Peak off-state voltage: 350 V (min)
- Trigger LED current: 3 mA (max)
- On-state current: 150 mA (max)
- On-state resistance: 25 Ω (max)
- Isolation voltage: 2500 Vrms (min)
- UL-recognized: UL 1577, File No. E67349

Pin Configuration (top view)

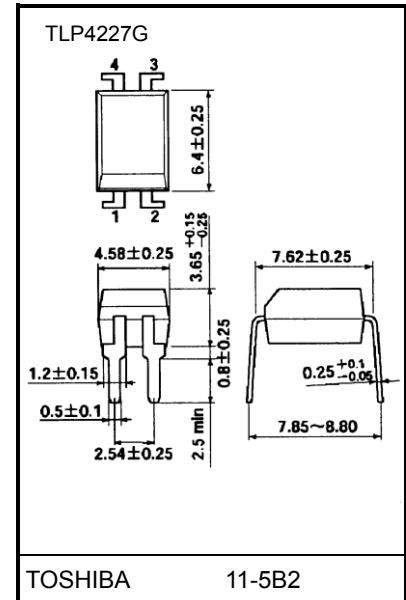


- 1: ANODE
2: CATHODE
3: DRAIN
4: DRAIN



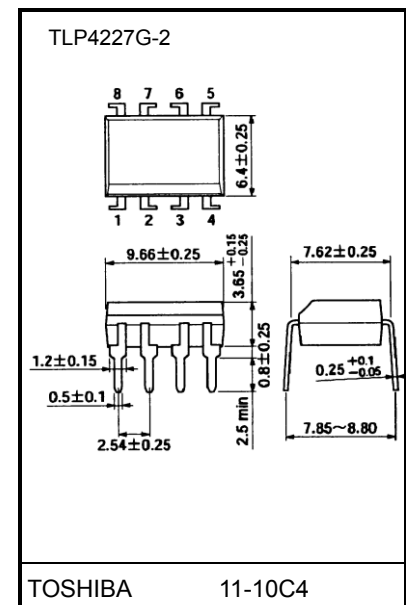
- 1, 3: ANODE
2, 4: CATHODE
5 : DRAIN D1
6 : DRAIN D2
7 : DRAIN D3
8 : DRAIN D4

Unit: mm



Weight: 0.26 g (typ.)

Unit: mm



Weight: 0.54 g (typ.)

Start of commercial production
2000-09

Absolute 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
	Peak forward current (100 μs pulse, 100 pps)			I _{FP}	1	A
	Reverse voltage			V _R	5	V
	Diode power dissipation			P _D	50	mW
	Diode power dissipation derating (Ta ≥ 25°C)			ΔP _D /°C	-0.5	mW/°C
	Junction temperature			T _J	125	°C
Detector	Off-state output terminal voltage			V _{OFF}	350	V
	On-state current	TLP4227G		I _{ON}	150	mA
		TLP4227G-2	One channel			
			Both channel			
	On-state current derating (Ta ≥ 25°C)	TLP4227G		ΔI _{ON} /°C	-1.5	mA/°C
		TLP4227G-2	One channel			
			Both channel			
	Output power dissipation			P _O	506	mW
	Output power dissipation derating (Ta ≥ 25°C)			ΔP _O / °C	-5.06	mW / °C
Junction temperature			T _J	125	°C	
Storage temperature range				T _{stg}	-55 to 125	°C
Operating temperature range				T _{opr}	-40 to 85	°C
Lead soldering temperature (10 s)				T _{sol}	260	°C
Isolation voltage (AC, 60 s, R.H. ≤ 60 %) (Note 1)				BV _S	2500	Vrms

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

Note 1: Device considered a two-terminal device: LED side pins shorted together, and DETECTOR side pins shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply voltage	V_{DD}	—	—	280	V
Forward current	I_F	5	—	25	mA
On-state current	I_{ON}	—	—	150	mA
Operating temperature	T_{opr}	-20	—	65	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

Electrical Characteristics (Ta = 25°C)

Characteristics		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	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Off-state current	I_{OFF}	$V_{OFF} = 350 \text{ V}$	—	—	1	μA
	Capacitance	C_{OFF}	$V = 0 \text{ V}, f = 1 \text{ MHz}, I_F = 5 \text{ mA}$	—	65	—	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	IFC	IOFF = 10 μA	—	1	3	mA
Return LED current	IFT	ION = 150 mA	0.1	—	—	mA
On-state resistance	RON	ION = 150 mA	—	15	25	Ω

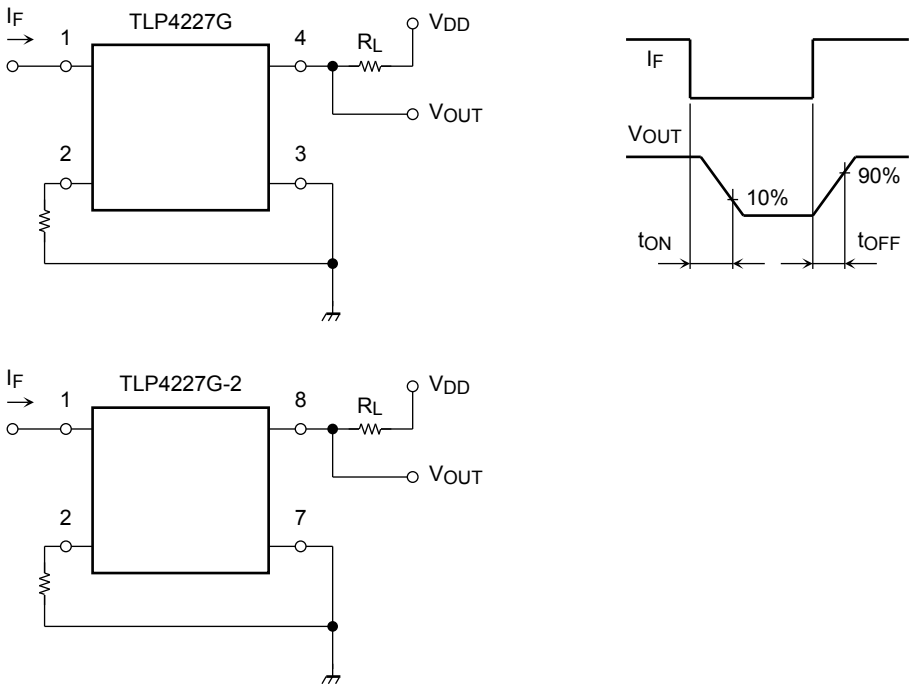
Isolation Characteristics (Ta = 25°C)

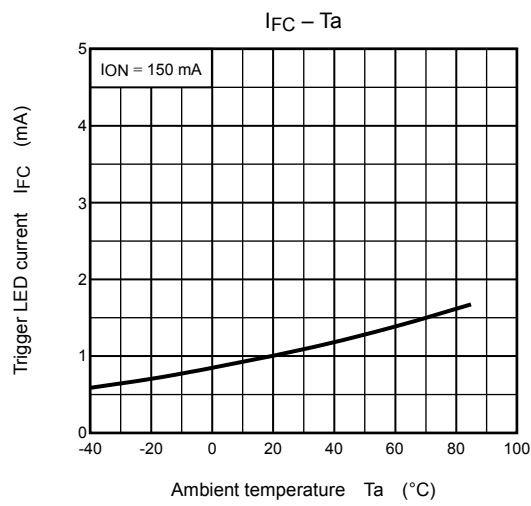
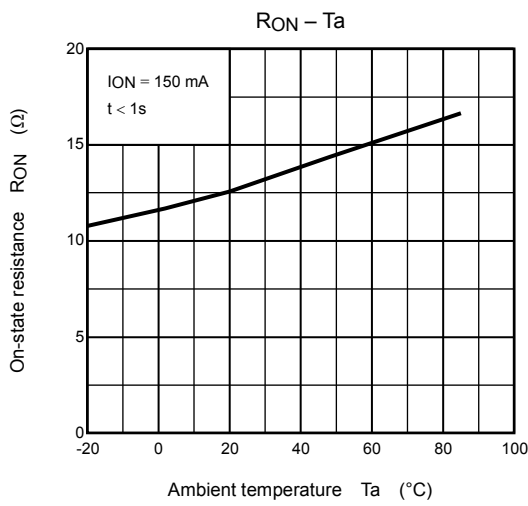
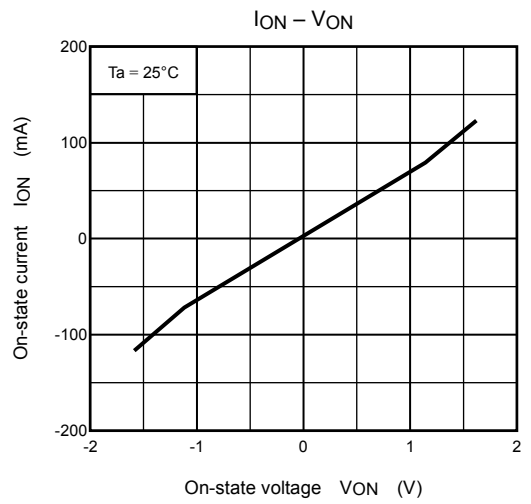
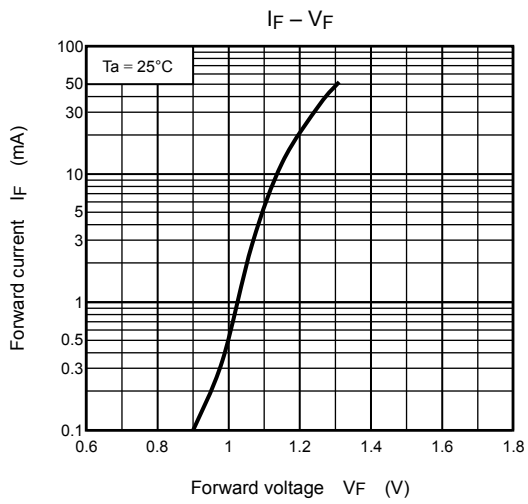
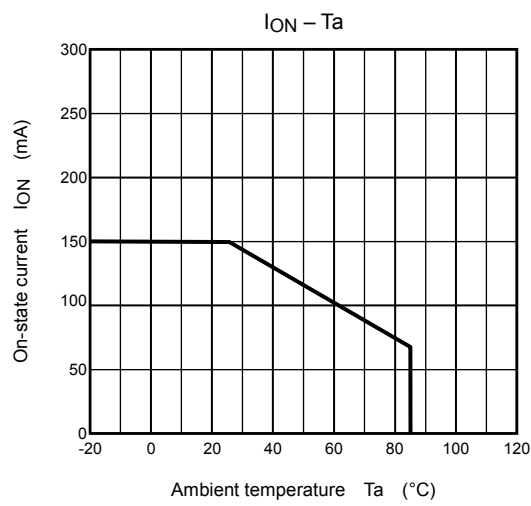
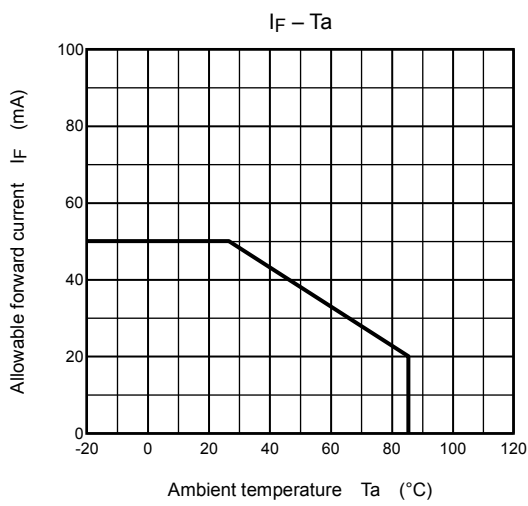
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	CS	VS = 0 V, f = 1 MHz	—	0.8	—	pF
Isolation resistance	RS	VS = 500 V, R.H. ≤ 60 %	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation voltage	BVS	AC, 60 s	2500	—	—	Vrms

Switching Characteristics (Ta = 25°C)

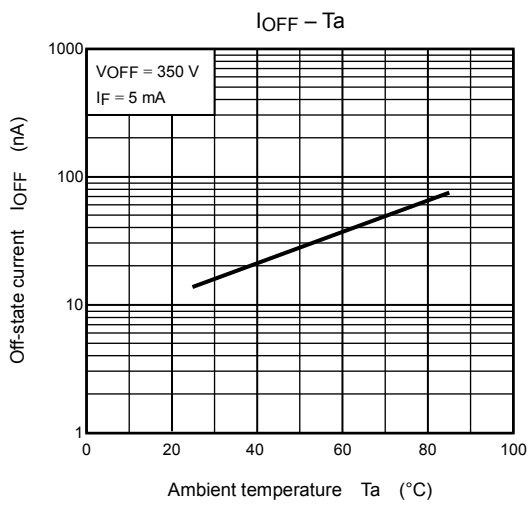
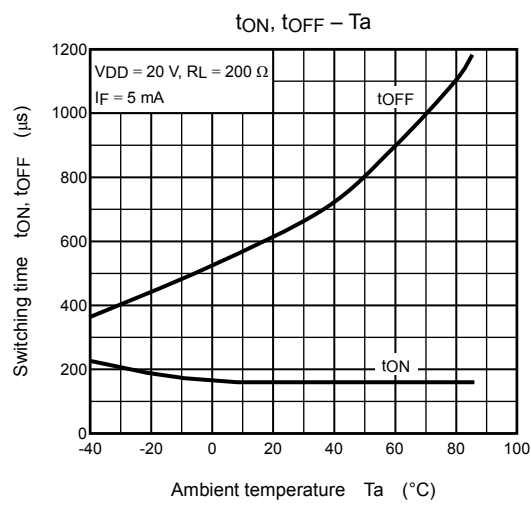
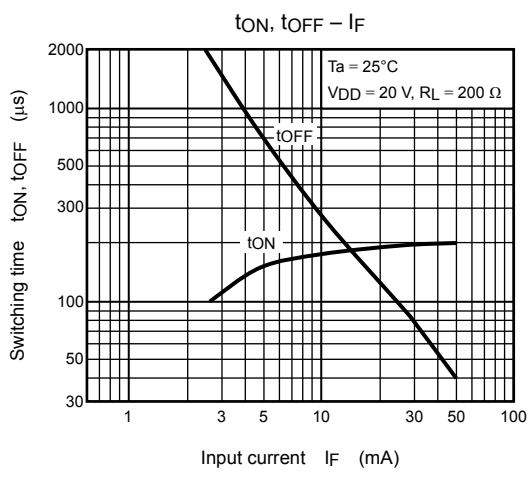
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Turn-on time	tON	RL = 200 Ω	—	—	1	ms
Turn-off time	tOFF	VDD = 20 V, IF = 5 mA (Note 2)	—	—	3	ms

Note 2: Switching time test circuit





NOTE: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.



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