

TOSHIBA Photocoupler Photorelay

TLP4227G, TLP4227G-2

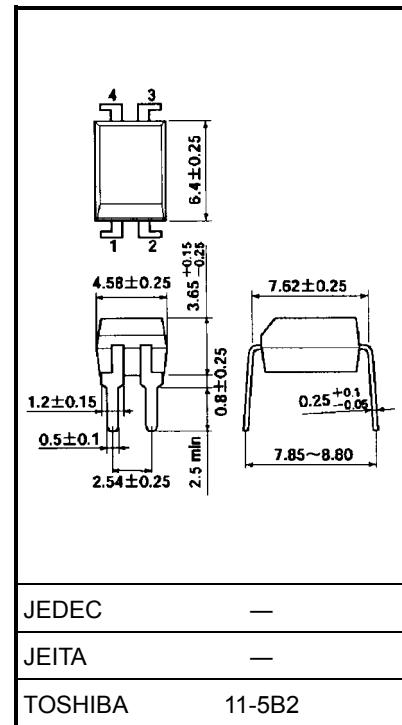
PBX

Telecommunication

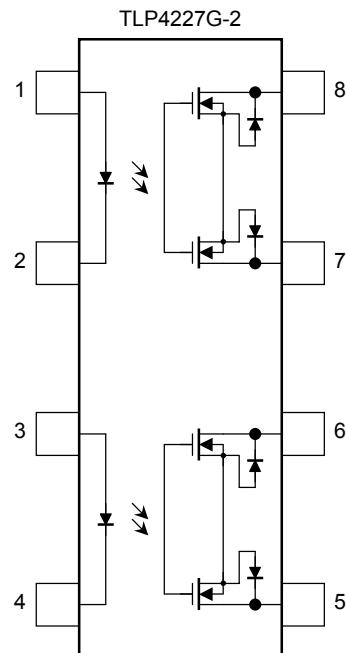
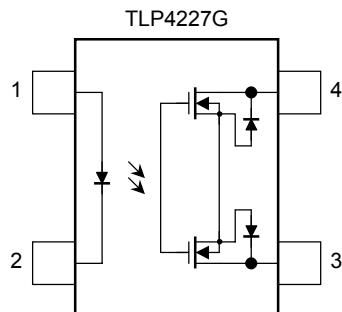
Modem·FAX Cards, Modems In PC

Measurement Instrumentation

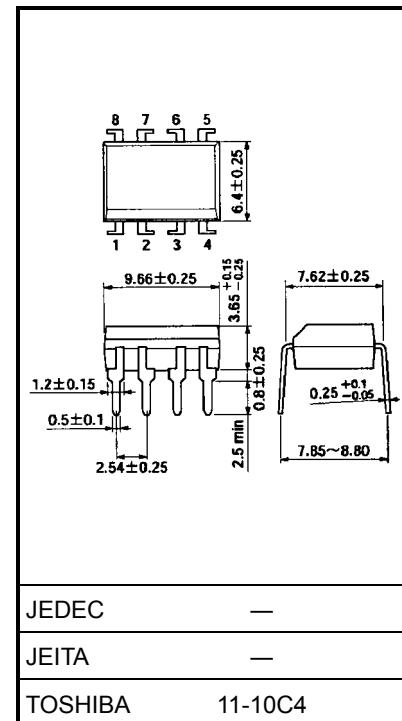
Unit: mm



Weight: 0.26 g (typ.)

Pin Configuration (top view)

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



Weight: 0.54 g (typ.)

Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristics		Symbol	Rating	Unit
LED	Forward current	I_F	50	mA
	Forward current derating ($T_a \geq 25^\circ\text{C}$)	$\Delta I_F/\text{ }^\circ\text{C}$	-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	I_{ON}	150	mA
	TLP4227G			
	TLP4227G-2	One channel	-1.5	mA/°C
		Both channel (Note 1)		
	On-state current derating ($T_a \geq 25^\circ\text{C}$)	TLP4227G	$\Delta I_{ON}/\text{ }^\circ\text{C}$	mA/°C
		TLP4227G-2		
	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, 1 min, R.H. $\leq 60\%$) (Note 2)		BV_S	2500	Vrms

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

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

Individual Electrical Characteristics ($T_a = 25^\circ\text{C}$)

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

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I _{FC}	I _{OFF} = 10 µA	—	1	3	mA
Return LED current	I _{FT}	I _{ON} = 150 mA	0.1	—	—	mA
On-state resistance	R _{ON}	I _{ON} = 150 mA	—	15	25	Ω

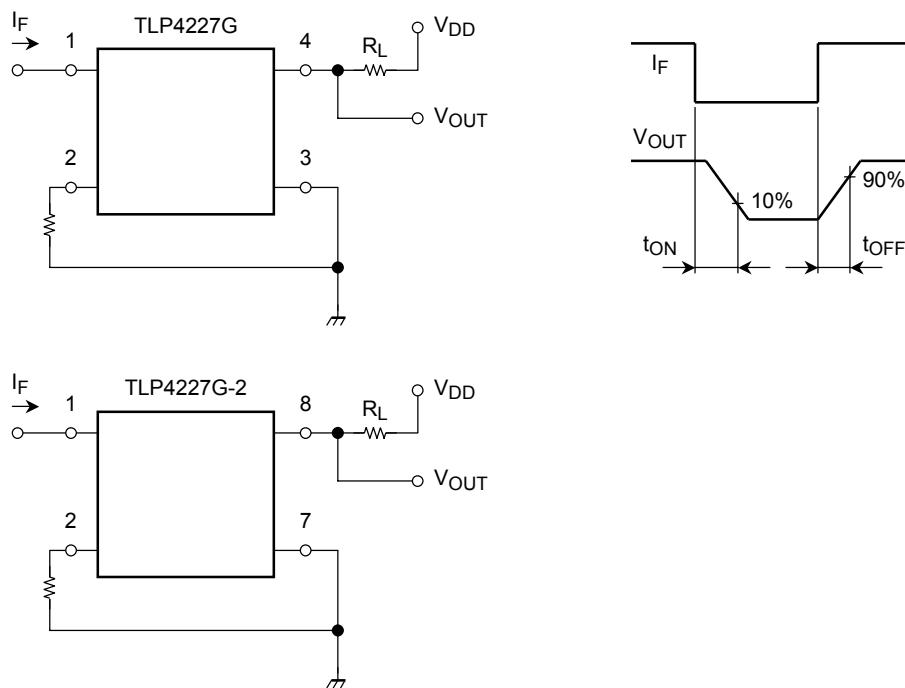
Isolation Characteristics (Ta = 25°C)

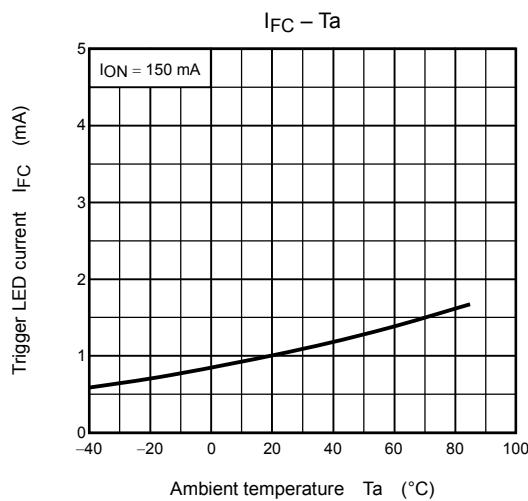
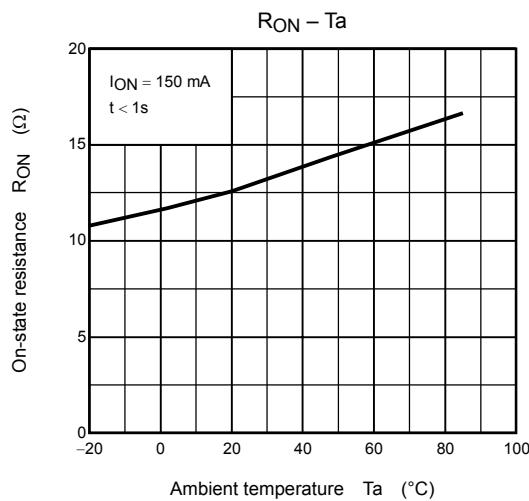
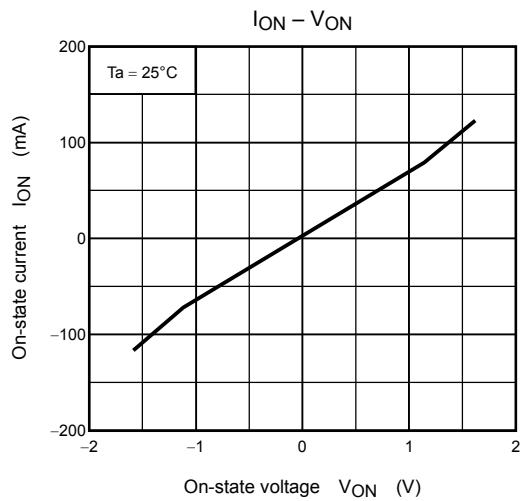
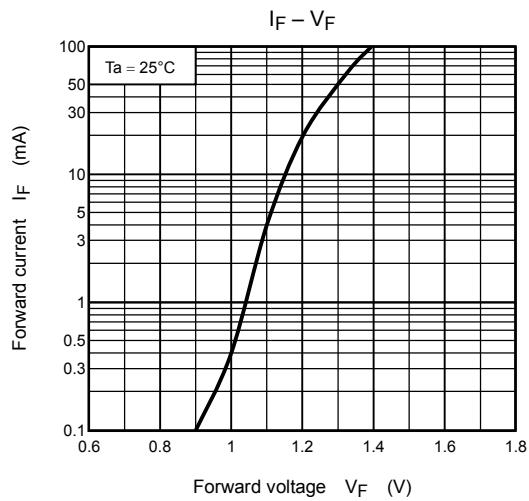
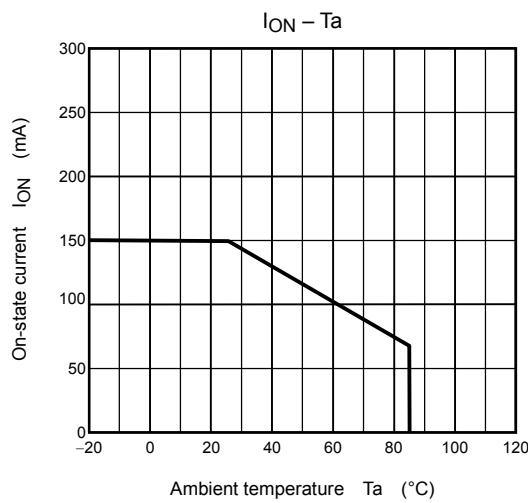
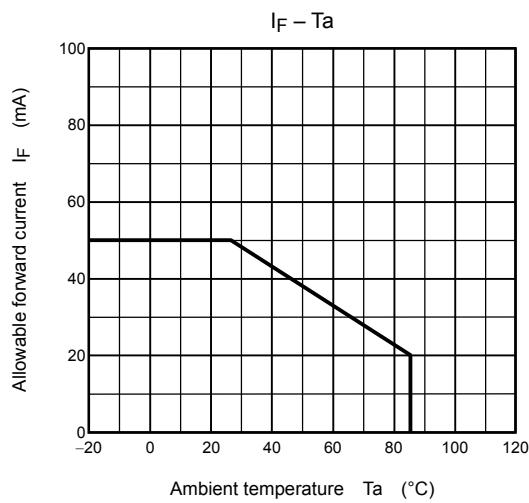
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C _S	V _S = 0, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R _S	V _S = 500 V, R.H. ≤ 60%	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation voltage	BV _S	AC, 1 min	2500	—	—	V _{rms}
		AC, 1 s, in oil	—	5000	—	
		DC, 1 min, in oil	—	5000	—	V _{dc}

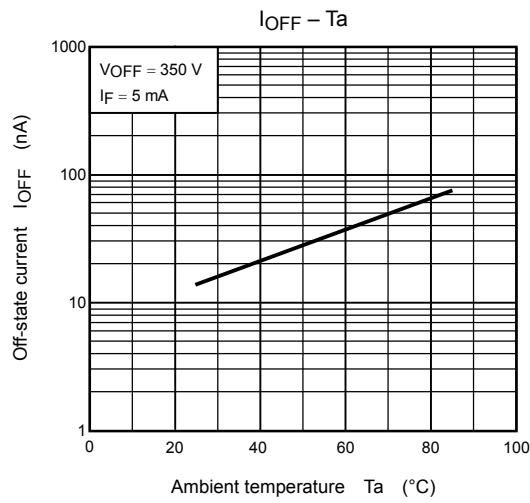
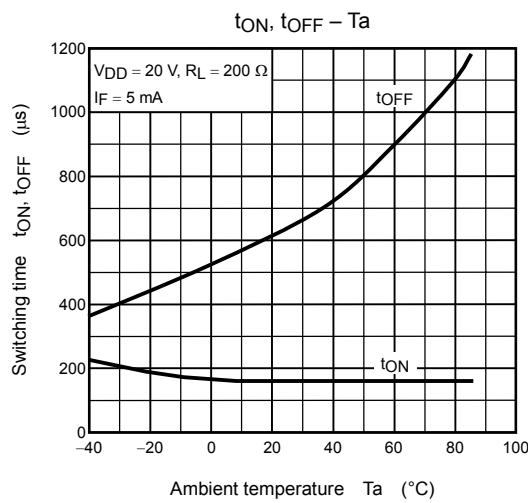
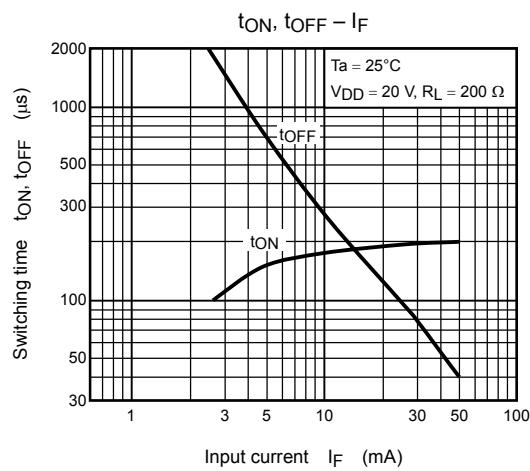
Switching Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Turn-on time	t _{ON}	R _L = 200 Ω	—	—	1	ms
Turn-off time	t _{OFF}	V _{DD} = 20 V, I _F = 5 mA (Note 3)	—	—	3	ms

Note 3: Switching time test circuit







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