

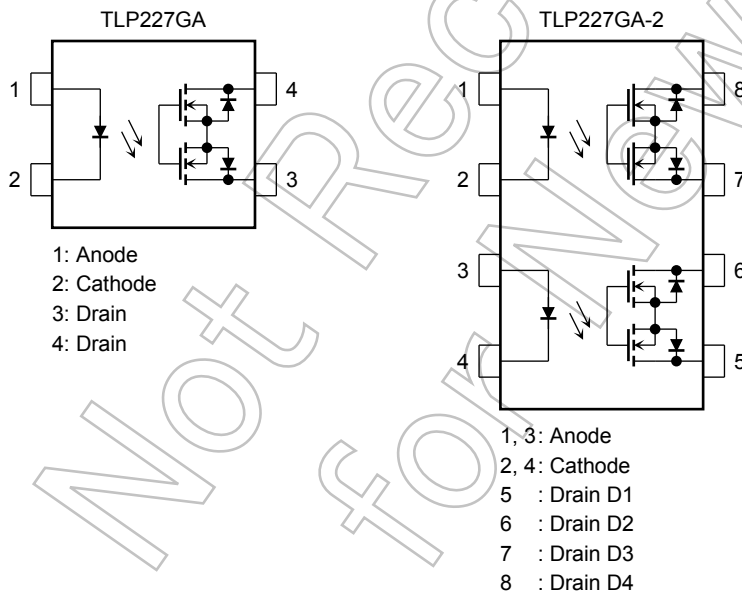
TLP227GA, TLP227GA-2

Modem
Telecommunications
PBXs

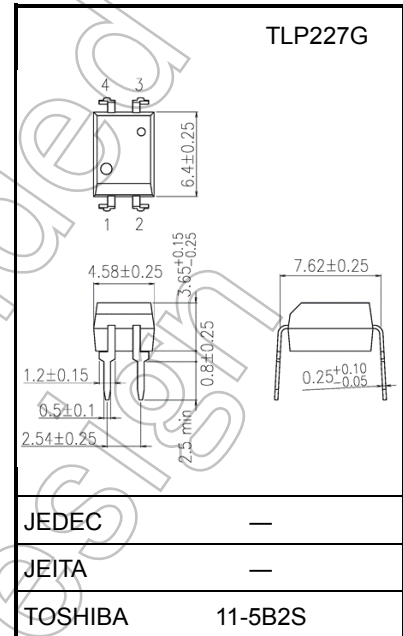
The Toshiba TLP227GA series consist of an infrared-emitting diode optically coupled to a photo-MOSFET in a 4-pin DIP or a 8-pin DIP package, and has a peak off-State voltage of 400 V.

- Normally off function
- TLP227GA : DIP4 (1 form A)
- TLP227GA-2 : DIP8 (2 form A)
- Peak off-state voltage : 400 V (min)
- Trigger LED current : 3 mA (max)
- On-state current : 120 mA (max)
- On-state resistance : 35 Ω (max)
- Isolation voltage : 2500 Vrms (min)
- UL-recognized : UL 1577, File No.E67349
- cUL-recognized : CSA Component Acceptance Service No.5A
File No.E67349

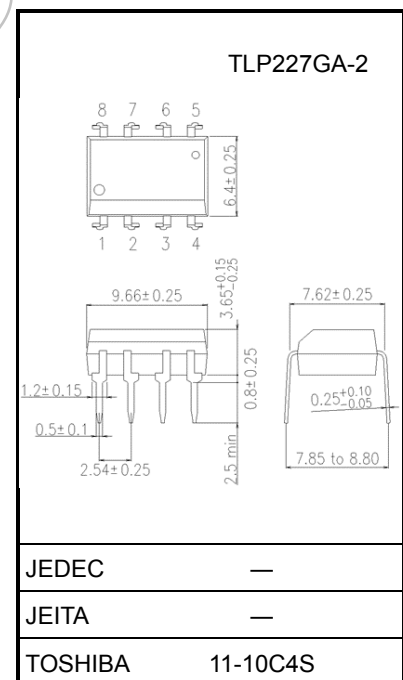
Pin Configuration (top view)



Unit: mm



Weight: 0.26 g (typ.)



Weight: 0.54 g (typ.)

Start of commercial production
2000-04

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		
Off-state output terminal voltage		V _{OFF}	400	V		
Detector	On-state current	TLP227GA	I _{ON}	120	mA	
		TLP227GA-2				One channel
		Both channel				
	On-state current rating (Ta ≥ 25°C)	TLP227GA	ΔI _{ON} /°C	-1.2	mA/°C	
		TLP227GA-2				One channel
		Both channel				
Output power dissipation	TLP227GA	P _o	432	mW		
	TLP227GA-2		600			
Output power dissipation derating (Ta ≥ 25°C)	TLP227GA	ΔP _o /°C	-4.32	mW/°C		
	TLP227GA-2		-6.0			
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	V _{rms}		

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: LED pins are shorted together. Detector pins are also shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Typ.	Max	Unit
Supply voltage	V _{DD}	—	—	320	V
Forward current	I _F	5	7.5	25	mA
On-state current	I _{ON}	—	—	100	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.

Individual 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}	$V_{OFF} = 400 \text{ V}$	—	—	1	μA

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Trigger LED current	I_{FT}	$I_{ON} = 120 \text{ mA}$	—	1	3	mA
On-state resistance	R_{ON}	$I_{ON} = 120 \text{ mA}, I_F = 5 \text{ mA}$	—	18	35	Ω

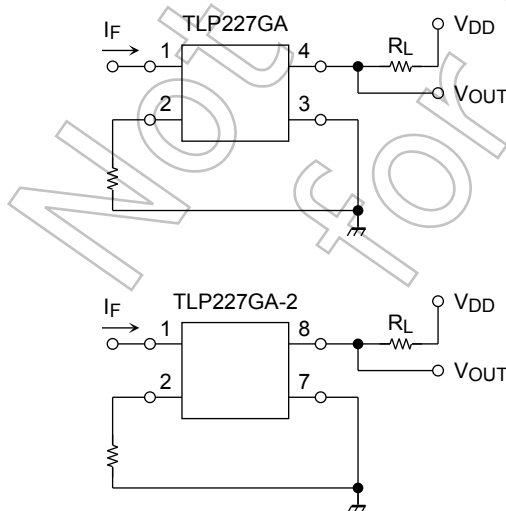
Isolation Characteristics (Ta = 25°C)

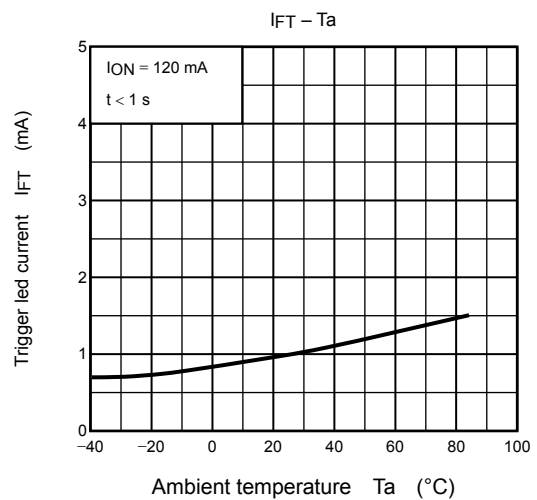
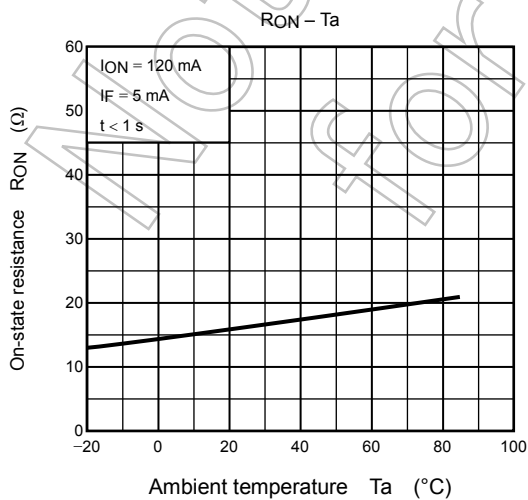
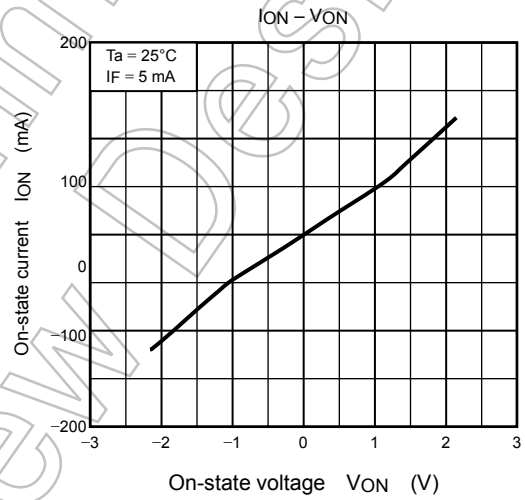
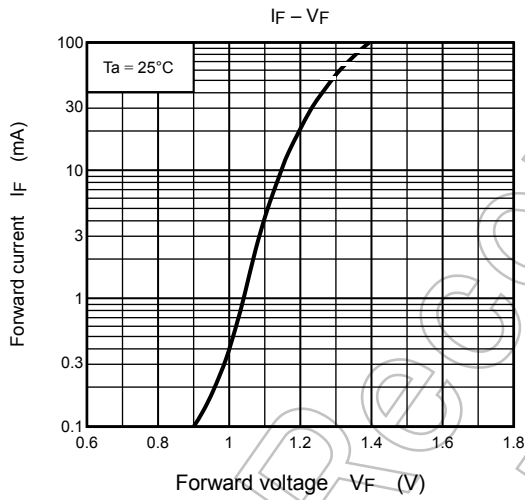
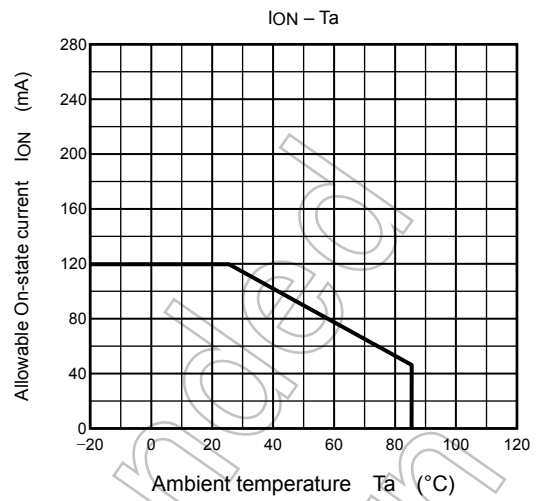
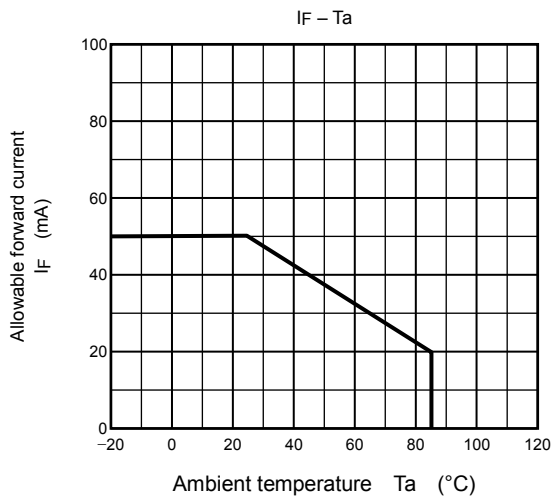
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60 \%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 60 s	2500	—	—	Vrms

Switching Characteristics (Ta = 25°C)

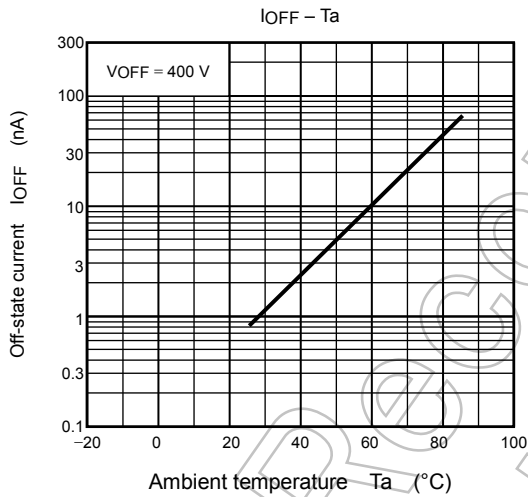
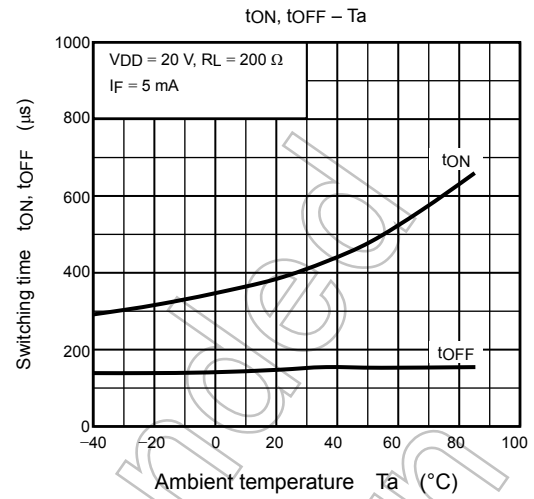
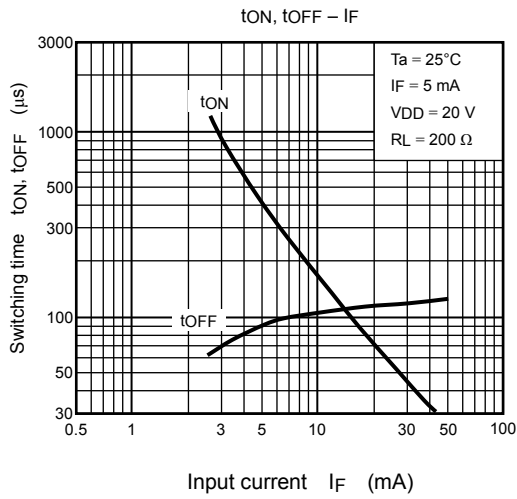
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Turn-on time	t_{ON}	$R_L = 200 \Omega$ $V_{DD} = 20 \text{ V}, I_F = 5 \text{ mA}$ (Note 2)	—	—	1	ms
Turn-off time	t_{OFF}		—	—	1	

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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