

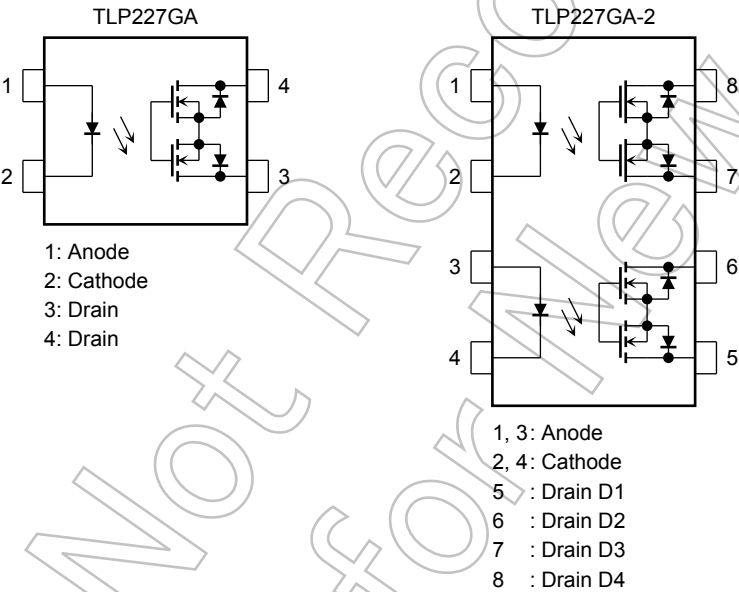
TLP227GA, TLP227GA-2

Modem
Telecommunications
PBXs

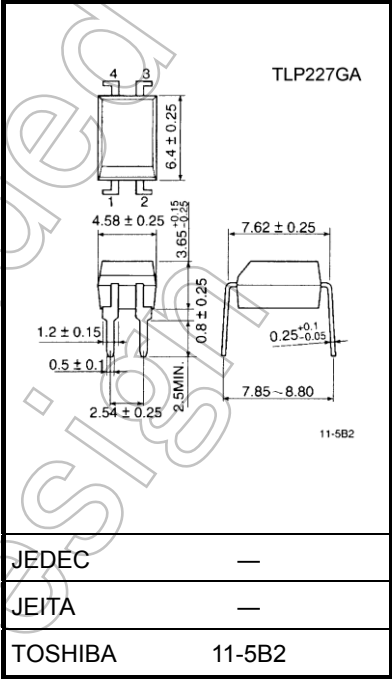
The Toshiba TLP227GA series consist of a gallium arsenide infrared-emitting diode optically coupled to a photo-MOSFET in a 4-pin DIP or a 8-pin DIP package, and has a peak off-State voltage of 400 V.

- 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 approval: UL1577, File No.E67349

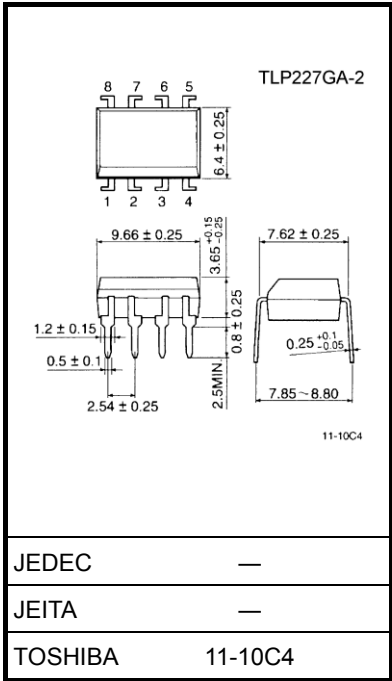
Pin Configuration (top view)



Unit: mm



Weight: 0.26 g (typ.)



Weight: 0.54 g (typ.)

Start of commercial production
2000-04

Absolute Maximum Ratings (Ta = 25°C)

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 (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}	400	V	
	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, 1 minute, 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: LED pins are shorted together. Detector pins are also shorted together.

Recommended Operating Conditions

Characteristic	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)

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	$V_F = 0 \text{ V}, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Off-state current	I_{OFF}	$V_{OFF} = 400 \text{ V}$	—	—	1	μA

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic	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

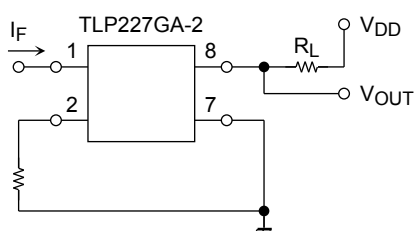
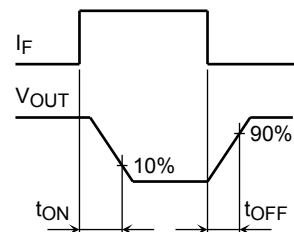
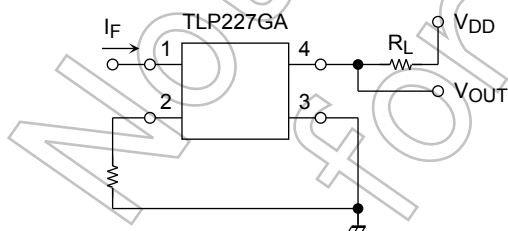
Isolation Characteristics (Ta = 25°C)

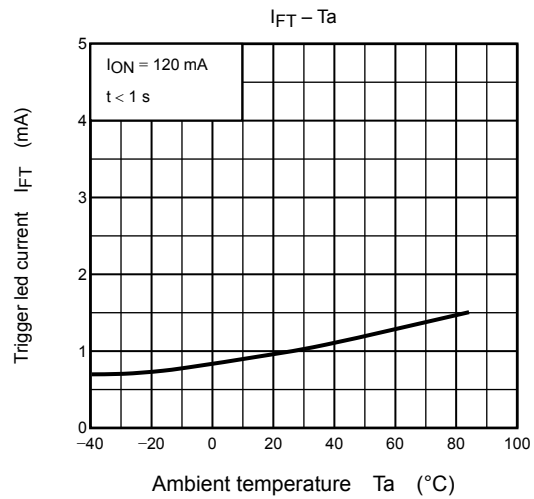
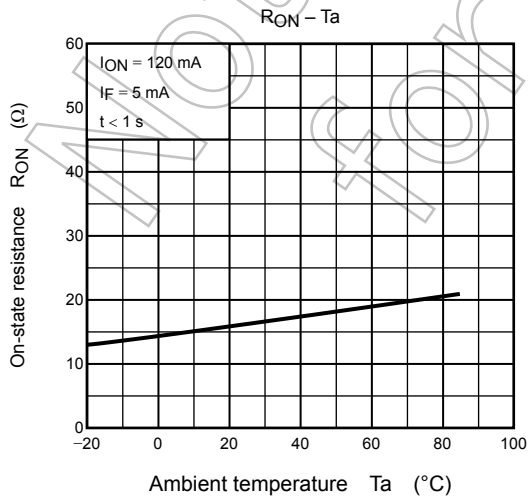
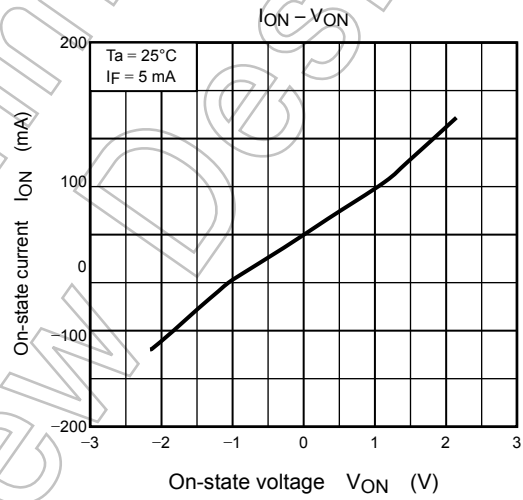
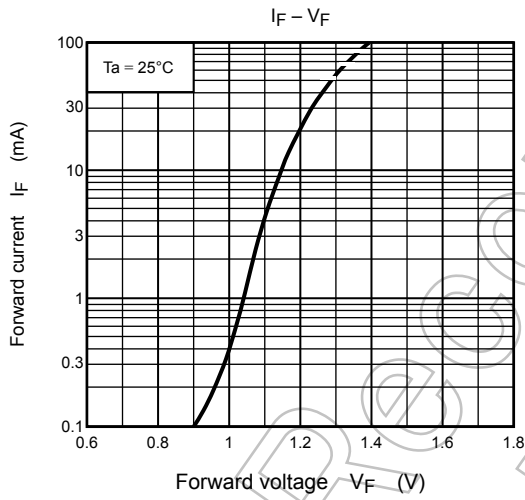
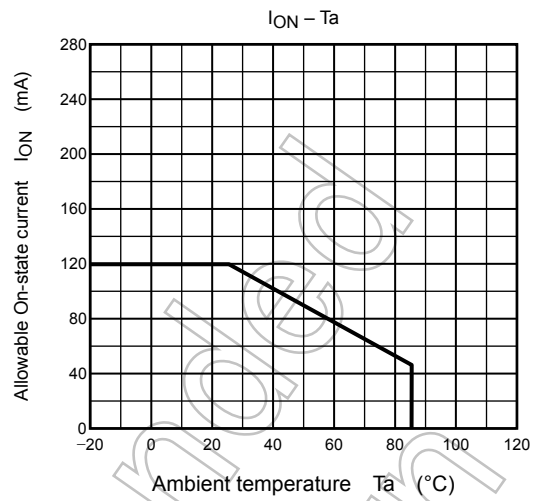
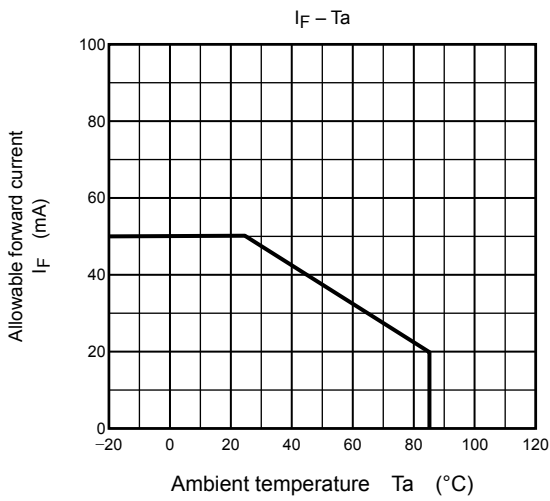
Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Capacitance input to output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second (in oil)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

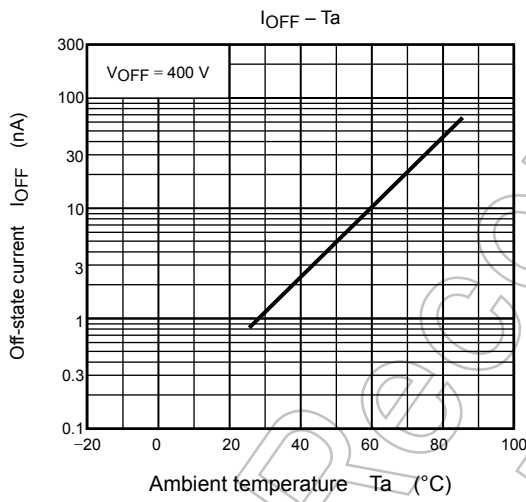
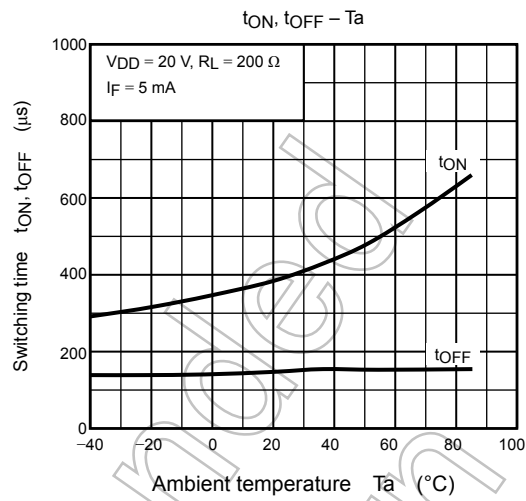
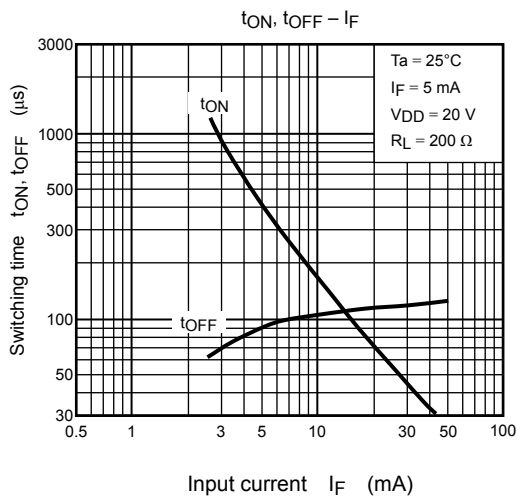
Switching Characteristics (Ta = 25°C)

Characteristic	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







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