

TLP227G, -2

PHOTO RELAY

TENTATIVE DATA

(TLP227G)

CORDLESS TELEPHONE

PABX

MODEM

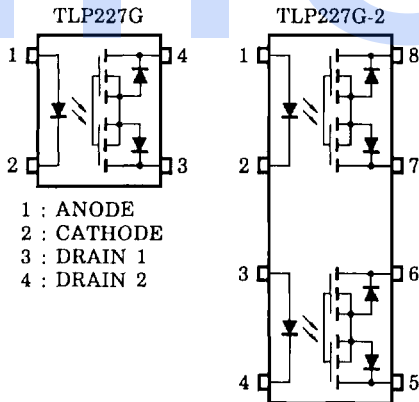
The TOSHIBA TLP227G series consist of a gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a plastic DIP package.

The TLP227G series are a bi-directional switch which can replace mechanical relays in many applications.

TLP227G 4 PIN 1 CIRCUIT (1 Form A)
 TLP227G-2 8 PIN 2 CIRCUITS (2 Form A)

- Peak Off-State Voltage : 350V (Min.)
- Trigger LED Current : 5mA (Max.)
- On-State Current : 100mA (Max.)
- On-State Resistance : 35Ω (Max.)
- Isolation Voltage : 2500Vrms (Min.)

PIN CONFIGURATION (TOP VIEW)

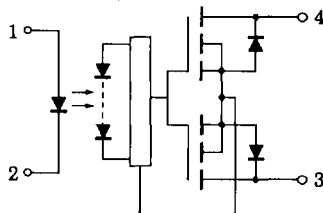


1 : ANODE
 2 : CATHODE
 3 : DRAIN 1
 4 : DRAIN 2

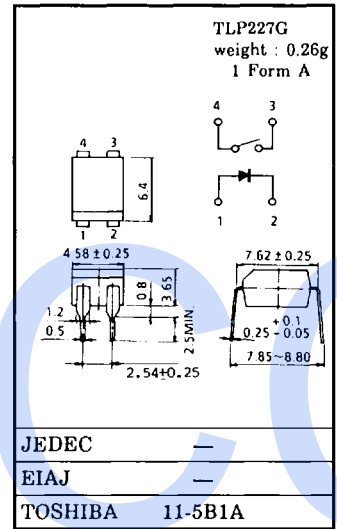
1, 3 : ANODE
 2, 4 : CATHODE
 5, 7 : DRAIN 1
 6, 8 : DRAIN 2

INTERNAL CIRCUIT

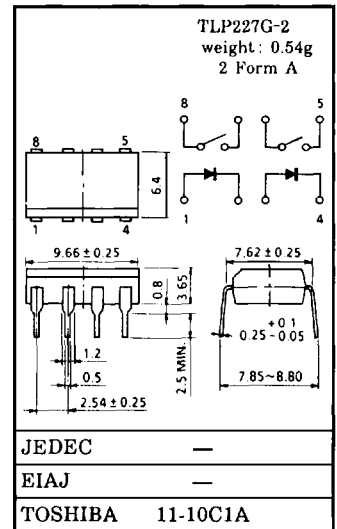
(TLP227G)



Unit in mm



Unit in mm



(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	
DETECTOR	Off-State Output Terminal Voltage		V_{OFF}	350	V	
	On-State Current	TLP227G	I_{ON}	100	mA	
		TLP227G-2		One Channel		120
				Both Channel (Note 1)		100
	On-State Current Derating (Ta ≥ 25°C)	TLP227G	$\Delta I_{ON} / ^\circ\text{C}$	-1.0	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}	-55~100	°C	
Operating Temperature Range			T_{opr}	-20~85	°C	
Lead Soldering Temperature (10 sec.)			T_{sol}	260	°C	
Isolation Voltage (AC, 1min., R.H. ≤ 60%) (Note 2)			BVS	2500	Vrms	

Note 1 : Two channles 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	7.5	15	25	mA
On-State Current	I_{ON}	—	—	100	mA
Operating Temperature	T_{opr}	-20	—	65	°C

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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}	$V = 0, f = 1\text{MHz}$	—	—	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	$I_{ON} = 100\text{mA}$	—	2	5	mA
On-State Resistance	R_{ON}	$I_{ON} = 100\text{mA}, I_F = 10\text{mA}$	—	22	35	Ω
		$I_{ON} = 20 \sim 100\text{mA}, I_F = 10\text{mA}$	—	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	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second (in oil)	—	5000	—	Vdc
		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}	$R_L = 200\Omega$	—	—	4	ms
Turn-off Time	t_{off}	$V_{DD} = 20\text{V}, I_F = 10\text{mA}$	—	—	4	

SWITCHING TIME TEST CIRCUIT

