SEMICONDUCTOR

TOSHIBA

TECHNICAL DATA

TOSHIBA PHOTOCOUPLER

TLP296G

PHOTO RELAY

TENTATIVE DATA

(TLP296G)

TELECOMMUNICATION

DATA ACQUISITION

MEASUREMENT INSTRUMENTATION

The TOSHIBA TLP296G consists of gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a 8 lead DIP package.

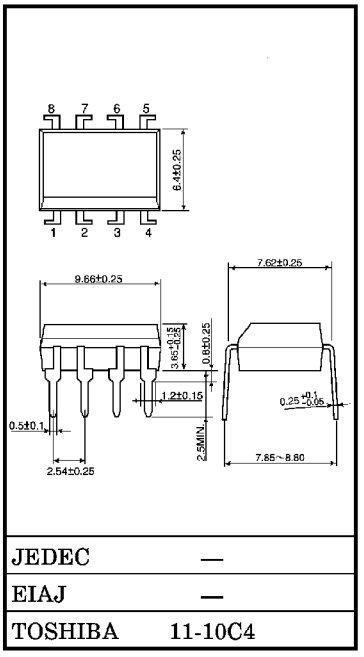
The TLP296G is a bi-directional switch which can replace mechanical relay in many applications.

- 8 PIN DIP, 2 Channel Type (2 Form A)
- Peak Off-State Voltage : 400V (MIN.)
- Trigger LED Current : 5mA (MAX.)
- On-State Current : 100mA (MAX.)
- On-State Resistance : 30Ω (MAX.)
- Isolation Voltage : 2500V_{rms} (MIN.)
- Trigger LED Current (Ta = 25°C)

CLASSIFICATION	TRIGGER LED CURRENT (mA) @I_{ON} = 100mA		MARKING OF CLASSIFICATION
	MIN.	MAX.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

* Ex. Rank IFT2 : TLP296G (IFT2)

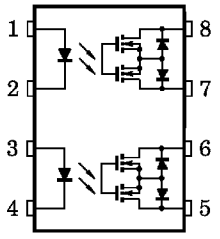
Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	11-10C4

Weight : 0.54g

PIN CONFIGURATION (Top view)



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

(TLP296G)

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 (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}	400	V
	On-State Current	Both Channel Note 1	I_{ON}	100	mA
		One Channel		120	
	On-State Current Derating (Ta ≧ 25°C)	Both Channel Note 1	ΔI_{ON} / °C	−1.0	mA / °C
		One Channel		−1.2	
	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 (10s)			T_{sol}	260	°C
Isolation Voltage (AC, 1min., R.H. ≦ 60%) Note 2			BV_S	2500	V_{rms}

Note 1 : Two channels operating simultaneously.

Note 2 : Device considered a two-terminal device : Pins 1, 2, 3 and 4 shorted together and Pins 5, 6, 7 and 8 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{DD}	—	—	320	V
Forward Current	I_F	7.5	15	25	mA
On-State Current	I_{ON}	—	—	100	mA
Operating Temperature	T_{opr}	−20	—	80	°C

(TLP296G)

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

	CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	I_F=10mA	1.0	1.15	1.3	V
LED	Reverse Current	I_R	V_R=5V	—	—	10	μA
LED	Capacitance	C_T	V=0, f=1MHz	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	V_{OFF}=400V	—	—	1	μA
DETECTOR	Capacitance	C_{OFF}	V=0, f=1MHz	—	—	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current	I_{FT}	I_{ON}=100mA	—	2	5	mA
On-State Resistance	R_{ON}	I_{ON}=100mA, I_F=10mA	—	20	30	Ω

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S=0, f=1MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S=500V, R.H.≦60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		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=200Ω (Note 1)	—	—	4	ms
Turn-off Time	t_{OFF}	V_{DD}=20V, I_F=10mA	—	—	4	

Note 1 : SWITCHING TIME TEST CIRCUIT