TOSHIBA PHOTOCOUPLER PHOTO RELAY

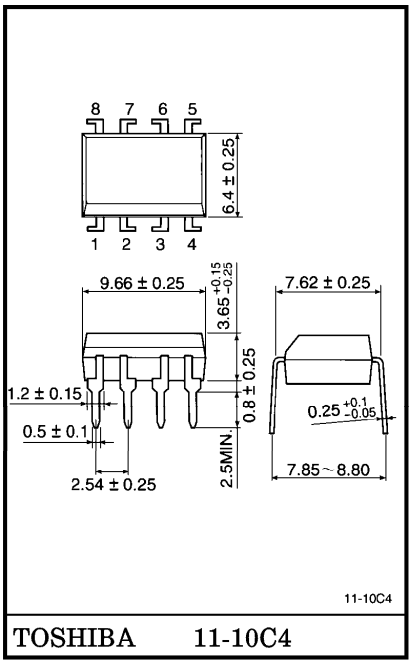
TLP296G

TELECOMMUNICATION

DATA ACQUISITION

MEASUREMENT INSTRUMENTATION

Unit in mm



TOSHIBA 11-10C4

Weight : 0.54 g

The TOSHIBA TLP296G consists of gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a 8 lead DIP package (DIP8).

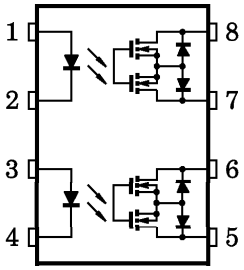
The TLP296G is a bi-directional switch which can replace mechanical relay in many applications.

- 8 PIN DIP (DIP8), 2 Channel Type (2-Form-A)
- Peak Off-State Voltage : 400 V (MIN.)
- Trigger LED Current : 5 mA (MAX.)
- On-State Current : 100 mA (MAX.)
- On-State Resistance : 30 Ω (MAX.)
- Isolation Voltage : 2500 V_{rms} (MIN.)
- Trigger LED Current (Ta = 25°C)

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

(*) : Ex. Rank IFT2 : TLP296G (IFT2)

PIN CONFIGURATION (Top view)



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

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
	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}	−55~125	°C
Operating Temperature Range			T_{opr}	−20~85	°C
Lead Soldering Temperature (10 s)			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

INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

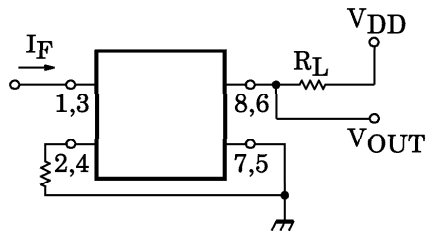
ISOLATION CHARACTERISTICS (Ta = 25°C)

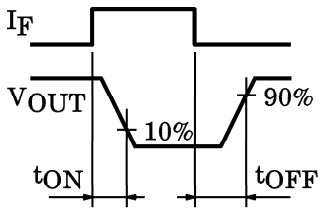
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	V_S = 0, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500 V, R.H. ≦ 60%	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	V_{rms}
		AC, 1 second (in oil)	—	5000	—	
		DC, 1 minute (in oil)	—	5000	—	Vdc

SWITCHING CHARACTERISTICS (Ta = 25°C)

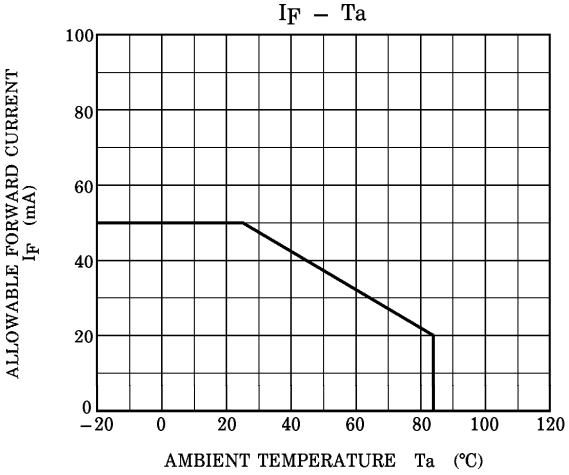
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	R_L = 200 Ω (Note 1)	—	—	4	ms
Turn-off Time	t_{OFF}	V_{DD} = 20 V, I_F = 10 mA	—	—	4	

(Note 1) : SWITCHING TIME TEST CIRCUIT

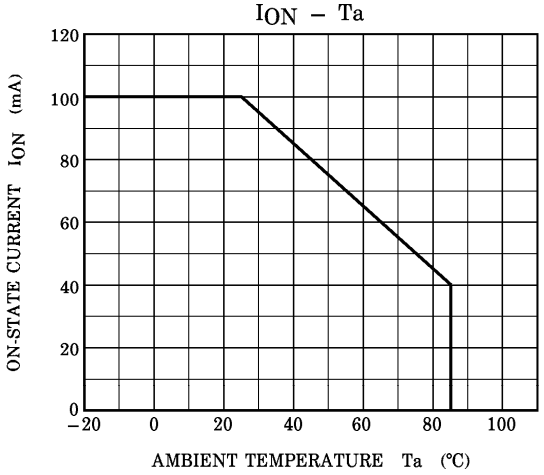




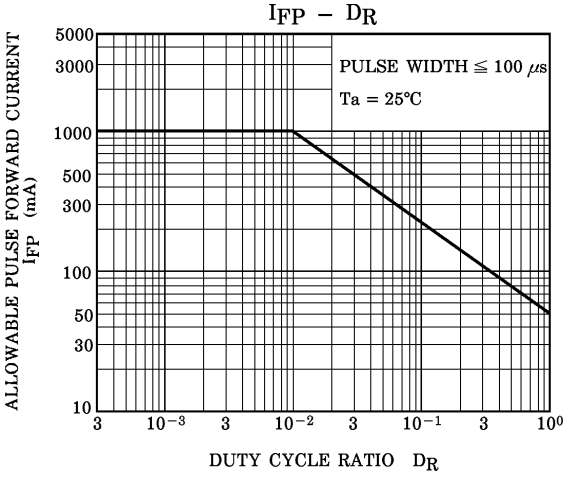
I_F – Ta



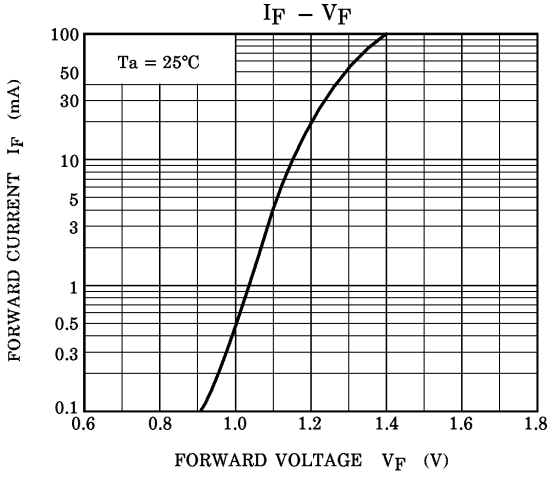
I_{ON} – Ta



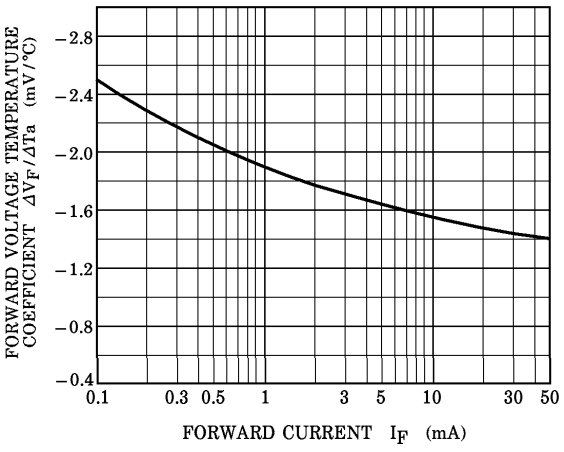
I_{FP} – D_R



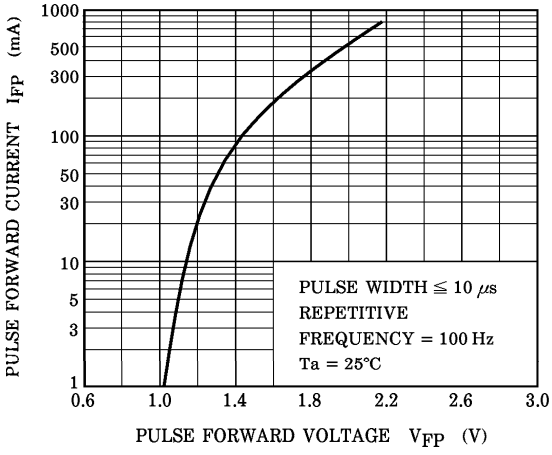
I_F – V_F



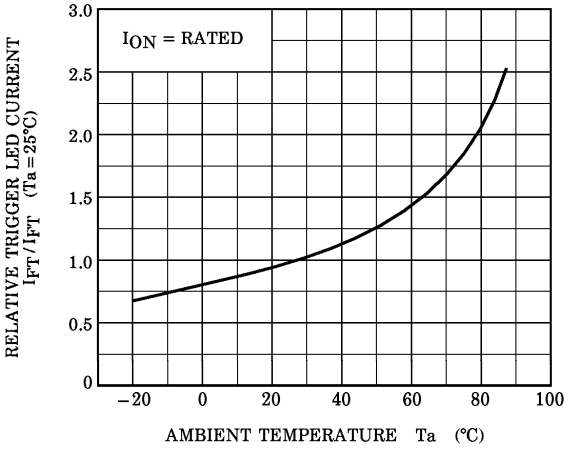
$\Delta V_F / \Delta Ta$ – I_F



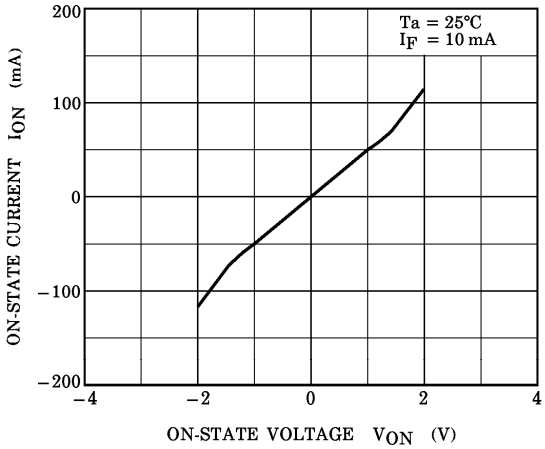
I_{FP} – V_{FP}



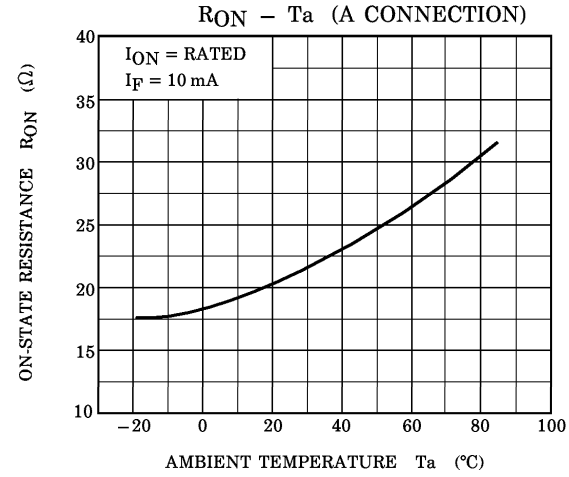
I_{FT} – Ta



I_{ON} – V_{ON} (A CONNECTION)



R_{ON} – Ta (A CONNECTION)



I_{OFF} – Ta