

TOSHIBA PHOTOCOUPLER GaAs IRED & PHOTO-MOS FET

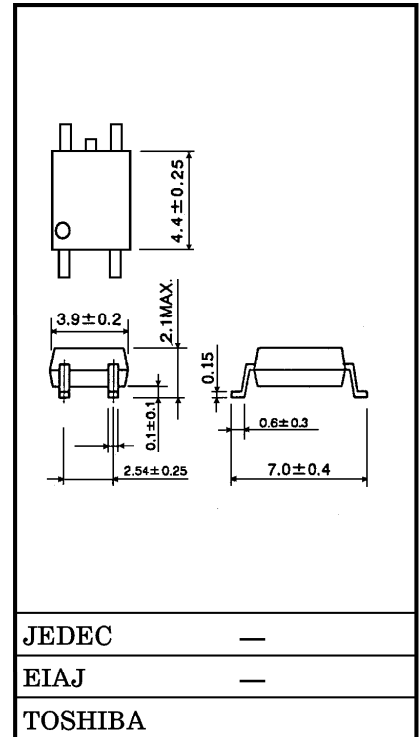
TLP176G

MODEMS IN PC
MODEM-FAX CARDS
TELECOMMUNICATIONS

The TOSHIBA TLP176G consists of gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a SOP, which is suitable for surface mount assembly. The TLP176G is suitable for the modem applications which require space savings.

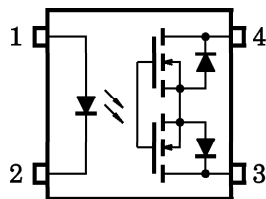
- Peak Off-State Voltage : 350 V (MIN.)
- Trigger LED Current : 3 mA (MAX.)
- On-State Resistance : 35 Ω (MAX.)
- Isolation Voltage : 1500 V_{rms} (MIN.)
- UL Recognized : UL1577, File No. E67349
- BSI Approved : BS EN60065 : 1994, Certificate No. 8273
BS EN60950 : 1992, Certificate No. 8274
- Option (V4) type : TUV Approved : DIN VDE0884 / 06.92,
Certificate No. R9850580

Unit in mm



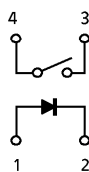
Weight : 0.1 g

PIN CONFIGURATION (TOP VIEW)

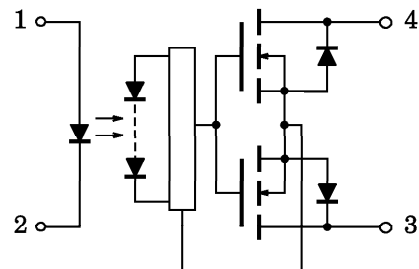


- 1. : ANODE
- 2. : CATHODE
- 3. : DRAIN
- 4. : DRAIN

1 Form A



SCHEMATIC



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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
	Pulse 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}	350	V
	On-State Current	I _{ON}	120	mA
	On-State Current Derating (Ta ≥ 25°C)	ΔI _{ON} /°C	-1.2	mA/°C
	Junction Temperature	T _j	125	°C
Total Power Dissipation		P _T	350	mW
Total Power Dissipation Derating (Ta ≥ 25°C)		ΔP _T /°C	-0.35	mW/°C
Storage Temperature Range		T _{stg}	-55~125	°C
Operating Temperature Range		T _{opr}	-40~85	°C
Lead Soldering Temperature (10 s)		T _{sol}	260	°C
Isolation Voltage (AC, 1min., R.H. ≤ 60%) (Note 1)		BVS	1500	V _{rms}

(Note 1) : Device considered a two-terminal device : Pin 1 and 2 shorted together and pin 3 and 4 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V _{DD}	—	—	280	V
Forward Current	I _F	5	7.5	25	mA
On-State Current	I _{ON}	—	—	100	mA
Operating Temperature	T _{opr}	-20	—	65	°C

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}	$V = 0, f = 1 \text{ MHz}$	—	40	—	pF

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}	$I_{ON} = 120 \text{ mA}, I_F = 5 \text{ mA}$	—	22	35	Ω

ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0, f = 1 \text{ MHz}$	—	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	1500	—	—	V_{rms}
		AC, 1 second (in oil)	—	3000	—	
		DC, 1 minute (in oil)	—	3000	—	V_{dc}

SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-On Time	t_{ON}	$R_L = 200 \Omega$	—	0.3	1	ms
Turn-Off Time	t_{OFF}	$V_{CC} = 20 \text{ V}, I_F = 5 \text{ mA}$	—	0.1	1	

