TOSHIBA Photocoupler Photorelay

TLP176GA

PBX

Telecommunication

Modem · FAX Cards, Modems In PC

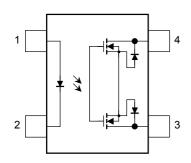
Measurement Instrumentation

The TOSHIBA TLP176GA consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET in a SOP, which is suitable for surface mount assembly.

The TLP176GA is suitable for the modem applications which require space savings. $\,$

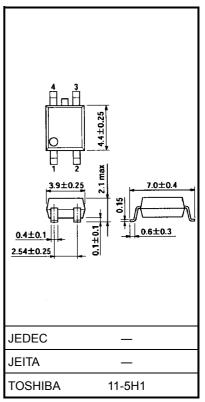
- 4 pin SOP (2.54SOP4): 2.1 mm high, 2.54 mm pitch
- 1-form-A
- Peak off-state voltage: 400 V (min)
- Trigger LED current: 3 mA (max)
- On-state current: 120 mA (max)
- On-state resistance: 35Ω (max)
- Isolation voltage: 1500 Vrms (min)

Pin Configuration (top view)



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

Unit: mm



Weight: 0.1 g (typ.)

Maximum Ratings (Ta = 25°C)

	Characteristics	Symbol	Rating	Unit
	Forward current	lF	50	mA
LED	Forward current derating (Ta ≧ 25°C)	ΔI _F /°C	-0.5	mA/°C
	Peak forward current (100 μs pulse, 100 pps)	I _{FP}	1	А
	Reverse voltage	V _R	5	V
	Junction temperature	Tj	125	°C
	Off-state output terminal voltage	V _{OFF}	400	V
tor	On-state current	I _{ON}	120	mA
Detector	On-state current derating (Ta ≥ 25°C)	Δl _{ON} /°C	-1.2	mA/°C
	Junction temperature	Tj	125	°C
Operating temperature range		T _{opr}	-40 to 85	°C
Storage temperature range		T _{stg}	-55 to 125	°C
Lead soldering temperature (10 s)		T _{sol}	260	°C
	tion voltage 1 min, R.H. ≦ 60%) (Note 1)	BVS	1500	Vrms

Note 1: Device considered a two-terminal device: LED side pins shorted together, and DETECTOR side pins shorted together.

Recommended Operating Conditions

Characteristics	Symbol	Min	Тур.	Max	Unit
Supply voltage	V_{DD}	_	_	320	V
Forward current	lF	5	7.5	25	mA
On-state current	I _{ON}	_	_	120	mA
Operating temperature	T _{opr}	-20	_	65	°C

Individual Electrical Characteristics (Ta = 25°C)

	Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
	Forward voltage	V _F	I _F = 10 mA	1.0	1.15	1.3	V
LED	Reverse current	I _R	V _R = 5 V	_	_	10	μА
	Capacitance	C _T	V = 0, f = 1 MHz	_	30	_	pF
ec-	Off-state current	l _{OFF}	V _{OFF} = 400 V	_	_	1	μА
Detec- tor	Capacitance	C _{OFF}	V = 0, f = 1 MHz	_	70	_	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Trigger LED current	I _{FT}	I _{ON} = 120 mA	_	1	3	mA
Return LED current	I _{FC}	I _{OFF} = 100 μA	0.1	_	_	mA
On-state resistance	R _{ON}	I _{ON} = 120 mA, I _F = 5 mA	_	17	35	Ω

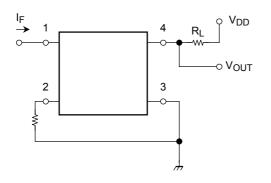
Isolation Characteristics (Ta = 25°C)

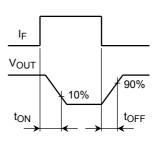
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Capacitance input to output	CS	V _S = 0, f = 1 MHz	_	0.8	_	pF
Isolation resistance	R _S	V _S = 500 V, R.H. ≦ 60%	5×10^{10}	10 ¹⁴	_	Ω
		AC, 1 min	1500	_	_	Vrms
Isolation voltage	BV_S	AC, 1 s, in oil	_	3000	_	VIIIIS
		DC, 1 min, in oil	_	3000	_	Vdc

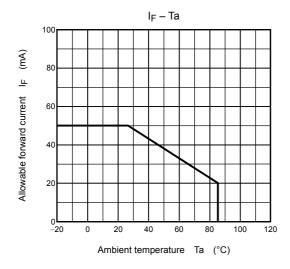
Switching Characteristics (Ta = 25°C)

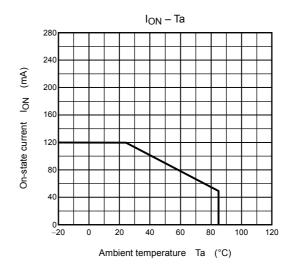
Characteristics	Symbol	Test Condition	Min	Тур.	Max	Unit
Turn-on time	t _{ON}	$R_L = 200 \Omega$ (Note 2)	_	0.3	1	ms
Turn-off time	toff	V _{DD} = 20 V, I _F = 5 mA	_	0.1	1	ms

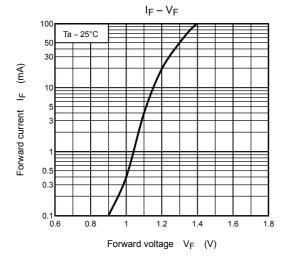
Note 2: Switching time test circuit

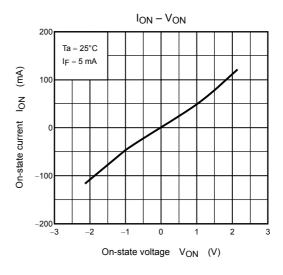


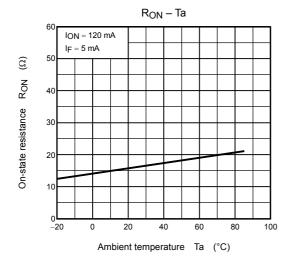


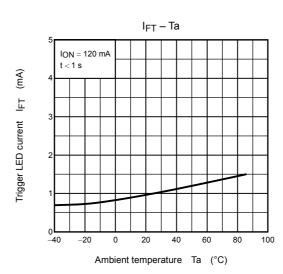




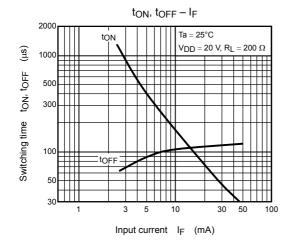


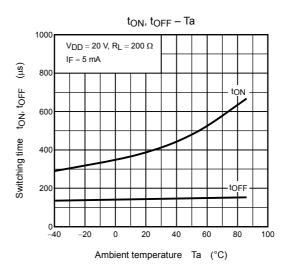


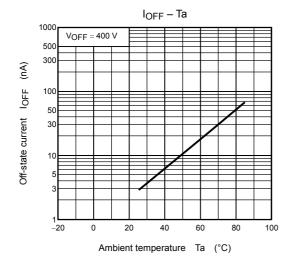




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