TOSHIBA Photocoupler GaAlAs Ired & Photo-Diode Array

# TLP191B

**Telecommunication Programmable Controllers** Mos Gate Driver MOS FET Gate Driver

The TOSHIBA mini flat coupler TLP191B is a small outline coupler, suitable for surface mount assembly.

The TLP191B consists of a GaAlAs light emitting diode, optically coupled to a series connected photo diode array with shunt resistor which is suitable for MOS FET gate drive.

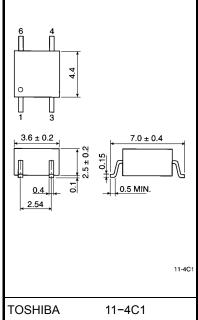
Open voltage: 7.0V(min.) Short current: 24.0 µA (min.) Isolation voltage: 2500 Vrms (min.) UL recognized: UL1577, file no. E67349

#### Absolute Maximum Ratings (Ta = 25°C)

Characteristic		Symbol	Rating	Unit
	Forward current	lF	50	mA
LED	Forward current derating (Ta ≥ 25°C)	ΔI <sub>F</sub> / °C	-0.5	mA / °C
	Pulse forward current (100µs pulse, 100 pps)	I <sub>FP</sub>	1	Α
	Reverse voltage	V <sub>R</sub>	3	V
	Junction temperature	Тj	125	°C
	Forward current	I <sub>FD</sub>	50	μA
Detector	Reverse voltage	$V_{RD}$	10	V
	Junction temperature	Тj	125	°C
Storage temperature range		T <sub>stg</sub>	-55~125	°C
Operating temperature range		T <sub>opr</sub>	-40~80	°C
Lead soldering temperature (10s)		T <sub>sol</sub>	260	°C
Isolation voltage (AC, 1 min., R.H. ≤ 60%) (Note)		BVS	2500	Vrms

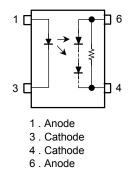


Unit in mm



Weight: 0.09 g

#### Pin Configuration(top view)



Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

(Note) Device considered a two terminal device: Pins 1 and 3 shorted together and pins 4 and 6 shorted together.

#### **Recommended Operating Conditions**

Characteristic	Symbol	Min. Typ.		Max.	Unit
Forward current	lF	_	20	25	mA
Operating temperature	T <sub>opr</sub>	-25	_	85	°C

Note: Recommended operating conditions are given as a design guideline to obtain expected performance of the device. Additionally, each item is an independent guideline respectively. In developing designs using this product, please confirm specified characteristics shown in this document.

### Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Тур.	Max.	Unit
	Forward voltage	$V_{F}$	I <sub>F</sub> = 10 mA	1.2	1.4	1.7	V
LED	Reverse current	I <sub>R</sub>	V <sub>R</sub> = 3 V	-	-	10	μΑ
	Capacitance	C <sub>T</sub>	V = 0, f = 1 MHz	_	30	60	pF
Detector	Forward voltage	$V_{FD}$	I <sub>FD</sub> = 10 μA	_	7	_	٧
	Reverse current	I <sub>RD</sub>	V <sub>RD</sub> = 10 V	_	7	_	μΑ
	Capacitance (anode to cathode)	C <sub>TD</sub>	V = 0, f = 1 MHz			_	pF

#### **Coupled Electrical Characteristics (Ta = 25°C)**

Characteristic	Symbol	Test Condition	MIn.	Тур.	Max.	Unit
Open voltage	V <sub>OC</sub>	I <sub>F</sub> = 20 mA	7	8	_	V
Short current	I <sub>SC</sub>	I <sub>F</sub> = 20 mA	24	40	_	μΑ

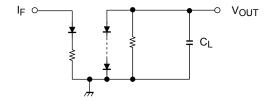
### **Isolation Characteristics (Ta = 25°C)**

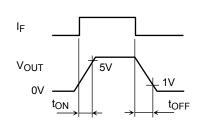
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Capacitance input to output	CS	V <sub>S</sub> = 0, f = 1 MHz	_	0.8	_	pF
Isolation resistance	R <sub>S</sub>	V <sub>S</sub> = 500 V, R.H. ≤ 60%	5×10 <sup>10</sup>	10 <sup>14</sup>	_	Ω
	<u> </u>	AC, 1 minute	2500	_	_	Vrms
Isolation voltage		AC, 1 second in oil	_	5000	_	VIIIIS
		DC, 1 minute in oil	_	5000	_	Vdc

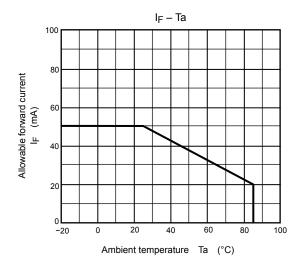
## **Switching Characteristics (Ta = 25°C)**

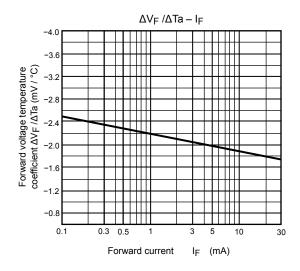
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Turn-on time	t <sub>ON</sub>	I <sub>F</sub> = 20mA, C <sub>L</sub> = 1000 pF	_	0.2	_	ms
Turn-off time	t <sub>OFF</sub>	(Fig.1)	_	3	_	ms

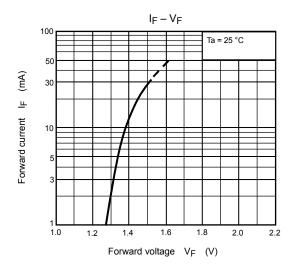
Fig. 1 Switching time test circuit

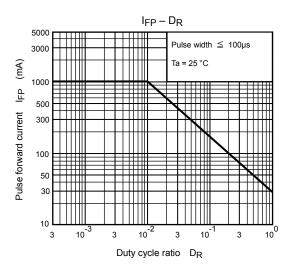


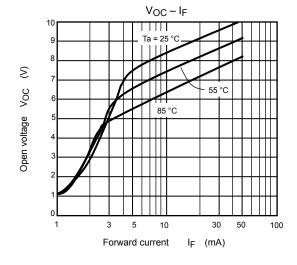


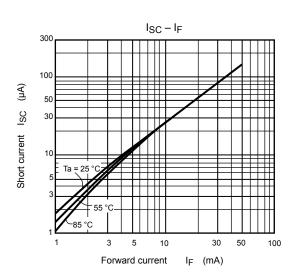












#### **RESTRICTIONS ON PRODUCT USE**

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