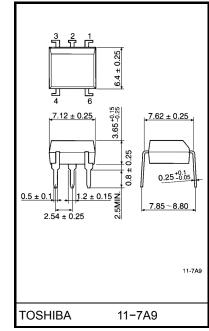
TOSHIBA Photocoupler GaA{As Ired & Photo-Diode Array

# TLP591B

Telecommunication Programmable Controllers MOS Gate Driver MOS FET Gate Driver

The TOSHIBA TLP591B consists of an aluminum galium arsenide infrared emitting diode optically coupled to a series connected photo-diode array in a six lead plastic DIP package. TLP591B is suitable for MOS FET gate driver. TLP591B has an internal shunt resistor to optimize switching speed.

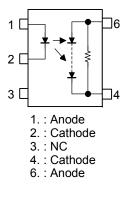
• UL recognized: UL1577, file no. E67349



# Maximum Ratings (Ta = 25°C)

	Characteristic	Symbol	Rating	Unit
LED	Forward current	lF	50	mA
	Forward current derating (Ta ≥ 25°C)	∆l <sub>F</sub> /°C	-0.5	mA /°C
	Pulse forward current (100µs pulse, 100pps)	I <sub>FP</sub>	1	А
	Reverse voltage	V <sub>R</sub>	3	V
	Junction temperature	Tj	125	°C
or	Forward current	I <sub>FD</sub>	50	μA
Detector	Reverse voltage	V <sub>RD</sub>	10	V
ŏ	Junction temperature	Tj	125	°C
Storage temperature range		T <sub>stg</sub>	-55~125	°C
Operating temperature range		T <sub>opr</sub>	-40~85	°C
Lead soldering temperature (10 sec.)		T <sub>sol</sub>	260	°C
	tion voltage 1 min., R.H.≤ 60%) (Note 1)	BVS	2500	V <sub>rms</sub>

Pin Configuration (top view)



(Note 1) Device considered a two terminal device: Pins 1, 2 and 3 shorted together, and pins 4 and 6 shorted together.

# **Recommended Operating Conditions**

Characteristic	Symbol	Min.	Тур.	Max.	Unit	
Forward current	١ <sub>F</sub>	_	20	25	mA	
Operating temperature	T <sub>opr</sub>	-25	_	85	°C	

# Individual Electrical Characteristics (Ta = 25°C)

	Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
	Forward voltage	VF	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	μA
	Capacitance	CT	V = 0, f = 1 MHz	_	30	60	pF
_	Forward voltage	V <sub>FD</sub>	I <sub>FD</sub> = 10 μA	_	7	—	V
Detector	Reverse current	I <sub>RD</sub>	V <sub>RD</sub> = 10 V	_	7	—	μA
	Capacitance (anode to cachode)	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	-	μA

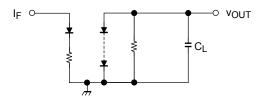
## Isolation Characteristics (Ta = 25°C)

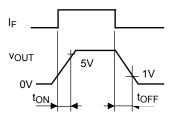
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Capacitance (input to output)	CS	V <sub>S</sub> = 0, f = 1 MHz	—	0.8	_	pF
Isolation resistance	R <sub>S</sub>	V <sub>S</sub> = 500 V	5×10 <sup>10</sup>	10 <sup>14</sup>	_	
	BVS	AC, 1 minute	2500	_	_	Vrms
Isolation voltage		AC, 1 second, in oil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

## Switching Characteristics (Ta = 25°C)

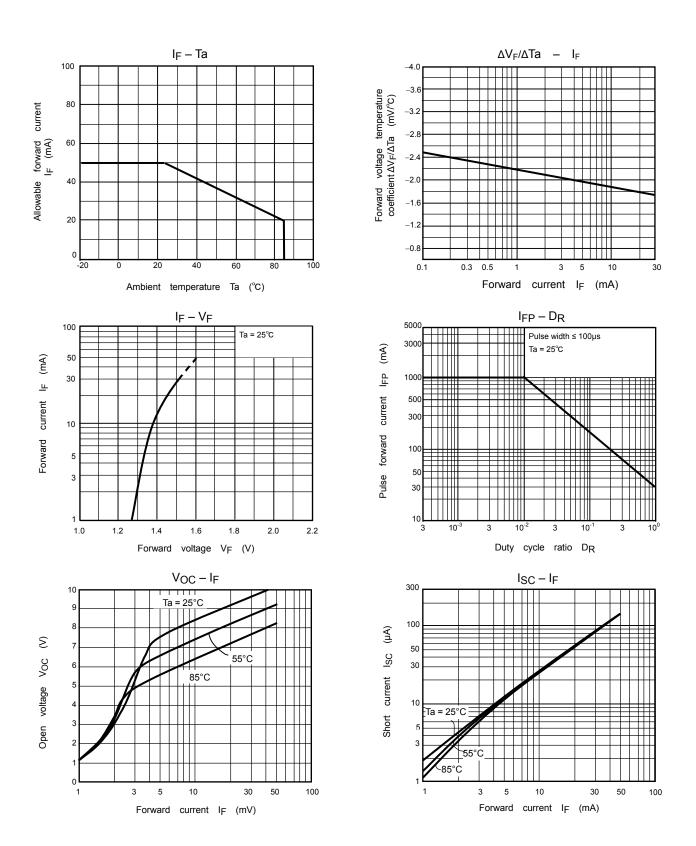
Characteristic	Symbol	Test Condition	Min.	Тур.	Max.	Unit
Turn-on time	t <sub>on</sub>	I <sub>F</sub> = 20 mA, C <sub>L</sub> = 1000pF	_	0.2	_	ms
Turn-off time	t <sub>off</sub>	(Fig. 1)		3		ms

Fig. 1 Switching time test circuit





# TOSHIBA



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20070701-EN

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