

TOSHIBA PHOTOCOUPLER GaAlAs IRED & PHOTO-DIODE ARRAY

TLP190B

TELECOMMUNICATION
PROGRAMMABLE CONTROLLERS
MOS GATE DRIVER
MOS FET GATE DRIVER

The TOSHIBA MINI FLAT COUPLER TLP190B is a small outline coupler, suitable for surface mount assembly.
The TLP190B consists of a GaAlAs light emitting diode, optically coupled to a series connected photo diode array which is suitable for MOS FET gate drive.

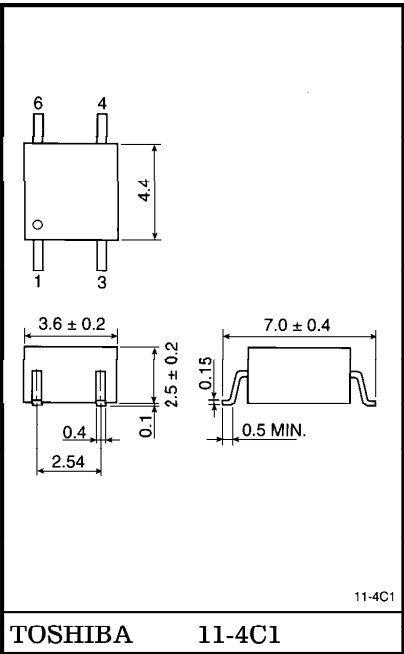
- Open Voltage : 7.0V (MIN.)
- Short Current : 12.0μA (MIN.)
- Isolation Voltage : 2500Vrms (MIN.)
- UL Recognized : UL1577, File No. E67349

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	IF	50	mA
	Forward Current Derating (Ta ≥ 25°C)	ΔIF / °C	−0.5	mA / °C
	Pulse Forward Current (100μs pulse 100pps)	IFP	1	A
	Reverse Voltage	VR	3	V
	Junction Temperature	Tj	125	°C
DETECTOR	Forward Current	IFD	50	μA
	Reverse Voltage	VRD	10	V
	Junction Temperature	Tj	125	°C
Storage Temperature Range		Tstg	−55~125	°C
Operating Temperature Range		Topr	−40~85	°C
Lead Soldering Temperature (10s)		Tsol	260	°C
Isolation Voltage (AC, 1 min., R.H. ≤ 60%) (Note)		BVS	2500	Vrms

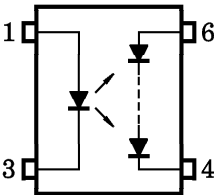
(Note) Device considered a two terminal device : Pins 1 and 3 shorted together and Pins 4 and 6 shorted together.

Unit in mm



Weight : 0.09g

PIN CONFIGURATION (TOP VIEW)



- 1. ANODE
- 3. CATHODE
- 4. CATHODE
- 6. ANODE

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RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Forward Current	I_F	—	20	25	mA
Operating Temperature	T_{opr}	-25	—	85	°C

INDIVIDUAL ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10\text{mA}$	1.2	1.4	1.7	V
	Reverse Current	I_R	$V_R = 3\text{V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	—	30	60	pF
DETECTOR	Forward Voltage	V_{FD}	$I_F = 10\mu\text{A}$	—	7	—	V
	Reverse Current	I_{RD}	$V_R = 10\text{V}$	—	1	—	nA
	Capacitance (Anode to Cathode)	C_{TD}	$V = 0, f = 1\text{MHz}$	—	—	—	pF

COUPLED ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Open Voltage	V_{OC}	$I_F = 10\text{mA}$	7	8	—	V
Short Current	I_{SC}	$I_F = 10\text{mA}$	12	20	—	μA

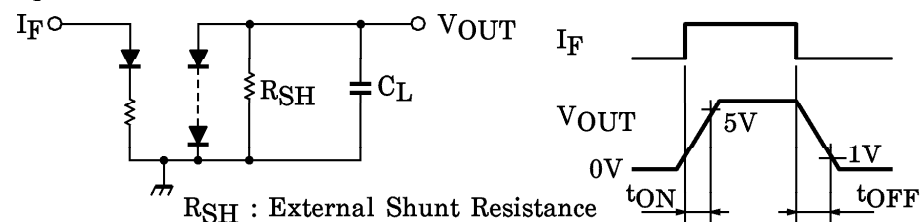
ISOLATION CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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	2500	—	—	V_{rms}
		AC, 1 second in oil	—	5000	—	
		DC, 1 minute in oil	—	5000	—	Vdc

SWITCHING CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	$I_F = 20\text{mA}, R_{SH} = 510\text{k}\Omega$	—	0.2	—	ms
Turn-off Time	t_{OFF}	$C_L = 1000\text{pF}$ (Fig.1)	—	1	—	ms

Fig.1 SWITCHING TIME TEST CIRCUIT



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- Gallium arsenide (GaAs) is a substance used in the products described in this document. GaAs dust and fumes are toxic. Do not break, cut or pulverize the product, or use chemicals to dissolve them. When disposing of the products, follow the appropriate regulations. Do not dispose of the products with other industrial waste or with domestic garbage.
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