TOSHIBA PHOTOCOUPLER GaAℓAs IRED & PHOTO-DIODE ARRAY

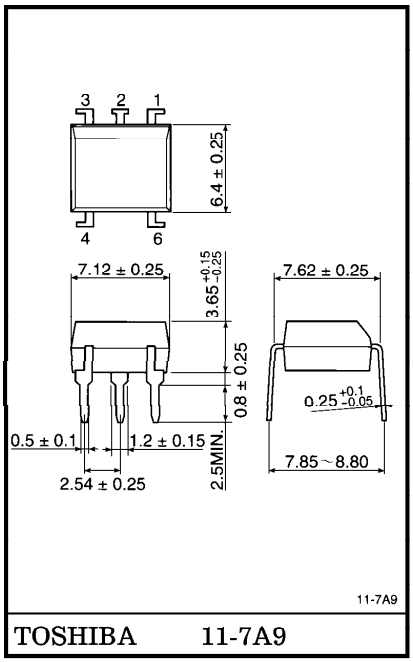
TLP591B

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

Unit in mm



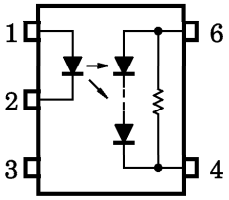
TOSHIBA 11-7A9

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 (100μs pulse, 100pps)	I_{FP}	1	A
	Reverse Voltage	V_R	3	V
	Junction Temperature	T_j	125	°C
DETECTOR	Forward Current	I_{FD}	50	μA
	Reverse Voltage	V_{RD}	10	V
	Junction Temperature	T_j	125	°C
Storage Temperature Range		T_{stg}	−55~125	°C
Operating Temperature Range		T_{opr}	−40~85	°C
Lead Soldering Temperature (10sec.)		T_{sol}	260	°C
Isolation Voltage (AC, 1 min., R.H. ≦ 60%) (Note 1)		BV_S	2500	Vrms

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

PIN CONFIGURATION (TOP VIEW)



1. : ANODE
2. : CATHODE
3. : NC
4. : CATHODE
6. : ANODE

961001EBC2

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 (Ta = 25°C)

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

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Open Voltage	V_{OC}	I_F = 20mA	7	8	—	V
Short Current	I_{SC}	I_F = 20mA	24	40	—	μA

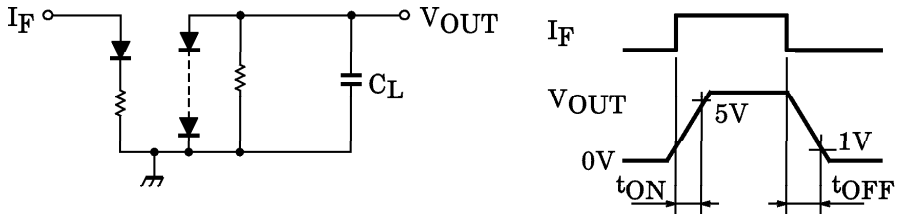
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance (Input to Output)	C_S	V_S = 0, f = 1MHz	—	0.8	—	pF
Isolation Resistance	R_S	V_S = 500V	5×10^{10}	10^{14}	—	
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second, in oil	—	5000	—	
		DC, 1 minute, in oil	—	5000	—	Vdc

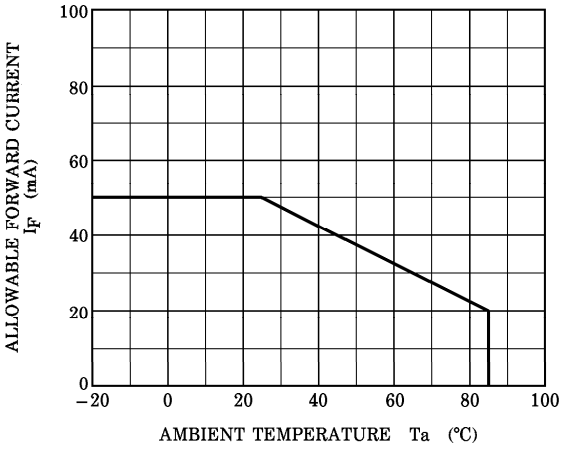
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{on}	I_F = 20mA, C_L = 1000pF (Fig.1)	—	0.2	—	ms
Turn-off Time	t_{off}		—	3	—	ms

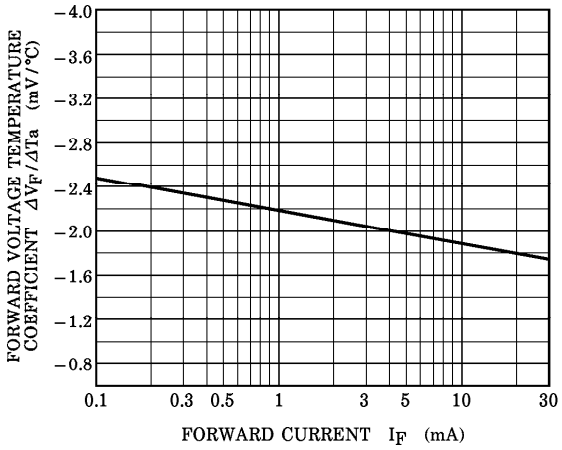
Fig.1 SWITCHING TIME TEST CIRCUIT



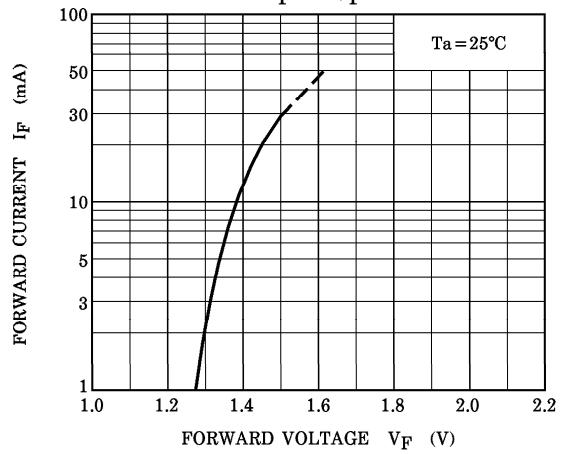
I_F – Ta



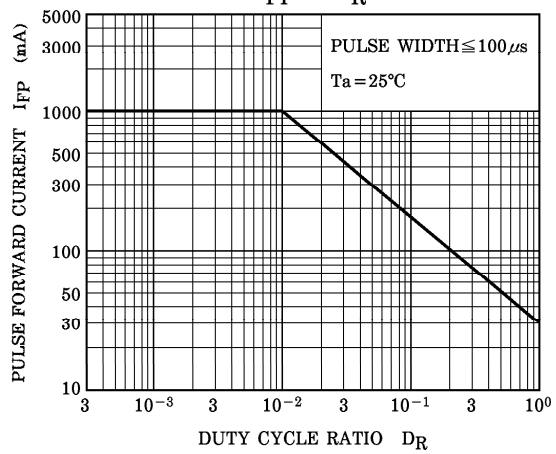
$\Delta V_F / \Delta Ta$ – I_F



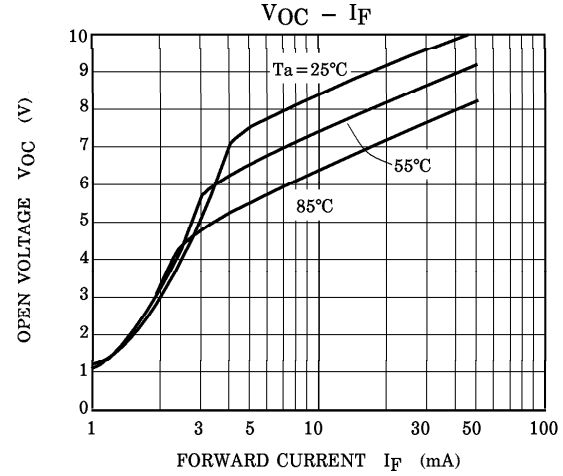
I_F – V_F



I_{FP} – D_R



V_{OC} – I_F



I_{SC} – I_F