

TLP590B

GaAs IRED & PHOTO-DIODE ARRAY

(TLP590B)

TELECOMMUNICATION
PROGRAMMABLE CONTROLLERS
MOS GATE DRIVER
MOS FET GATE DRIVER

The TOSHIBA TLP590B consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a series connected photo-diode array in a six lead plastic DIP package.
TLP590B is suitable for MOS FET Gate Driver.

- UL Recognized : UL1577, File No. E67349

SHORT CURRENT

TYPE NAME	CLASSIFICATION	SHORT CURRENT		MARKING OF CLASSIFICATION
		(Min.)	I _F	
TLP590B	C20	20 μ A	10mA	20
	Standard	12 μ A		20, blank

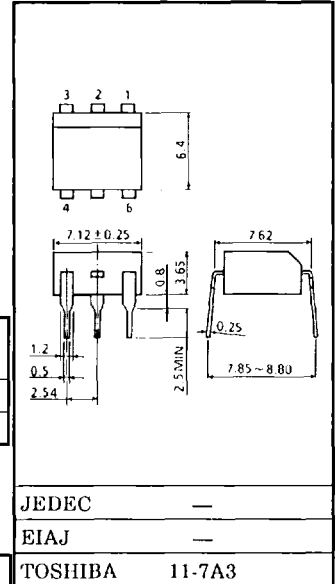
Note : Application type name for certification test, please use standard product type name, i.e.
TLP590B (C20) : TLP590B

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I _F	50	mA
	Forward Current Derating (Ta \pm 25°C)	Δ I _F /°C	-0.5	mA/°C
	Pulse Forward Current (100 μ s pulse, 100pps)	I _{FP}	1	A
	Reverse Voltage	V _R	3	V
	Junction Temperature	T _j	125	°C
DETECTOR	Forward Current	I _{FD}	50	μ A
	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, 1min., R.H. \leq 60%)(Note 1)		BV _S	2500	V _{rms}

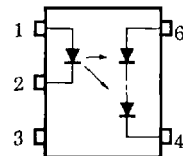
Note 1 : Device considered a two terminal device : Pins 1, 2 and 3 shorted together, and pins 4 and 6 shorted together.

Unit in mm



Weight : 0.39g

PIN CONFIGURATION (TOP VIEW)



- 1. : ANODE
- 2. : CATHODE
- 3. : NC
- 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}	$I_{FD} = 10\mu\text{A}$	—	7	—	V
	Reverse Current	I_{RD}	$V_{RD} = 10\text{V}$	—	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}	$I_F = 10\text{mA}$	7.0	8.0	—	V
Short Current	I_{SC}	$I_F = 10\text{mA}$	12	20	—	μA

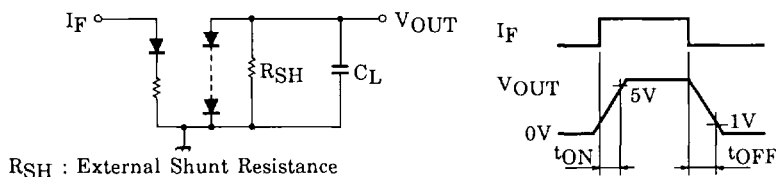
ISOLATION CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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	$V_S = 500\text{V}$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second in oil	—	5000	—	
		DC, 1 minute in oil	—	5000	—	Vdc

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

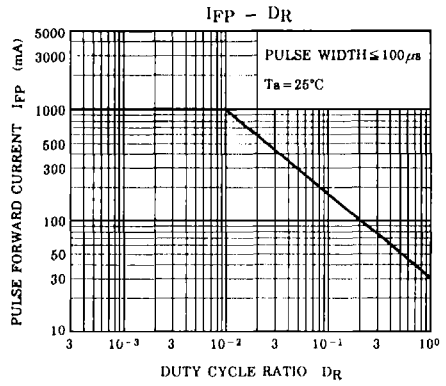
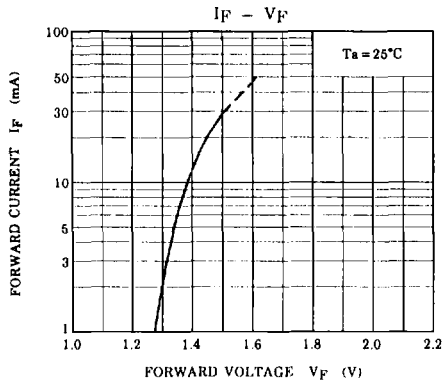
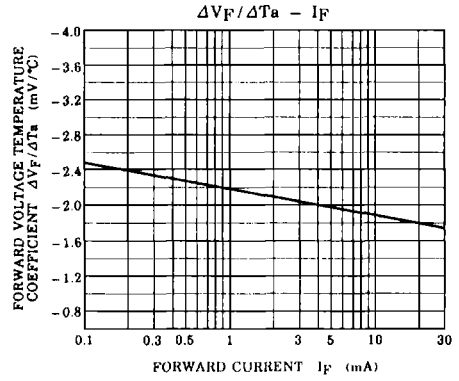
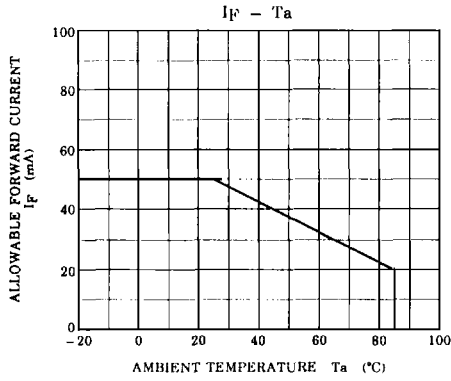
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{on}	$I_F = 20\text{mA}, R_{SH} = 510\text{k}\Omega$	—	0.2	—	ms
Turn-off Time	t_{off}	$C_L = 1000\text{pF}$ (Fig.1)	—	1	—	ms

Fig.1 SWITCHING TIME TEST CIRCUIT



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