

TLP595B

PHOTO RELAY

(TLP595B)

TELECOMMUNICATION
DATA ACQUISITION
MEASUREMENT INSTRUMENTATION

The TOSHIBA TLP595B consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package.

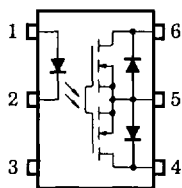
The TLP595B is a bi-directional switch which can replace mechanical relays in many applications.

- Peak Off-State Voltage : 100V (MIN.)
- On-State Current : 200mA (MAX.) (A Connection)
- On-State Resistance : 4Ω (MAX.) (A Connection)
- Isolation Voltage : 2500Vrms (MIN.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)

CLASSIFICATION (Note 1)	Trigger LED Current (mA)		MARKING OF CLASSIFICATION
	@ I _{ON} = 200mA		
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

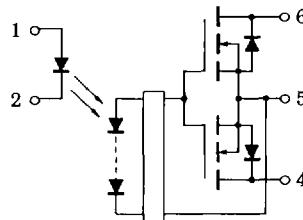
Note 1 : Application type name for certification test,
please use standard product type name, i.e.
TLP595B (IFT2) : TLP595B

PIN CONFIGURATION (TOP VIEW)

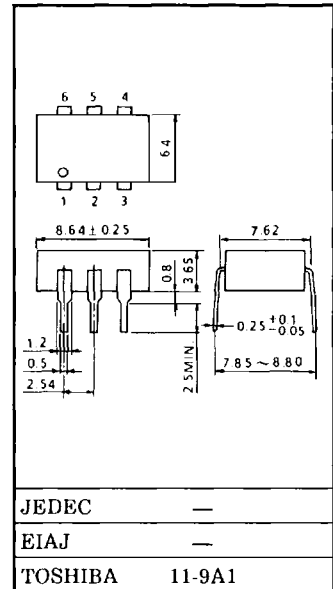


- 1. : ANODE
- 2. : CATHODE
- 3. : NC
- 4. : DRAIN D1
- 5. : SOURCE
- 6. : DRAIN D2

SCHEMATIC



Unit in mm



Weight : 0.49g

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MAXIMUM RATINGS (Ta = 25°C)

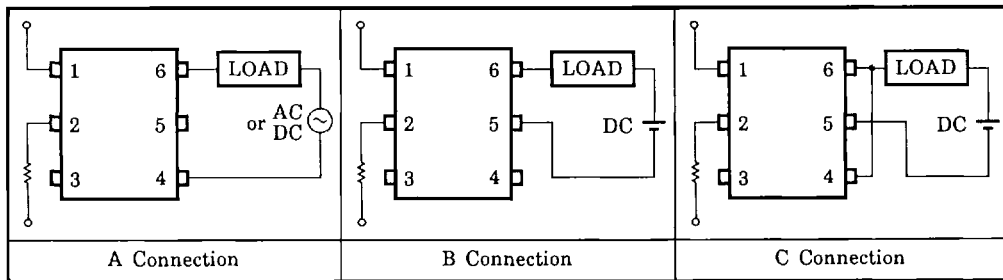
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	I_F	30	mA
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ C$	-0.3	mA / °C
	Peak Forward Current (100µs pulse, 100pps)	I_{FP}	1	A
	Reverse Voltage	V_R	5	V
	Junction Temperature	T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage	V_{OFF}	100	V
	On-State RMS Current	A Connection	200	mA
		B Connection	300	
		C Connection	400	
	On-State Current Derating (Ta ≥ 25°C)	A Connection	-2	mA / °C
		B Connection	-3	
		C Connection	-4	
	Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	-55~100	°C	
Operating Temperature Range	T_{opr}	-20~85	°C	
Lead Soldering Temperature (10sec.)	T_{sol}	260	°C	
Isolation Voltage (AC, 1min., R.H. ≤ 60%)	BV_S	2500	Vrms	

Note 2 : Device considered a two-terminal device : Pins 1, 2 and 3 shorted together, and Pins 4, 5 and 6 shorted together.

RECOMMENDED OPERATING CONDITIONS

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply Voltage	V_{DD}	—	—	80	V
Forward Current	I_F	10	15	20	mA
On-State Current	I_{ON}	—	—	200	mA
Operating Temperature	T_{opr}	-20	—	80	°C

CIRCUIT CONNECTIONS



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INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°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	$V = 0, f = 1\text{MHz}$	—	15	—	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 100\text{V}$	—	—	1	μA
	Capacitance	C_{OFF}	$V = 0, f = 1\text{MHz}$	—	—	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current		I_{FT}	$I_{ON} = 200\text{mA}$	—	1	5	mA
On-State Resistance	A Connection	R_{ON}	$I_{ON} = 200\text{mA}, I_F = 10\text{mA}$	—	3.0	4	Ω
	B Connection		$I_{ON} = 300\text{mA}, I_F = 10\text{mA}$	—	1.5	2	
	C Connection		$I_{ON} = 400\text{mA}, I_F = 10\text{mA}$	—	0.75	1	

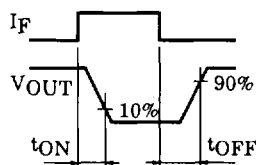
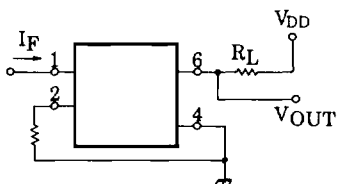
ISOLATION CHARACTERISTICS (Ta = 25°C)

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	—	—	Vrms
		AC, 1 second (in oil)	—	5000	—	
		DC, 1 minute (in oil)	—	5000	—	VDC

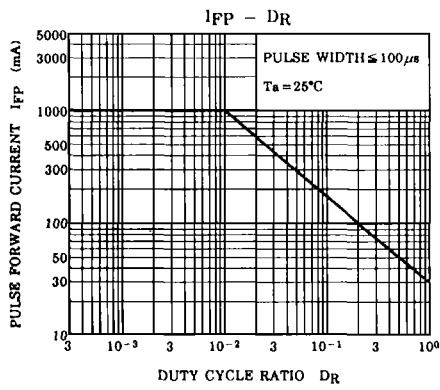
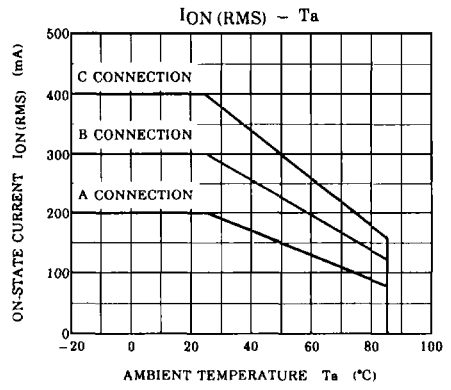
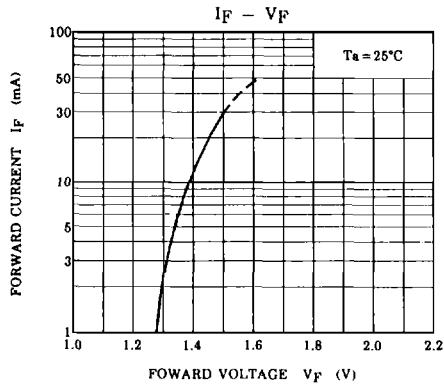
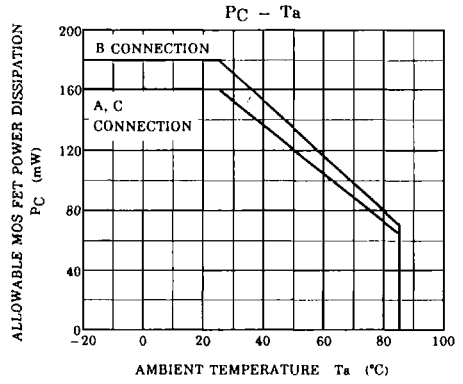
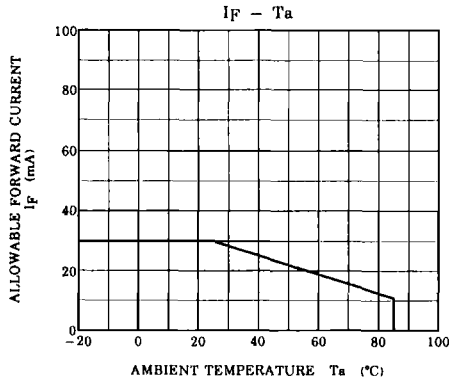
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	$V_{DD} = 20\text{V}, R_L = 200\Omega$ $I_F = 10\text{mA}$ (Note 3)	—	0.1	0.4	ms
Turn-off Time	t_{OFF}		—	0.2	0.4	

Note 3 : SWITCHING TIME TEST CIRCUIT



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