

T L P 5 9 7 A

TELECOMMUNICATION

DATA ACQUISITION

MEASUREMENT INSTRUMENTATION

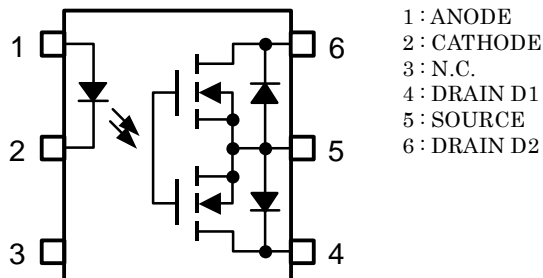
The TOSHIBA TLP597A consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package (DIP6).

The TLP597A is a bi-directional switch can replace mechanical relays in many applications.

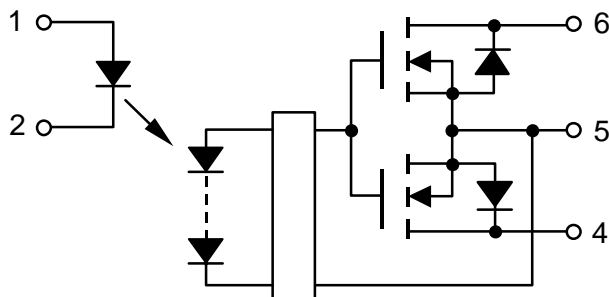
FEATURES

- 6 pin DIP (DIP6)
- 1-Form-A
- Peak Off-State Voltage : 60 V (MIN.)
- Trigger LED Current : 3 mA (MAX.)
- On-State Current : 500 mA (MAX.)
- On-State Resistance : 2 Ω (MAX.)
- Isolation Voltage : 2500 Vrms (MIN.)
- UL Recognized : UL1577, File No. E67349

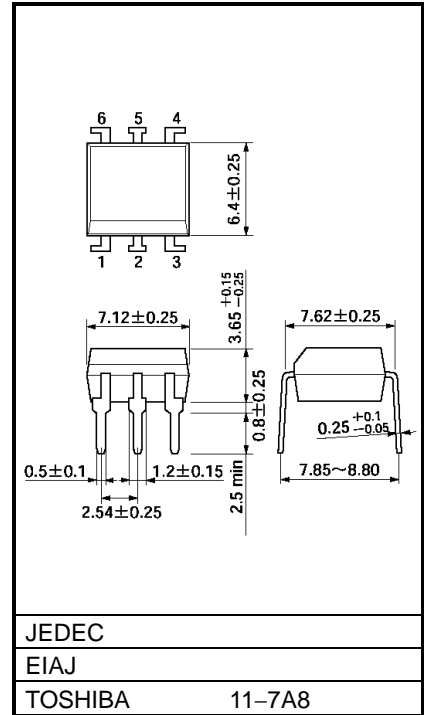
PIN CONFIGURATION (TOL VIEW)



SCHEMATIC



Unit: mm



Weight: 0.4 g

MAXIMUM RATINGS (Ta = 25°C)

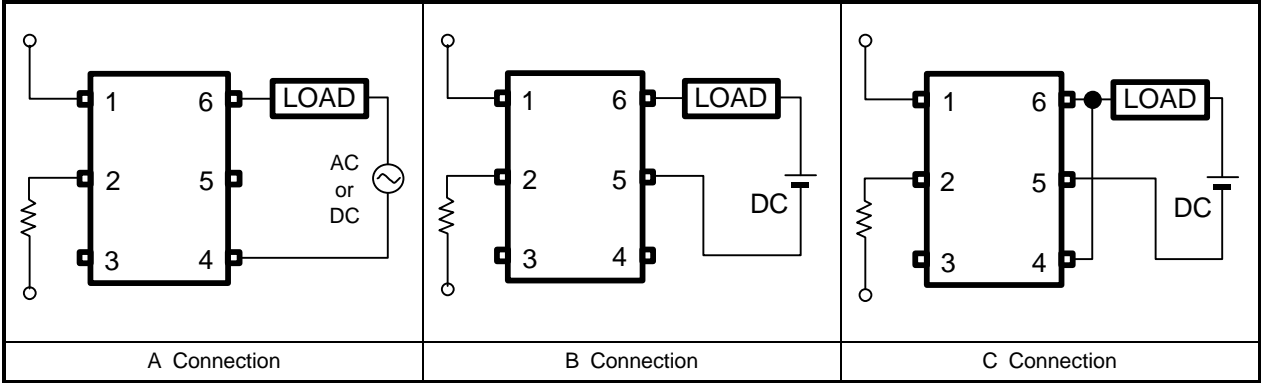
CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I _F	50	mA
	Forward Current Derating (T _a ≥ 25°C)		ΔI _F /°C	−0.5	mA/°C
	Peak Forward Current (100 μs pulse, 100 pps)		I _{FP}	1	A
	Reverse Voltage		V _R	5	V
	Junction Temperature		T _j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V _{OFF}	60	V
	On-State RMS Current	A Connection	I _{ON}	500	mA
		B Connection		500	
		C Connection		1000	
	On-State Current Derating (T _a ≥ 25°C)	A Connection	ΔI _{ON} /°C	−5.0	mA/°C
		B Connection		−5.0	
		C Connection		−10.0	
	Junction Temperature		T _j	125	°C
Operating Temperature Range		T _{opr}	−40~85	°C	
Storage Temperature Range		T _{stg}	−55~125	°C	
Lead Soldering Temperature (10 s)		T _{sol}	260	°C	
Isolation Voltage (AC, 1 minute, R.H. ≤ 60%) (NOTE1)		BV _S	2500	V _{rms}	

(NOTE1) :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	VDD	—	—	48	V
Forward Current	IF	5	7.5	25	mA
On-State Current	ION	—	—	400	mA
Operating Temperature	Topr	−20	—	65	°C

CIRCUIT CONNECTIONS



INDIVIDUAL ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
LED	Forward Voltage	V_F	$I_F = 10 \text{ mA}$	1.0	1.15	1.3	V
	Reverse Current	I_R	$V_R = 5 \text{ V}$	—	—	10	μA
	Capacitance	C_T	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 60 \text{ V}$	—	—	1	μA
	Capacitance	C_{OFF}	$V = 0, f = 1 \text{ MHz}$	—	130	—	pF

COUPLED ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Trigger LED Current		I_{FT}	$I_{ON} = 500 \text{ mA}$	—	—	3	mA
Close LED Current		I_{FC}	$I_{OFF} = 100 \mu\text{A}$	0.1	—	—	mA
On-State Resistance	A Connection	R_{ON}	$I_{ON} = 500 \text{ mA}, I_F = 5 \text{ mA}$	—	1	2	Ω
	B Connection		$I_{ON} = 500 \text{ mA}, I_F = 5 \text{ mA}$	—	0.5	1	
	C Connection		$I_{ON} = 1000 \text{ mA}, I_F = 5 \text{ mA}$	—	0.25	—	

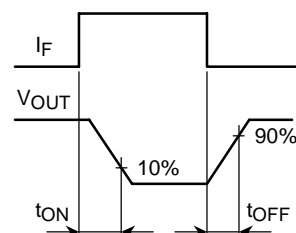
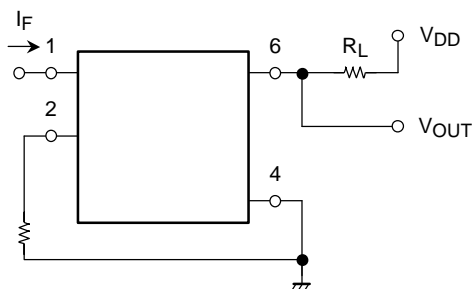
ISOLATION CHARACTERISTICS (Ta = 25°C)

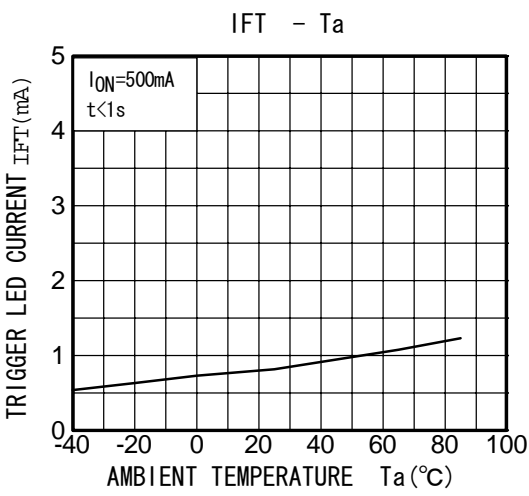
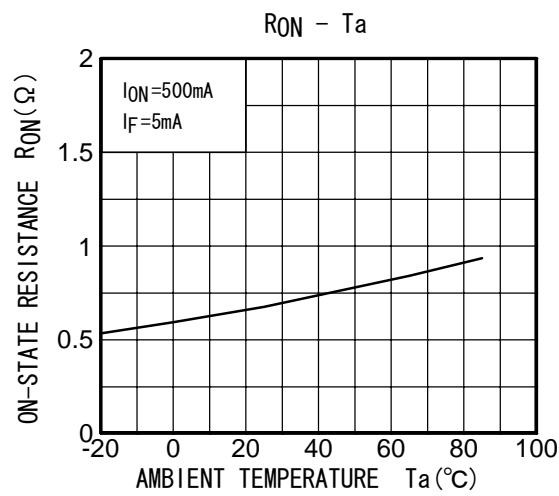
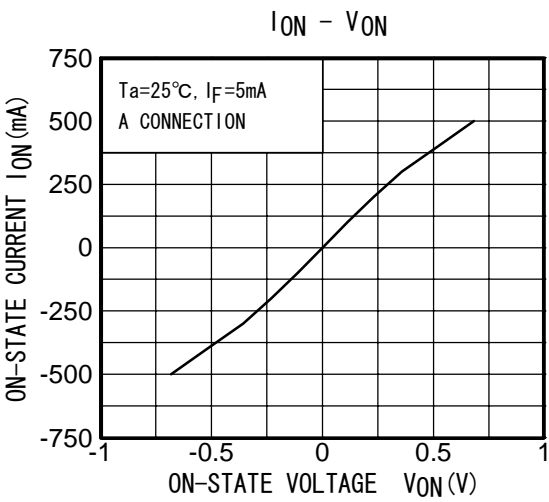
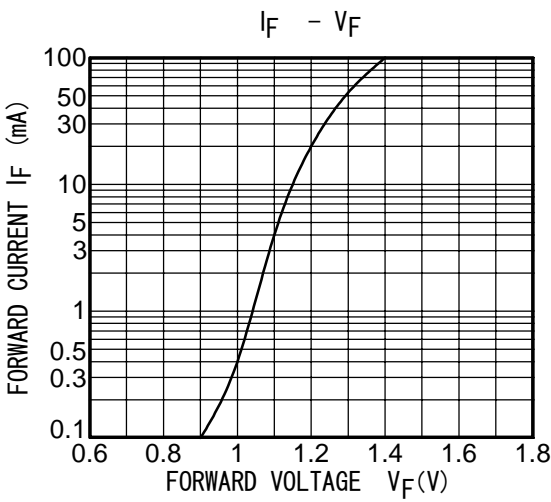
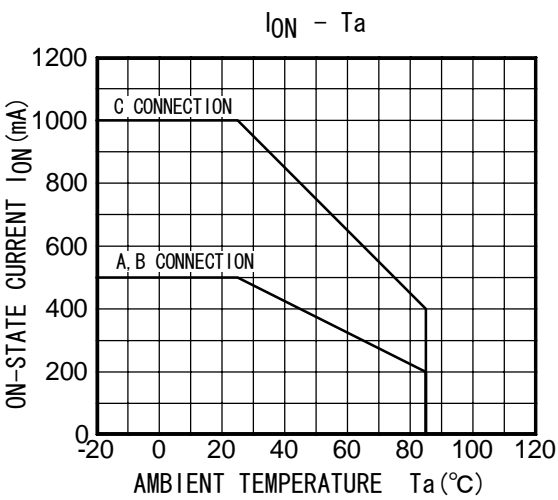
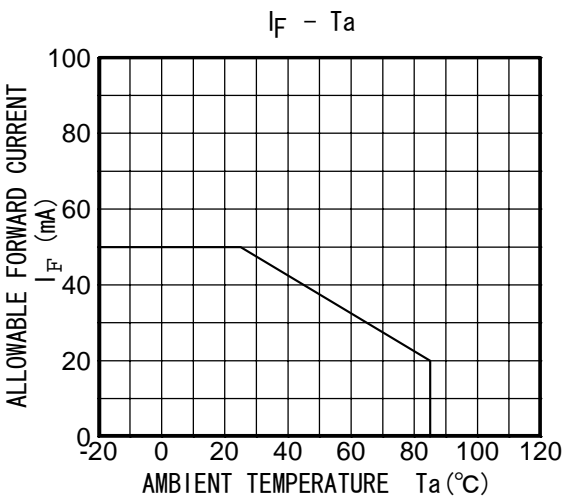
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation Resistance	R_S	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	—	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second (in oil)	—	5000	—	
		DC, 1 minute (in oil)	—	5000	—	Vdc

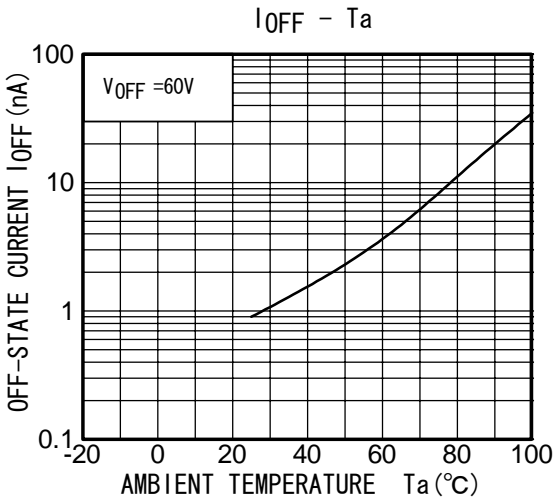
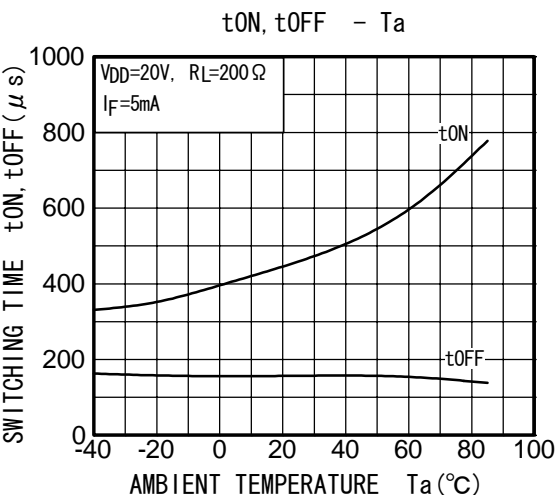
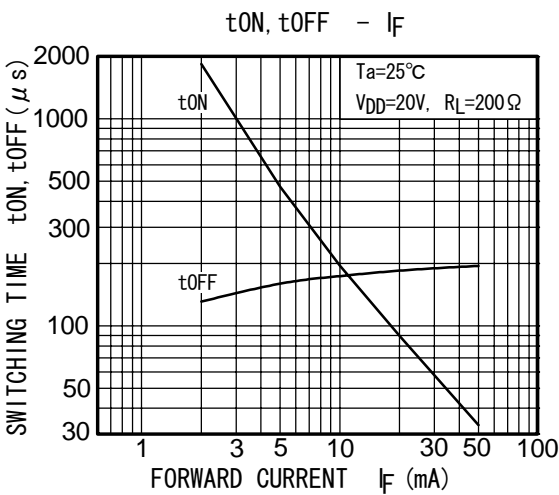
SWITCHING CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t_{ON}	$R_L = 200 \Omega$ (NOTE 2) $V_{DD} = 20 \text{ V}, I_F = 5 \text{ mA}$	—	0.6	2	ms
Turn-off Time	t_{OFF}		—	0.1	1	
Turn-on Time	t_{ON}	$R_L = 200 \Omega$ (NOTE 2) $V_{DD} = 20 \text{ V}, I_F = 10 \text{ mA}$	—	0.3	1	ms
Turn-off Time	t_{OFF}		—	0.1	1	

(NOTE 2) : SWITCHING TIME TEST CIRCUIT







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