

TOSHIBA Photocoupler Photo Relay

TLP598B

Telecommunication

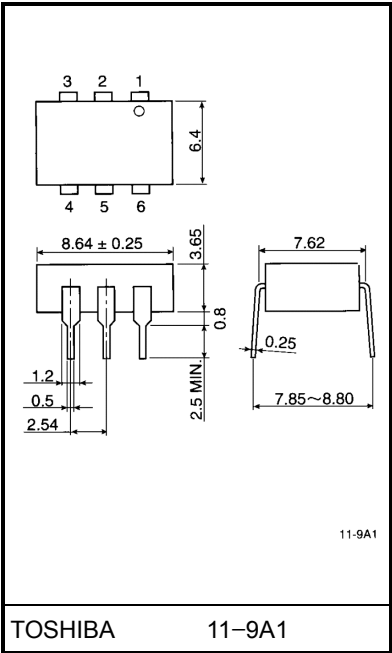
Data Acquisition

Measurement Instrumentation

The TOSHIBA TLP598B consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP (DIP6).  
The TLP598B 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)

Unit in mm

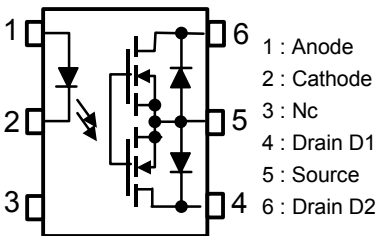


Weight: 0.49 g

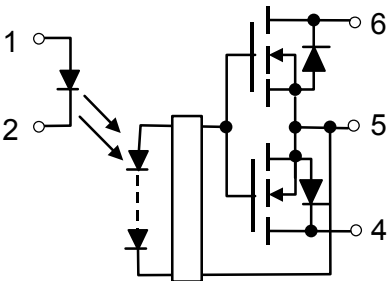
Classification (Note 1)	Trigger LED Current (mA)		Marking Of Classification
	@I <sub>ON</sub> = 200mA		
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

(Note 1): Application type name for certification test, please use standard product type name, i.e.  
TLP598B (IFT2) : TLP598B

Pin Configuration (top view)



Schematic



Maximum Ratings (Ta = 25°C)

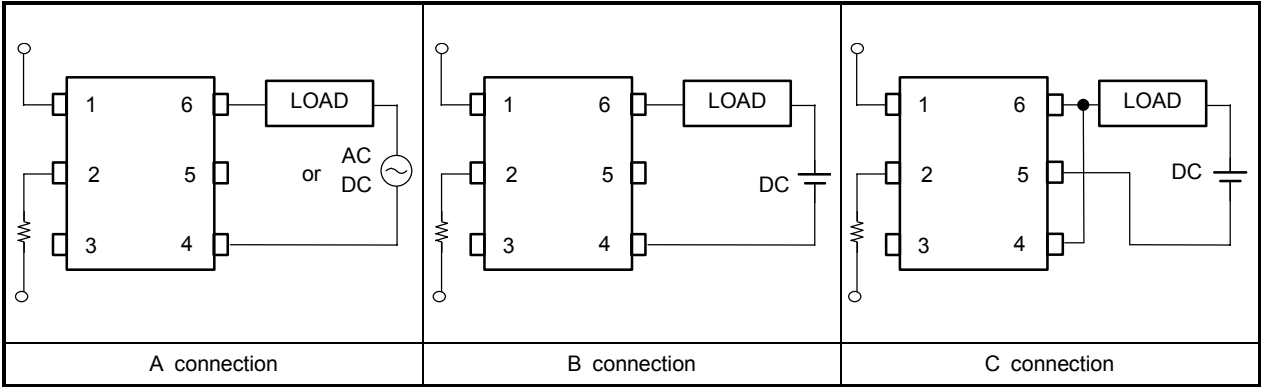
Characteristic			Symbol	Rating	Unit
LED	Forward current		I <sub>F</sub>	30	mA
	Forward current derating (Ta ≥ 25°C)		ΔI <sub>F</sub> / °C	−0.3	mA / °C
	Peak forward current (100 μs pulse, 100 pps)		I <sub>FP</sub>	1	A
	Reverse voltage		V <sub>R</sub>	5	V
	Junction temperature		T <sub>j</sub>	125	°C
Detector	Off-state output terminal voltage		V <sub>OFF</sub>	100	V
	On-state RMS current	A connection	I <sub>ON</sub>	200	mA
		B connection		300	
		C connection		400	
	On-state current derating (Ta ≥ 25°C)	A connection	ΔI <sub>ON</sub> / °C	−2	mA / °C
		B connection		−3	
		C connection		−4	
	Junction temperature		T <sub>j</sub>	125	°C
	Storage temperature range		T <sub>stg</sub>	−55~125	°C
Operating temperature range		T <sub>opr</sub>	−40~85	°C	
Lead soldering temperature (10 s)		T <sub>sol</sub>	260	°C	
Isolation voltage (AC, 1min, R.H. ≤ 60%) (Note 2)		BV <sub>S</sub>	2500	V <sub>rms</sub>	

(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



## 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	$\mu\text{A}$
	Capacitance	$C_T$	$V = 0, f = 1 \text{ MHz}$	—	30	—	pF
Detector	Off-state current	$I_{OFF}$	$V_{OFF} = 100 \text{ V}$	—	—	1	$\mu\text{A}$
	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	$\Omega$
	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	

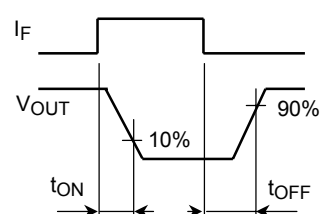
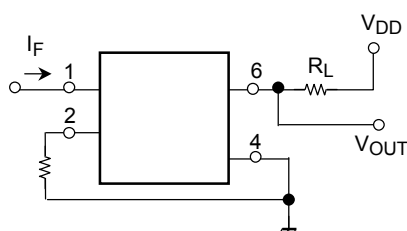
## Isolation Characteristics (Ta = 25°C)

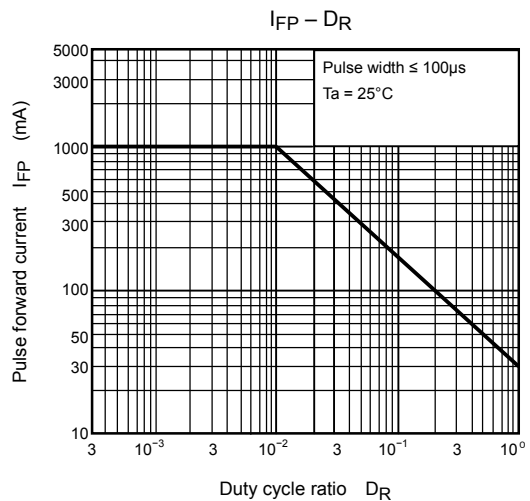
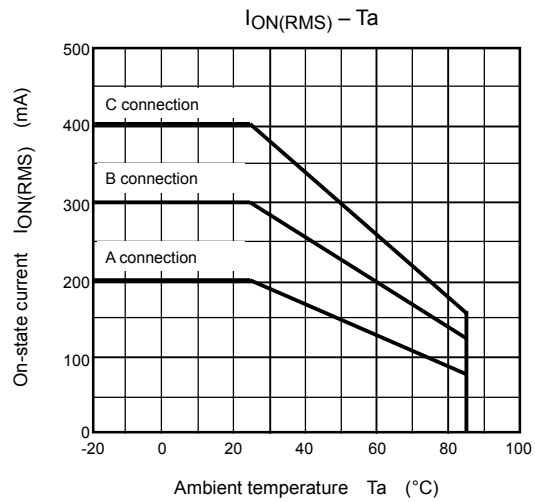
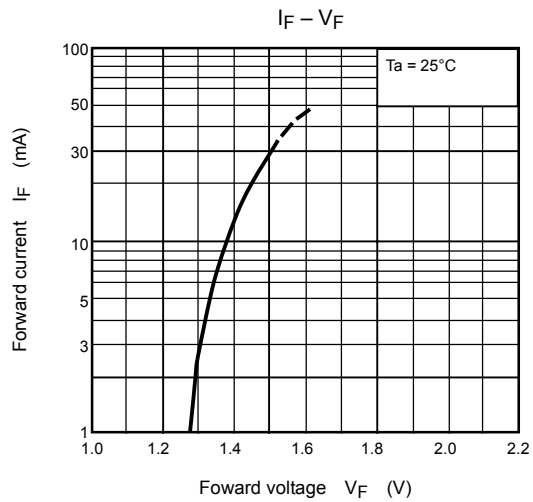
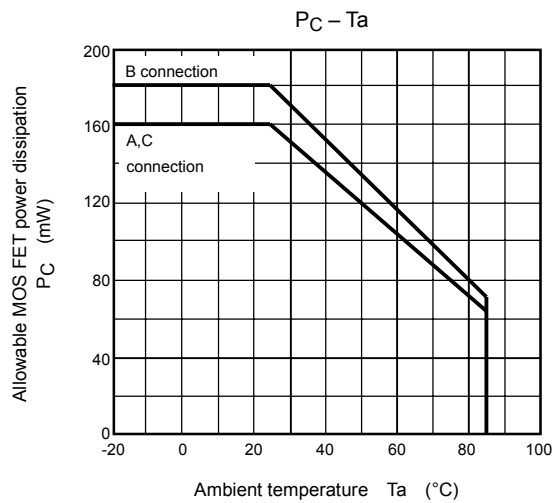
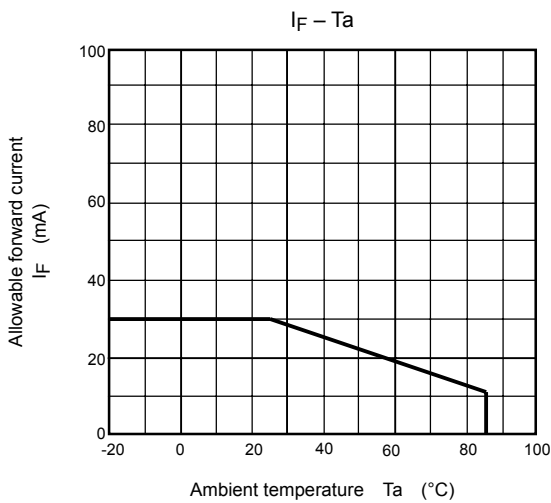
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	$C_S$	$V_S = 0 \text{ V}, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation resistance	$R_S$	$V_S = 500 \text{ V}, \text{R.H.} \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation voltage	$BV_S$	AC, 1 minute	2500	—	—	Vrms
		AC, 1 second (in oil)	—	5000	—	
		DC, 1 minute (in oil)	—	5000	—	VDC

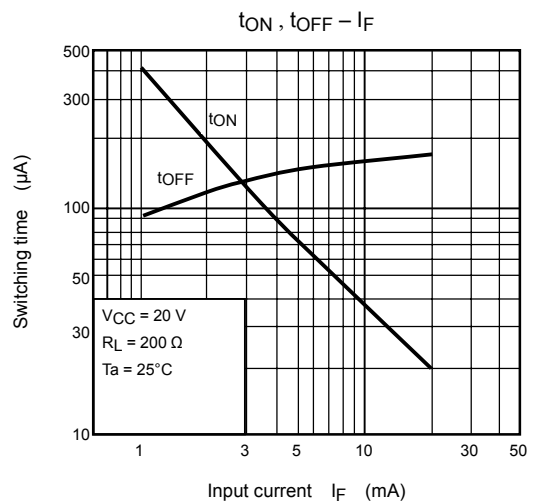
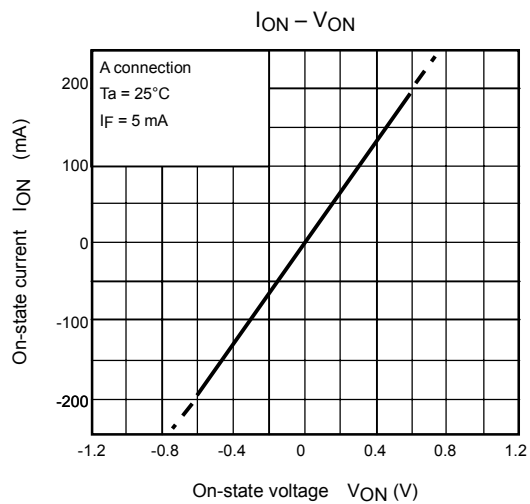
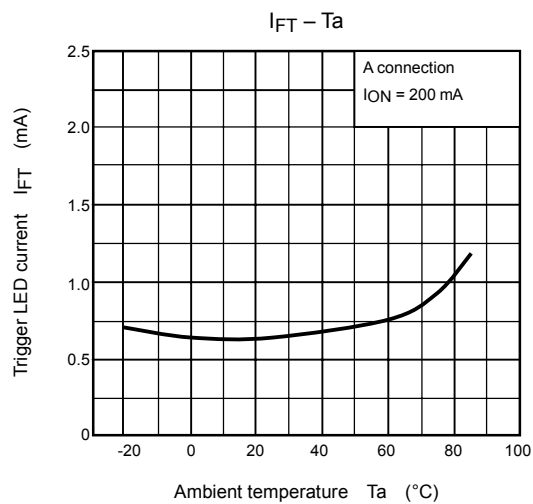
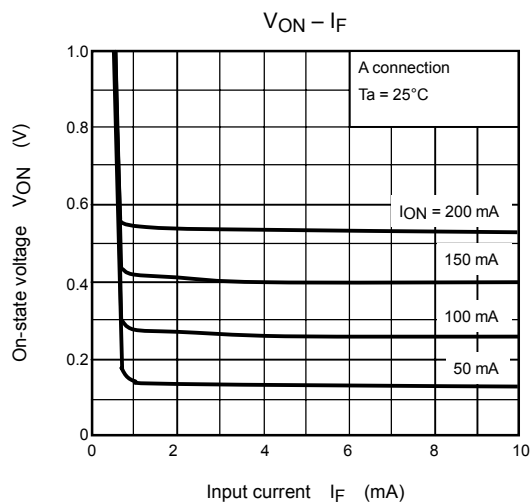
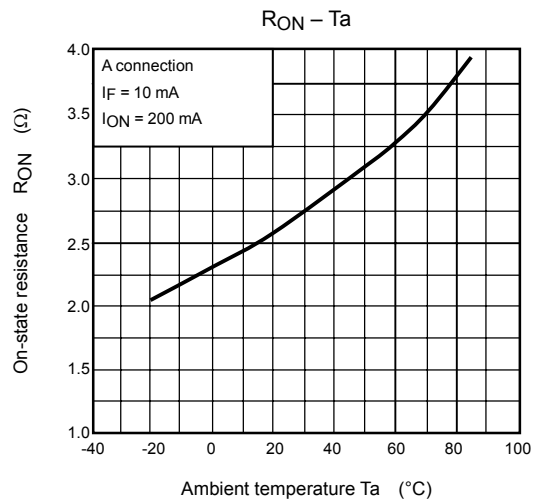
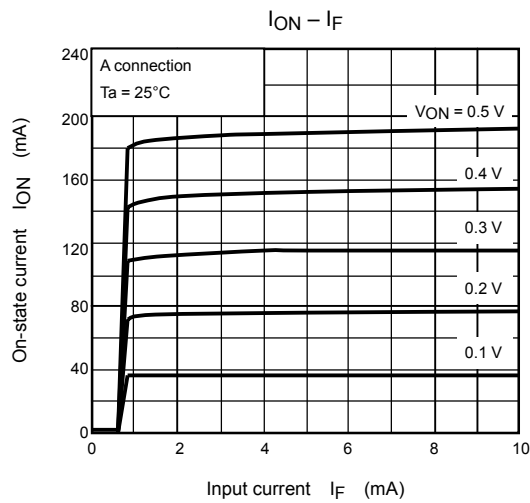
## Switching Characteristics (Ta = 25°C)

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)	—	0.2	0.5	ms
Turn-off time	$t_{OFF}$		—	0.2	0.5	

(Note 3) : Switching time test circuit







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000707EBC

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