

TOSHIBA Photocoupler Photo Relay

TLP598A

Telecommunication
Data Acquisition
Measurement Instrumentation

The TOSHIBA TLP598A consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package (DIP6).

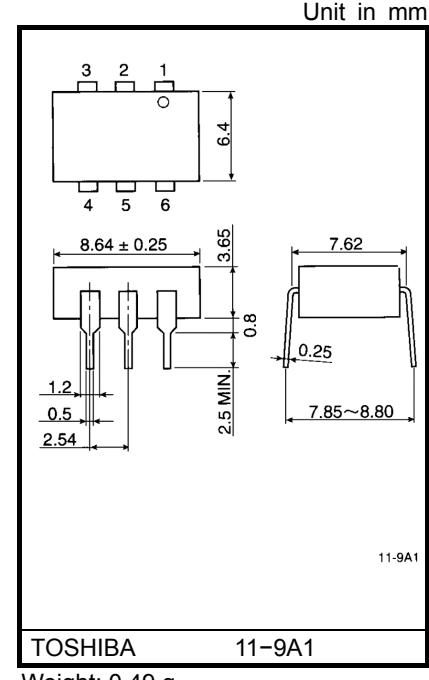
The TLP598A is a bi-directional switch which can replace mechanical relays in many applications.

- Peak off-state voltage: 60V (min.)
- On-state current: 300mA (max.) (A connection)
- On-state resistance: 2Ω (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} = 300mA			
	Min.	Max.		
(IFT2)	—	2	T2	
Standard	—	5	T2, blank	

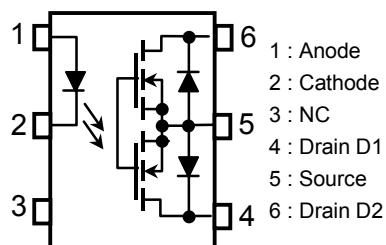
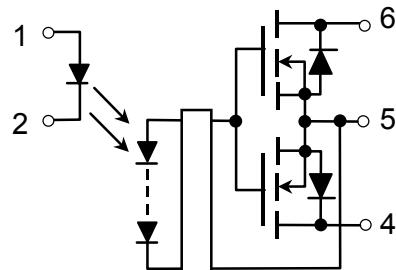
(Note 1): Application type name for certification test, please use standard product type name, i. e.

TLP598A (IFT2): TLP598A



TOSHIBA 11-9A1

Weight: 0.49 g

Pin Configuration (top view)**Schematic**

Maximum Ratings ($T_a = 25^\circ\text{C}$)

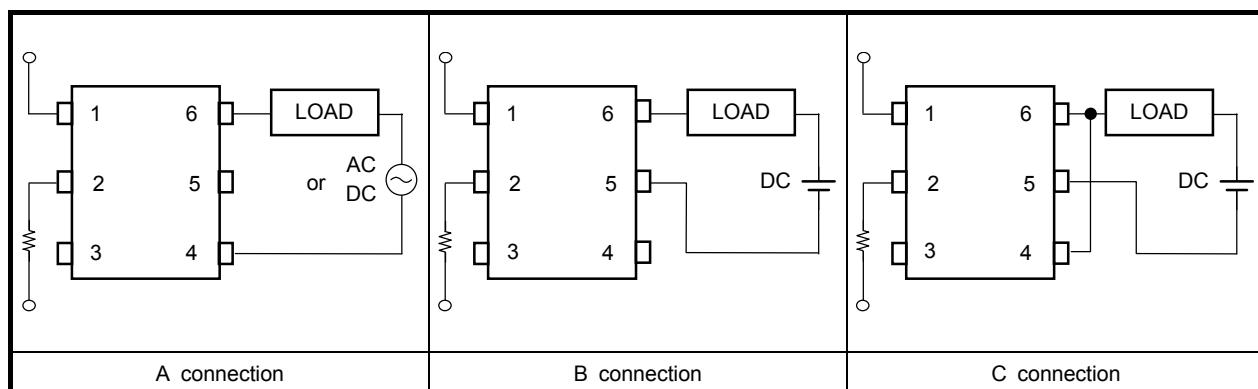
Characteristic		Symbol	Rating	Unit
LED	Forward current	I_F	30	mA
	Forward current derating ($T_a \geq 25^\circ\text{C}$)	$\Delta I_F/\text{ }^\circ\text{C}$	-0.3	mA/ $^\circ\text{C}$
	Peak forward current (100 μs pulse, 100 pps)	I_{FP}	1	A
	Reverse voltage	V_R	5	V
	Junction temperature	T_j	125	$^\circ\text{C}$
Detector	Off-state output terminal voltage	V_{OFF}	60	V
	On-state RMS current	I_{ON}	300	mA
			450	
			600	
	On-state current derating ($T_a \geq 25^\circ\text{C}$)	$\Delta I_{ON}/\text{ }^\circ\text{C}$	-3	mA/ $^\circ\text{C}$
			-4.5	
			-6	
	Junction temperature	T_j	125	$^\circ\text{C}$
	Storage temperature range	T_{stg}	-55~125	$^\circ\text{C}$
	Operating temperature range	T_{opr}	-40~85	$^\circ\text{C}$
Lead soldering temperature (10 s)		T_{sol}	260	$^\circ\text{C}$
Isolation voltage (AC, 1 min., R.H. \leq 60%) (Note 2)		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}	—	—	48	V
Forward current	I_F	10	15	20	mA
On-state current	I_{ON}	—	—	300	mA
Operating temperature	T_{opr}	-20	—	80	$^\circ\text{C}$

Circuit Connections



Individual Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
LED	Forward voltage	V _F	I _F = 10 mA	1.2	1.4	1.7	V
	Reverse current	I _R	V _R = 3 V	—	—	10	μA
	Capacitance	C _T	V = 0, f = 1 MHz	—	30	—	pF
Detector	Off-state current	I _{OFF}	V _{OFF} = 60 V	—	—	1	μA
	Capacitance	C _{OFF}	V = 0, f = 1 MHz	—	—	—	pF

Coupled Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Condition	Min.	Typ.	Max.	Unit
Trigger LED current	I _{FT}	I _{ON} = 300 mA	—	1	5	mA	
On-state resistance	A connection	R _{ON}	I _{ON} = 300 mA, I _F = 10 mA	—	1.4	2	Ω
	B connection		I _{ON} = 450 mA, I _F = 10 mA	—	0.7	1	
	C connection		I _{ON} = 600 mA, I _F = 10 mA	—	0.35	0.5	

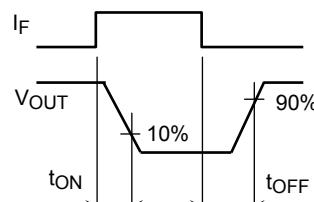
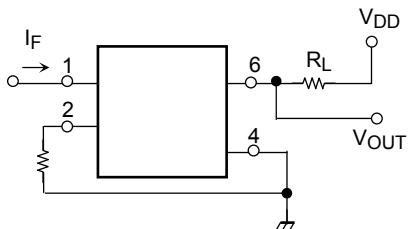
Isolation Characteristics (Ta = 25°C)

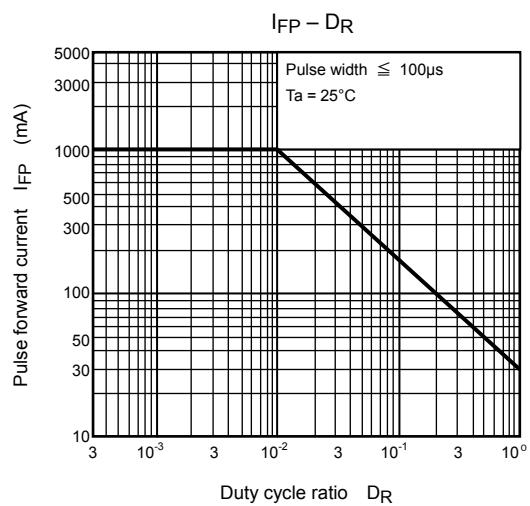
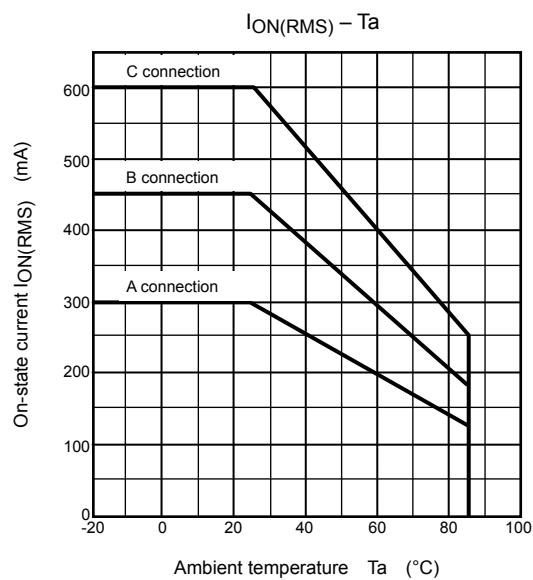
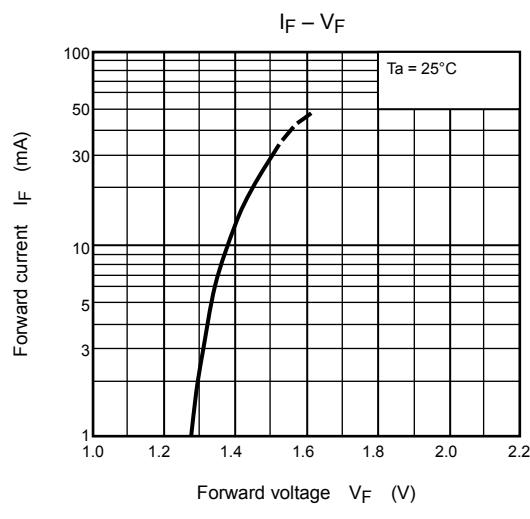
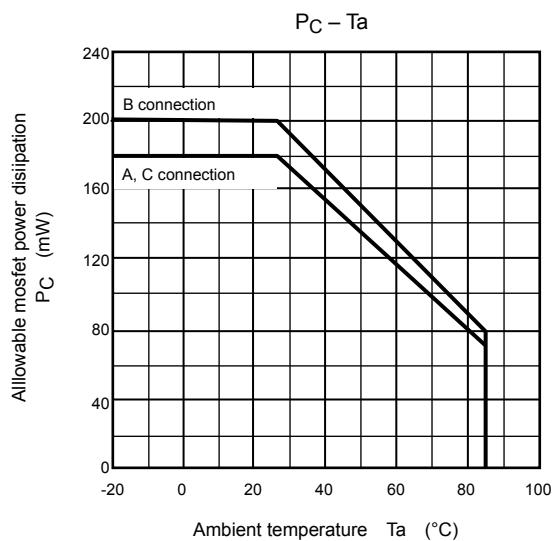
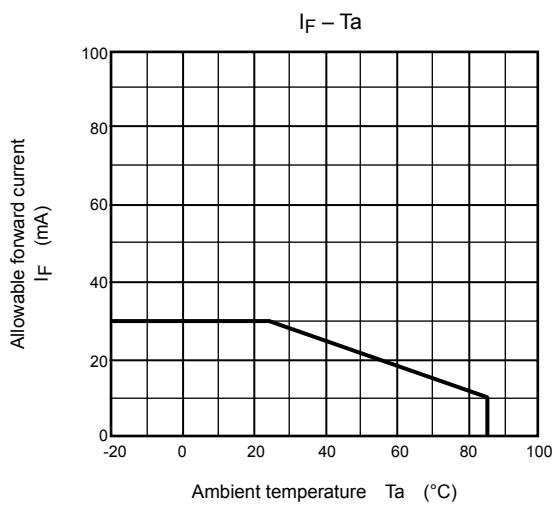
Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Capacitance input to output	C _S	V _S = 0, f = 1 MHz	—	0.8	—	pF
Isolation resistance	R _S	V _S = 500 V, R.H.≤ 60%	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation voltage	BVs	AC, 1 minute	2500	—	—	V _{rms}
		AC, 1 second (in oil)	—	5000	—	
		DC, 1 minute (in oil)	—	5000	—	V _{DC}

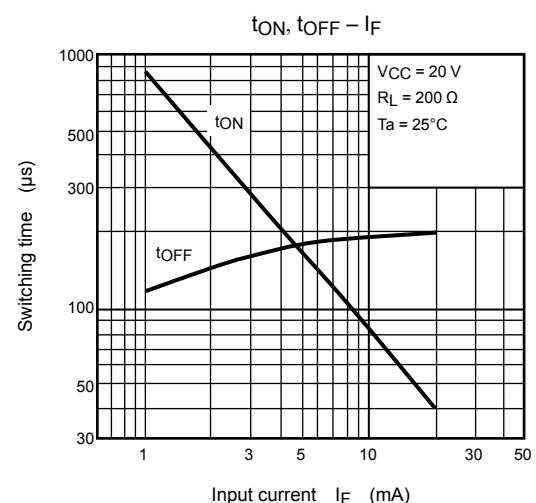
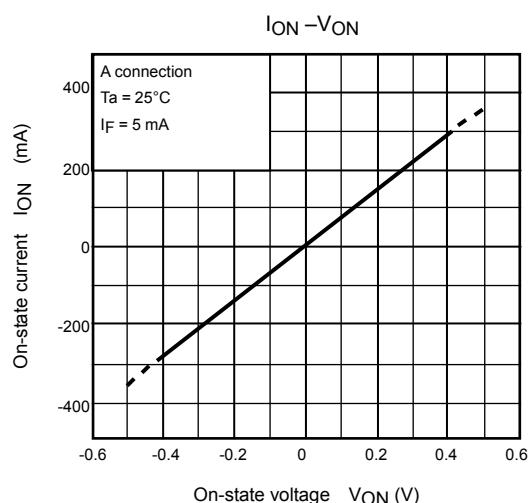
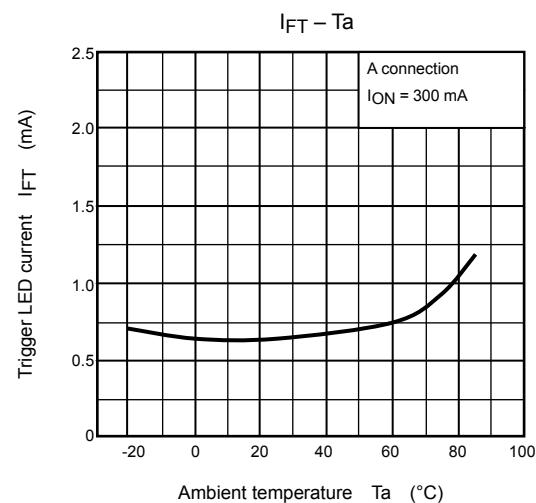
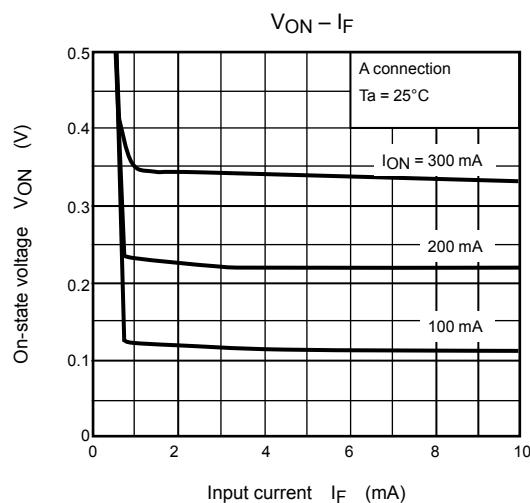
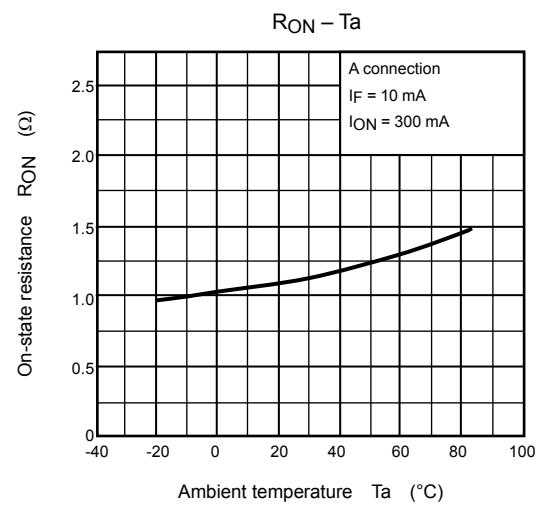
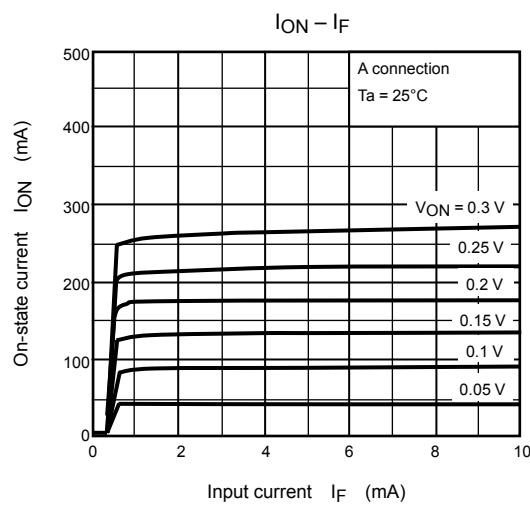
Switching Characteristics (Ta = 25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Turn-on time	t _{ON}	V _{DD} = 20 V, R _L = 200Ω I _F = 10 mA	—	0.2	0.5	ms
Turn-off time	t _{OFF}		—	0.2	0.5	

(Note 3): Switching time test circuit







RESTRICTIONS ON PRODUCT USE

20070701-EN GENERAL

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