

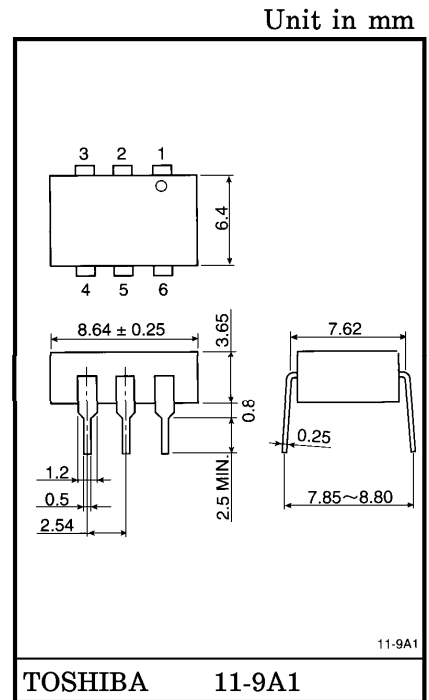
# TLP598A

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 : 60 V (MIN.)
- On-State Current : 300 mA (MAX.) (A Connection)
- On-State Resistance : 2 Ω (MAX.) (A Connection)
- Isolation Voltage : 2500 Vrms (MIN.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)

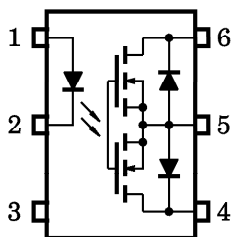


Weight : 0.49 g

CLASSIFICATION (Note 1)	Trigger LED Current (mA)		MARKING OF CLASSIFICATION
	@I <sub>ON</sub> = 300 mA		
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

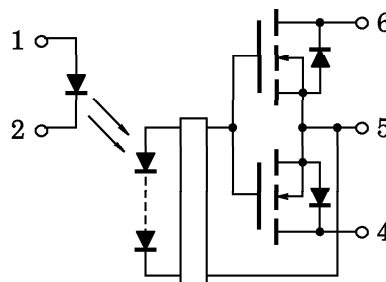
(Note 1) : Application type name for certification test,  
 please use standard product type name, i.e.  
 TLP598A (IFT2) : TLP598A

**PIN CONFIGURATION (TOP VIEW)**



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

**SCHEMATIC**



MAXIMUM RATINGS (Ta = 25°C)

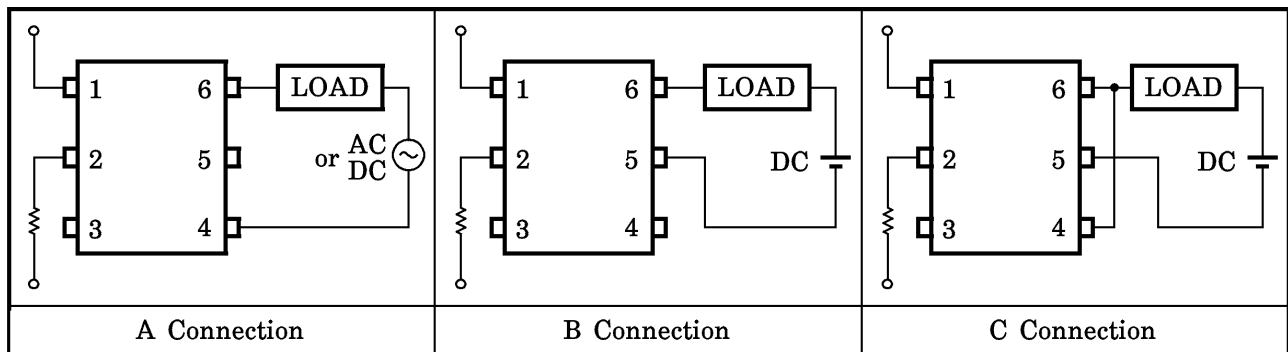
CHARACTERISTIC		SYMBOL	RATING	UNIT
LED	Forward Current	$I_F$	30	mA
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ C$	-0.3	mA / °C
	Peak Forward Current (100 μs pulse, 100 pps)	$I_{FP}$	1	A
	Reverse Voltage	$V_R$	5	V
	Junction Temperature	$T_j$	125	°C
DETECTOR	Off-State Output Terminal Voltage	$V_{OFF}$	60	V
	On-State RMS Current	A Connection	300	mA
		B Connection	450	
		C Connection	600	
	On-State Current Derating (Ta ≥ 25°C)	A Connection	-3	mA / °C
		B Connection	-4.5	
		C Connection	-6	
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 (10 s)	$T_{sol}$	260	°C	
Isolation Voltage (AC, 1 min., R.H. ≤ 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	°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	$I_{OFF}$	$V_{OFF} = 60 \text{ V}$	—	—	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		$I_{FT}$	$I_{ON} = 300 \text{ mA}$	—	1	5	mA
On-State Resistance	A Connection	$R_{ON}$	$I_{ON} = 300 \text{ mA}, I_F = 10 \text{ mA}$	—	1.4	2	$\Omega$
	B Connection		$I_{ON} = 450 \text{ mA}, I_F = 10 \text{ mA}$	—	0.7	1	
	C Connection		$I_{ON} = 600 \text{ mA}, I_F = 10 \text{ mA}$	—	0.35	0.5	

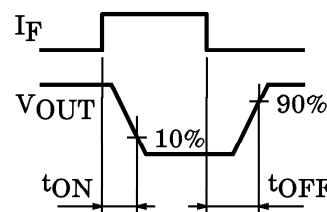
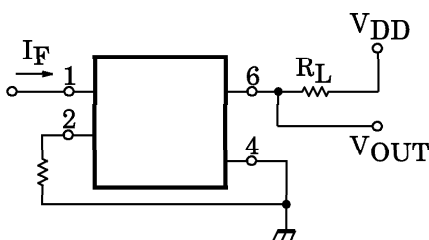
ISOLATION CHARACTERISTICS (Ta = 25°C)

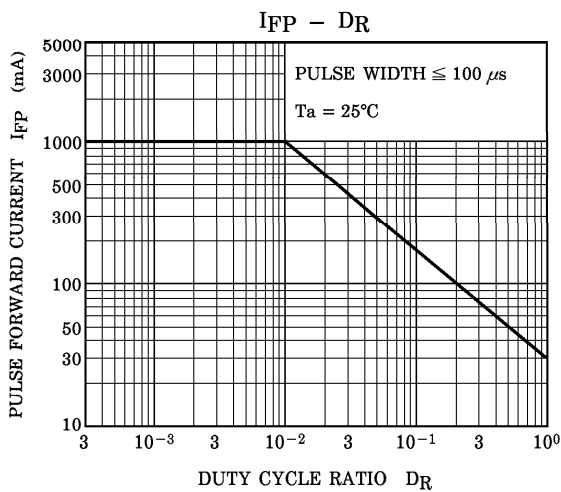
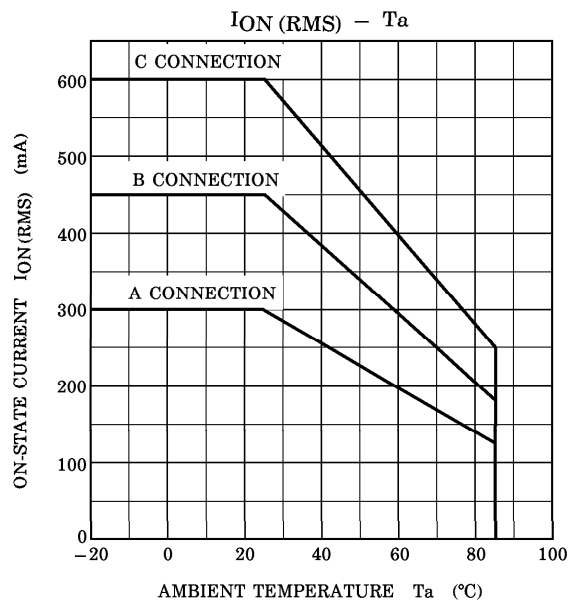
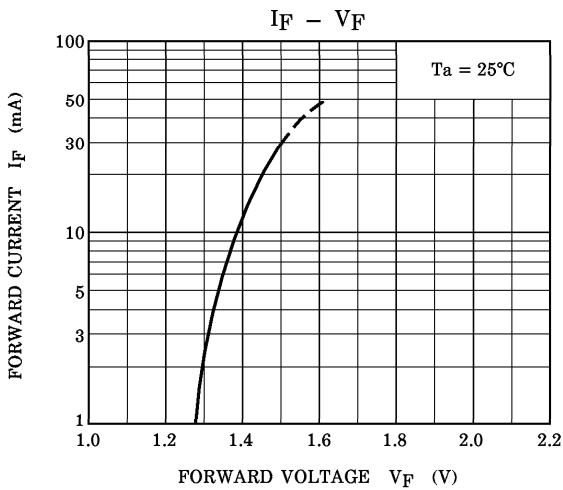
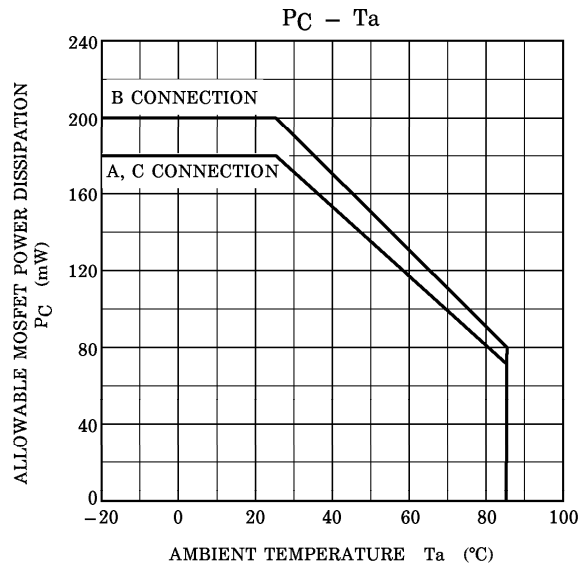
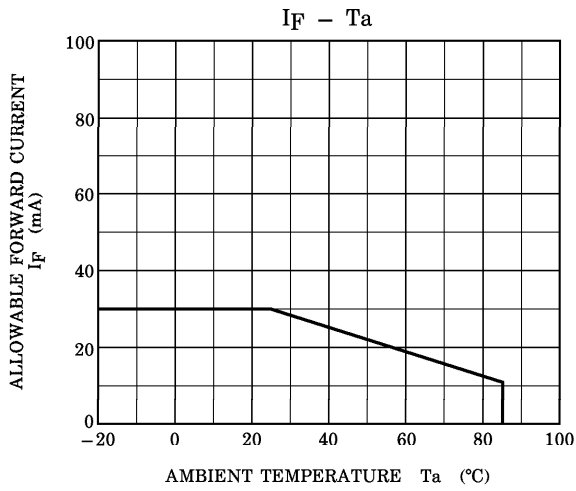
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	$C_S$	$V_S = 0, f = 1 \text{ MHz}$	—	0.8	—	pF
Isolation Resistance	$R_S$	$V_S = 500 \text{ V}, R.H. \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	—	$\Omega$
Isolation Voltage	$BV_S$	AC, 1 minute	2500	—	—	$V_{rms}$
		AC, 1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

SWITCHING CHARACTERISTICS (Ta = 25°C)

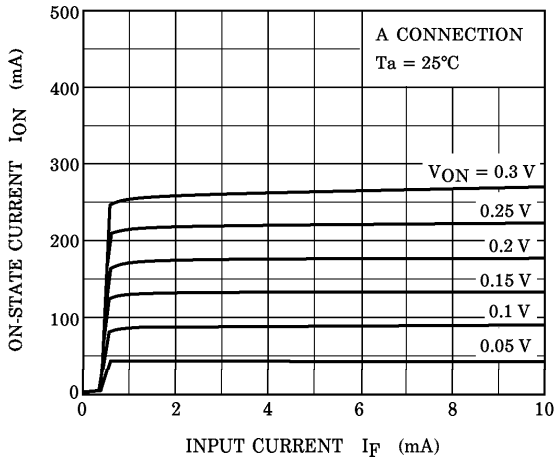
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	$t_{ON}$	$V_{DD} = 20 \text{ V}, R_L = 200 \Omega$ $I_F = 10 \text{ mA}$ (Note 3)	—	0.2	0.5	ms
Turn-off Time	$t_{OFF}$		—	0.2	0.5	

(Note 3) : SWITCHING TIME TEST CIRCUIT

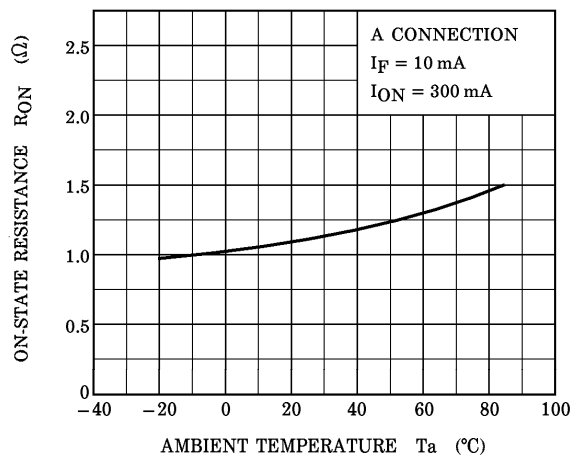




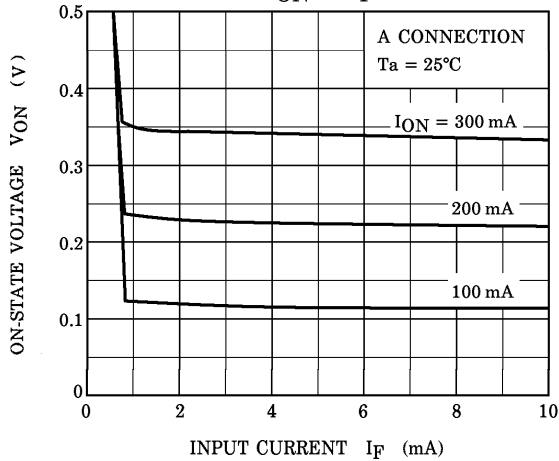
$I_{ON} - I_F$



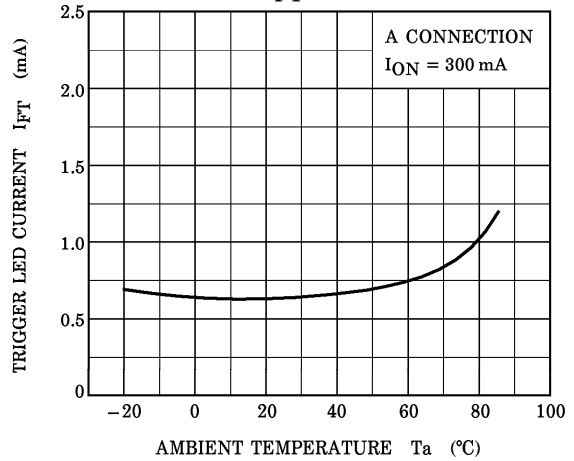
$R_{ON} - T_a$



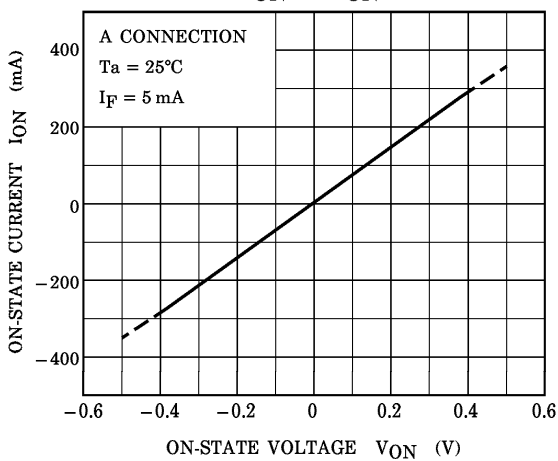
$V_{ON} - I_F$



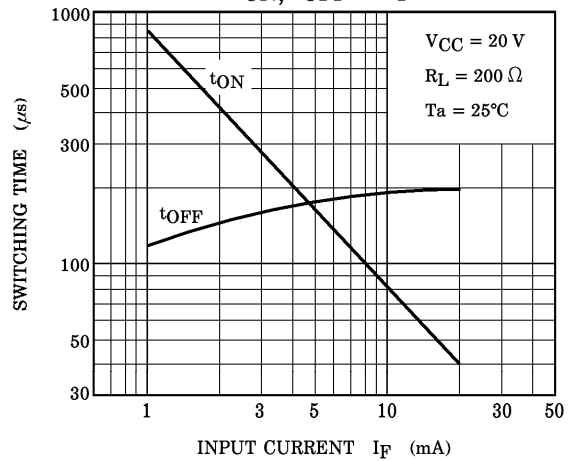
$I_{FT} - T_a$



$I_{ON} - V_{ON}$



$t_{ON}, t_{OFF} - I_F$



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