

TOSHIBA PHOTOCOUPLER PHOTO RELAY

TLP598G

TELECOMMUNICATION

DATA ACQUISITION

MEASUREMENT INSTRUMENTATION

The TOSHIBA TLP598G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package (DIP6).

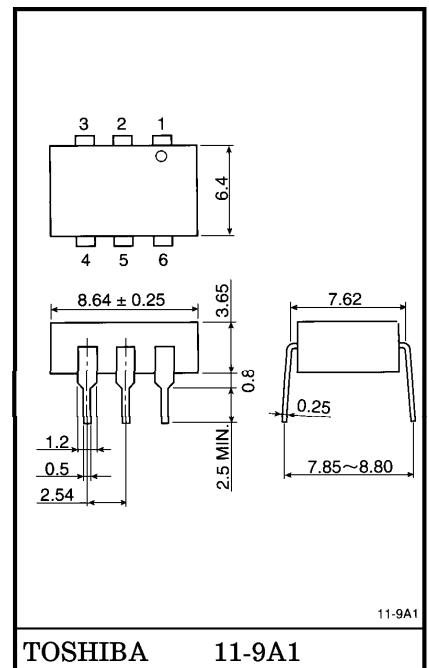
The TLP598G is a bi-directional switch which can replace mechanical relays in many applications.

- Peak Off-State Voltage : 400 V (MIN.)
- On-State Current : 150 mA (MAX.) (A Connection)
- On-State Resistance : 12 Ω (MAX.) (A Connection)
- Isolation Voltage : 2500 Vrms (MIN.) (A Connection)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)

CLASSIFICATION (Note 1)	Trigger LED Current (mA)		MARKING OF CLASSIFICATION
	@ION = 150 mA		
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

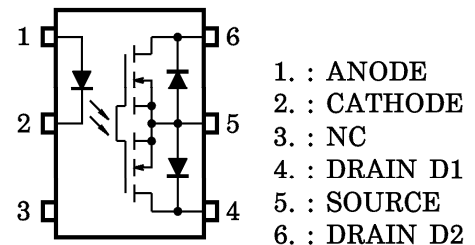
(Note 1) : Application type name for certification test, please use standard product type name, i.e. TLP598G (IFT2) : TLP598G

Unit in mm

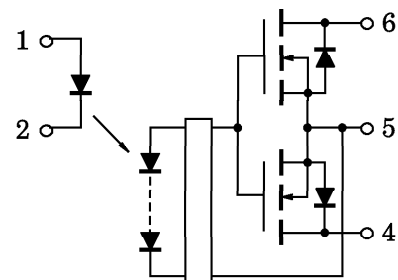


Weight : 0.49 g

PIN CONFIGURATION (TOP VIEW)



SCHEMATIC



MAXIMUM RATINGS (Ta = 25°C)

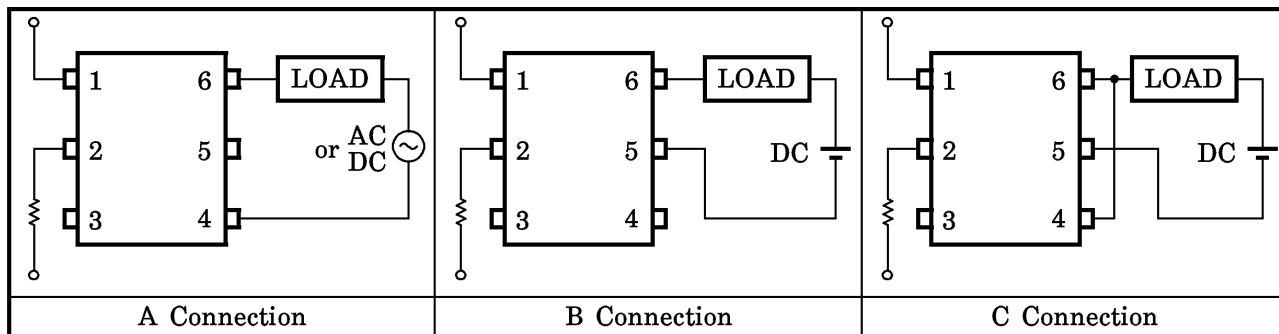
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	I_F	30	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ C$	-0.3	mA / °C	
	Peak Forward Current (100 μs pulse, 100 pps)	I_{FP}	1	A	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
DETECTOR	Off-State Output Terminal Voltage	V_{OFF}	400	V	
	On-State RMS Current	A Connection	150	mA	
		B Connection	200		
		C Connection	300		
	On-State Current Derating (Ta ≥ 25°C)	A Connection	$\Delta I_{ON} / ^\circ C$	-1.5	mA / °C
		B Connection	-2.0		
		C Connection	-3.0		
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}	—	—	320	V
Forward Current	I_F	10	15	20	mA
On-State Current	I_{ON}	—	—	150	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 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} = 400 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} = 150 mA	—	1	5	mA
On-State Resistance	A Connection	R _{ON}	I _{ON} = 150 mA, I _F = 10 mA	—	8	12	Ω
	B Connection		I _{ON} = 200 mA, I _F = 10 mA	—	4	6	
	C Connection		I _{ON} = 300 mA, I _F = 10 mA	—	2	3	

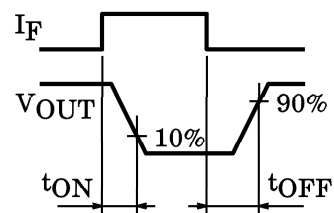
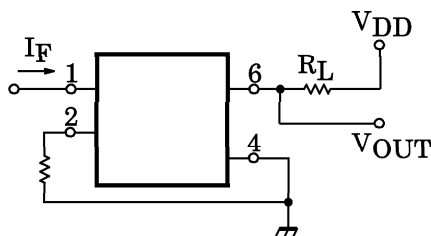
ISOLATION CHARACTERISTICS (Ta = 25°C)

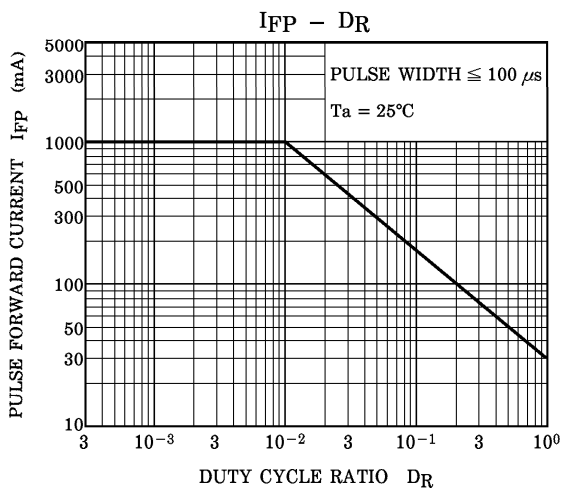
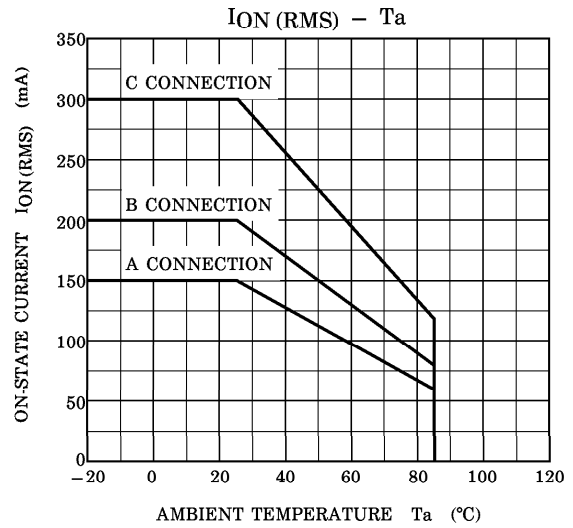
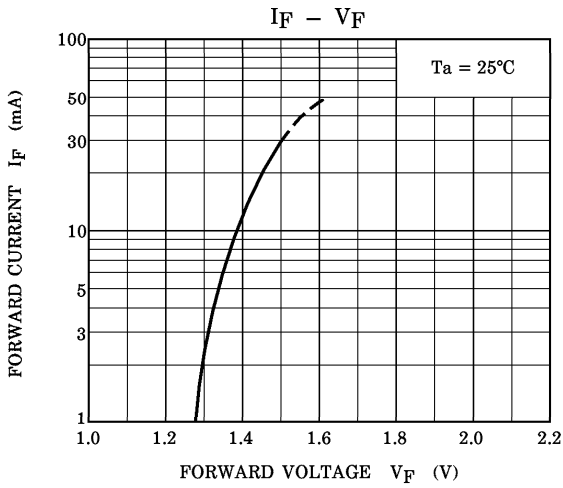
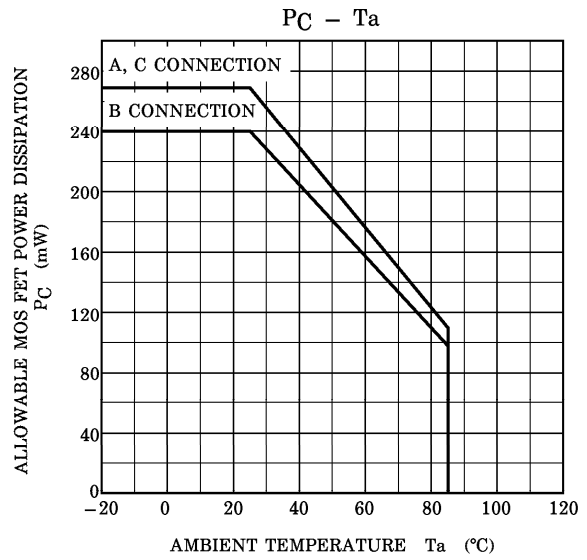
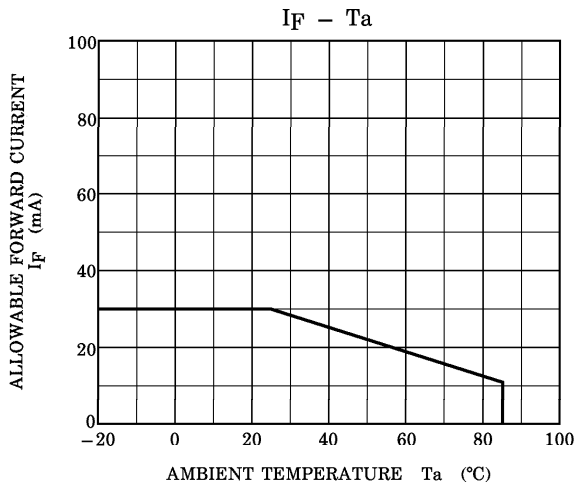
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	C _S	V _S = 0, f = 1 MHz	—	0.8	—	pF
Isolation Resistance	R _S	V _S = 500 V, R.H. ≤ 60%	5 × 10 ¹⁰	10 ¹⁴	—	Ω
Isolation Voltage	BV _S	AC, 1 minute	2500	—	—	V _{rms}
		AC, 1 second (in Oil)	—	5000	—	
		DC, 1 minute (in Oil)	—	5000	—	V _{DC}

SWITCHING CHARACTERISTICS (Ta = 25°C)

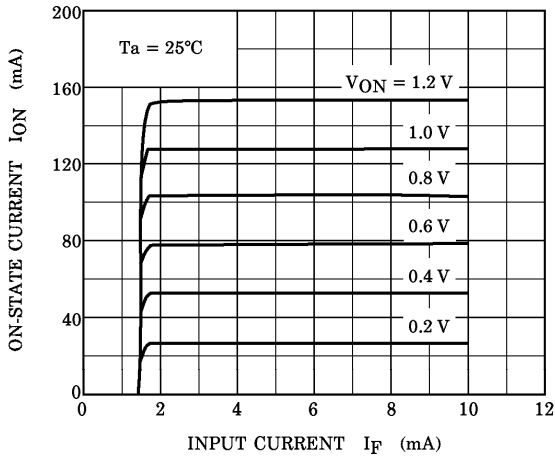
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	t _{ON}	V _{DD} = 20 V, R _L = 200 Ω I _F = 10 mA (Note 3)	—	0.3	1.0	ms
Turn-off Time	t _{OFF}		—	0.2	1.0	

(Note 3) : SWITCHING TIME TEST CIRCUIT

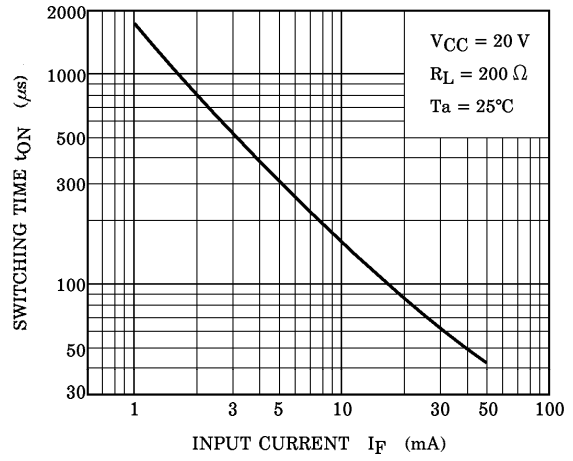




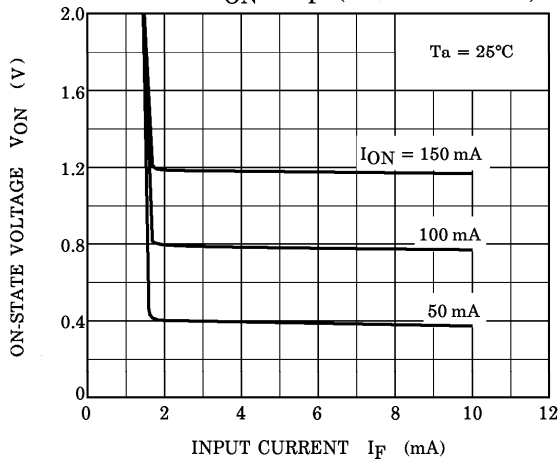
$I_{ON} - I_F$ (A CONNECTION)



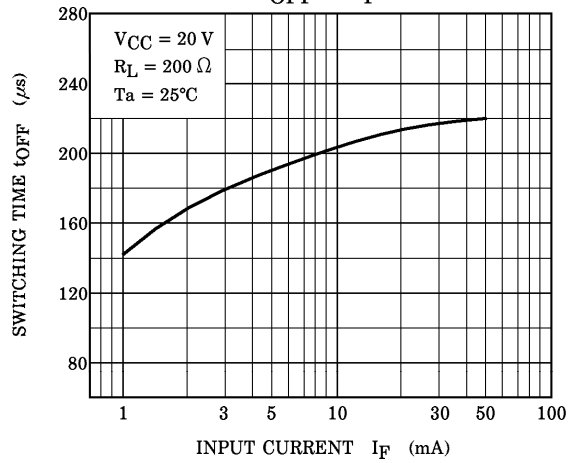
$t_{ON} - I_F$



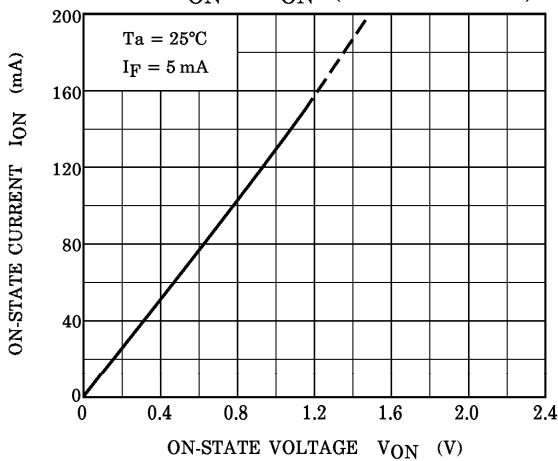
$V_{ON} - I_F$ (A CONNECTION)

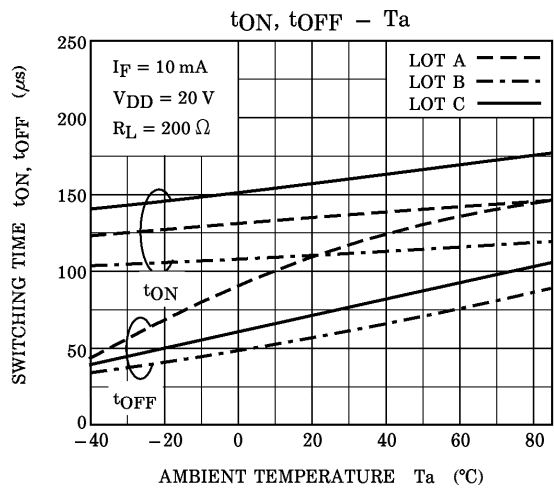
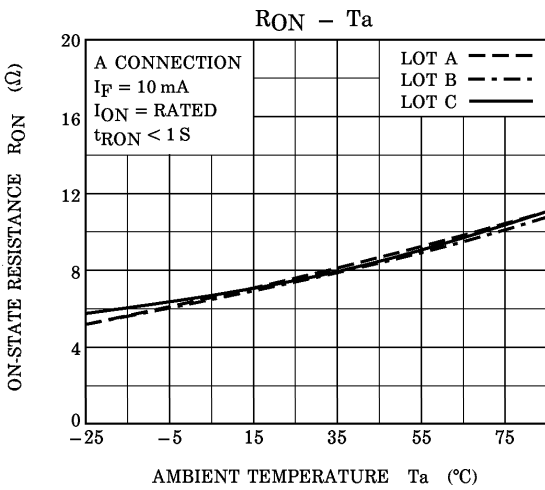
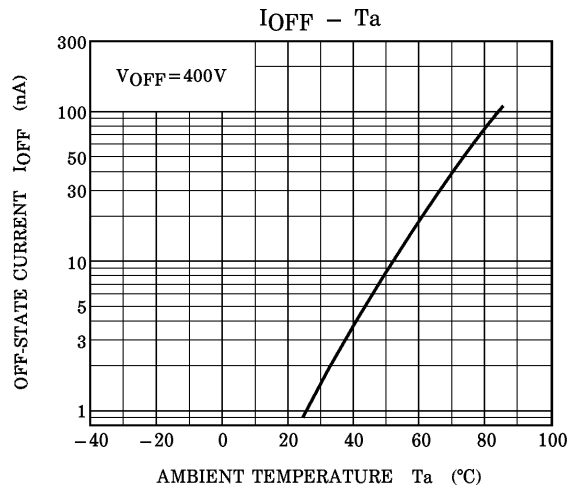
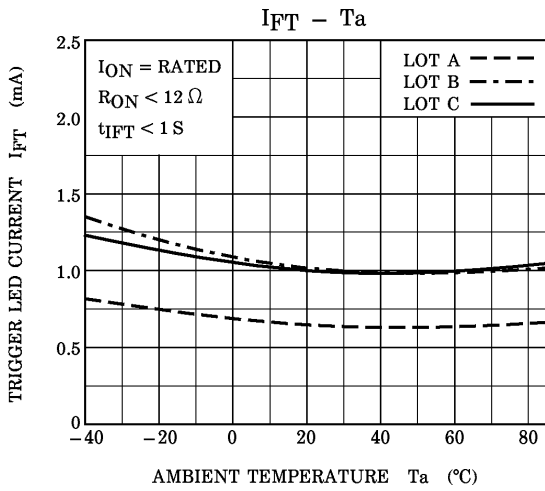


$t_{OFF} - I_F$



$I_{ON} - V_{ON}$ (A CONNECTION)





RESTRICTIONS ON PRODUCT USE

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