

(TLP595G)

TELECOMMUNICATION  
 DATA ACQUISITION  
 MEASUREMENT INSTRUMENTATION

The TOSHIBA TLP595G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOS FET in a six lead plastic DIP package.

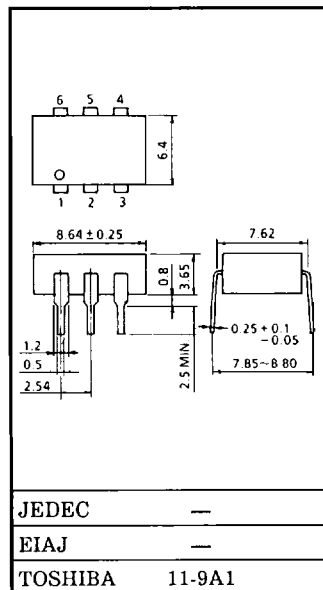
The TLP595G is a bi-directional switch which can replace mechanical relays in many applications.

- Peak Off-State Voltage : 400V (MIN.)
- On-State Current : 150mA (MAX.) (A Connection)
- On-State Resistance : 12Ω (MAX.) (A Connection)
- Isolation Voltage : 2500Vrms (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
	@I <sub>ON</sub> = 150mA		
	Min.	Max.	
(IFT2)	—	2	T2
Standard	—	5	T2, blank

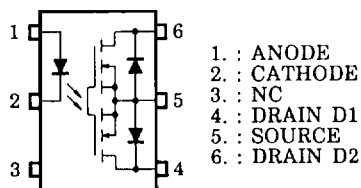
Note 1 : Application type name for certification test,  
 please use standard product type name, i.e.  
 TLP595G (IFT2) : TLP595G

Unit in mm

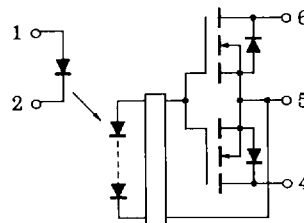


Weight : 0.49g

PIN CONFIGURATION (TOP VIEW)



SCHEMATIC



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MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ )

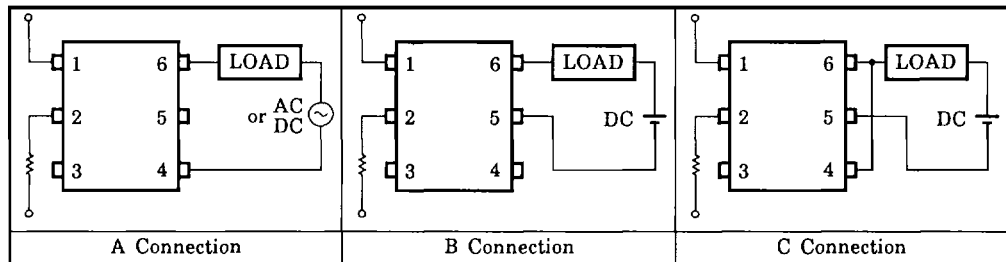
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	$I_F$	30	mA	
	Forward Current Derating ( $T_a \geq 25^\circ\text{C}$ )	$\Delta I_F / ^\circ\text{C}$	-0.3	mA / $^\circ\text{C}$	
	Peak Forward Current (100 $\mu\text{s}$ pulse, 100pps)	$I_{FP}$	1	A	
	Reverse Voltage	$V_R$	5	V	
	Junction Temperature	$T_j$	125	$^\circ\text{C}$	
DETECTOR	Off-State Output Terminal Voltage	$V_{OFF}$	400	V	
	On-State RMS Current	A Connection	150	mA	
		B Connection	200		
		C Connection	300		
	On-State Current Derating ( $T_a \geq 25^\circ\text{C}$ )	A Connection	$\Delta I_{ON} / ^\circ\text{C}$	-1.5	mA / $^\circ\text{C}$
		B Connection	-2.0		
		C Connection	-3.0		
Junction temperature	$T_j$	125	$^\circ\text{C}$		
Storage Temperature Range	$T_{stg}$	-55~100	$^\circ\text{C}$		
Operating Temperature Range	$T_{opr}$	-20~85	$^\circ\text{C}$		
Lead Soldering Temperature (10sec.)	$T_{sol}$	260	$^\circ\text{C}$		
Isolation Voltage (AC, 1min., R.H. $\leq 60\%$ )	(Note 2) $BV_S$	2500	$V_{rms}$		

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	$^\circ\text{C}$

## CIRCUIT CONNECTIONS



(TLP595G)

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	$C_T$	$V = 0, f = 1\text{MHz}$	—	15	—	pF
DETECTOR	Off-State Current	$I_{OFF}$	$V_{OFF} = 400\text{V}$	—	—	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		$I_{FT}$	$I_{ON} = 150\text{mA}$	—	1	5	mA
On-State Resistance	A Connection	$R_{ON}$	$I_{ON} = 150\text{mA}, I_F = 10\text{mA}$	—	8	12	$\Omega$
	B Connection		$I_{ON} = 200\text{mA}, I_F = 10\text{mA}$	—	4	6	
	C Connection		$I_{ON} = 300\text{mA}, I_F = 10\text{mA}$	—	2	3	

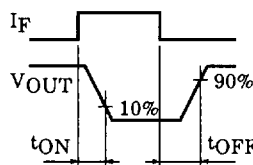
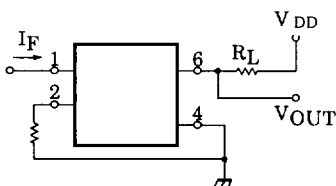
ISOLATION CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Capacitance Input to Output	$C_S$	$V_S = 0, f = 1\text{MHz}$	—	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	—	—	$V_{rms}$
		AC, 1 second (in Oil)	—	5000	—	
		DC, 1 minute (in Oil)	—	5000	—	$V_{DC}$

SWITCHING CHARACTERISTICS (Ta = 25°C)

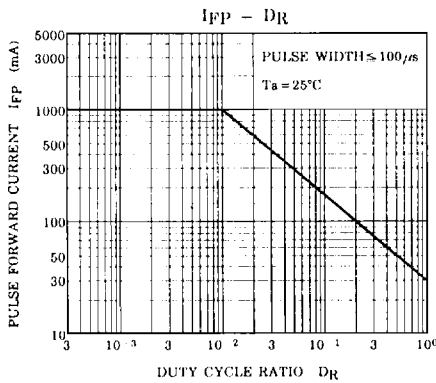
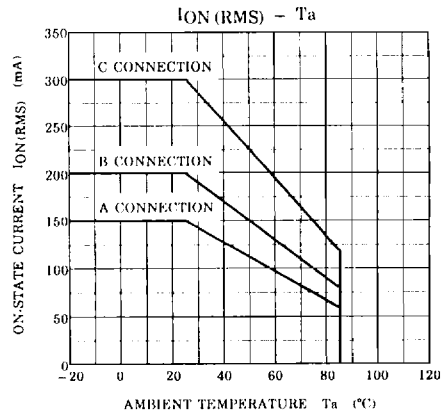
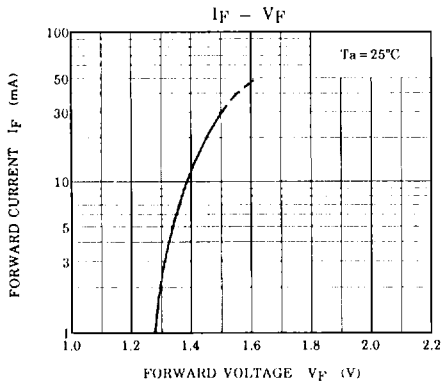
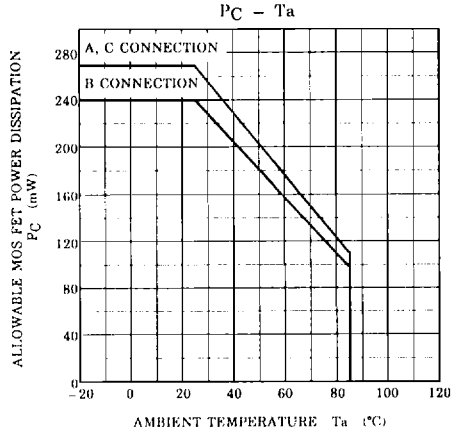
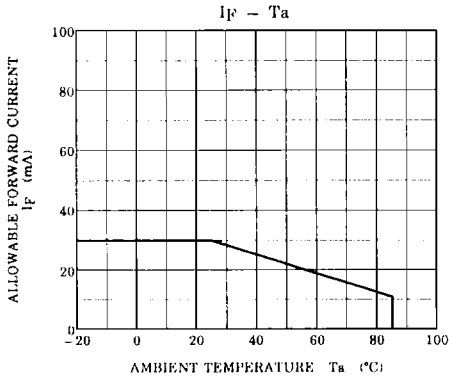
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Turn-on Time	$t_{ON}$	$V_{DD} = 20\text{V}, R_L = 200\Omega$	—	0.3	1.0	ms
Turn-off Time	$t_{OFF}$	$I_F = 10\text{mA}$ (Note 3)	—	0.2	1.0	

Note 3 : SWITCHING TIME TEST CIRCUIT

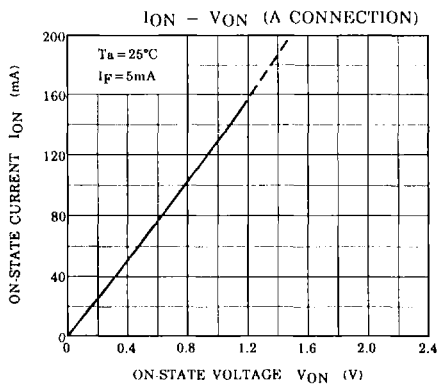
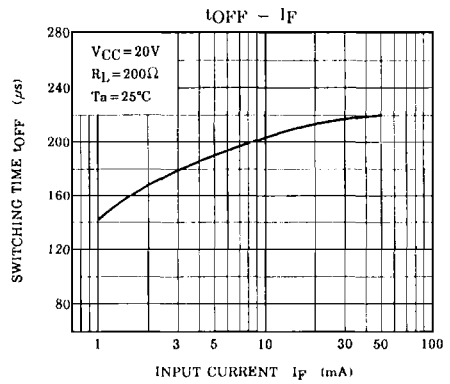
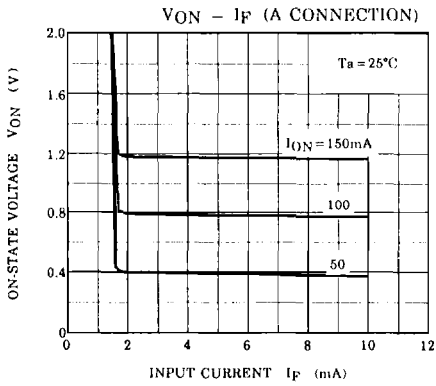
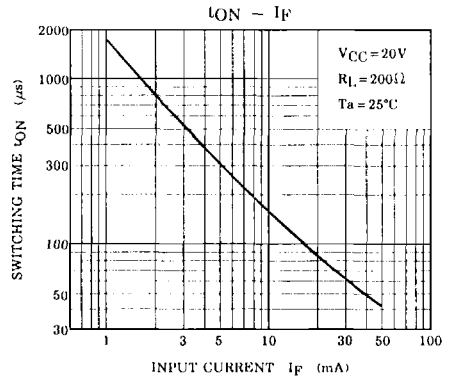
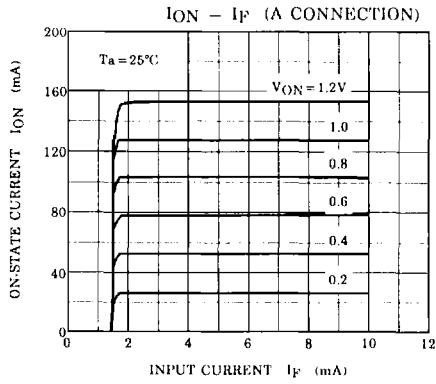


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