

TOSHIBA

PHOTO RELAY

TLP795G

Unit in mm

Telecommunication

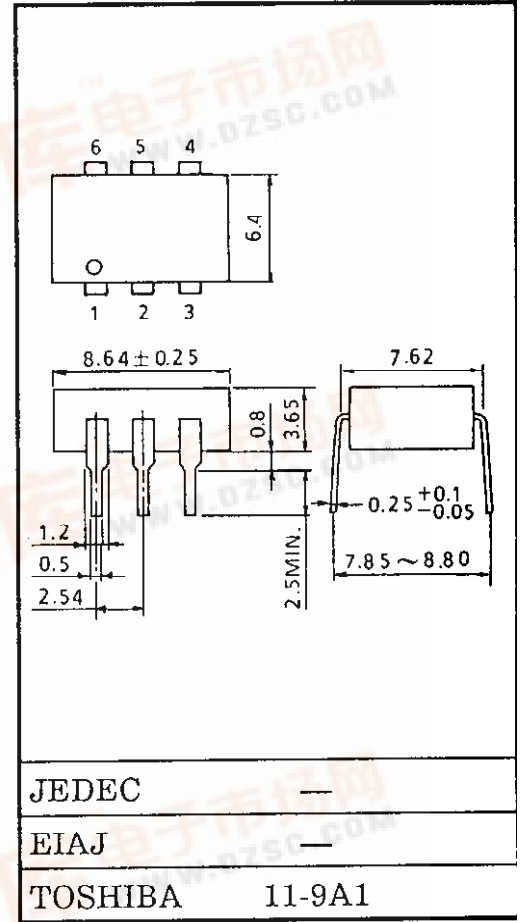
Data Acquisition

Measurement Instrumentation

The Toshiba TLP795G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET in a six lead plastic DIP package. The TLP795G is a bi-directional switch which can replace mechanical relays in many applications.

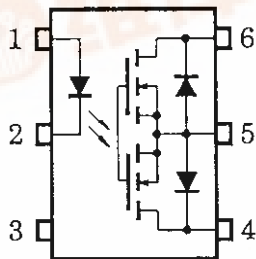
- Peak Off-State Voltage : 400V (Min.)
- Trigger LED Current : 5mA (Max.)
- On-State Current : 150mA (Max.) (A Connection)
- On-State Resistance : 12Ω (Max.) (A Connection)
- Isolation Voltage : 0.4mm (Min.)
- Isolation Voltage : 5000V_{rms} (Min.)

Supplementary Information	Page (s)
Lead Form Options	31-32
Tape and Reel	39-40



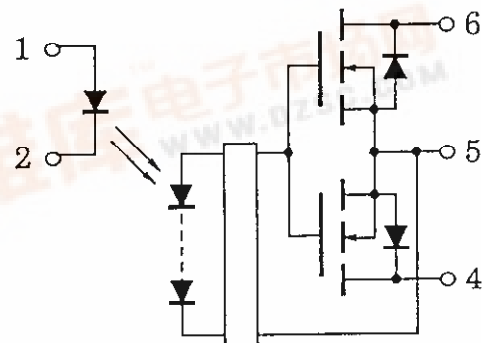
Weight : 0.49g

Pin Configuration (Top View)



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

Schematic



TLP795G

Maximum Ratings (Ta = 25°C)

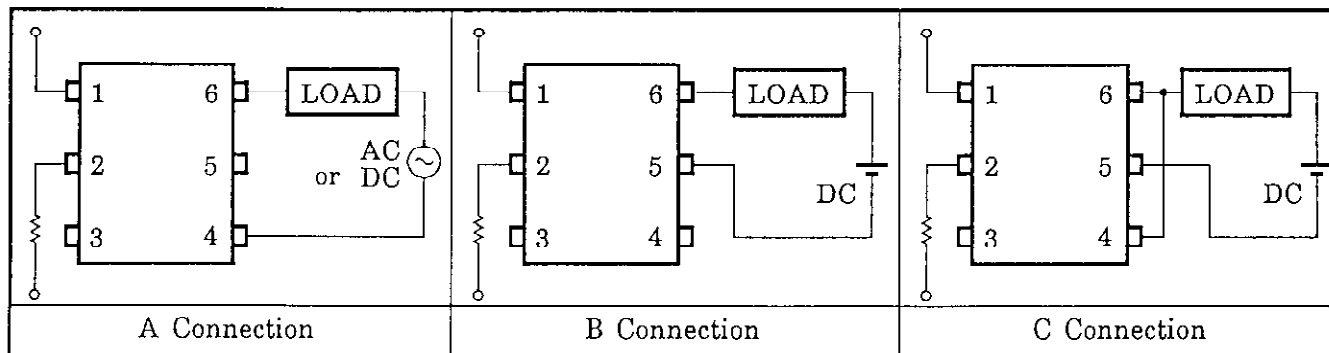
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	I_F	30	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F/^\circ\text{C}$	-0.3	mA/°C	
	Peak Forward Current (100μs pulse, 100pps)	I_{FP}	1	A	
	Reverse Voltage	V_R	5	V	
	Junction Temperature	T_j	125	°C	
DETECTOR	Off-State Output Terminal Voltage	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	$\Delta I_{ON}/^\circ\text{C}$	-1.5	mA/°C
		B Connection	-2.0		
		C Connection	-3.0		
Junction Temperature	t_j	125	°C		
Storage Temperature Range		T_{stg}	-55~100	°C	
Operating Temperature Range		T_{opr}	-20~85	°C	
Lead Soldering Temperature (10s)		T_{sol}	260	°C	
Isolation Voltage (AC, 1 min., R.H. ≤ 60%)		(Note 1) BV_S	5000	V_{rms}	

Note 1: Device considered a two terminal device: pins 1, 2 and 3 shorted together, and pins 4, 5 and 8 shorted together.

Recommended Operating Conditions

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MX.	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.*	MX.	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	μA
	Capacitance	C_T	$V = 0, f = 1\text{MHz}$	–	15	–	pF
DETECTOR	Off-State Current	I_{OFF}	$V_{OFF} = 400\text{V}$	–	–	1	μA
	Capacitance	C_{OFF}	$V = 0, f = 1\text{MHz}$	–	–	–	pF

Coupled Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	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	Ω
	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.	MX.	UNIT
Capacitance Input to Output	C_S	$V_S = 0, f = 1\text{MHz}$	–	0.8	–	pF
Isolation Resistance	R_S	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	5×10^{10}	10^{14}	–	Ω
Isolation Voltage	BV_S	AC, 1 minute	2500	–	–	V_{rms}
		AC, 1 second in oil	–	10000	–	
		DC, 1 minute in oil	–	10000	–	V_{dc}

Switching Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Turn-on Time	t_{on}	$V_{DD} = 20\text{mA}, R_L = 200\Omega$ $I_F = 10\text{mA}$ (Note 2)	–	0.3	1.0	ms
Turn-off Time	t_{off}		–	0.2	1.0	

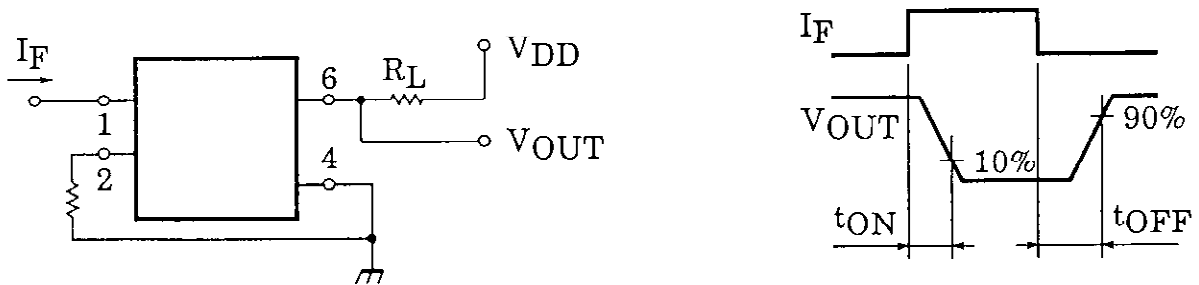
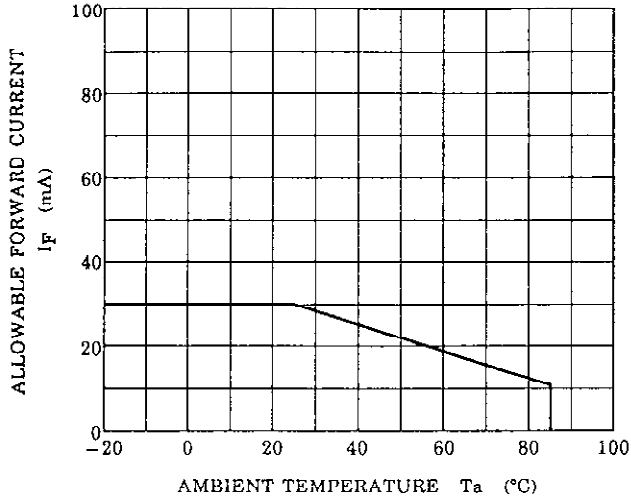
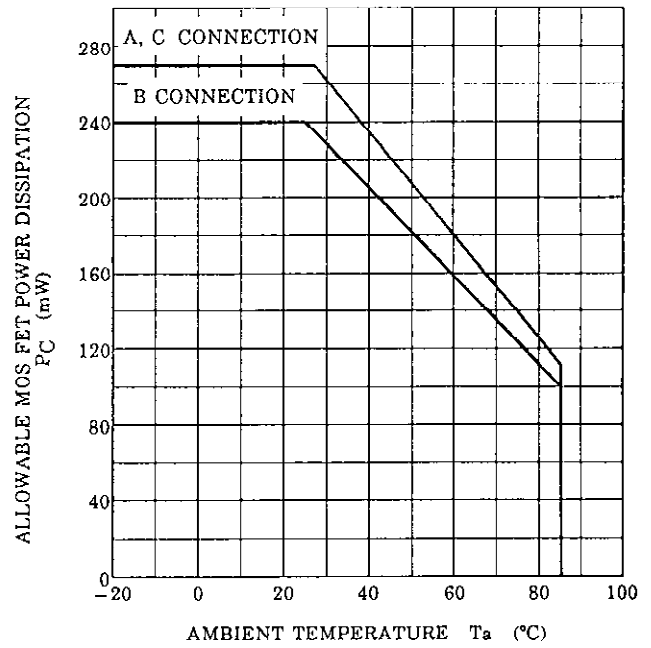


Figure 1. Switching Time Test Circuit

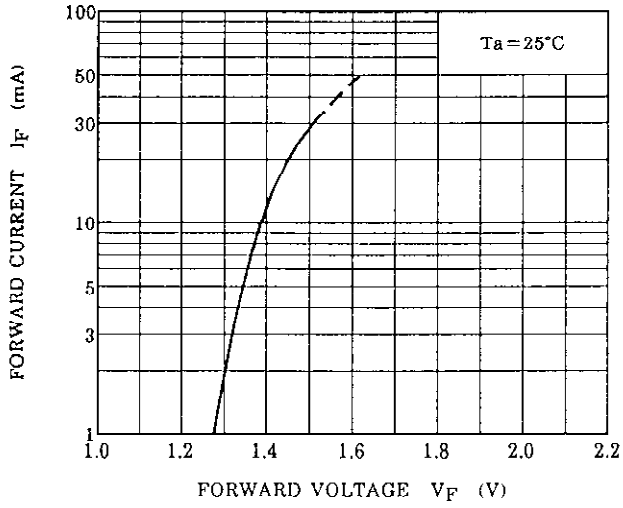
$I_F - T_a$



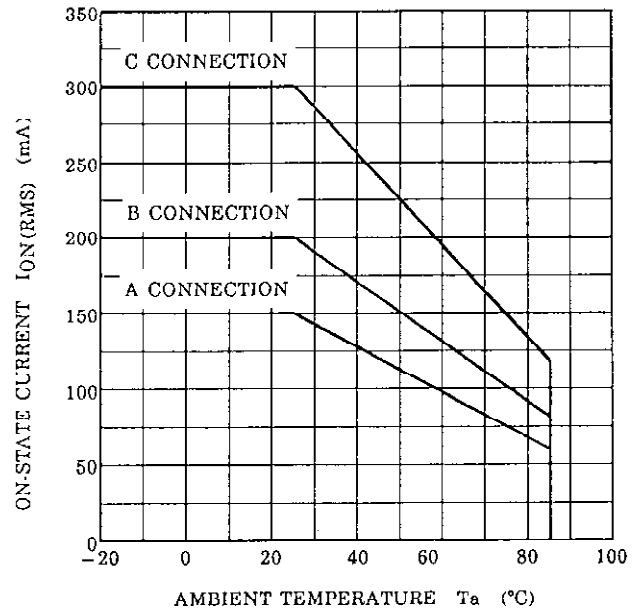
$P_C - T_a$



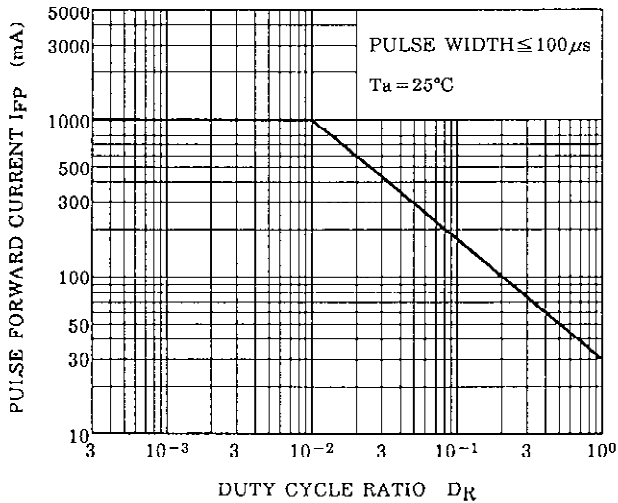
$I_F - V_F$



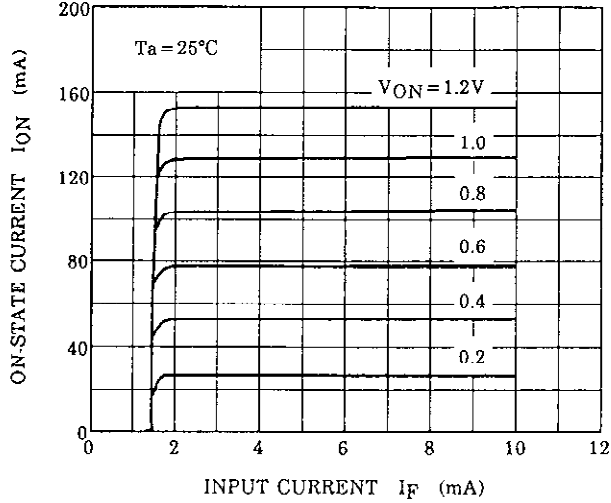
$I_{ON(RMS)} - T_a$



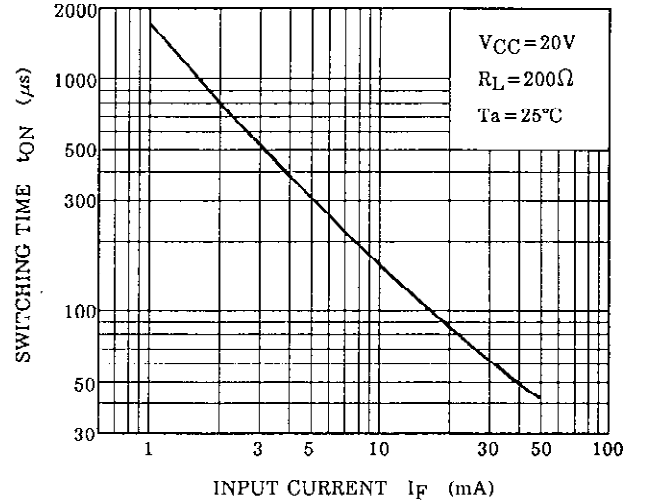
$I_{FP} - D_R$



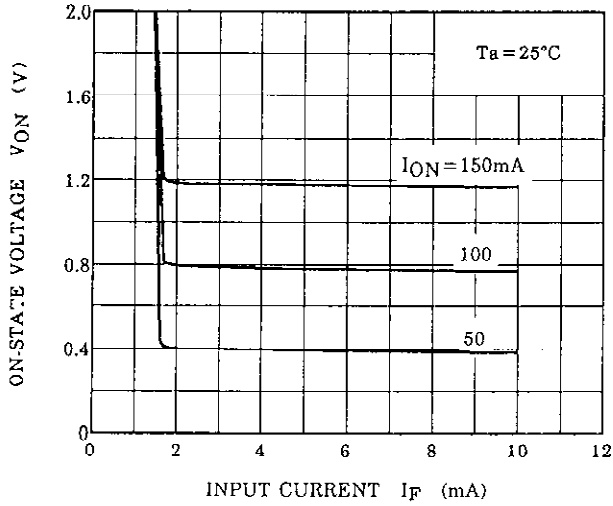
$I_{ON} - I_F$ (A CONNECTION)



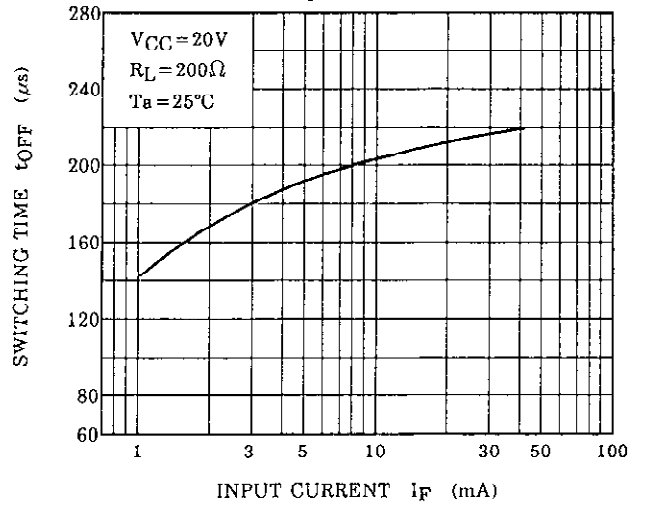
$t_{ON} - I_F$



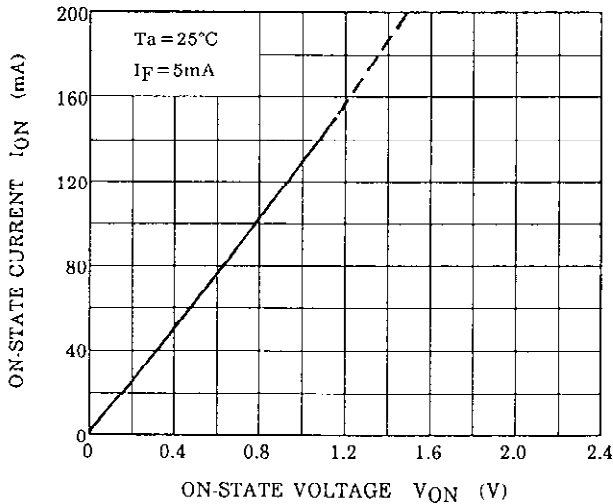
$V_{ON} - I_F$ (A CONNECTION)



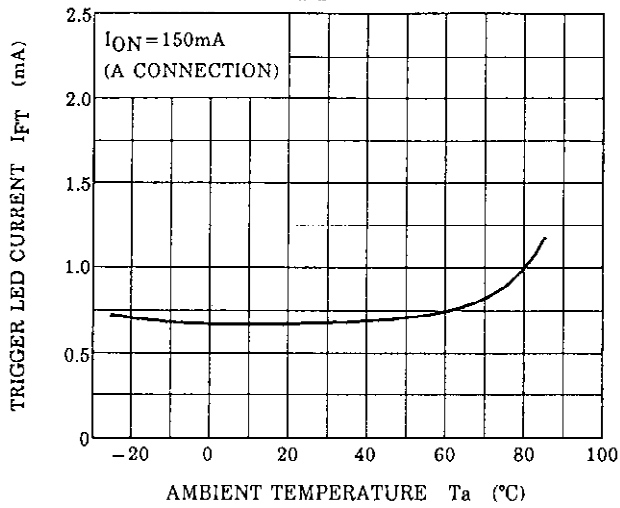
$t_{OFF} - I_F$



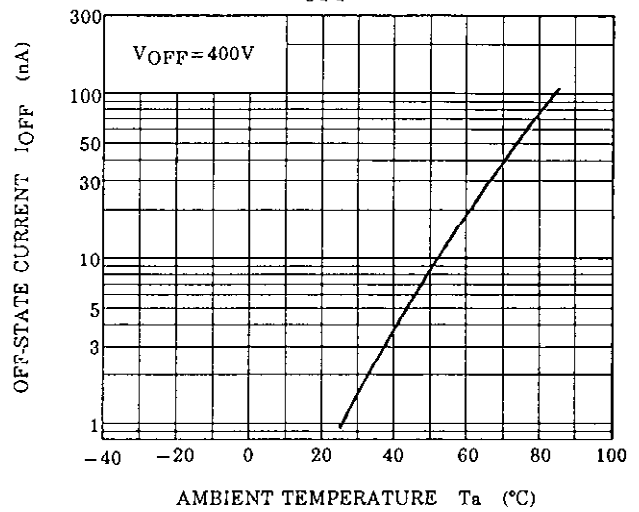
$I_{ON} - V_{ON}$ (A CONNECTION)



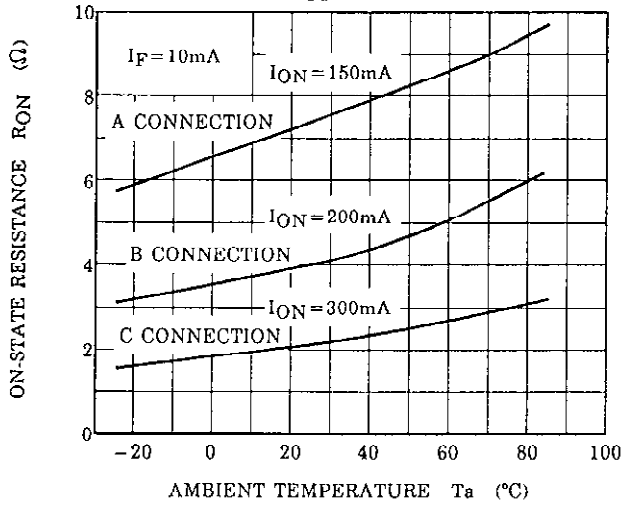
$I_{FT} - T_a$



$I_{OFF} - T_a$



$R_{ON} - T_a$



SWITCHING TIME - T_a

