Unit in mm

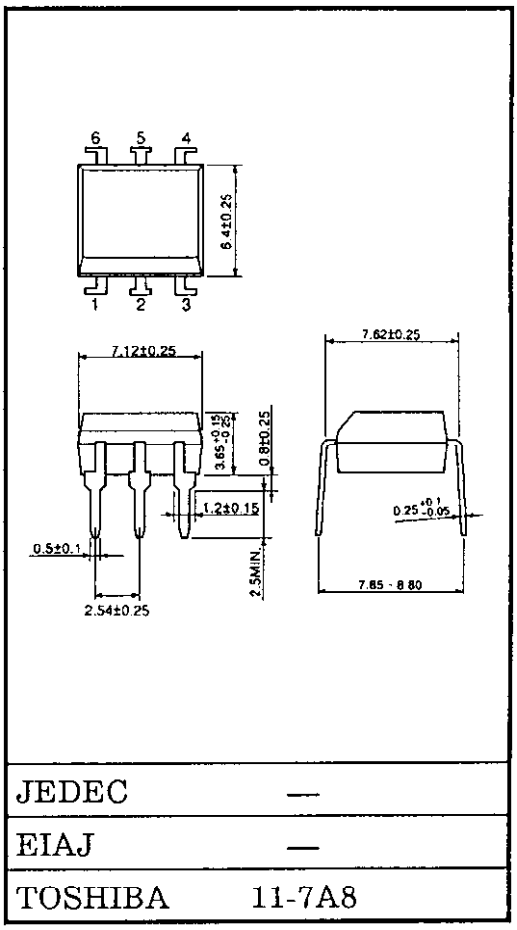
Telecommunication

Data Acquisition

Measurement Instrumentation

The Toshiba TLP596G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET in a six lead plastic DIP package. The TLP596G is a bi-directional switch which can replace mechanical relays in many applications.

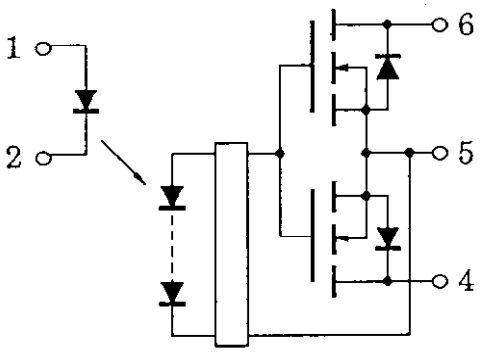
- Peak Off-State Voltage : 400V (Min.)
- On-State Current : 120mA (Max.) (A Connection)
- On-State Resistance : 30Ω (Max.) (A Connection)
- Insulation Thickness : 0.4mm (Max.)
- Isolation Voltage : 2500Vrms (Min.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)



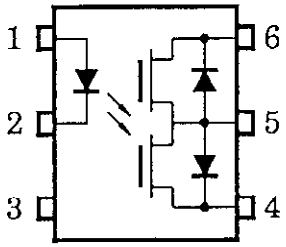
JEDEC	—
EIAJ	—
TOSHIBA	11-7A8

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

Pin Configuration (Top View)



Schematic



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

CLASSIFICATION (Note 1)	TRIGGER LED CURRENT (mA) @I_{ON} = 120mA		MARKING OF CLASSIFICATION
	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., TLP596G (IFT2): TLP596G

Maximum Ratings (Ta = 25°C)

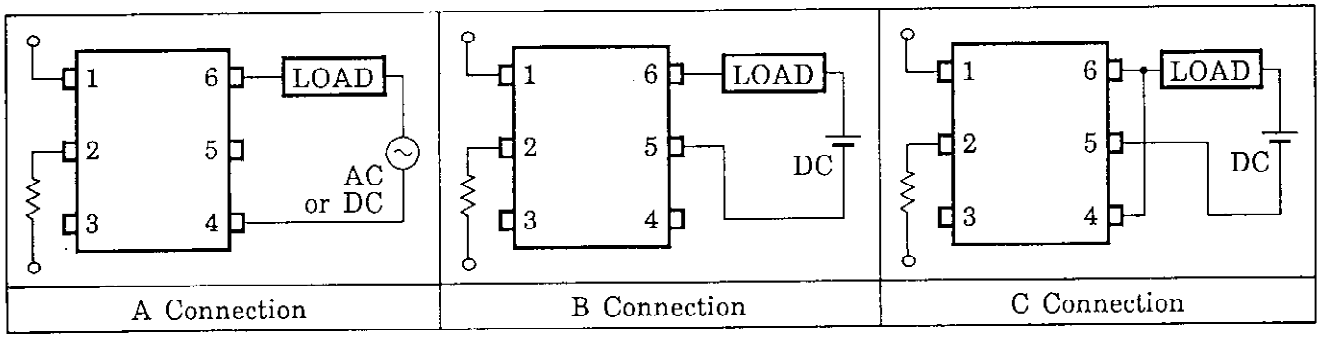
CHARACTERISTIC			SYMBOL	RATING	UNIT
LED	Forward Current		I_F	50	mA
	Forward Current Derating (Ta ≥ 25°C)		ΔI_F/°C	-0.5	mA/°C
	Peak Forward Current (100μs pulse, 100pps)		I_{FP}	1	A
	Reverse Voltage		V_R	5	V
	Junction Temperature		T_j	125	°C
DETECTOR	Off-State Output Terminal Voltage		V_{OFF}	400	V
	On-State RMS Current	A Connection	I_{ON}	120	mA
		B Connection		150	
		C Connection		200	
	On-State Current Derating (Ta ≥ 25°C)	A Connection	ΔI_{ON}/°C	-1.2	mA/°C
		B Connection		-1.5	
		C Connection		-2.0	
	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	2500	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_D	–	–	320	V
Forward Current	I_F	7.5	15	25	mA
On-State Current	I_{ON}	–	–	120	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 = 10mA	1.0	1.15	1.3	V
	Reverse Current	I_R	V_R = 5V	–	–	10	μA
	Capacitance	C_T	V = 0, f = 1MHz	–	30	–	pF
DETECTOR	Off-State Current	I_{OFF}	V_{OFF} = 400V	–	–	1	μA
	Capacitance	C_{OFF}	V = 0, f = 1MHz	–	–	–	pF

Coupled Electrical Characteristics (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Trigger LED Current		I_{FT}	I_{ON} = 120mA	–	1	5	mA
On-State Resistance	A Connection	R_{ON}	I_{ON} = 120mA, I_F = 10mA	–	20	30	Ω
	B Connection		I_{ON} = 150mA, I_F = 10mA	–	12	20	
	C Connection		I_{ON} = 200mA, I_F = 10mA	–	6	10	

Isolation Characteristics (Ta = 25°C)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MX.	UNIT
Capacitance Input to Output	C_S	V_S = 0, f = 1MHz	–	0.8	–	pF
Isolation Resistance	R_S	V_S = 500V, 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.	MX.	UNIT
Turn-on Time	t_{on}	R_L = 200Ω V_{DD} = 20mA, I_F = 10mA	–	–	2	ms
Turn-off Time	t_{off}		–	–	2	

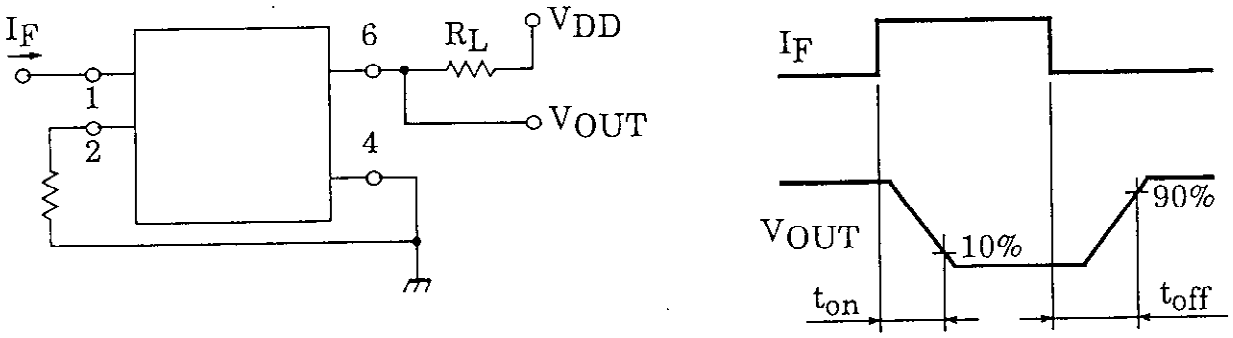
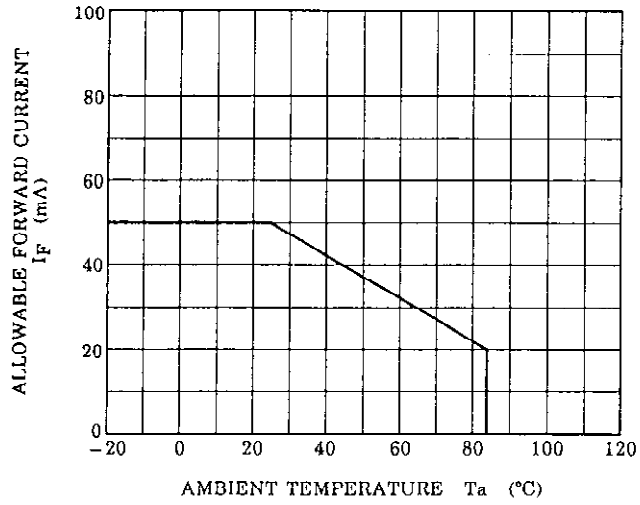
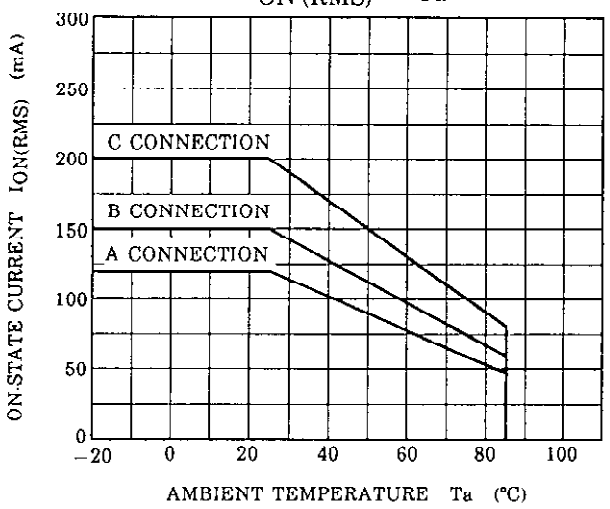


Figure 1. Switching Time Test Circuit

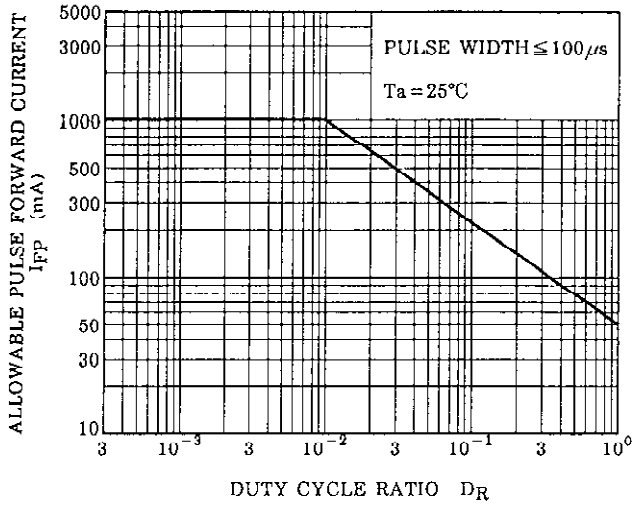
I_F – Ta



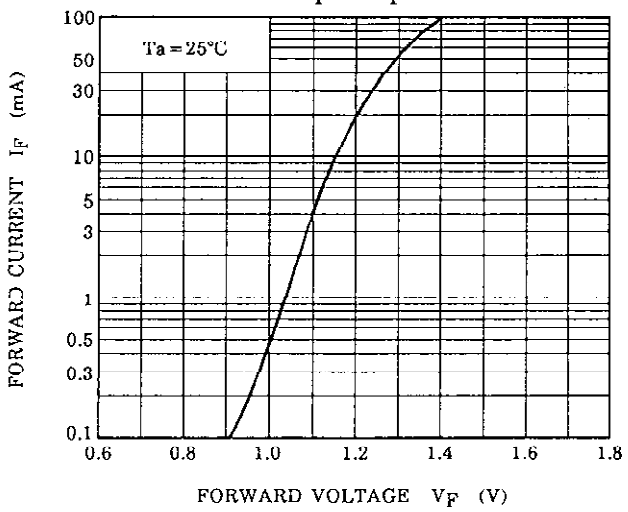
I_{ON} (RMS) – Ta



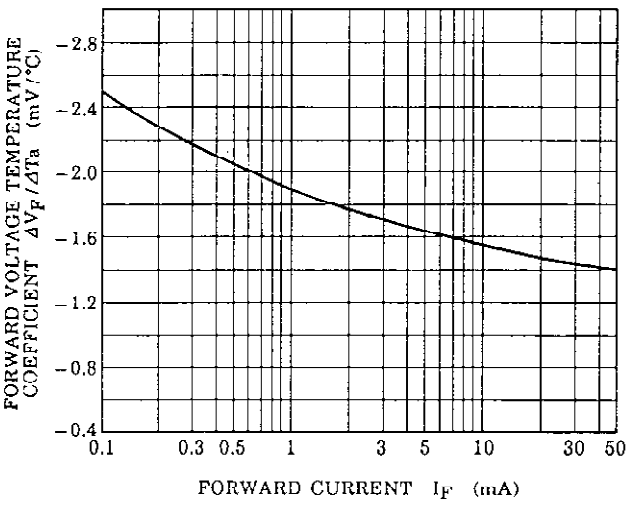
I_{FP} – D_R



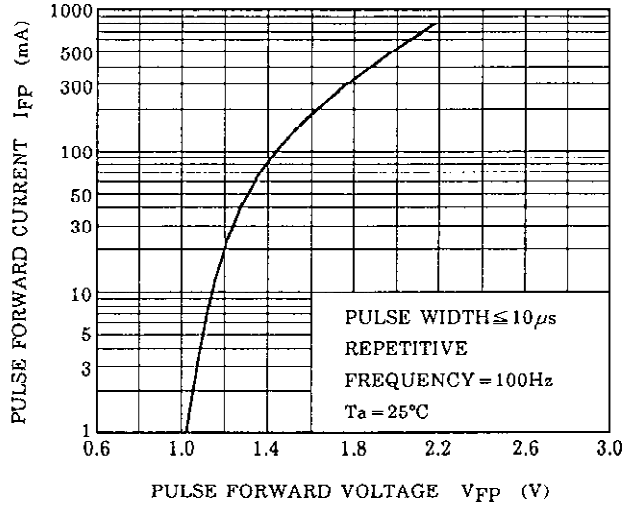
I_F – V_F



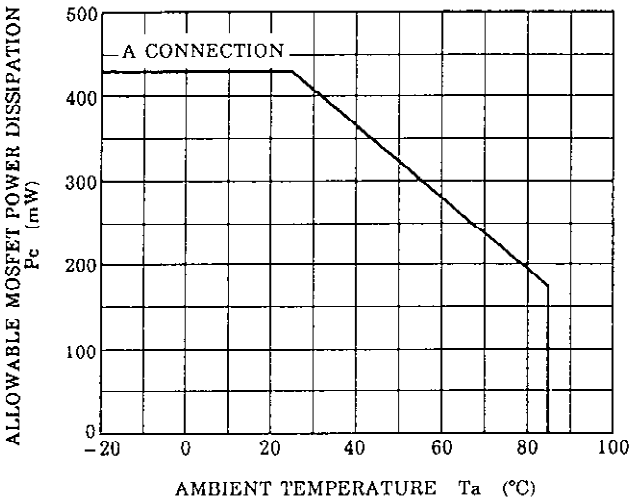
$\Delta V_F / \Delta Ta$ – I_F



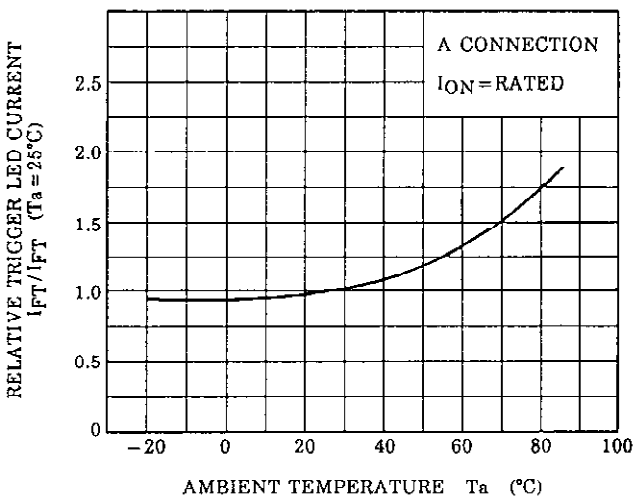
I_{FP} – V_{FP}



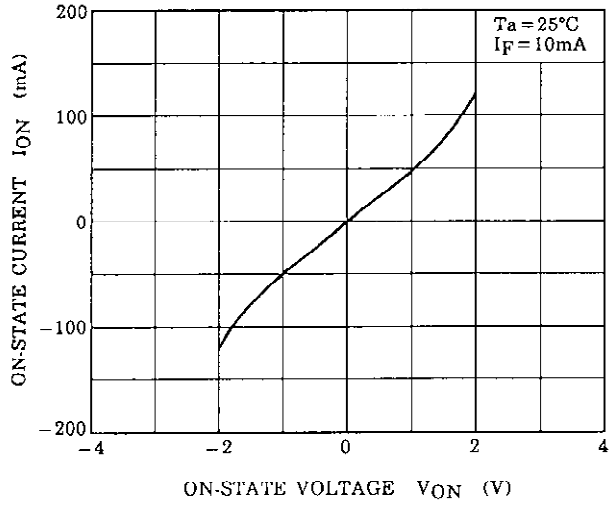
Pc – Ta



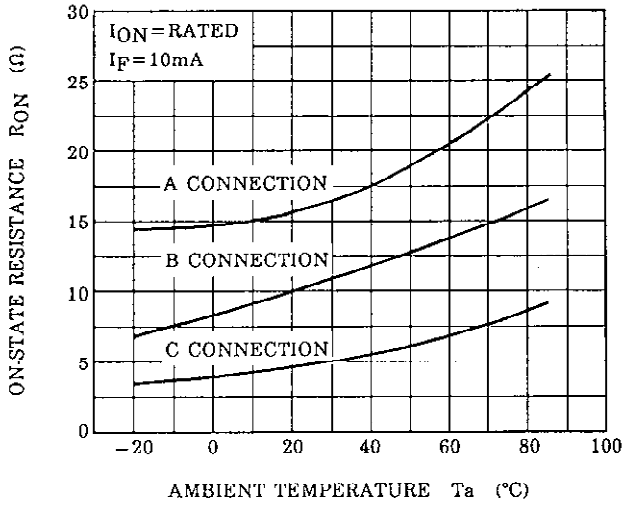
I_{FT} – Ta



I_{ON} – V_{ON} (A CONNECTION)



R_{ON} – Ta



I_{OFF} – Ta