

Unit in mm

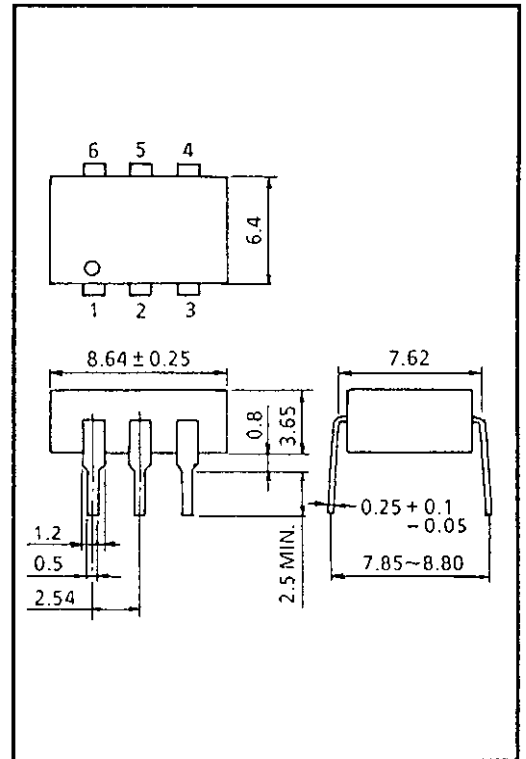
### Telecommunication

### Data Acquisition

### Measurement Instrumentation

The Toshiba TLP595G consists of an aluminum gallium arsenide infrared emitting diode optically coupled to a photo-MOSFET 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.)
- UL Recognized : UL1577, File No. E67349
- Trigger LED Current (Ta = 25°C)

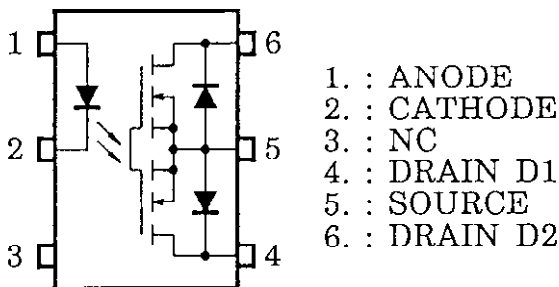


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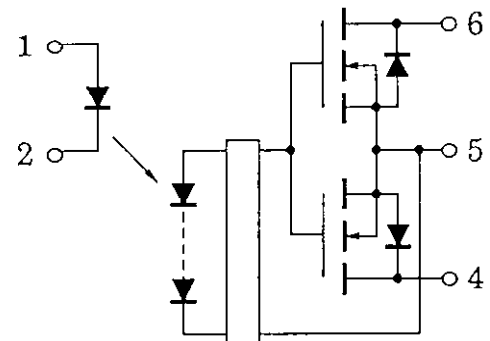
JEDEC	—
EIAJ	—
TOSHIBA	11-9A1

Weight : 0.49g

### Pin Configuration (Top View)



### Schematic



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CLASSIFICATION (Note 1)	TRIGGER LED CURRENT (mA)		MARKING OF CLASSIFICATION
	@ $I_{ON} = 150\text{mA}$		
	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., TLP595G (IFT2): TLP595G

**Maximum Ratings (Ta = 25°C)**

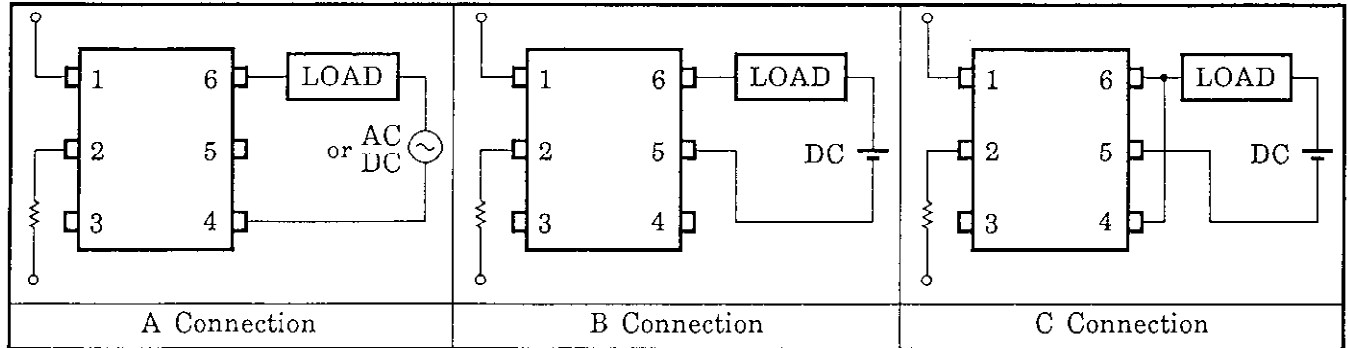
CHARACTERISTIC		SYMBOL	RATING	UNIT	
LED	Forward Current	$I_F$	30	mA	
	Forward Current Derating (Ta ≥ 25°C)	$\Delta I_F / ^\circ\text{C}$	-0.3	mA/°C	
	Peak Forward Current (100µs pulse, 100pps)	$I_{FP}$	1	A	
	Reverse Voltage	$V_R$	5	V	
	Junction Temperature	$T_j$	125	°C	
DETECTOR	Off-State Output Terminal 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 2)	$BV_S$	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	$I_F$	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	$\mu\text{A}$
	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.	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	$\Omega$
	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.	MX.	UNIT
Capacitance Input to Output	$C_S$	$V_S = 0, f = 1\text{MHz}$	–	0.8	–	pF
Isolation Resistance	$R_S$	$V_S = 500\text{V}, \text{R.H.} \leq 60\%$	$5 \times 10^{10}$	$10^{14}$	–	$\Omega$
Isolation Voltage	$BV_S$	AC, 1 minute	2500	–	–	$V_{\text{rms}}$
		AC, 1 second in oil	–	5000	–	
		DC, 1 minute in oil	–	5000	–	$V_{\text{dc}}$

**Switching Characteristics (Ta = 25°C)**

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

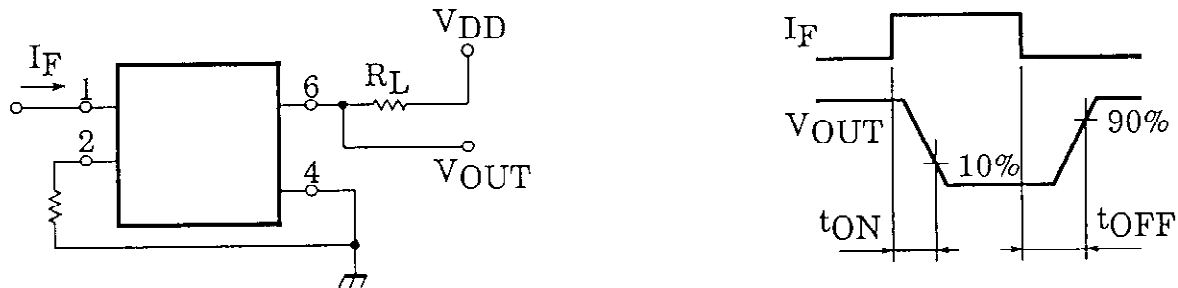
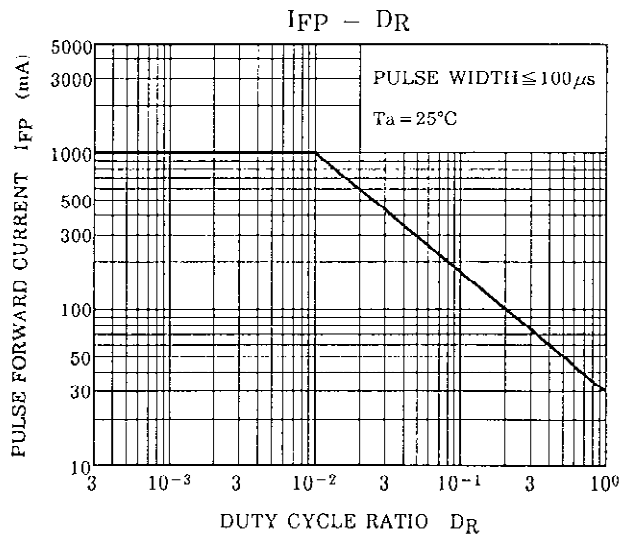
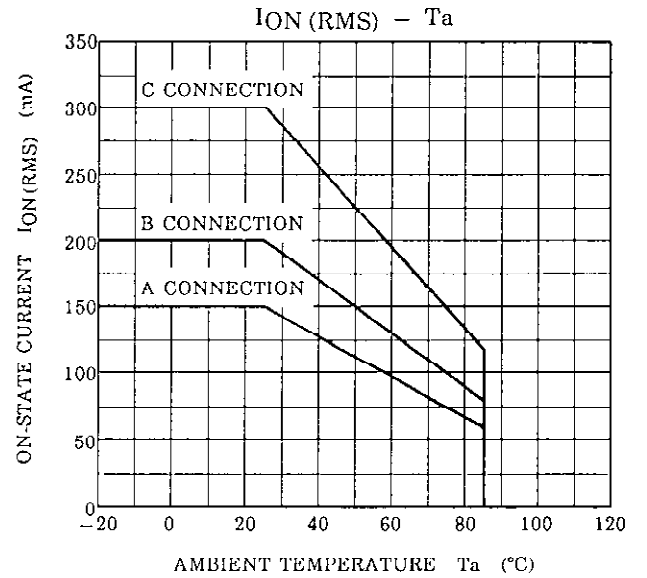
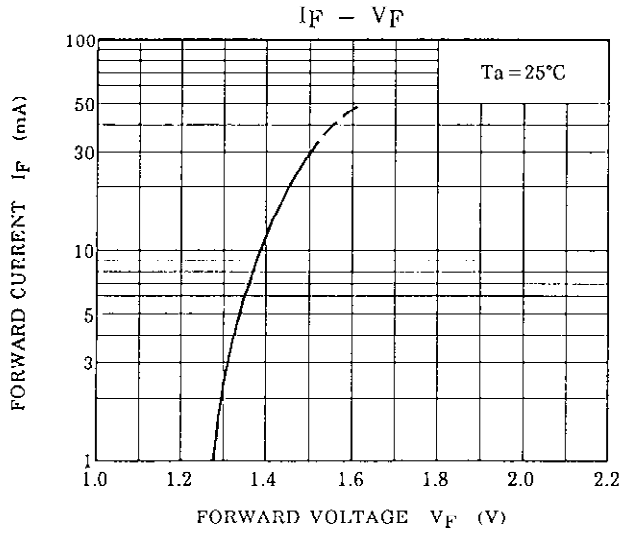
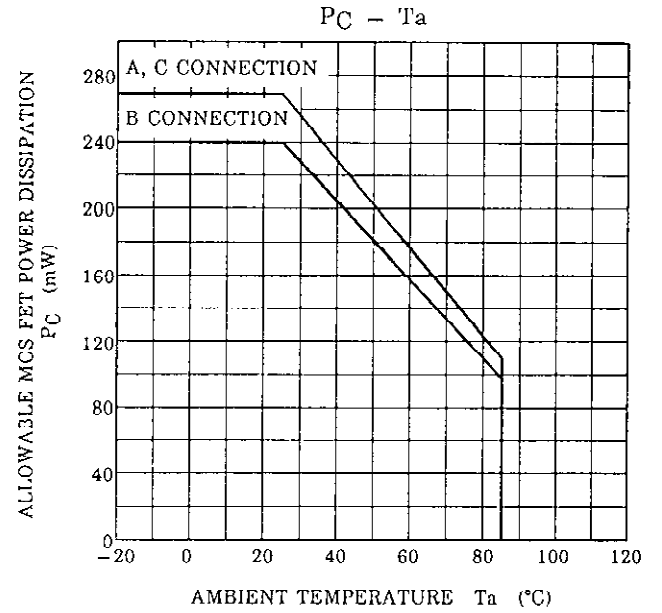
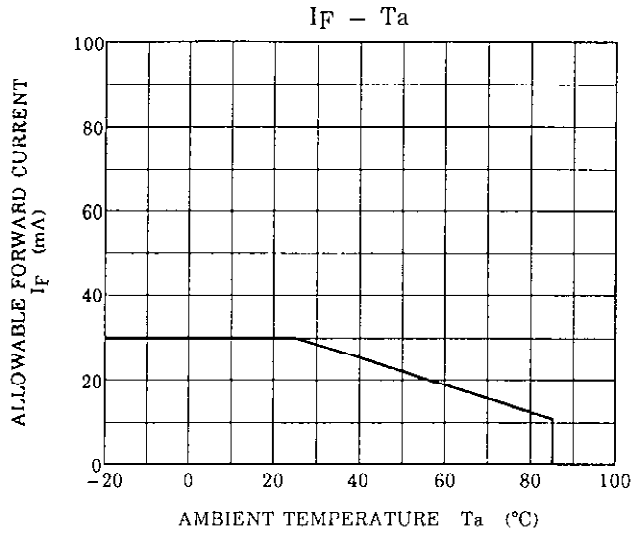
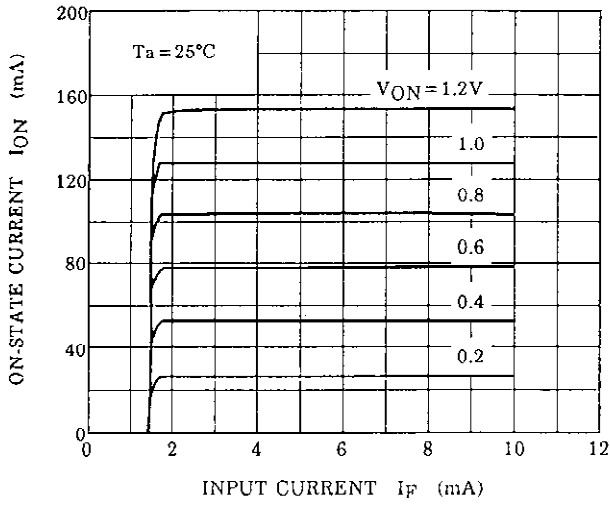


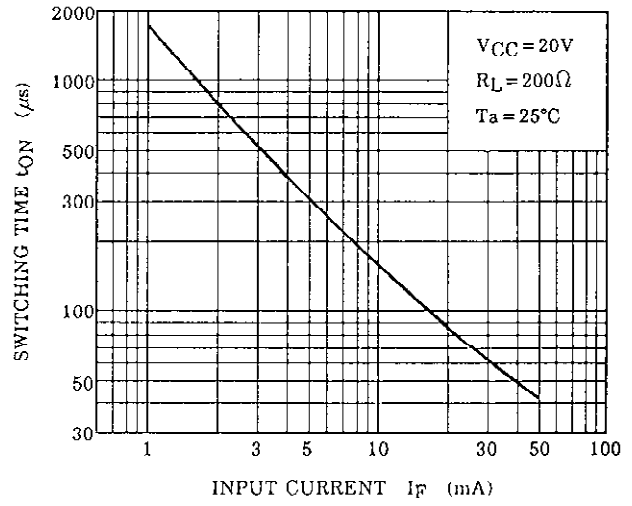
Figure 1. Switching Time Test Circuit



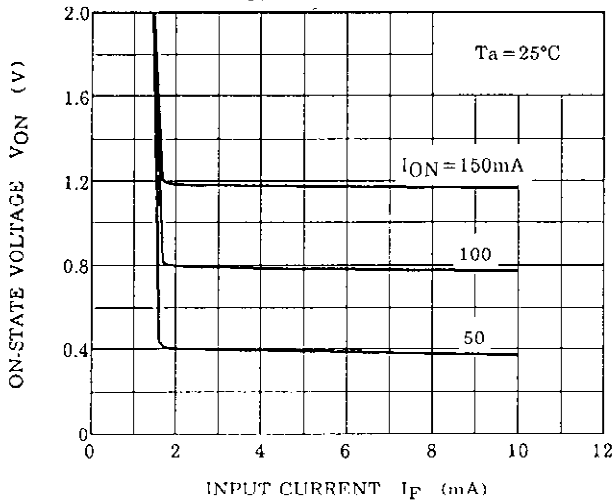
$I_{ON} - I_F$  (A CONNECTION)



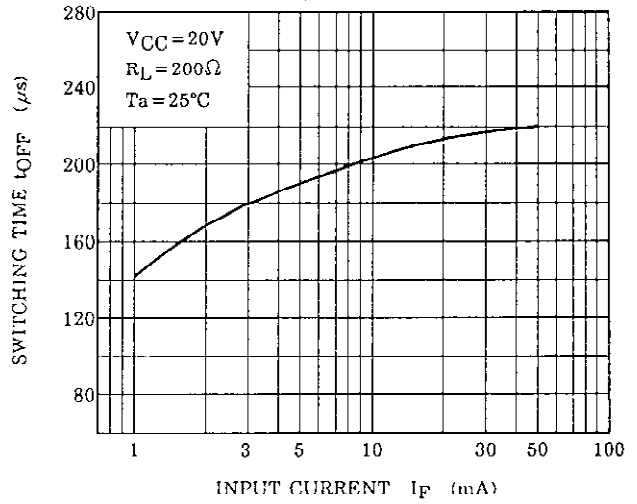
$t_{ON} - I_F$



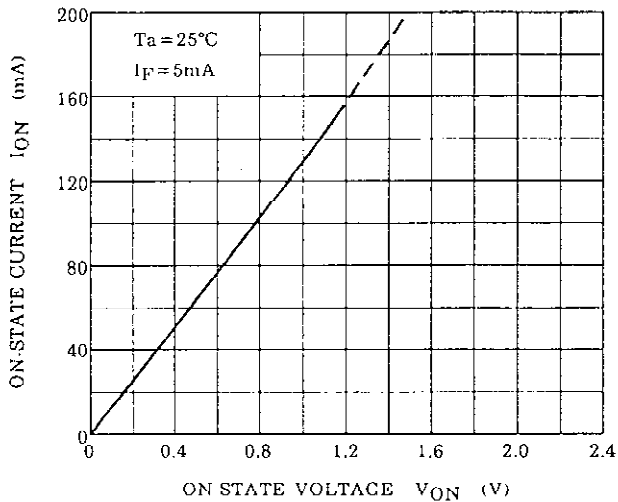
$V_{ON} - I_F$  (A CONNECTION)

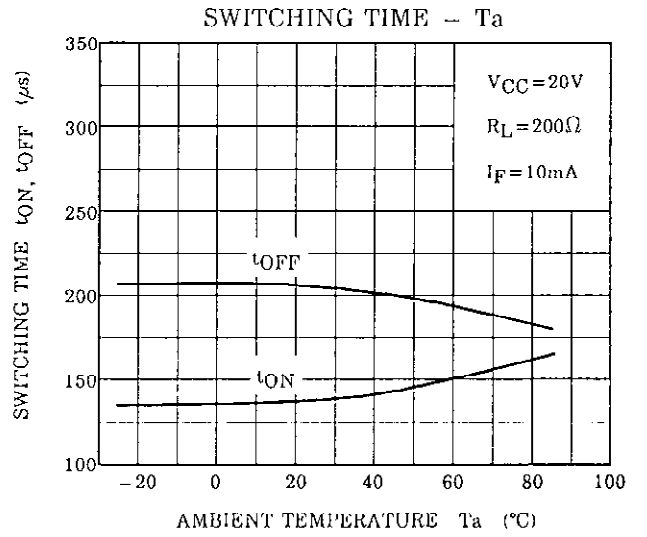
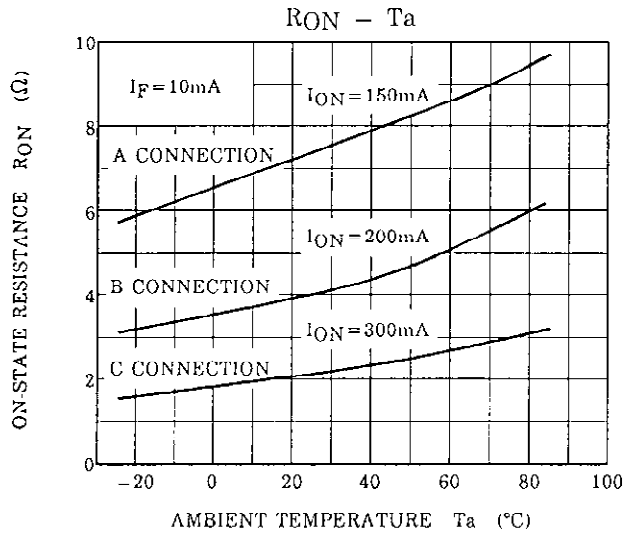
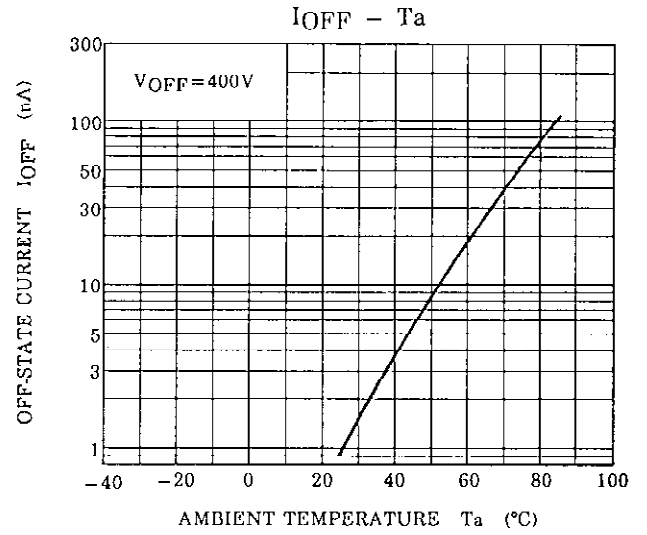
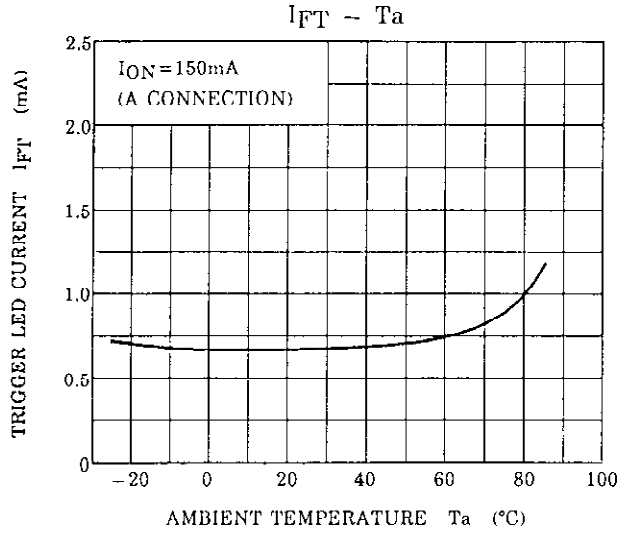


$t_{OFF} - I_F$



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





Notes