

Unit in mm

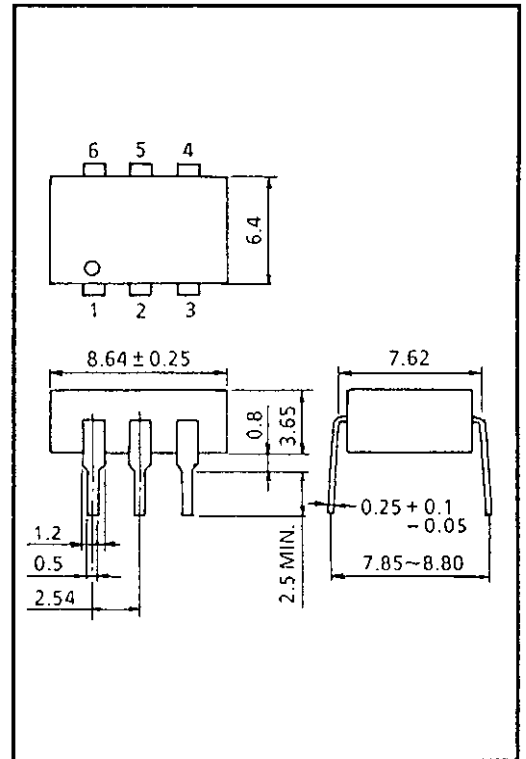
Telecommunication

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)

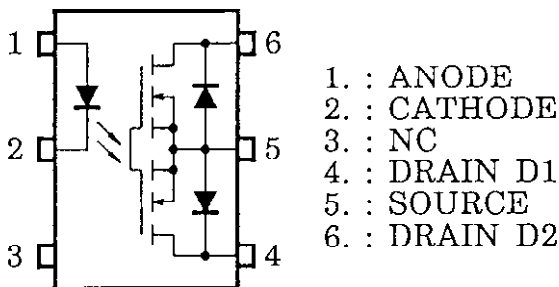


| Supplementary Information | Page (s) |
|---------------------------|----------|
| Lead Form Options | 31-32 |
| Tape and Reel | 39-40 |

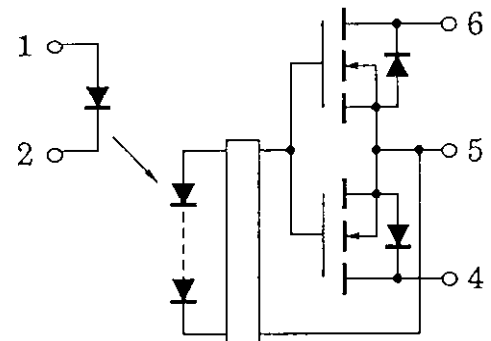
| | |
|---------|--------|
| JEDEC | — |
| EIAJ | — |
| TOSHIBA | 11-9A1 |

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)

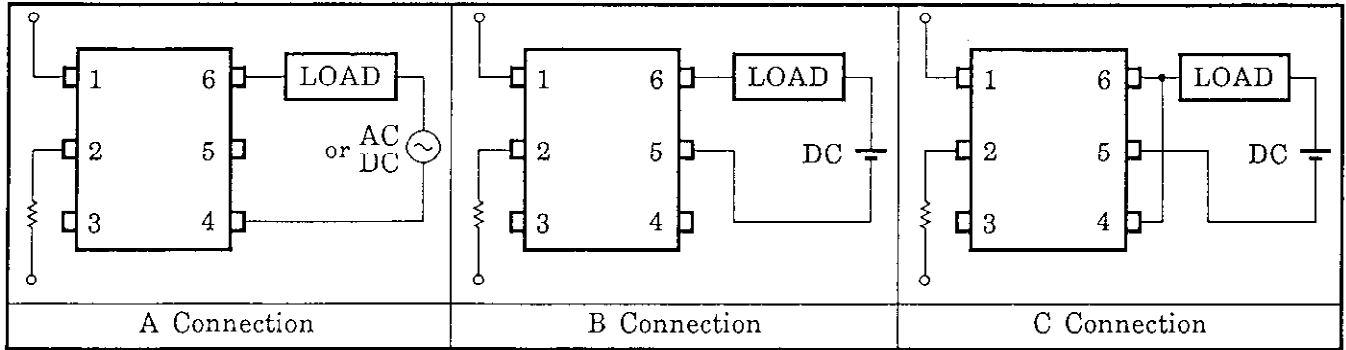
| CHARACTERISTIC | | SYMBOL | RATING | UNIT | |
|---|--|-------------------------------|----------------------------------|-----------|-------|
| LED | Forward Current | I_F | 30 | mA | |
| | Forward Current Derating (Ta ≥ 25°C) | $\Delta I_F / ^\circ\text{C}$ | -0.3 | mA/°C | |
| | Peak Forward Current (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 | 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 | – | 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} | $V_{\text{DD}} = 20\text{mA}, R_L = 200\Omega$ $I_F = 10\text{mA}$ (Note 3) | – | 0.3 | 1.0 | ms |
| Turn-off Time | t_{off} | | – | 0.2 | 1.0 | |

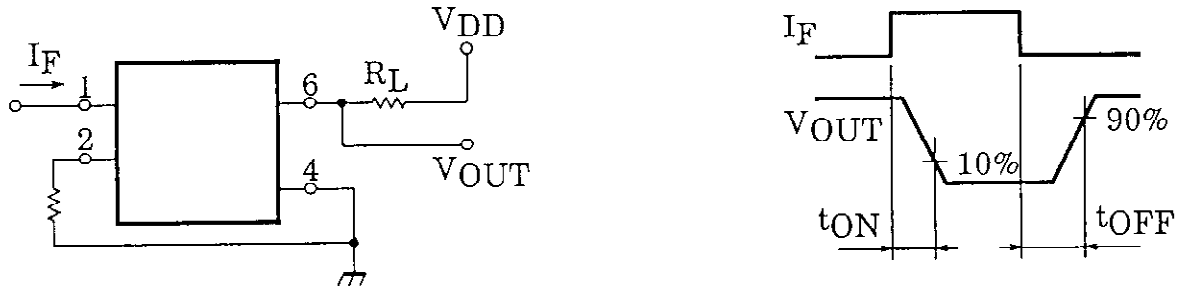
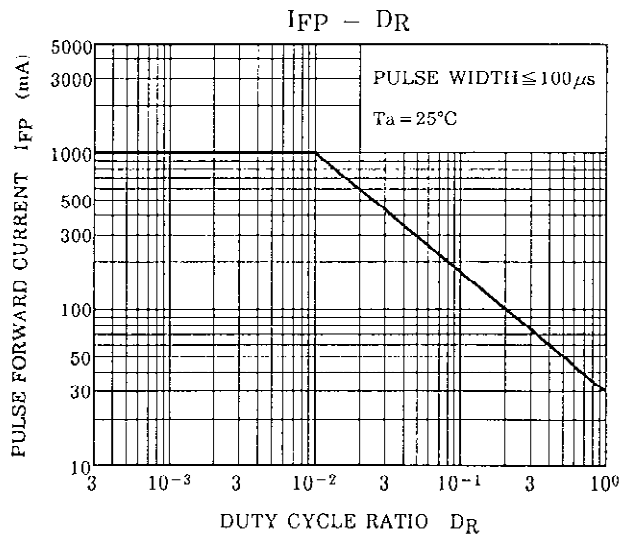
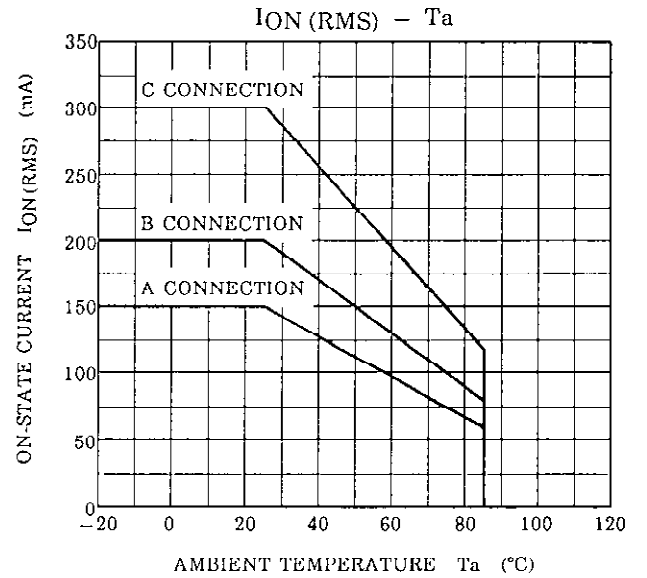
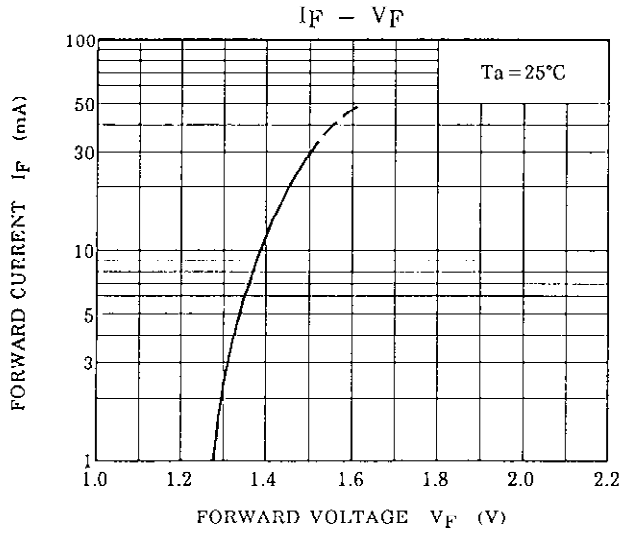
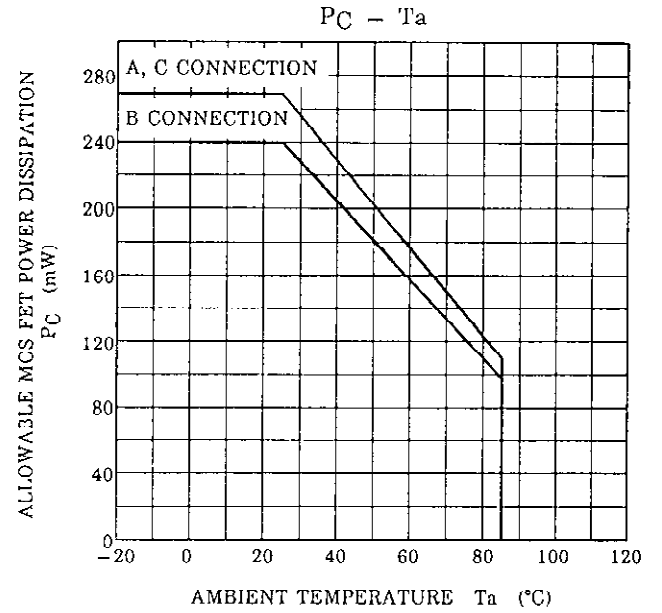
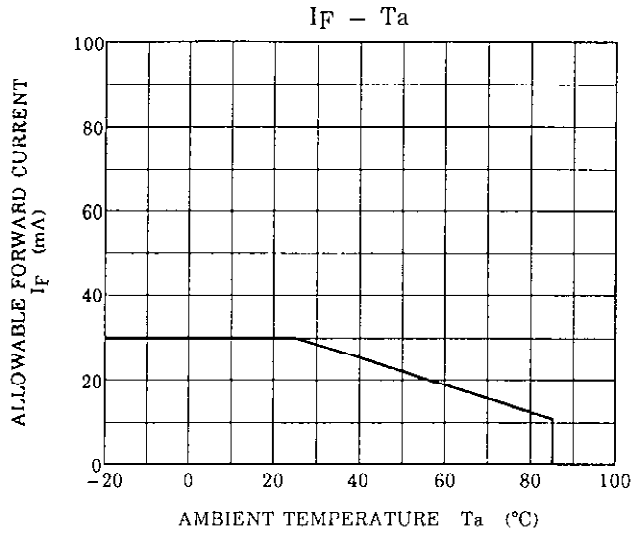
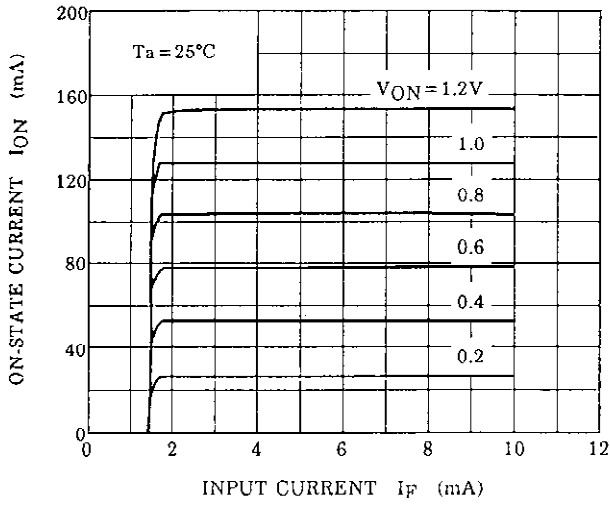


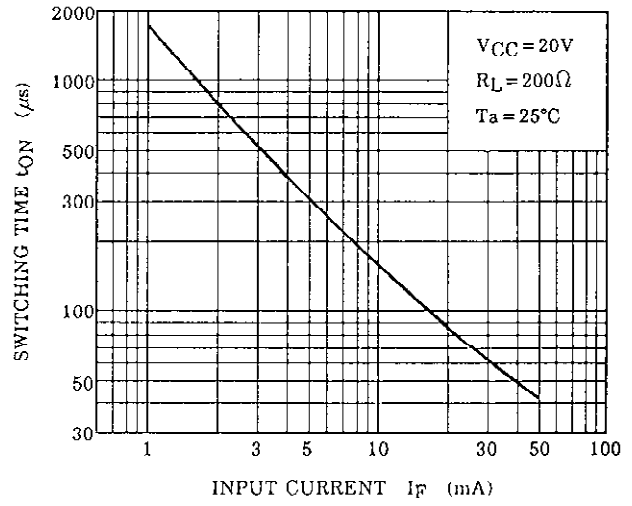
Figure 1. Switching Time Test Circuit



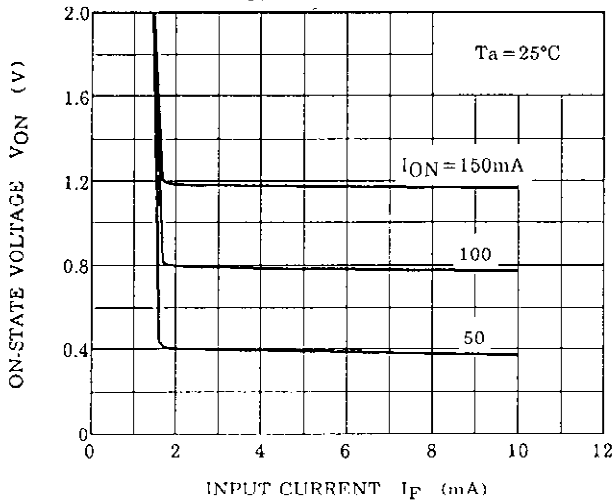
$I_{ON} - I_F$ (A CONNECTION)



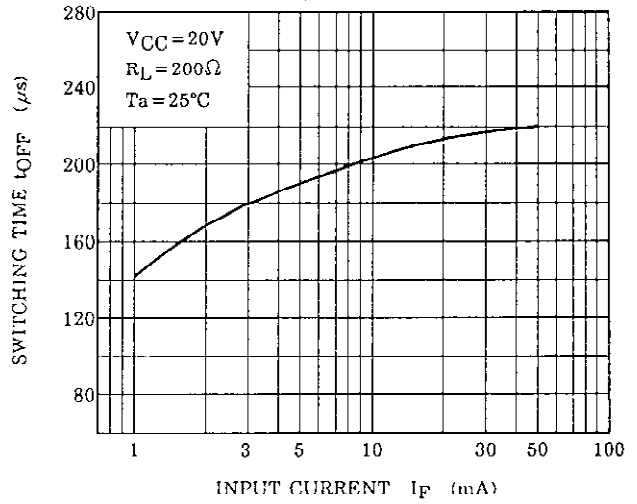
$t_{ON} - I_F$



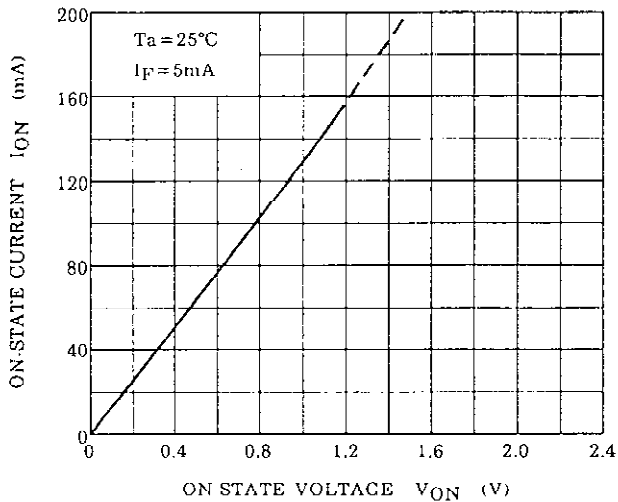
$V_{ON} - I_F$ (A CONNECTION)

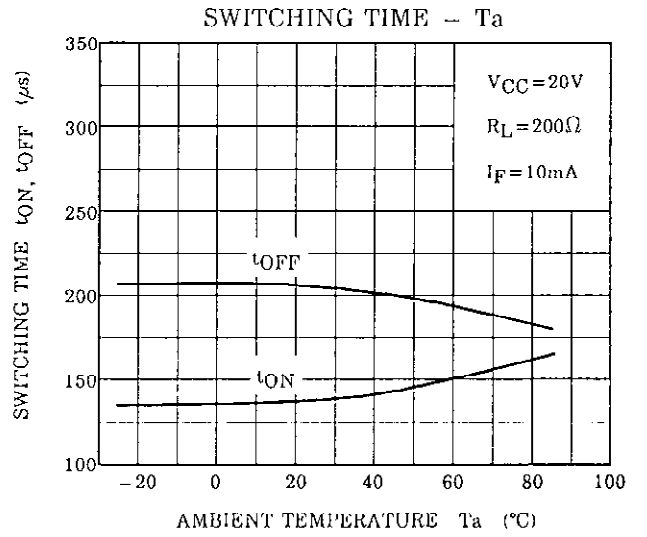
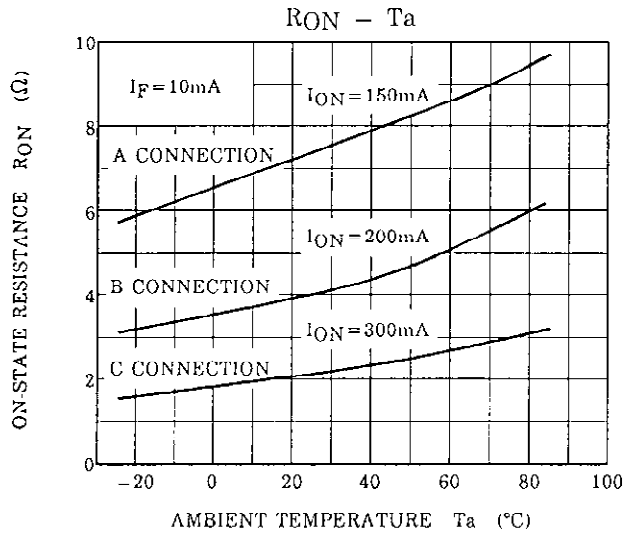
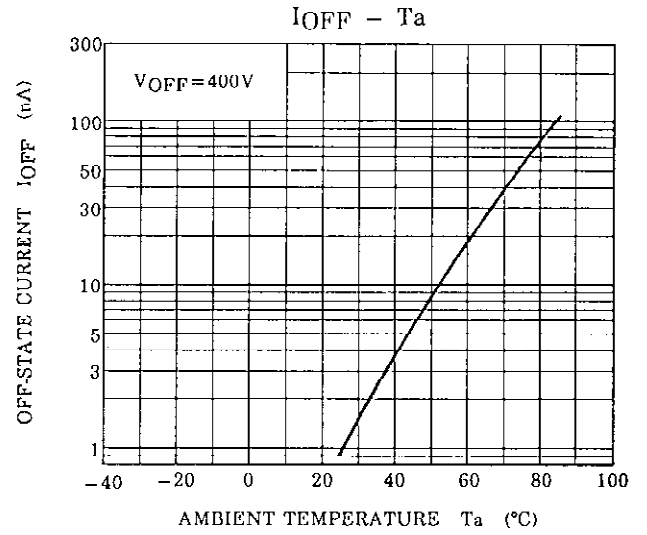
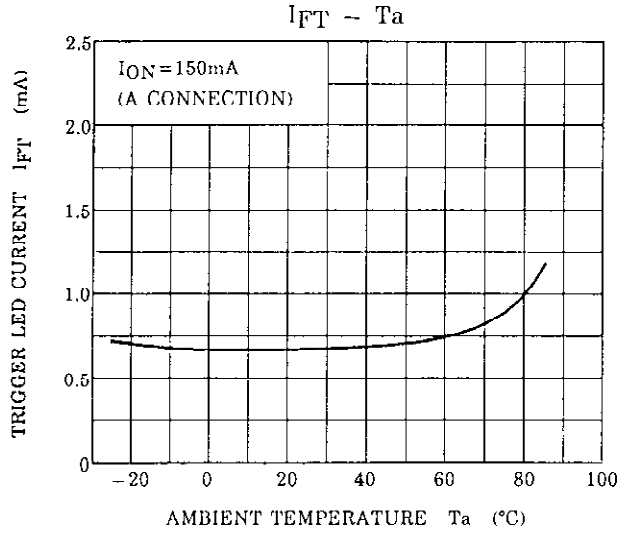


$t_{OFF} - I_F$



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





Notes