

■ **Electro-optical** Characteristics

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

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | | |
|--------------------------|-------------------------|-------------------|-------------------------------------|---|---|-----------|---------------|-----|---------------|
| Input | Forward voltage | V_F | $I_F=20\text{mA}$ | | 1.2 | 1.4 | V | | |
| | Peak forward voltage | V_{FM} | $I_{FM}=0.5\text{A}$ | | 3.0 | 4.0 | V | | |
| | Reverse current | I_R | $V_R=3\text{V}$ | | | 10 | μA | | |
| Output | Collector dark current | I_{CEO} | $V_{CE}=20\text{V}$ | — | 10^{-9} | 10^{-7} | A | | |
| Transfer characteristics | *Current transfer ratio | GP2S01 GP2S01F | CTR | $I_F=20\text{mA}$ $V_{CF}=5\text{V}$ | 1 | — | 10 | % | |
| | | | | | 1 | — | 4.5 | | |
| | Response time | Rise time | GP2S01 | t_r | $I_C=0.2\text{mA}, V_{CF}=2\text{V}$ $R_L=1\text{k}\Omega, d=5\text{mm}$ | — | 30 | 90 | μs |
| | | | GP2S01F | | | — | 30 | 120 | |
| | | Fall time | GP2S01 | | | — | 40 | 120 | μs |
| | | | GP2S01F | | | — | 40 | 160 | |
| *1 Leak current | | I_{LEAK} | $I_F=20\text{mA}, V_{CF}=5\text{V}$ | — | — | 10 | μA | | |

*3 Test method A reflective object shall be an OMS test card (white) specified by Sharp, and be 5.0mm away from the sensor

*4 Without reflective object

Fig. 1 Forward Current vs. Ambient Temperature

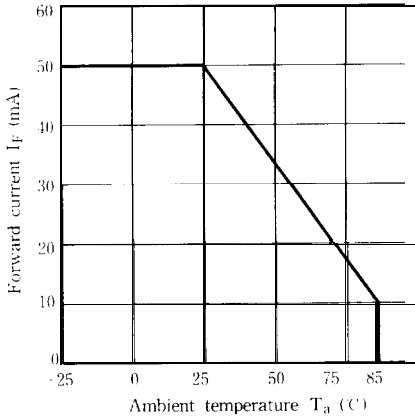


Fig. 2 Collector Power Dissipation vs. Ambient Temperature

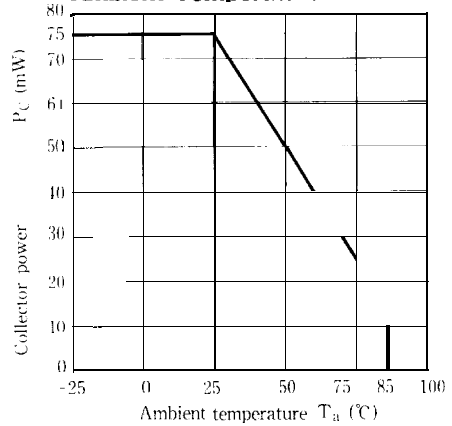


Fig. 3 Peak Forward Current vs. Duty Ratio

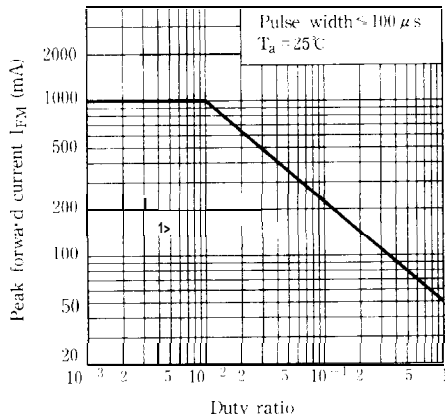


Fig. 4 Forward Current vs. Forward Voltage

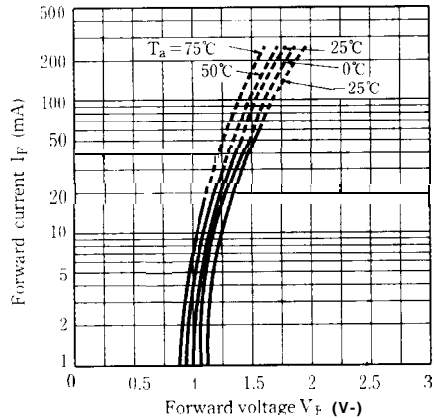


Fig. 5 Collector Current vs. Forward Current

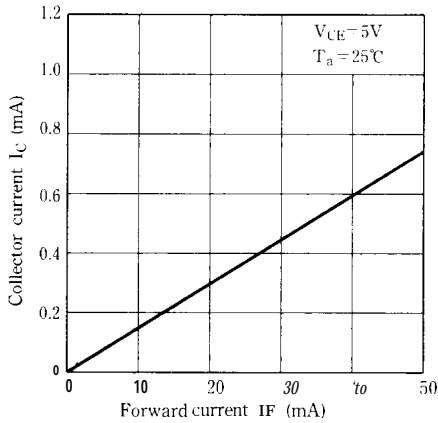


Fig. 6 Collector Current vs. Collector-emitter Voltage

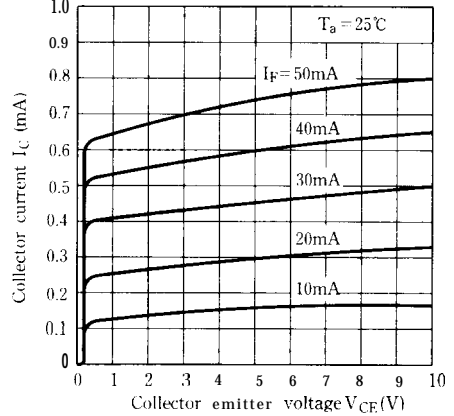


Fig. 7 Collector Current vs. Ambient Temperature

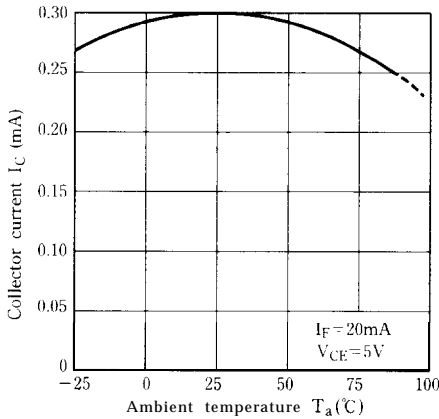


Fig. 8 Collector Dark Current vs. Ambient Temperature

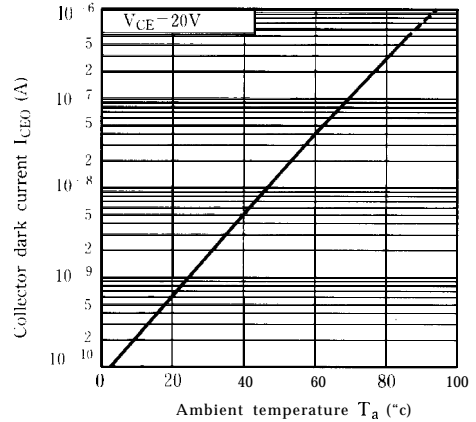
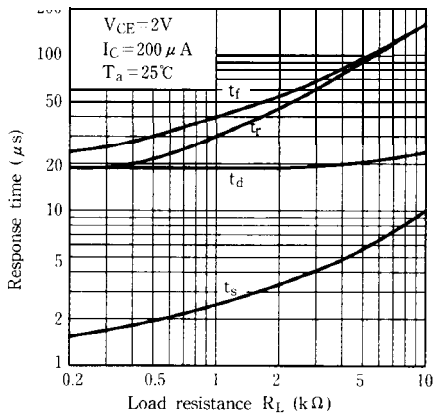


Fig. 9 Response Time vs. Load Resistance



Test Circuit for Response Time

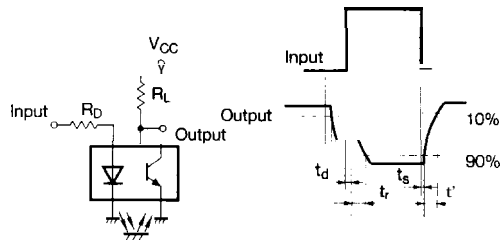


Fig.10 Frequency Response

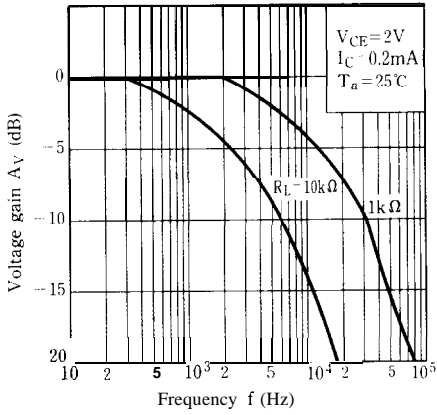


Fig.11 Relative Collector Current vs. Distance between GP2S01(F) and Test Card

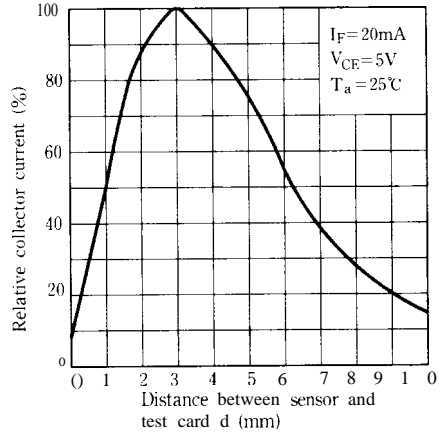
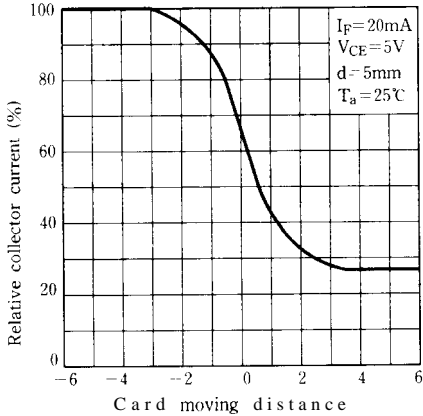


Fig.12 Relative Collector Current vs. card Moving Distance

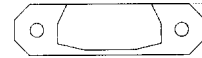


Distance Characteristic Test Condition

Correspond to Fig.11

SHARP OMS TEST CARD

(White)



GP2S01
(GP2S01F)

Correspond to Fig.12

SHARP OMS TEST CARD

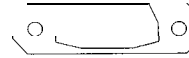
Black

White

d

0

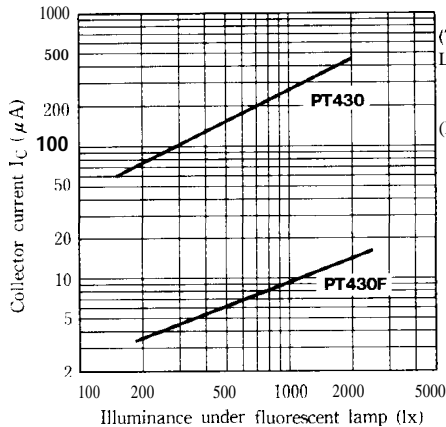
- +



GP2S01
(GP2S01F)

Card moving direction
(Distance = l)

Fig.13 Collector Current vs. Illuminance (Reference)



● please refer to the chapter "Precautions for use" (Page 78 to 93).

Photo