



●Electrical and optical characteristics ( $T_a = 25^\circ\text{C}$ )

| Parameter                    |                                      | Symbol               | Conditions  | Values |      |      | Unit          |
|------------------------------|--------------------------------------|----------------------|---|--------|------|------|---------------|
|                              |                                      |                      |   | Min.   | Typ. | Max. |               |
| Input characteristics        | Forward voltage                      | $V_F$                | $I_F = 50\text{mA}$   | -      | 1.3  | 1.6  | V             |
|                              | Reverse current                      | $I_R$                | $V_R = 5\text{V}$   | -      | -    | 10   | $\mu\text{A}$ |
| Output characteristics       | Dark current                         | $I_{\text{CEO}}$     | $V_{\text{CE}} = 10\text{V}$  | -      | -    | 0.5  | $\mu\text{A}$ |
|                              | Peak sensitivity wavelength          | $\lambda_p$          | -   | -      | 800  | -    | nm            |
| Transfer characteristics     | Collector current                    | $I_C$                | $V_{\text{CE}} = 5\text{V}, I_F = 20\text{mA}$  | 0.2    | 1.0  | -    | mA            |
|                              | Collector-emitter saturation voltage | $V_{\text{CE(sat)}}$ | $I_F = 20\text{mA}, I_R = 0.1\text{mA}$   | -      | -    | 0.4  | V             |
|                              | Response time                        | tr·tf                | $V_{\text{CC}} = 5\text{V}, I_F = 20\text{mA}, R_L = 100\Omega$   | -      | 10   | -    | $\mu\text{s}$ |
| Infrared light emitter diode | Cut-off frequency                    | $f_c$                | $I_F = 50\text{mA}$   | -      | 1    | -    | MHz           |
|                              | Peak light emitting wavelength       | $\lambda_p$          | * Non-coherent Infrared light emitting diode used.  | -      | 950  | -    | nm            |
| Photo transistor             | Response time                        | tr·tf                | $V_{\text{CC}} = 5\text{V}, I_C = 1\text{mA}, R_L = 100\Omega$<br>*This product is not designed to be protected against electromagnetic wave. | -      | 10   | -    | $\mu\text{s}$ |
|                              | Maximum sensitivity wavelength       | $\lambda_p$          | -   | -      | 800  | -    | nm            |

●Electrical and optical characteristics curves

Fig.1 Relative Output Current vs.Distance (I)

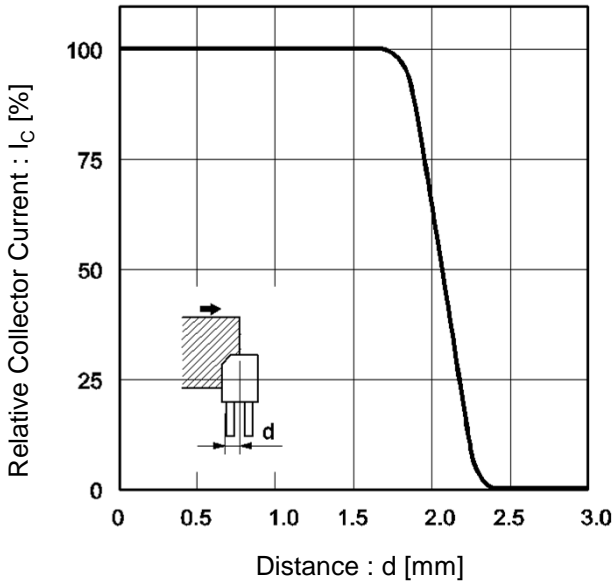


Fig.2 Relative Output Current vs.Distance (II)

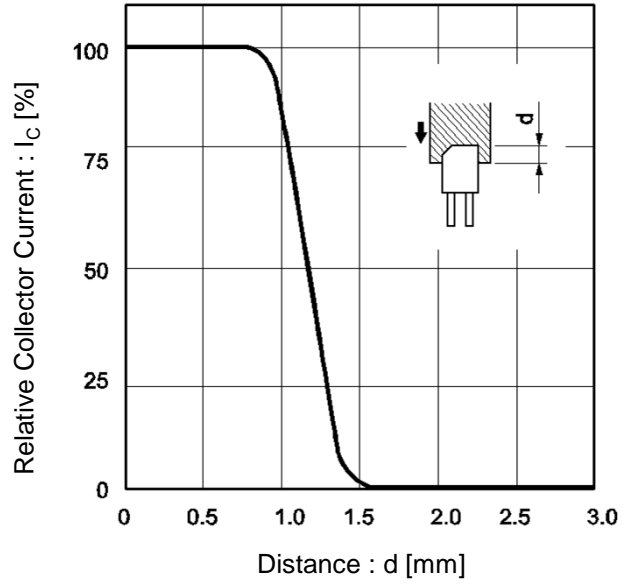


Fig.3 Forward Current Falloff

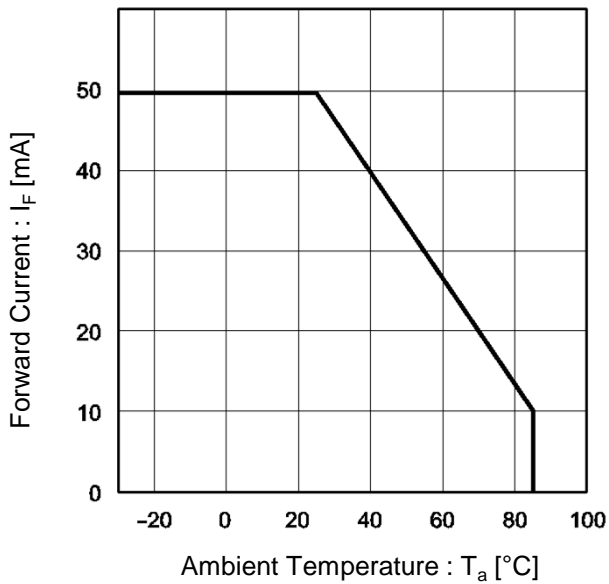
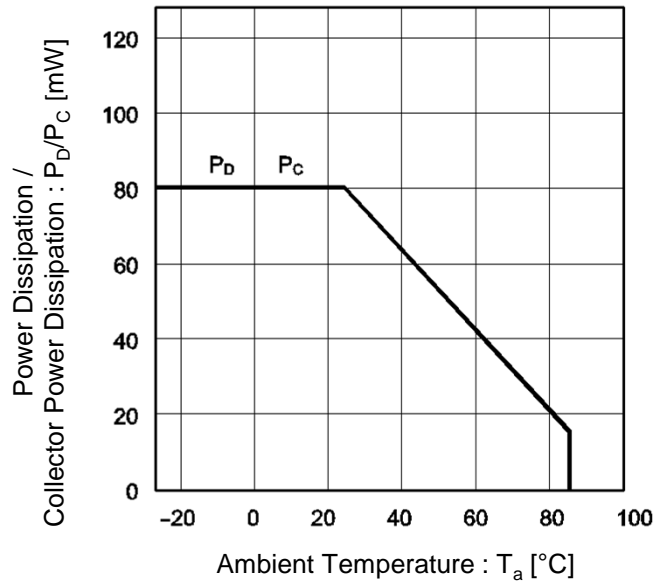


Fig.4 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature



●Electrical and optical characteristics curves

Fig.5 Forward Current vs. Forward Voltage

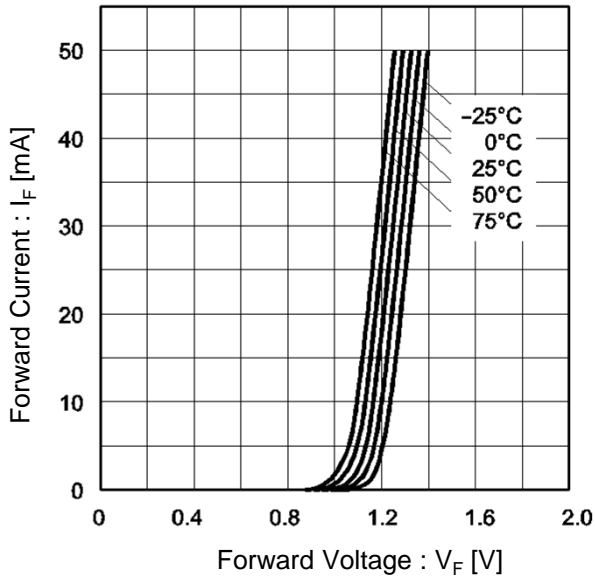


Fig.6 Collector Current vs. Forward Current

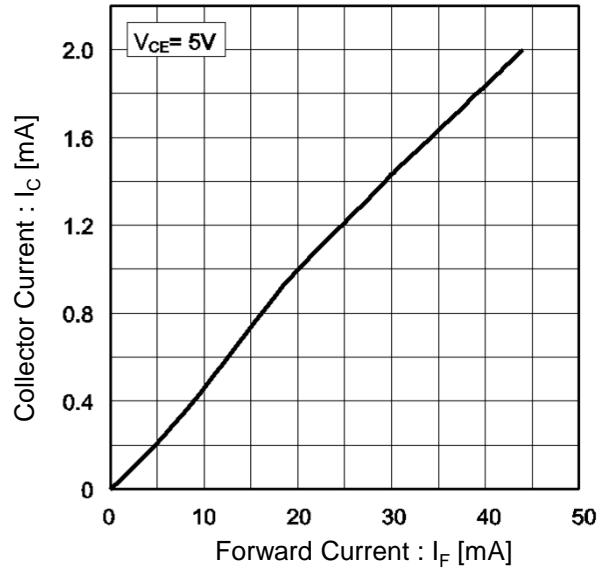


Fig.7 Relative Output vs. Ambient Temperature

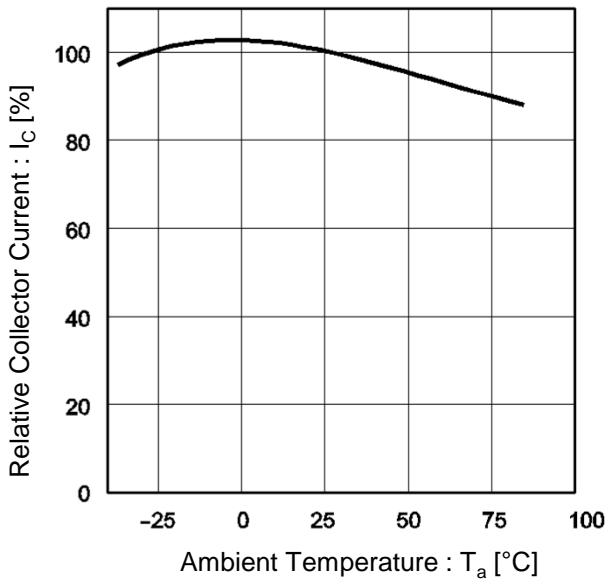
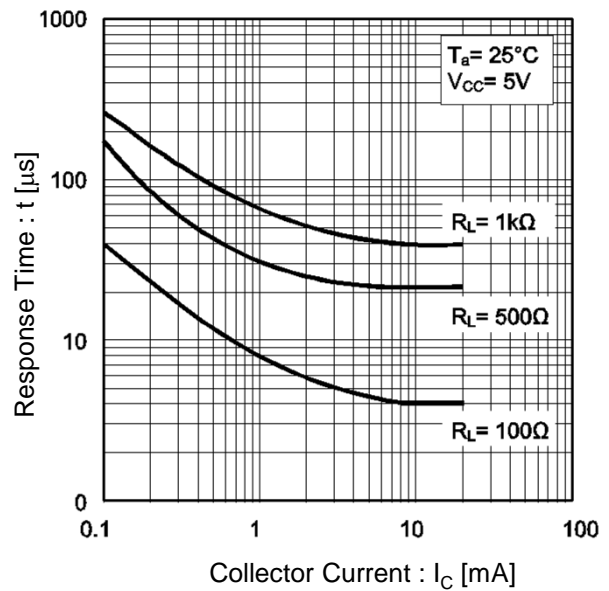


Fig.8 Response Time vs. Collector Current



●Electrical and optical characteristics curves

Fig.9 Dark Current vs. Ambient Temperature

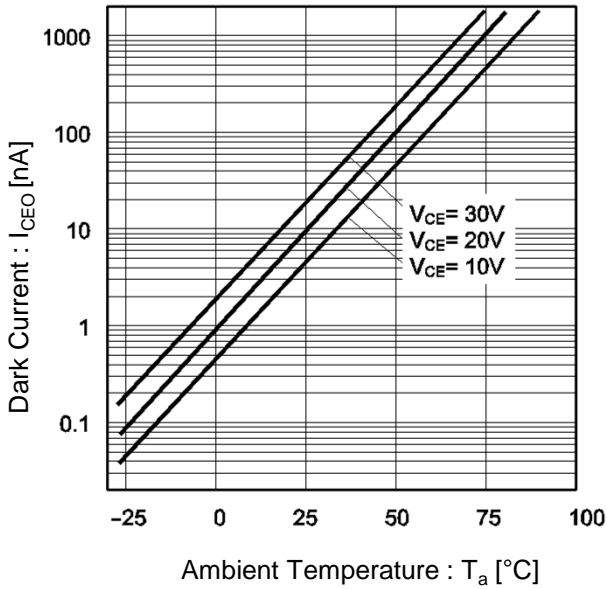


Fig.10 Output Characteristics

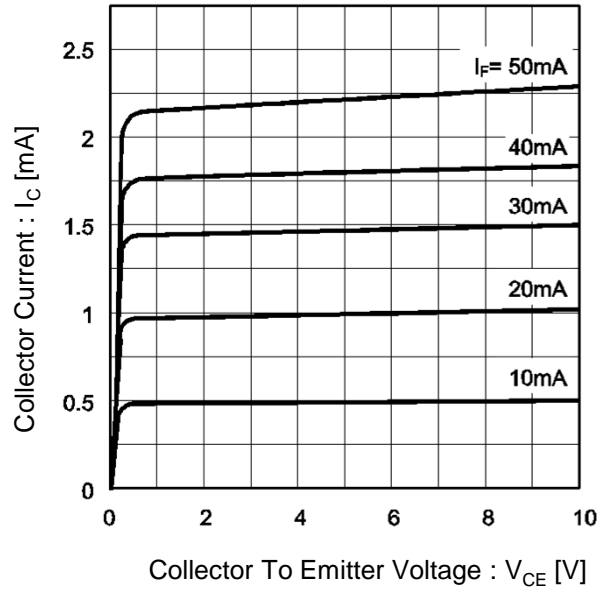
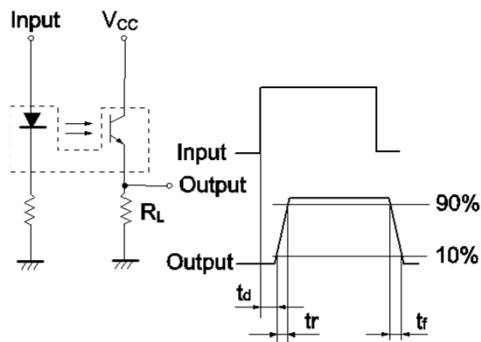


Fig.11 Response Time Measurement Circuit



$t_d$  : Delay time  
 $t_r$  : Rise time (time for output current to rise from 10% to 90% of peak current)  
 $t_f$  : Fall time (time for output current to fall from 90% to 10% of peak current)

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