



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

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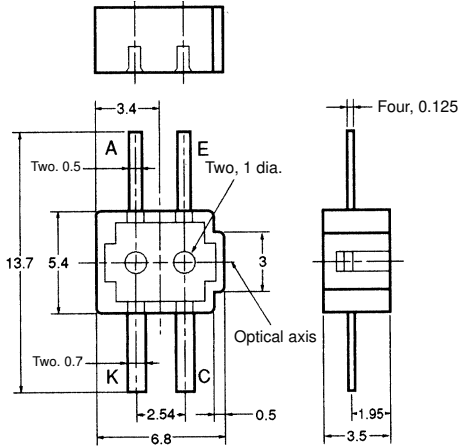
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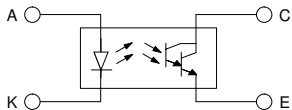


### ■ Dimensions

**Note:** All units are in millimeters unless otherwise indicated.



### Internal Circuit



Unless otherwise specified, the tolerances are as shown below.

Dimensions	Tolerance
3 mm max.	±0.3
3 < mm ≤ 6	±0.375
6 < mm ≤ 10	±0.45
10 < mm ≤ 18	±0.55
18 < mm ≤ 30	±0.65

Terminal No.	Name
A	Anode
K	Cathode
C	Collector
E	Emitter

### ■ Features

- The LED requires a forward current of only 5 mA due to the Photo-Darlington transistor built into the detector.
- With a red LED light source.

### ■ Absolute Maximum Ratings (Ta = 25°C)

Item	Symbol	Rated value
Emitter	Forward current	$I_F$ 15 mA (see note 1)
	Pulse forward current	$I_{FP}$ ---
	Reverse voltage	$V_R$ 4 V
Detector	Collector–Emitter voltage	$V_{CEO}$ 24 V
	Emitter–Collector voltage	$V_{ECO}$ ---
	Collector current	$I_C$ 20 mA
	Collector dissipation	$P_C$ 50 mW (see note 1)
Ambient temperature	Operating	$T_{opr}$ -20°C to 60°C
	Storage	$T_{stg}$ -20°C to 80°C
Soldering temperature	$T_{sol}$	260°C (see note 2)

- Note:**
1. Refer to the temperature rating chart if the ambient temperature exceeds 25°C.
  2. Complete soldering within 10 seconds.

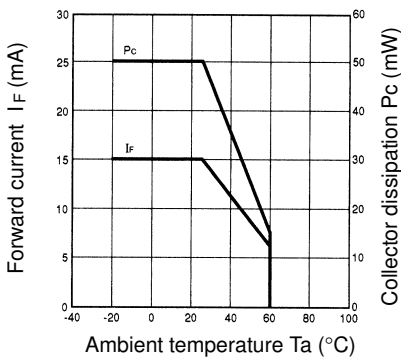
### ■ Electrical and Optical Characteristics (Ta = 25°C)

Item	Symbol	Value	Condition
Emitter	Forward voltage	$V_F$ 2.0 V typ., 2.6 V max.	$I_F = 15$ mA
	Reverse current	$I_R$ 0.01 $\mu$ A typ., 5 $\mu$ A max.	$V_R = 4$ V
	Peak emission wavelength	$\lambda_P$ 700 nm typ.	$I_F = 10$ mA
Detector	Light current	$I_L$ 0.3 $\mu$ A min., 8.0 $\mu$ A max.	$I_F = 5$ mA, $V_{CE} = 10$ V White paper with a reflection ratio of 90%, $d = 4$ mm (see note)
	Dark current	$I_D$ 2 nA typ., 250 nA max.	$V_{CE} = 10$ V, 0 lx
	Leakage current	$I_{LEAK}$ ---	---
	Collector–Emitter saturated voltage	$V_{CE (sat)}$	---
	Peak spectral sensitivity wavelength	$\lambda_P$	750 nm typ.
Rising time	$t_r$	180 $\mu$ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 1$ mA
Falling time	$t_f$	60 $\mu$ s typ.	$V_{CC} = 5$ V, $R_L = 100 \Omega$ , $I_L = 1$ mA

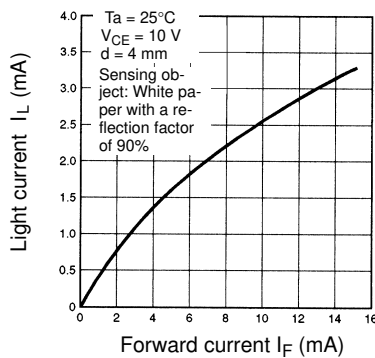
**Note:** The letter “d” indicates the distance between the top surface of the sensor and the sensing object.

■ Engineering Data

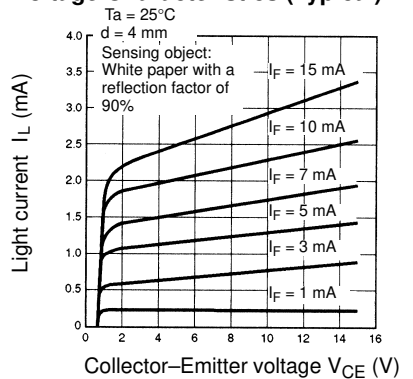
**Forward Current vs. Collector Dissipation Temperature Rating**



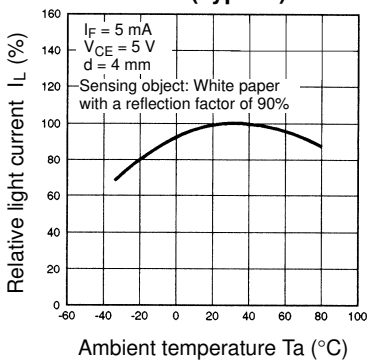
**Light Current vs. Forward Current Characteristics (Typical)**



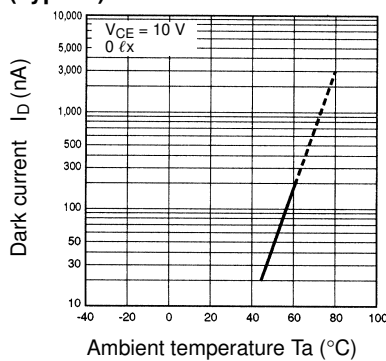
**Light Current vs. Collector–Emitter Voltage Characteristics (Typical)**



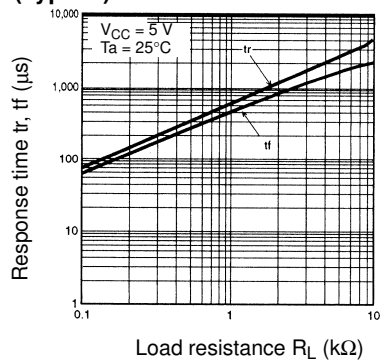
**Relative Light Current vs. Ambient Temperature Characteristics (Typical)**



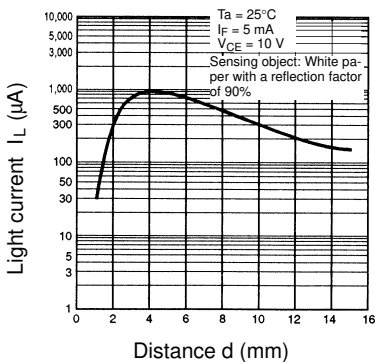
**Dark Current vs. Ambient Temperature Characteristics (Typical)**



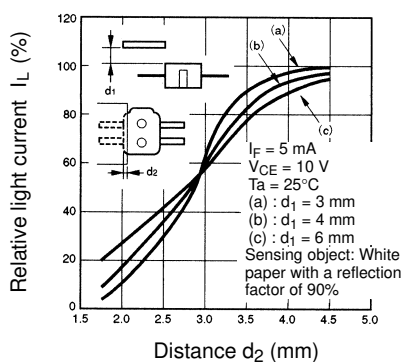
**Response Time vs. Load Resistance Characteristics (Typical)**



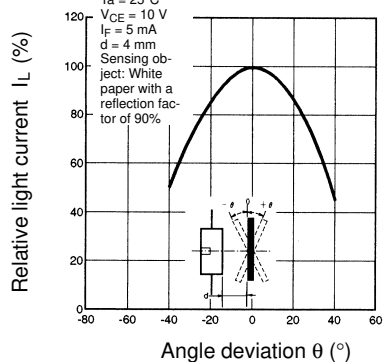
**Sensing Distance Characteristics (Typical)**



**Sensing Position Characteristics (Typical)**



**Sensing Angle Characteristics (Typical)**



**Response Time Measurement Circuit**

