

# PNA4K01F

## Bipolar Integrated Circuit with Photodetection Function

For brightness control systems

### ■ Features

- Peak sensitivity wavelength: 560 nm
- Output ratio of incandescent light and fluorescent light: 1.1 (typ.)
- Small, thin type package: 1.55 mm × 1.5 mm × 0.53 mm
- Surface-mounting type for reflow soldering

### ■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

| Parameter                     | Symbol    | Rating       | Unit             |
|-------------------------------|-----------|--------------|------------------|
| Operating supply voltage      | $V_{CC}$  | -0.5 to +7.0 | V                |
| Power dissipation             | $P_D$     | 35           | mW               |
| Operating ambient temperature | $T_{opr}$ | -30 to +85   | $^\circ\text{C}$ |
| Storage temperature           | $T_{stg}$ | -40 to +100  | $^\circ\text{C}$ |

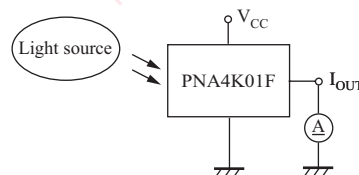
### ■ Electro-Optical Characteristics $T_a = 25^\circ\text{C} \pm 3^\circ\text{C}$ , $V_{CC} = 3\text{ V}$

| Parameter                   | Symbol            | Conditions   | Min  | Typ  | Max  | Unit          |
|-----------------------------|-------------------|--|------|------|------|---------------|
| Operating supply voltage    | $V_{CC}$          |  | 1.4  |      | 5.5  | V             |
| Saturation voltage *3       | $V_{O(sat)}$      | $E_V = 100\text{ lx}$ , $R_L = 100\text{ k}\Omega$ | 2.60 | 2.94 | 3.00 | V             |
| Supply current *1           | $I_{CC}$          | $E_V = 1000\text{ lx}$ , $R_L = 1\text{ k}\Omega$  |      | 480  | 920  | $\mu\text{A}$ |
| Output current 1 *1, *3     | $I_{O1}$          | $E_V = 100\text{ lx}$                              | 29   | 48   | 90   | $\mu\text{A}$ |
| Output current 2 *2, *3     | $I_{O2}$          | $E_V = 10\text{ lx}$                               | 2.5  | 4.3  | 7.9  | $\mu\text{A}$ |
| Output current 3 *2, *3     | $I_{O3}$          | $E_V = 100\text{ lx}$                              | 25   | 43   | 79   | $\mu\text{A}$ |
| Output current ratio        | $I_{O1} / I_{O3}$ |  |      | 1.10 | 1.65 | —             |
| Drain current               | $I_D$             | $E_V = 0\text{ lx}$                                |      | 10   | 100  | nA            |
| Peak sensitivity wavelength | $\lambda_{PD}$    |  |      | 560  |      | nm            |
| Rise time *4                | $t_r$             | $R_L = 5.1\text{ k}\Omega$                         |      | 30   | 1000 | $\mu\text{s}$ |
| Fall time *4                | $t_f$             |  |      | 230  | 1000 | $\mu\text{s}$ |
| Delay time *4               | $t_d$             |  |      | 110  |      | $\mu\text{s}$ |
| Storage time *4             | $t_s$             |  |      | 8    |      | $\mu\text{s}$ |

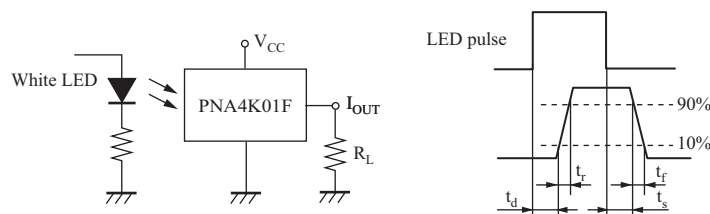
Note) \*1: Light source is CIE standard A light source. (Incandescent lamp)

\*2: Light source is fluorescence light.

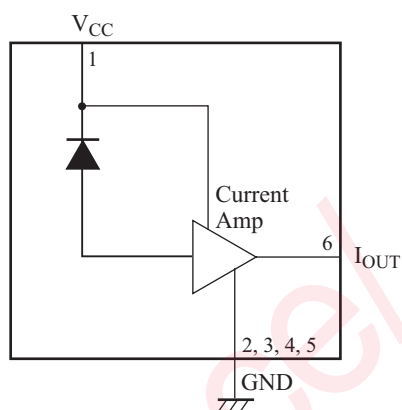
\*3: Output current measurement circuit



\*4: Switching time measurement method

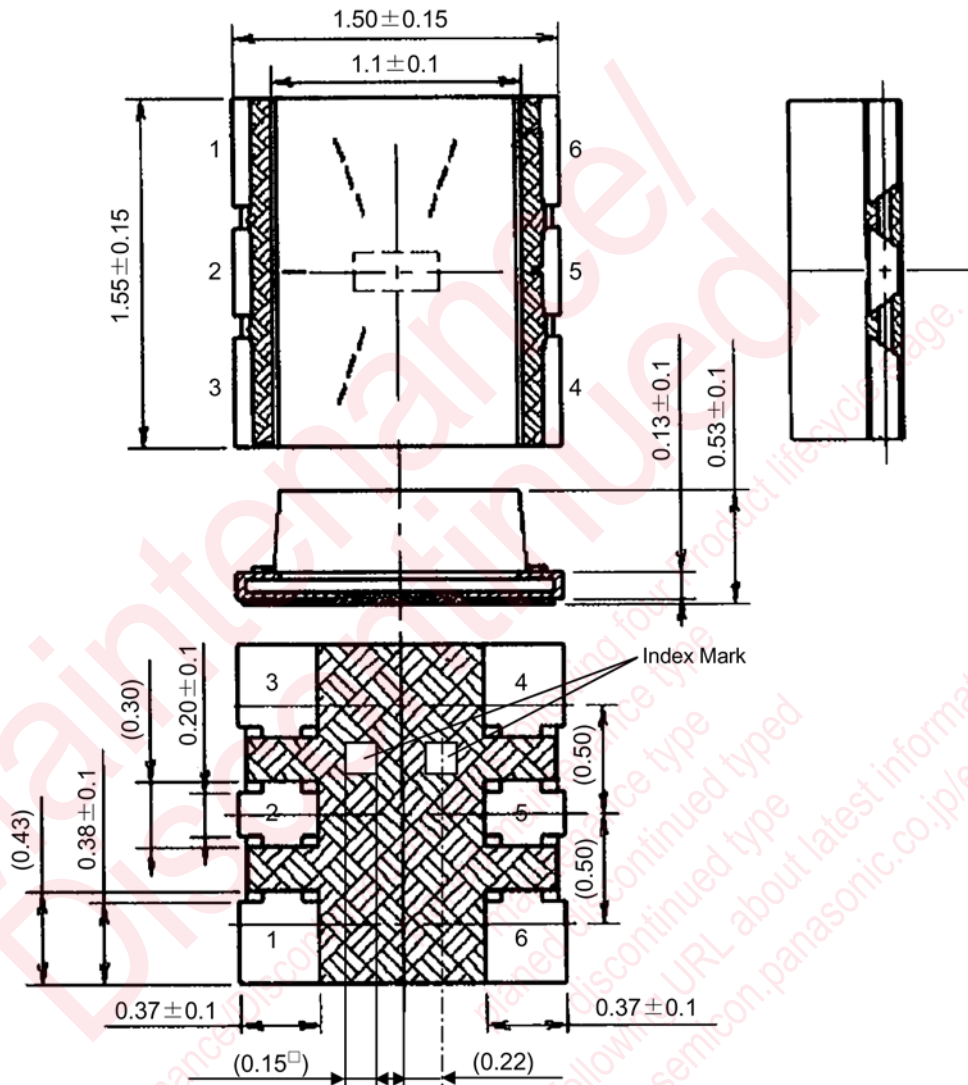


■ Block Diagram



■ Package (Unit: mm)

KPTFTN6K0001



• Pin name

- 1:  $V_{CC}$
- 2: GND
- 3: GND
- 4: GND
- 5: GND
- 6:  $I_{OUT}$

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