

## K4N27

These Photocouplers consist of a Gallium Arsenide Infrared Emitting Diode and a Silicon NPN Phototransistor in a 6-pin package.

### FEATURES

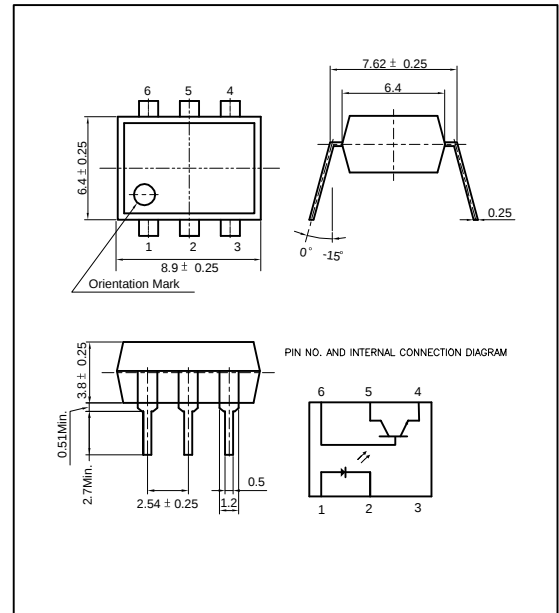
- Switching Time - Typ.  $3\mu\text{s}$
- Collector-Emitter Voltage : Min.30V
- Current Transfer Ratio : Typ.100% (at  $I_F=10\text{mA}$ ,  $V_{CE}=10\text{V}$ )
- Electrical Isolation Voltage : AC2500V<sub>rms</sub>
- UL Recognized File No. E107486

### APPLICATIONS

- Interface between two circuits of different potential
- Vending Machine, Voltage Regulator
- Traffic Controller System
- Programmable Controller

### DIMENSION

(Unit : mm)



### MAXIMUM RATINGS

(Ta=25 )

| Parameter                                       |                                     | Symbol     | Rating           | Unit             |
|-------------------------------------------------|-------------------------------------|------------|------------------|------------------|
| Input                                           | Forward Current                     | $I_F$      | 80               | mA               |
|                                                 | Reverse Voltage                     | $V_R$      | 5                | V                |
|                                                 | Peak Forward Current <sup>*1</sup>  | $I_{FP}$   | 3                | A                |
|                                                 | Power Dissipation                   | $P_D$      | 70               | mW               |
| Output                                          | Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | 35 <sup>*4</sup> | V                |
|                                                 | Emitter-Collector Breakdown Voltage | $BV_{ECO}$ | 6                | V                |
|                                                 | Collector-Base Breakdown Voltage    | $BV_{ECO}$ | 70               | V                |
|                                                 | Collector Current                   | $I_C$      | 100              | mA               |
|                                                 | Collector Power Dissipation         | $P_C$      | 70               | mW               |
| Input to Output Isolation Voltage <sup>*2</sup> |                                     | $V_{iso}$  | AC1500           | V <sub>rms</sub> |
| Storage Temperature                             |                                     | $T_{stg}$  | -55~+125         |                  |
| Operating Temperature                           |                                     | $T_{opr}$  | -30~+100         |                  |
| Lead Soldering Temperature <sup>*3</sup>        |                                     | $T_{sol}$  | 260              |                  |
| Total Power Dissipation                         |                                     | $P_{tot}$  | 200              | mW               |

\*1. Input current with 100 $\mu\text{s}$  pulse width, 1% duty cycle

\*2. Measured at RH=40~60% for 1min

\*3. 1/16 inch form case for 10sec

\*4. Customer Option

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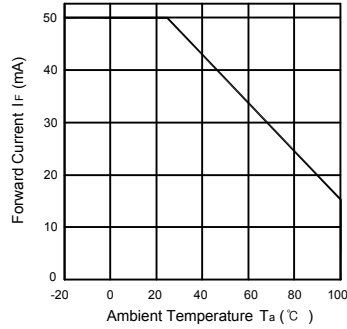
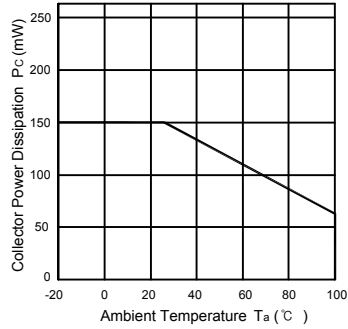
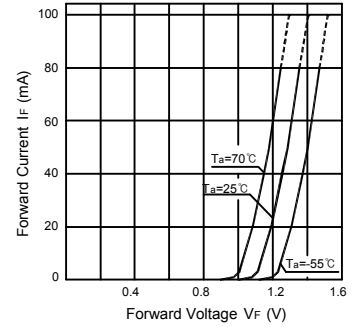
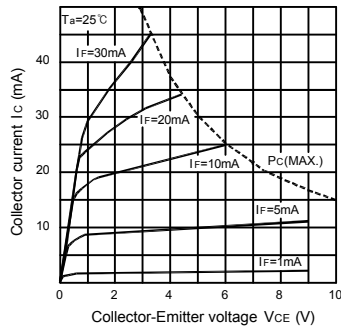
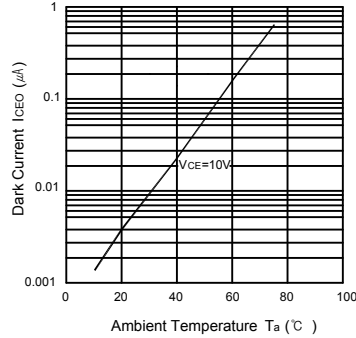
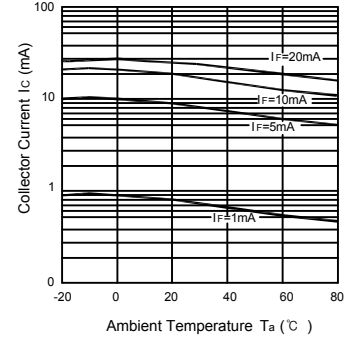
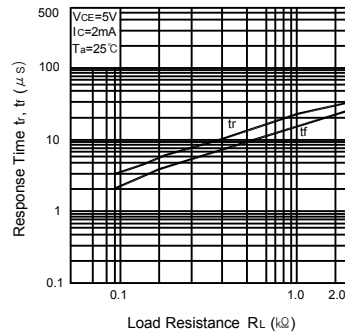
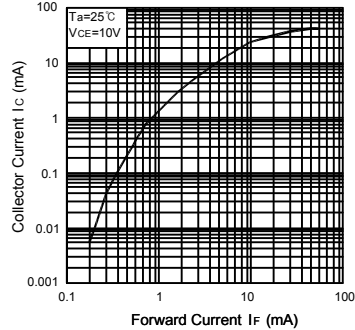
## ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25 , unless otherwise noted)

| Parameter |                                      | Symbol               | Condition                                  | Min. | Typ.             | Max. | Unit. |
|-----------|--------------------------------------|----------------------|--------------------------------------------|------|------------------|------|-------|
| Input     | Forward Voltage                      | V <sub>F</sub>       | I <sub>F</sub> =10mA                       | -    | 1.15             | 1.30 | V     |
|           | Reverse Current                      | I <sub>R</sub>       | V <sub>R</sub> =5V                         | -    | -                | 10   | μA    |
|           | Capacitance                          | C <sub>T</sub>       | V=0, f=1MHz                                | -    | 30               | -    | pF    |
| Output    | Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | I <sub>C</sub> =1mA                        | 35   | -                | -    | V     |
|           | Emitter-Collector Breakdown Voltage  | BV <sub>ECO</sub>    | I <sub>E</sub> =0.1mA                      | 6    | -                | -    | V     |
|           | Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | I <sub>C</sub> =0.1mA                      | 70   | -                | -    | V     |
|           | Collector Dark Current               | I <sub>CEO</sub>     | I <sub>F</sub> =0, V <sub>CE</sub> =10V    | -    | -                | 100  | nA    |
|           | Capacitance                          | C <sub>CE</sub>      | V <sub>CE</sub> =0, f=1MHz                 | -    | 10               | -    | pF    |
| Coupled   | Current Transfer Ratio <sup>*5</sup> | CTR                  | I <sub>F</sub> =10mA, V <sub>CE</sub> =10V | 10   | -                | -    | %     |
|           | Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | I <sub>F</sub> =50mA, I <sub>C</sub> =1mA  | -    | 0.15             | 0.4  | V     |
|           | Input-Output Capacitance             | C <sub>IO</sub>      | V=0, f=1MHz                                | -    | 1                | -    | pF    |
|           | Input-Output Isolation Resistance    | R <sub>IO</sub>      | RH=40~60%, V=500V                          | -    | 10 <sup>11</sup> | -    | Ω     |
|           | Rise Time                            | t <sub>r</sub>       | V <sub>CE</sub> =5V, R <sub>L</sub> =100   | -    | 3                | -    | μs    |
|           | Fall Time                            | t <sub>f</sub>       | I <sub>C</sub> =2mA                        | -    | 3                | -    | μs    |

\*5. CTR=(I<sub>C</sub>/I<sub>F</sub>) X 100 (%)

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Forward Current vs.  
Ambient TemperatureCollector Power Dissipation vs.  
Ambient TemperatureForward Current vs.  
Forward VoltageCollector Current vs.  
Collector-Emitter VoltageDark Current vs.  
Ambient TemperatureCollector Current vs.  
Ambient TemperatureResponse Time vs.  
Load ResistanceCollector Current vs.  
Forward Current

Switching Time Test Circuit

