

## Photocoupler

**KODENSHI**

### KPC814L • KPC824L • KPC844L

These Photocouplers consist of two Gallium Arsenide Infrared Emitting Diodes connected in a reverse-paralled configuration for AC-input and a Silicon NPN Phototransistor per a channel.

The KPC814L has one channel in a 4-pin DIP package.

The KPC824L has two channels in a 8-pin DIP package.

The KPC844L has four channels in a 16-pin DIP package.

#### FEATURES

- Small Package Size
- Collector-Emitter Voltage : Min.35V
- Current Transfer Ratio : 50% Min.(at  $I_F = \pm 5\text{mA}$ ,  $V_{CE} = 5\text{V}$ )
- Electrical Isolation Voltage : AC5000Vrms
- UL Recognized File No. E107486

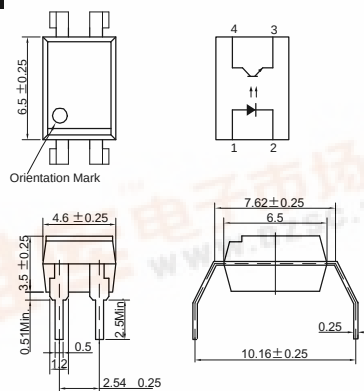
#### APPLICATIONS

- AC Signal Input
- Interface between two circuits of difference
- Vending Machine, Cordless Phone, Key Phone
- Programmable Logic Control

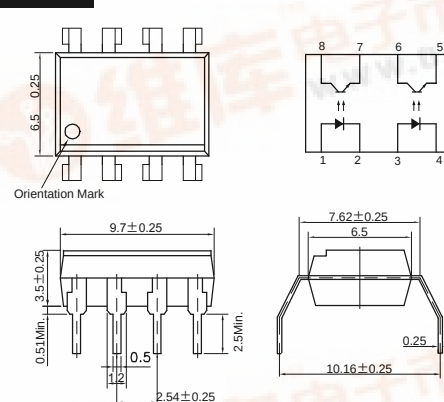
#### DIMENSION

(Unit : mm)

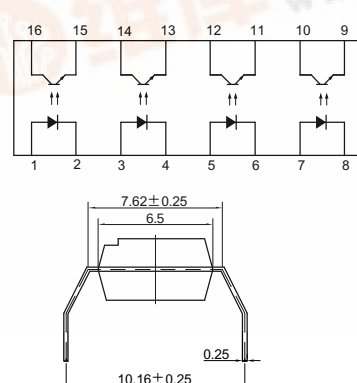
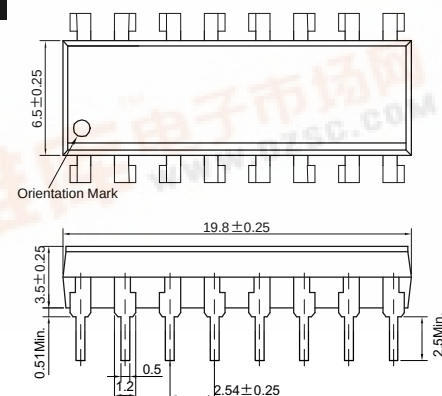
##### KPC814L



##### KPC824L



##### KPC844L



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## MAXIMUM RATINGS

(Ta=25 )

| Parameter                                       |                                     | Symbol | Rating   | Unit |
|-------------------------------------------------|-------------------------------------|--------|----------|------|
| Input                                           | Forward Current                     | IF     | ±50      | mA   |
|                                                 | Peak Forward Current <sup>*1</sup>  | IFP    | ±1       | A    |
|                                                 | Power Dissipation                   | PD     | 70       | mW   |
| Output                                          | Collector-Emitter Breakdown Voltage | BVCEO  | 35       | V    |
|                                                 | Emitter-Collector Breakdown Voltage | BVECO  | 6        | V    |
|                                                 | Collector Current                   | IC     | 50       | mA   |
|                                                 | Collector Power Dissipation         | PC     | 150      | mW   |
| Input to Output Isolation Voltage <sup>*2</sup> |                                     | Viso   | AC5000   | Vrms |
| Storage Temperature                             |                                     | Tstg   | -55~+125 | °C   |
| Operating Temperature                           |                                     | Topr   | -30~+100 | °C   |
| Lead Soldering Temperature <sup>*3</sup>        |                                     | Tsol   | 260      | °C   |
| Total Power Dissipation                         |                                     | Ptot   | 200      | mW   |

\*1. Input current with 100μs pulse width, 1% duty cycle

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

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

## ELECTRO-OPTICAL CHARACTERISTICS

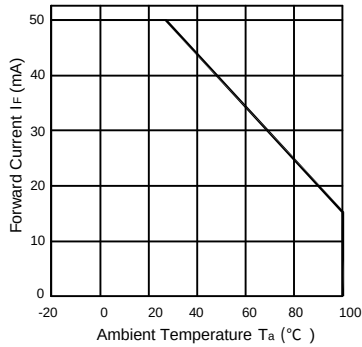
(Ta=25°C , unless otherwise noted)

| Parameter      |                                      | Symbol    | Condition         | Min. | Typ.             | Max. | Unit. |
|----------------|--------------------------------------|-----------|-------------------|------|------------------|------|-------|
| Input          | Forward Voltage                      | VF        | IF= ±10mA         | -    | 1.15             | 1.30 | V     |
|                | Capacitance                          | CT        | V=0, f=1kHz       | -    | 30               | -    | pF    |
| Output         | Collector-Emitter Breakdown Voltage  | BVCEO     | IC=0.5mA          | 35   | -                | -    | V     |
|                | Emitter-Collector Breakdown Voltage  | BVECO     | IE=0.1mA          | 6    | -                | -    | V     |
|                | Collector Dark Current               | ICEO      | IF=0, VCE=24V     | -    | -                | 100  | nA    |
|                | Capacitance                          | CCE       | VCE=0, f=1kHz     | -    | 10               | -    | pF    |
| Coupled        | Current Transfer Ratio <sup>*4</sup> | CTR       | IF=±5mA, VCE=5V   | 50   | -                | 600  | %     |
|                | Collector-Emitter Saturation Voltage | VCE(SAT)  | IF=±5mA, IC=1mA   | -    | 0.15             | 0.4  | V     |
|                | Input-Output Capacitance             | CIO       | V=0, f=1kHz       | -    | 1                | -    | pF    |
|                | Input-Output Isolation Resistance    | RIO       | RH=40~60%, V=500V | -    | 10 <sup>11</sup> | -    | °C    |
|                | Rise Time                            | tr        | VCE=5V, RL=100    | -    | 4                | -    | °C    |
|                | Fall Time                            | tf        | IC=2mA            | -    | 4                | -    | °C    |
| Symmetry Ratio |                                      | CTR1/CTR2 |                   | 1    | -                | 3    |       |

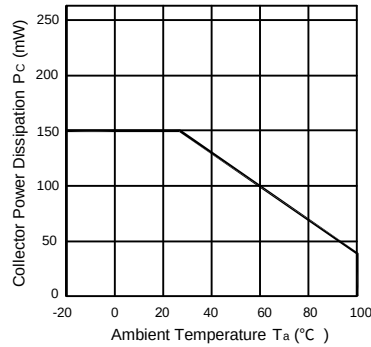
\*4. CTR=(IC/IF) X 100 (%)

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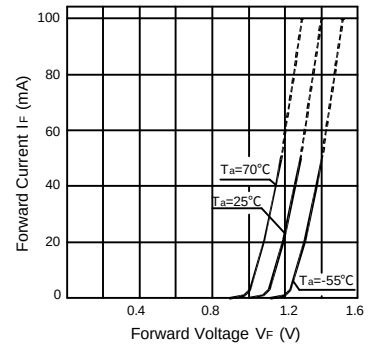
**Forward Current vs. Ambient Temperature**



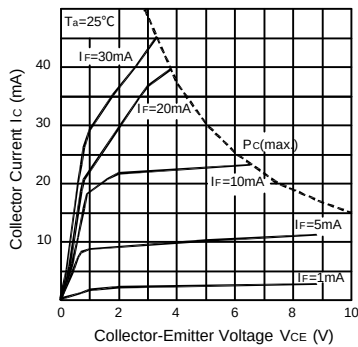
**Collector Power Dissipation vs. Ambient Temperature**



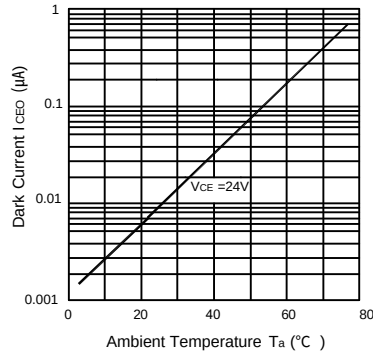
**Forward Current vs. Forward Voltage**



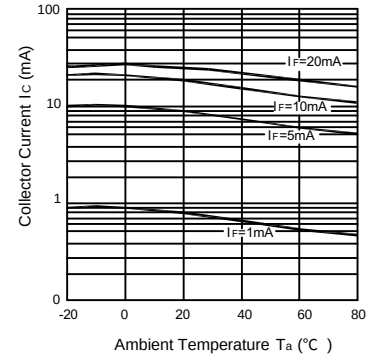
**Collector Current vs. Collector-Emitter Voltage**



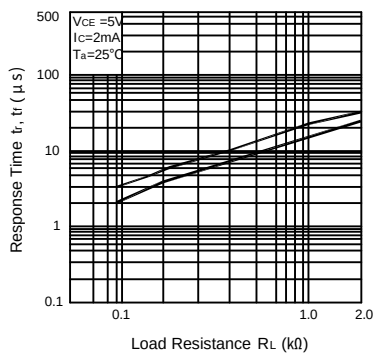
**Dark Current vs. Ambient Temperature**



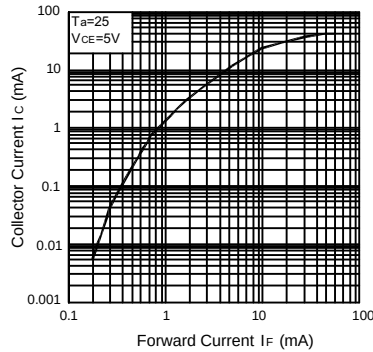
**Collector Current vs. Ambient Temperature**



**Response Time vs. Load Resistance**



**Collector Current vs. Forward Current**



**Switching Time Test Circuit**

