**Photocoupler**

# 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 $I_F$=±5mA, $V_{CE}$=5V)
- Electrical Isolation Voltage : AC5000$V_{rms}$
- UL Recognized File No. E107486

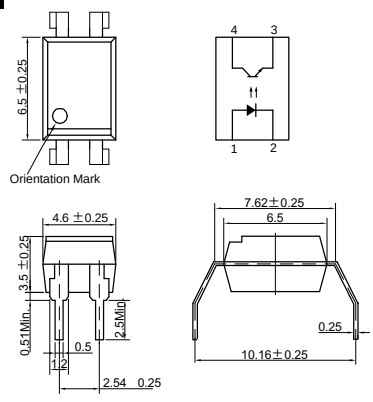
## APPLICATIONS

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

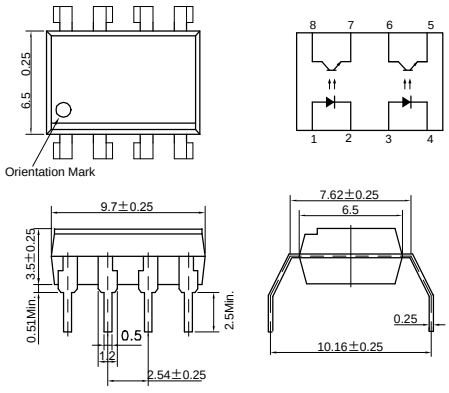
## DIMENSION

(Unit : mm)

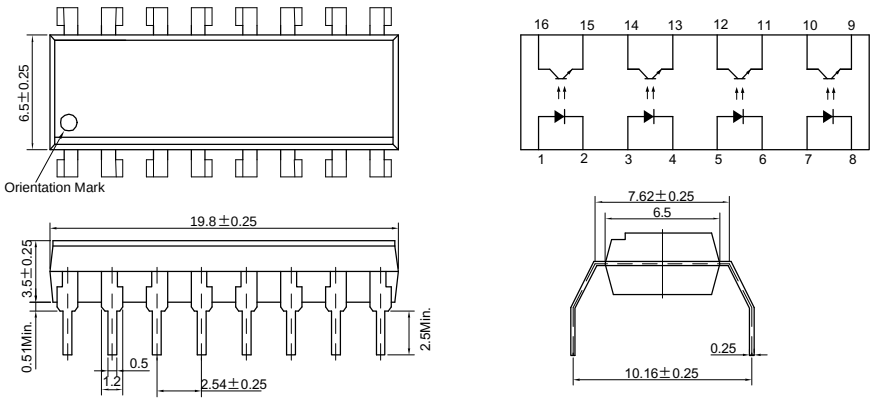
**KPC814L**




**KPC824L**




**KPC844L**



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**MAXIMUM RATINGS** (Ta=25 )

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward Current | $I_F$ | ±50 | mA |
| | Peak Forward Current *1 | $I_{FP}$ | ±1 | A |
| | Power Dissipation | $P_D$ | 70 | mW |
| Output | Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | 35 | V |
| | Emitter-Collector Breakdown Voltage | $BV_{ECO}$ | 6 | V |
| | Collector Current | $I_C$ | 50 | mA |
| | Collector Power Dissipation | $P_C$ | 150 | mW |
| Input to Output Isolation Voltage *2 | | $V_{iso}$ | AC5000 | $V_{rms}$ |
| Storage Temperature | | $T_{stg}$ | -55~+125 | ℃ |
| Operating Temperature | | $T_{opr}$ | -30~+100 | ℃ |
| Lead Soldering Temperature *3 | | $T_{sol}$ | 260 | ℃ |
| Total Power Dissipation | | $P_{tot}$ | 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℃ , unless otherwise noted)

| Parameter | | Symbol | Condition | Min. | Typ. | Max. | Unit. |
|---|---|---|---|---|---|---|---|
| Input | Forward Voltage | $V_F$ | $I_F$= ±10mA | - | 1.15 | 1.30 | V |
| | Capacitance | $C_T$ | V=0, f=1kHz | - | 30 | - | pF |
| Output | Collector-Emitter Breakdown Voltage | $BV_{CEO}$ | $I_C$=0.5mA | 35 | - | - | V |
| | Emitter-Collector Breakdown Voltage | $BV_{ECO}$ | $I_E$=0.1mA | 6 | - | - | V |
| | Collector Dark Current | $I_{CEO}$ | $I_F$=0, $V_{CE}$=24V | - | - | 100 | nA |
| | Capacitance | $C_{CE}$ | $V_{CE}$=0, f=1kHz | - | 10 | - | pF |
| Coupled | Current Transfer Ratio *4 | CTR | $I_F$=±5mA, $V_{CE}$=5V | 50 | - | 600 | % |
| | Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_F$=±5mA, $I_C$=1mA | - | 0.15 | 0.4 | V |
| | Input-Output Capacitance | $C_{IO}$ | V=0, f=1kHz | - | 1 | - | pF |
| | Input-Output Isolation Resistance | $R_{IO}$ | RH=40~60%, V=500V | - | $10^{11}$ | - | ℃ |
| | Rise Time | tr | $V_{CE}$=5V, $R_L$=100 | - | 4 | - | ℃ |
| | Fall Time | tf | $I_C$=2mA | - | 4 | - | ℃ |
| Symmetry Ratio | | CTR1/CTR2 | | 1 | - | 3 | |

*4. CTR=($I_C$/$I_F$) X 100 (%)

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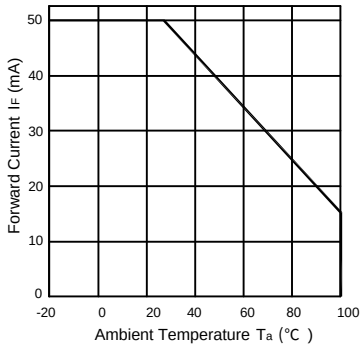
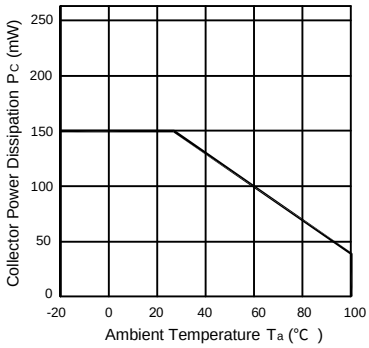
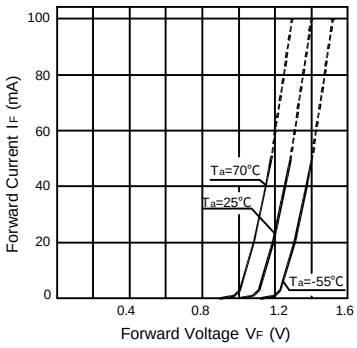
### Forward Current vs. Ambient Temperature



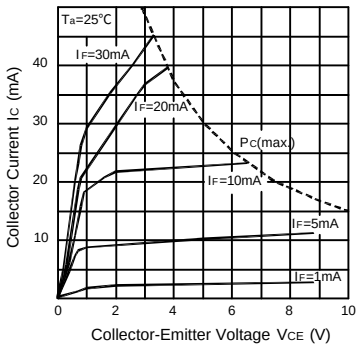

### Collector Power Dissipation vs. Ambient Temperature



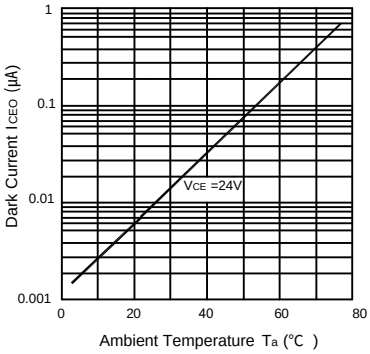

### Forward Current vs. Forward Voltage



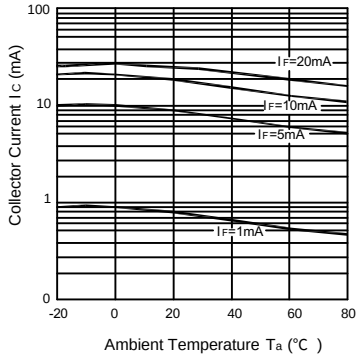

### Collector Current vs. Collector-Emitter Voltage



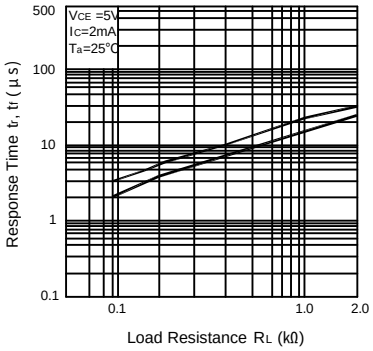

### Dark Current vs. Ambient Temperature



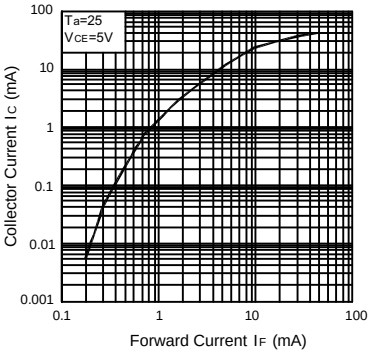

### Collector Current vs. Ambient Temperature




### Response Time vs. Load Resistance




### Collector Current vs. Forward Current




### Switching Time Test Circuit