

K301 • K302 • K304

These Photocouplers consist of a Gallium Arsenide Infrared Emitting Diode and a Silicon NPN Photo Darlington transistor per a channel.

The K301 has one channel in a 4-pin mini-flat SMD package.

The K302 has two channels in a 8-pin mini-flat SMD package.

The K304 has four channels in a 16-pin mini-flat SMD package.

FEATURES

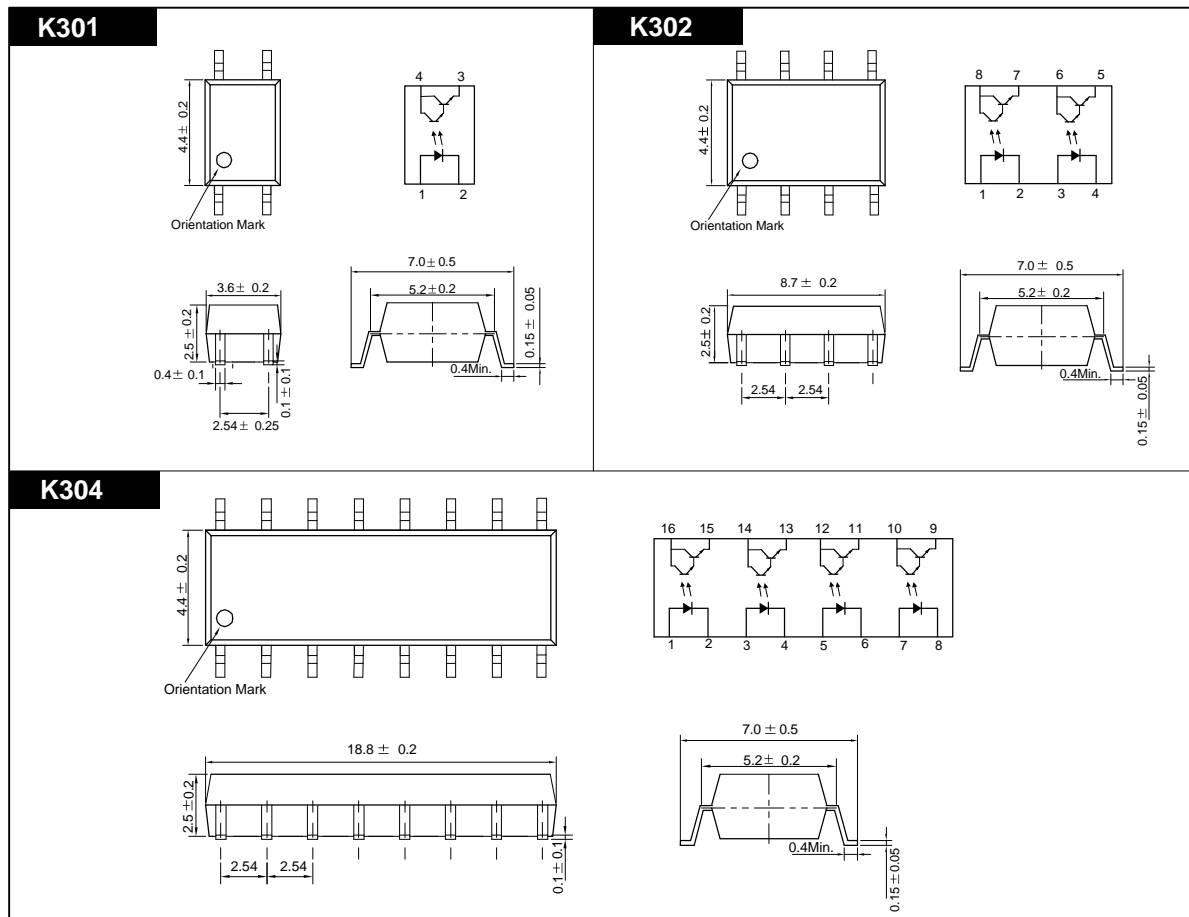
- Mini-flat Package
- Collector-Emitter Voltage : Min.30V
- Current Transfer Ratio : Type 600% (at $I_F=1mA$, $V_{CE}=2V$)
- Electrical Isolation Voltage : AC3750V_{rms}

APPLICATIONS

- Interface between two circuits of different potential
- Telephone Line Receiver
- Automatic Vending Machine
- Power Supply Regulators

DIMENSION

(Unit : mm)



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MAXIMUM RATINGS

(Ta=25)

| Parameter | | Symbol | Rating | Unit |
|---|-------------------------------------|--------|----------|------|
| Input | Forward Current | IF | 50 | mA |
| | Reverse Voltage | VR | 5 | V |
| | Peak Forward Current ^{*1} | IFP | 1 | A |
| | Power Dissipation | PD | 70 | mW |
| | Junction Temperature | TJ | 125 | |
| Output | Collector-Emitter Breakdown Voltage | BVCEO | 30 | V |
| | Emitter-Collector Breakdown Voltage | BVECO | 5 | V |
| | Collector Current | IC | 50 | mA |
| | Collector Power Dissipation | PC | 150 | mW |
| Input to Output Isolation Voltage ^{*2} | | Viso | AC3750 | Vrms |
| Storage Temperature | | Tstg | -55~+125 | |
| Operating Temperature | | Topr | -30~+85 | |
| Lead Soldering Temperature ^{*3} | | Tsol | 260 | |
| Total Power Dissipation | | Ptot | 250 | 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

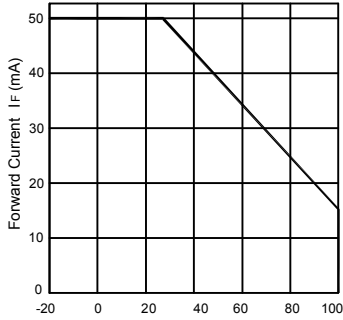
(Ta=25 , unless otherwise noted)

| Parameter | | Symbol | Condition | Min. | Typ. | Max. | Unit. |
|-----------|--------------------------------------|----------|-------------------|------|------------------|------|-------|
| Input | Forward Voltage | VF | IF=10mA | - | 1.15 | 1.30 | V |
| | Reverse Current | IR | VR=5V | - | - | 10 | μA |
| | Capacitance | CT | V=0, f=1KHz | - | 30 | - | pF |
| Output | Collector-Emitter Breakdown Voltage | BVCEO | IC=0.5mA | 30 | - | - | V |
| | Emitter-Collector Breakdown Voltage | BVECO | IE=0.1mA | 5 | - | - | V |
| | Collector Dark Current | ICEO | IF=0, VCE=10V | - | - | 100 | nA |
| | Capacitance | CCE | VCE=0, f=1KHz | - | 10 | - | pF |
| Coupled | Current Transfer Ratio ^{*4} | CTR | IF=1mA, VCE=2V | 300 | - | 1500 | % |
| | Collector-Emitter Saturation Voltage | VCE(SAT) | IF=1mA, IC=2mA | - | 0.85 | 1.0 | V |
| | Input-Output Capacitance | CIO | V=0, f=1KHz | - | 5 | - | pF |
| | Input-Output Isolation Resistance | RIO | RH=40~60%, V=500V | - | 10 ¹¹ | - | |
| | Rise Time | tr | VCE=10V, RL=100 | - | 100 | - | μs |
| | Fall Time | tf | IC=10mA | - | 100 | - | μs |

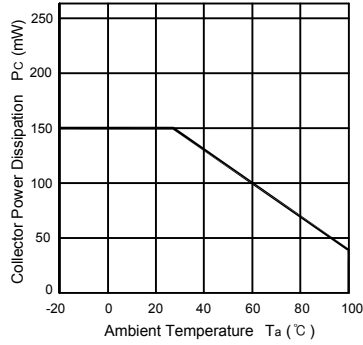
*4. CTR=(IC/IF) X 100 (%)

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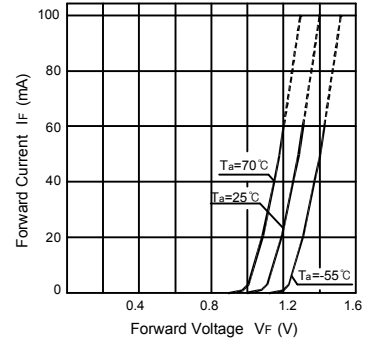
Forward Current vs. Ambient Temperature



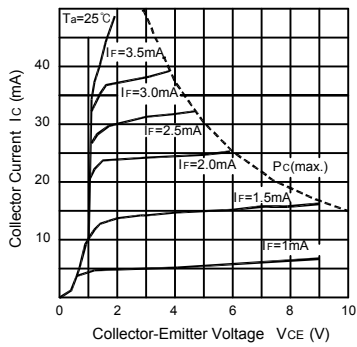
Collector Power Dissipation vs. Ambient Temperature



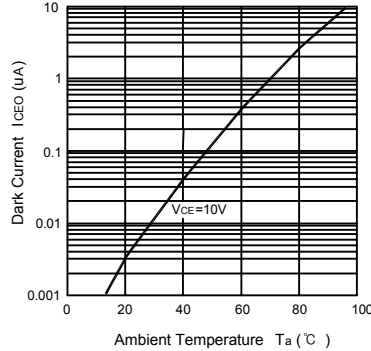
Forward Current vs. Forward Voltage



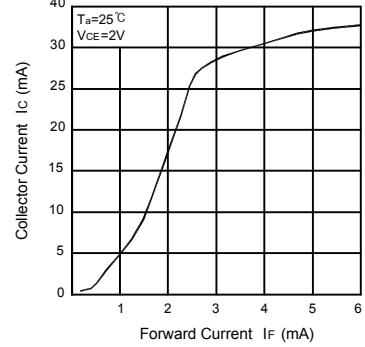
Collector Current vs. Collector-Emitter Voltage



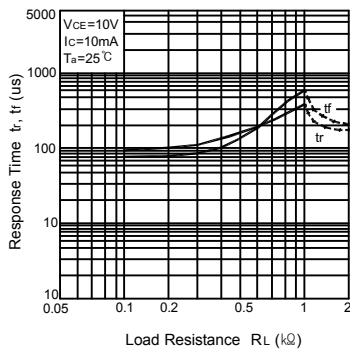
Dark Current vs. Ambient Temperature



Collector Current vs. Forward Current



Response Time vs. Load Resistance



Switching Time Test Circuit

