# PRODUCT SPECIFICATION

DATE:08/13/2010

| cosmo ELECTRONICS CORPORATION | Photocoupler : KT1000 | NO.61P04084 | REV. 2 |
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## Mini-Flat package
## General purpose Photocoupler

### ● Features

1. High isolation voltage 5000Vrms.
2. Opaque type,SMD low profile 4 lead package.
3. Current transfer ratio.
   (CTR : MIN.50% at IF=5mA Vce=5V)
4. 8mm outer creepage distance.
5. DC input with transistor output.

### ●Applications

1. Hybrid substrates that require high density mounting.
2. Programmable controllers.
3. Switchmode power supplies.
4. Microprocessor system interface.

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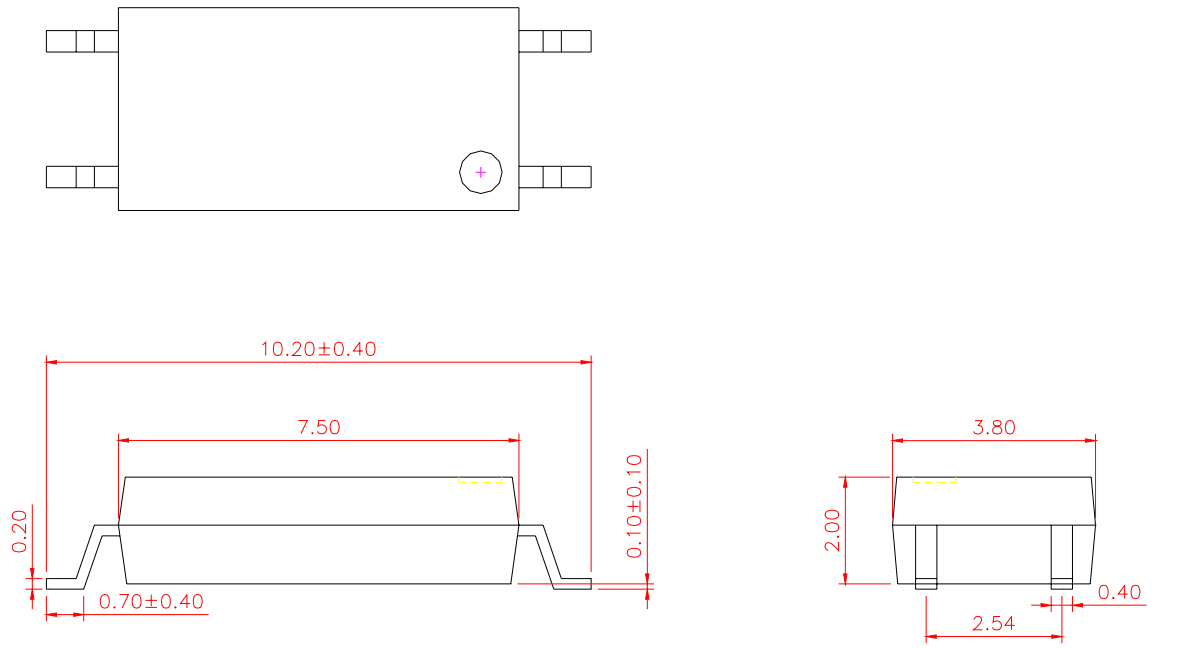
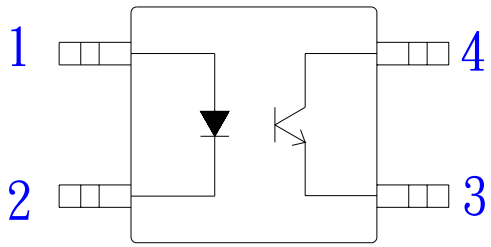
## 1. OUTSIDE DIMENSION : UNIT (mm)




TOLERANCE : ±0.2mm

## 2. SCHEMATIC : TOP VIEW




1. Anode
2. Cathode
3. Emitter
4. Collector

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## ●Absolute Maximum Ratings

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | Forward current | $I_F$ | 60 | mA |
| | Peak forward current | $I_{FM}$ | 1 | A |
| | Reverse voltage | $V_R$ | 6 | V |
| | Power dissipation | P | 100 | mW |
| Output | Collector-emitter voltage | $V_{CEO}$ | 80 | V |
| | Emitter-collector voltage | $V_{ECO}$ | 7 | V |
| | Collector current | $I_C$ | 50 | mA |
| | Collector power dissipation | $P_C$ | 150 | mW |
| Total power dissipation | | Ptot | 250 | mW |
| Isolation voltage 1 minute | | Viso | 5000 | Vrms |
| Operating temperature | | Topr | -55 to +100 | ℃ |
| Storage temperature | | Tstg | -55 to +125 | ℃ |
| Soldering temperature 10 second | | Tsol | 260 | ℃ |

## ●Electro-optical Characteristics

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| Input | Forward voltage | $V_F$ | IF=20mA | - | 1.2 | 1.4 | V |
| | Reverse current | $I_R$ | VR=4V | - | - | 10 | uA |
| | Terminal capacitance | Ct | V=0, f=1kHz | - | 30 | 250 | pF |
| Output | Collector dark current | $I_{CEO}$ | $V_{CE}$=20V, $I_F$=0 | - | - | 0.1 | uA |
| | Collector-emitter breakdown voltage | $BV_{CEO}$ | Ic=0.1mA, $I_F$=0 | 80 | - | - | V |
| | Emitter-collector breakdown voltage | $BV_{ECO}$ | $I_E$=100uA, $I_F$=0 | 7 | - | - | V |
| Transfer charac-teristics | Current transfer ratio | CTR | $I_F$=5mA, $V_{CE}$=5V | 50 | - | 600 | % |
| | Collector-emitter saturation voltage | $V_{CE}$(sat) | $I_F$=20mA, Ic=1mA | - | 0.1 | 0.3 | V |
| | Isolation resistance | Riso | DC500V, 40 to 60%RH | $5x10^{10}$ | $10^{11}$ | - | ohm |
| | Floating capacitance | $C_f$ | V=0, f=1MHz | - | 0.6 | 1.0 | pF |
| | Response time (Rise) | tr | Vce=2V,Ic=2mA,RL=100ohm | - | 5 | 20 | us |
| | Response time (Fall) | tf | | - | 4 | 20 | us |

## ●Classification table of current transfer ratio is shown below.

| CTR RANK | CTR(%) |
|---|---|
| KT1005 | 50 TO 150 |
| KT1006 | 100 TO 300 |
| KT1007 | 80 TO 160 |
| KT1008 | 130 TO 260 |
| KT1009 | 200 TO 400 |
| KT1000 | 50 TO 600 |

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Fig.1 Forward Current vs. Ambient Temperature

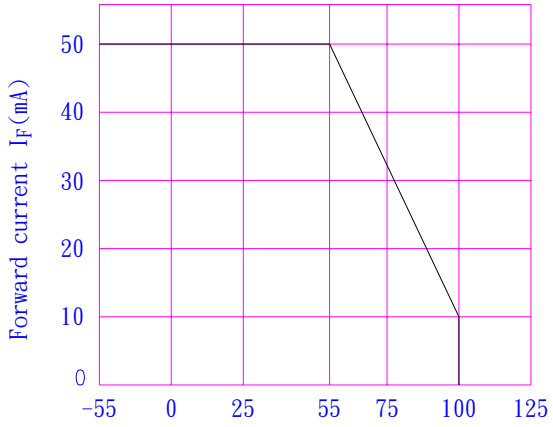


Fig.2 Diode Power Dissipation vs. Ambient Temperature

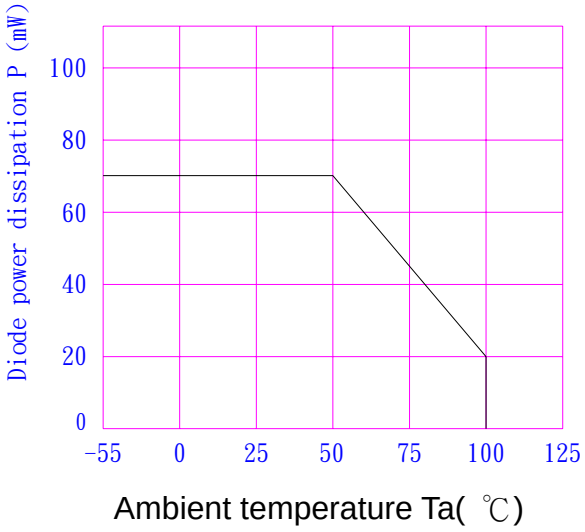


Fig.3 Collector Power Dissipation vs. Ambient Temperature

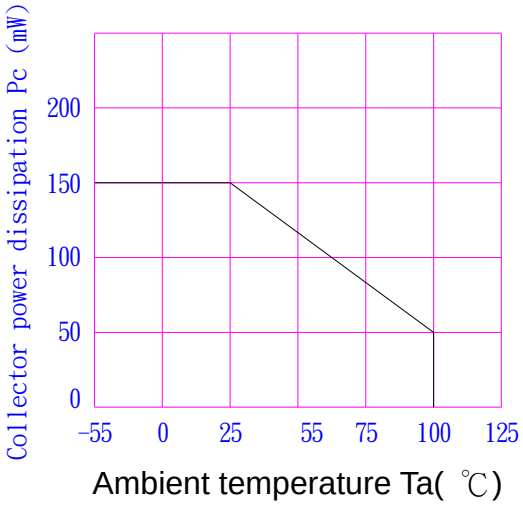


Fig4 Total Power Dissipation vs. Ambient Temperature

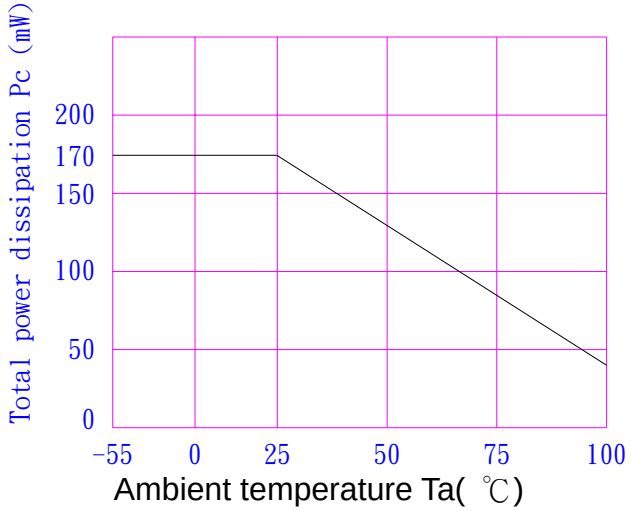


Fig.5 Peak Forward Current vs. Duty Ratio

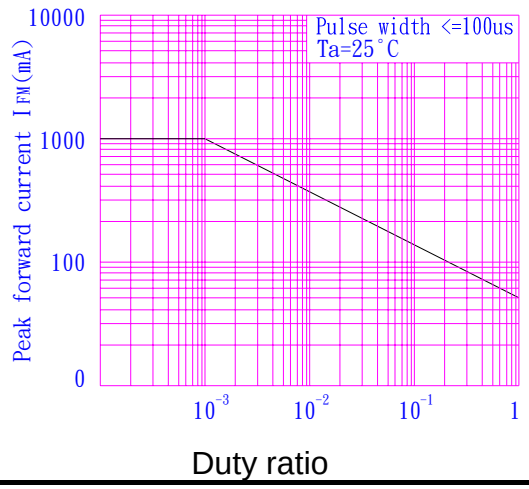


Fig.6 Forward Current vs. Forward Voltage

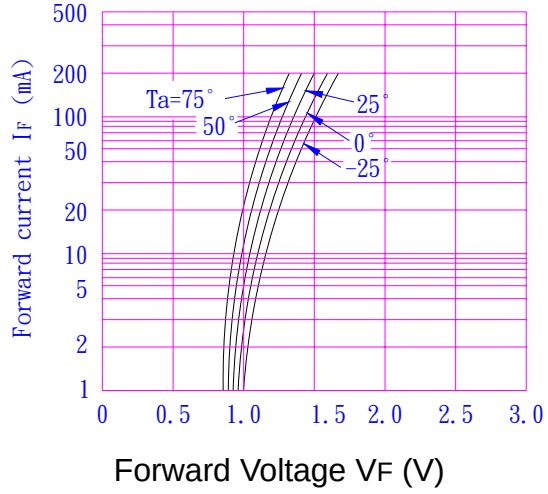

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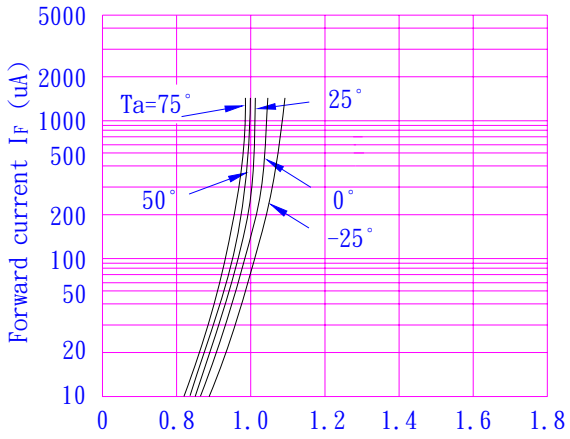
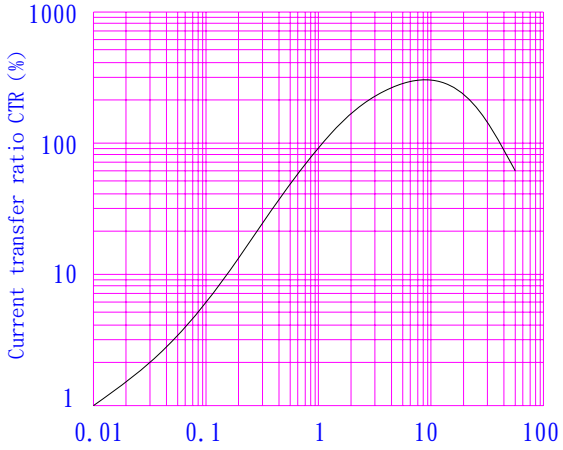
Fig.7 Forward Current vs. Forward Current



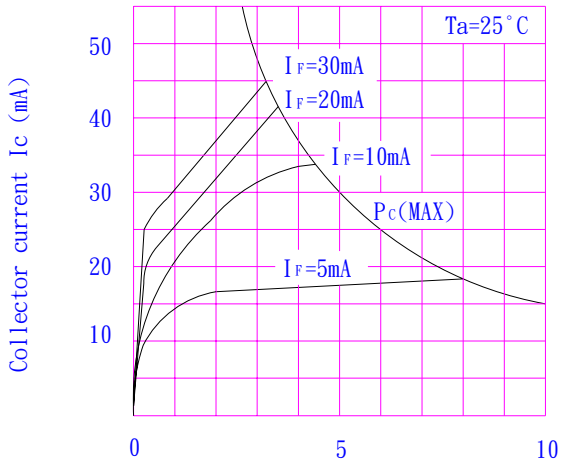

Forward Voltage VF (V)

Fig.8 Current Transfer Ratio vs. Forward Current



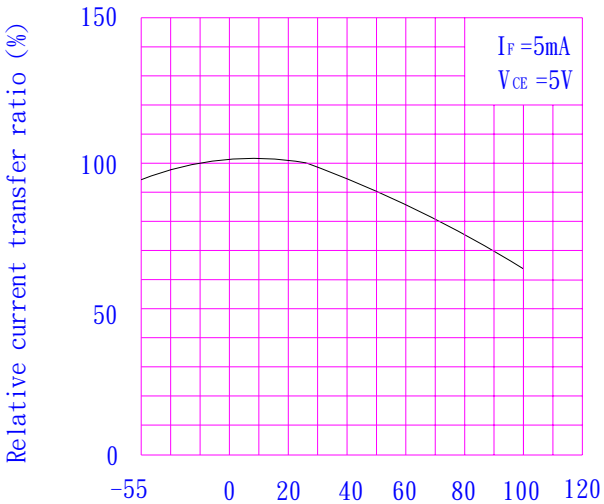

Forward Current IF (mA))

Fig.9 Collector Current vs. Collector-Emitter Voltage




Collector-Emitter voltage VCE(V)

Fig.10 Relative Current Transfer Ratio vs. Ambient Temperature




Ambient temperature Ta(℃)

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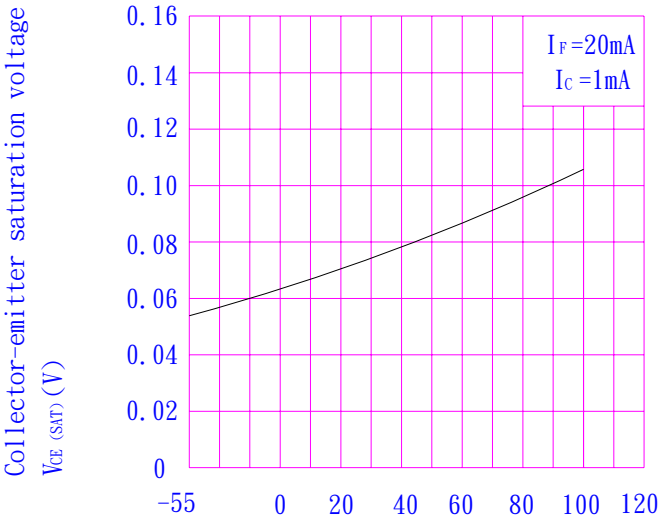
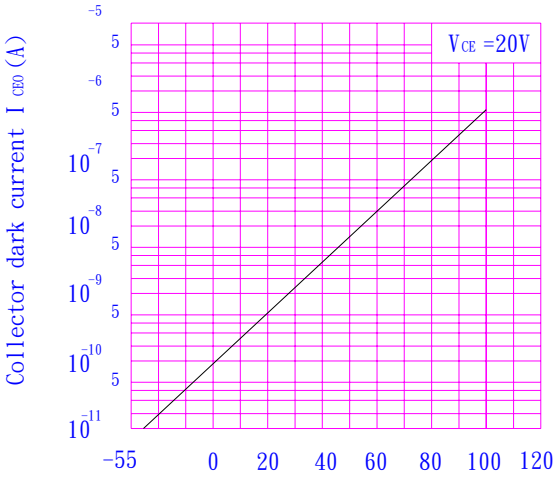
Fig.11 Collector-emitter Saturation Voltage vs. Ambient Temperature



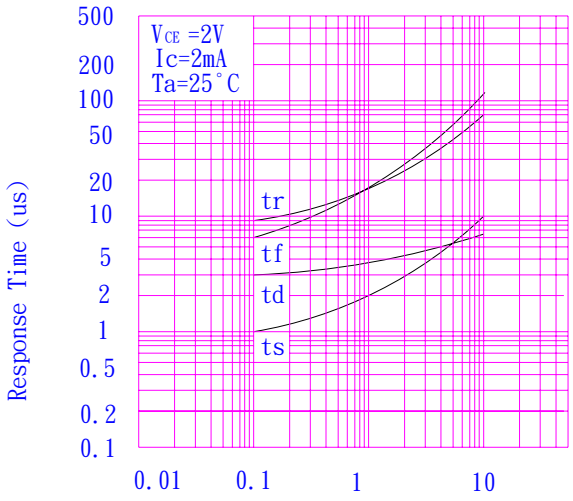

Ambient temperature Ta(℃)

Fig.12 Collector Dark Current vs. Ambient Temperature




Ambient Temperature Ta(℃)

Fig.13 Response Time vs. Load Resistance




Load Resistance RL(K ohm)

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