

# PRODUCT SPECIFICATION

RoHS Compliance

DATE: 08/14/2008

|   |                                 |              |     |
|---|---------------------------------|--------------|-----|
| <b>cosmo</b><br>ELECTRONICS CORPORATION | Photocoupler :<br><b>KPC457</b> | NO.61P04025  | REV |
|   |                                 | SHEET 1 OF 4 | 3   |

## High Speed 1Mb/s,High CMR Mini-flat Package Photocoupler

### ●Features

- 1.High speed response( $t_{PLH}$ :typ.0.2us,  $t_{PHL}$ :typ.0.4us).
- 2.High noise immunity due to high instantaneous common mode rejection voltage( $CMH$ :Min. 15KV/us,  $CML$ :Min. -15KV/us).
- 3.High isolation voltage between input and output (Viso:3750Vrms).
- 4.Mini-flat 5 pin package.

### ●Applications

1. Computers, measuring instruments,control equipment.
2. High speed line receivers, high speed logic.
3. Telephone sets.
4. Signal transmission between circuits of different potentials and impedances

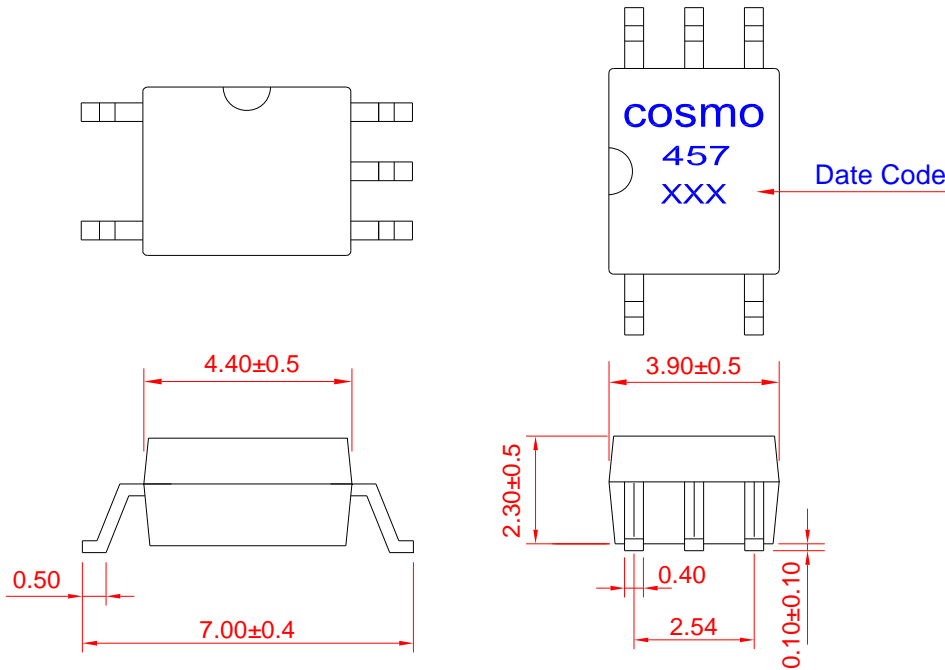
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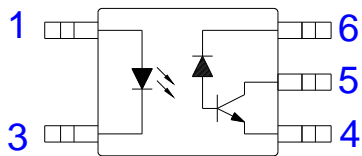
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## 1. OUTSIDE DIMENSION : UNIT (mm)



TOLERANCE :  $\pm 0.2$ mm

## 2. SCHEMATIC : Top View



- 1. Anode
- 3. Cathode
- 4. GND(Emitter)
- 5. Vo (Open collector)
- 6. Vcc

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## ● Absolute Maximum Ratings

(Ta=25°C)

| Parameter                       | Symbol                 | Rating      | Unit        |    |
|---------------------------------|------------------------|-------------|-------------|----|
| Input                           | Forward current (*1)   | IF          | 25          | mA |
|                                 | Peak forward current   | IFM         | 200         | mA |
|                                 | Reverse voltage        | VR          | 5           | V  |
|                                 | Power dissipation (*2) | PD          | 45          | mW |
| Output                          | Supply voltage         | VCC         | -0.5 to +30 | V  |
|                                 | Output voltage         | Vo          | -0.5 to +20 | V  |
|                                 | Output current         | Io          | 8           | mA |
|                                 | Power dissipation (*3) | Po          | 100         | mW |
| Total power dissipation (*3)    | Ptot                   | 100         | mW          |    |
| Isolation voltage 1 minute (*4) | Viso                   | 3750        | Vrms        |    |
| Operating temperature           | Topr                   | -55 to +85  | °C          |    |
| Storage temperature             | Tstg                   | -55 to +125 | °C          |    |
| Soldering temperature 10 second | Tsol                   | 260         | °C          |    |

\*1 When ambient temperature goes above 70°C, the power dissipation goes down at 0.8mA/°C.

\*2 When ambient temperature goes above 70°C, the power dissipation goes down at 1.5mW/°C.

\*3 When ambient temperature goes above 70°C, the power dissipation goes down at 1.8mW/°C.

\*4 40 to 80%RH AC for 1 minute, f=60HZ.

## ● Electro-optical Characteristics (\*5)

(Ta=25°C)

| Parameter                | Symbol  | Conditions | MIN.   | TYP.               | MAX.               | Unit |       |
|--------------------------|---|------------|--|--------------------|--------------------|------|-------|
| Input                    | Forward voltage   | VF         | IF=16mA                                      | -                  | 1.7                | 1.95 | V     |
|                          | Reverse current   | IR         | VR=5V  | -                  | -                  | 10   | uA    |
|                          | Terminal capacitance  | Ct         | V=0, f=1MHZ                                  | -                  | 60                 | 250  | pF    |
| Output                   | High level output current (1)                                   | IOH (1)    | IF=0, VCC=5.5V, Vo=5.5V                      | -                  | 3                  | 500  | nA    |
|                          | High level output current (2)                                   | IOH (2)    | IF=0, VCC=15V, Vo=15V                        | -                  | -                  | 1.0  | uA    |
|                          | High level output current (3) (*6)                              | IOH (3)    |  | -                  | -                  | 50   | uA    |
|                          | High level supply current (1)                                   | ICCH (1)   | IF=0, VCC=15V, Vo=Open                       | -                  | 0.02               | 1.0  | uA    |
|                          | High level supply current (2) (*6)                              | ICCH (2)   |  | -                  | -                  | 2.0  | uA    |
|                          | Low level supply current  | ICCL       | IF=16mA, VCC=15V, Vo=Open                    | -                  | 120                | -    | uA    |
|                          | Low level supply voltage  | VL         | IF=16mA, VCC=4.5V, Io=2.4mA                  | -                  | -                  | 0.4  | V     |
| Transfer characteristics | Current transfer ratio (1)                                      | CTR(1)     | IF=16mA, VCC=4.5V, Vo=0.4V, RL=1.9K ohm      | 19                 | -                  | 50   | %     |
|                          | Current transfer ratio (2) (*6)                                 | CTR(2)     | IF=16mA, VCC=4.5V, Vo=0.4V, RL=1.9K ohm      | 15                 | -                  | -    | %     |
|                          | Isolation resistance  | RISO       | DC=500V, 40 to 60%RH                         | 5x10 <sup>10</sup> | 1x10 <sup>11</sup> | -    | ohm   |
|                          | Floating capacitance  | Cf         | V=0, f=1MHZ                                  | -                  | 0.6                | 1.0  | pF    |
|                          | "High-->Low" propagation delay time                             | tPHL       | IF=16mA, VCC=5V, RL=1.9K ohm                 | -                  | 0.2                | 0.8  | us    |
|                          | "High-->Low" propagation delay time                             | tPLH       |  | -                  | 0.4                | 0.8  | us    |
|                          | Instantaneous common mode rejection voltage (High level output) | CMH        | IF=0, VCC=5V, VCM=1.0KV(p-p), RL=1.9K ohm    | 15                 | 30                 | -    | KV/us |
|                          | Instantaneous common mode rejection voltage (High level output) | CML        | IF=16mA, VCC=5V, VCM=1.0KV(p-p), RL=1.9K ohm | -15                | -30                | -    | KV/us |

\*5 It shall connect a by-pass capacitor of 0.01uF or more between Vcc (pin 6) and GND(pin 4) near the device, when it measures transfer characteristics and the output side characteristics.

\*6 Ta=0 to 70°C.

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