

cosmo

**High Reliability Digital Output IC
Photo IC Photo Coupler**

KP7010

UL 1577 (File No.E169586)

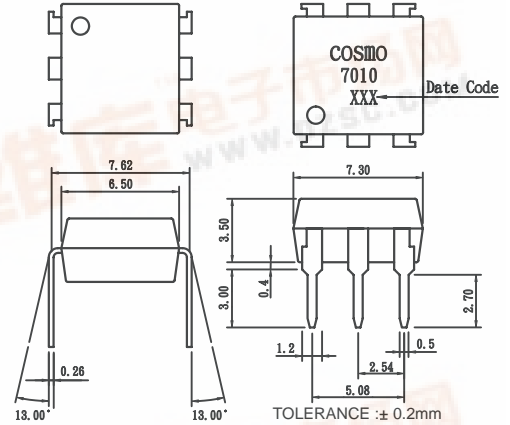
Features

1. High sensitivity.
2. TTL and LSTTL compatible output.
3. Operating supply voltage range.
(Vcc 4.5V to 17V)
4. Output form pull-up resistor built-in type.
5. Low output current dissipation.
(Iccl:MAX. 3.8mA)
6. High isolation voltage between input and output
(Viso:5000Vrms).
7. Available package : DIP/ SMD/ H. (For Package Dimension please refer to page 82)

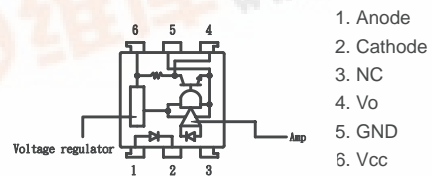
Applications

1. Computer terminals.
2. High speed line receivers.
3. Interfaces with various data transmission equipment.
4. Switching regulators.

Outside Dimension : Unit (mm)



Schematic : Top View



1. Anode
2. Cathode
3. NC
4. Vo
5. GND
6. Vcc

Absolute Maximum Ratings

(Ta=25°C)

| Parameter | | Symbol | Rating | Unit |
|----------------------------|----------------------|--------|-------------|------|
| Input | Forward current | IF | 10 | mA |
| | Peak forward current | IFM | 1 | V |
| | Reverse voltage | VR | 6 | V |
| | Power dissipation | PD | 70 | mW |
| Output | Supply voltage | VCC | -0.5 to 17 | V |
| | Output current | IO | 50 | mA |
| | Power dissipation | PD | 150 | mW |
| Total power dissipation | | Ptot | 170 | mW |
| Isolation voltage 1 minute | | Viso | 5000 | Vrms |
| Operating temperature | | Topr | -25 to +85 | °C |
| Storage temperature | | Tstg | -40 to +125 | °C |
| Soldering temperature | | Tsol | 260 | °C |

Electro-optical Characteristics

(Ta=25°C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit | |
|------------------------------------|---------------------------|------------------------------------|---------------------------|---|------------------|------|------|----|
| Input | Forward voltage | VF | IF =10mA | — | 1.2 | 1.4 | V | |
| | Peak forward voltage | VFM | IFM =0.5A | — | — | 3.5 | V | |
| | Reverse current | IR | VR =4V | — | — | 10 | uA | |
| | Terminal capacitance | Ct | V=0, f=1kHz | — | 30 | — | pF | |
| Output | Operating supply voltage | VCC | | 4.5 | — | 17 | V | |
| | Low level output voltage | VOL | IOL =16mA, VCC =5V, IF =0 | — | 0.15 | 0.4 | V | |
| | High level output voltage | VOH | VCC =5V, IF =4mA | 3.5 | — | — | V | |
| | Low level supply current | ICCL | VCC =5V, IF =0 | — | 1.7 | 3.8 | mA | |
| | High level supply current | ICCH | VCC =5V, IF =1mA | — | 0.7 | 2.2 | mA | |
| | Transfer characteristics | "High-Low" Threshold input current | IFHL | VCC =5V, RL =280ohm | 0.1 | 0.4 | — | mA |
| "Low-High" Threshold input current | | IFLH | VCC =5V, RL =280ohm | — | 0.5 | 1.0 | mA | |
| Hysteresis | | IFHL /IFLH | VCC =5V, RL =280ohm | — | 0.8 | — | — | |
| Isolation resistance | | Riso | Ta =25°C, DC500V | 5x10 ¹⁰ | 10 ¹¹ | — | ohm | |
| Response time | | "High-Low" propagation delay time | tPHL | Ta=25°C, Vcc=5V, IF =1mA, RL =280ohm | — | 5 | 15 | us |
| | | "Low -High" propagation delay time | tPLH | | — | 3 | 9 | |
| | | Fall time | tf | | — | 0.05 | 0.5 | |
| | Rise time | tr | — | | 0.1 | 0.5 | | |



Fig.1 Low Level Output Current vs. Ambient Temperature

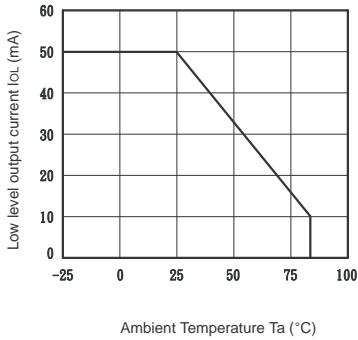


Fig.2 Power Dissipation vs. Ambient Temperature

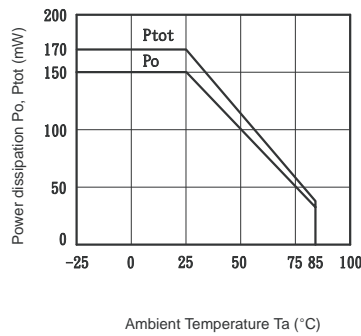


Fig.3 Rise Time, Fall Time vs. Load Resistance

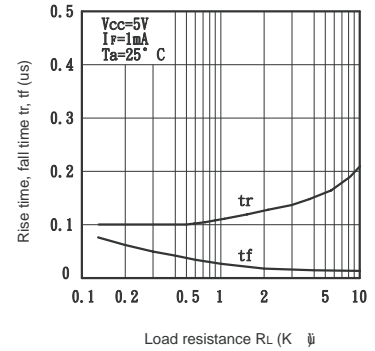


Fig.4 Forward Current vs. Forward Voltage

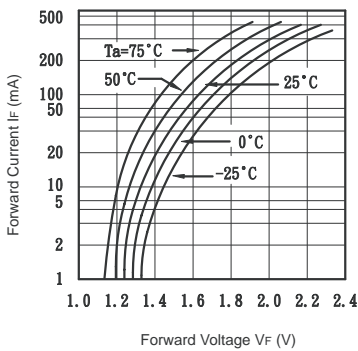


Fig.5 Supply Current vs. Ambient Temperature

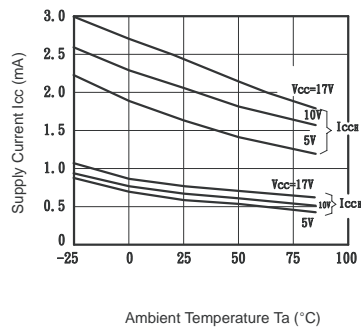


Fig.6 Low Level Output Voltage vs. Ambient Temperature

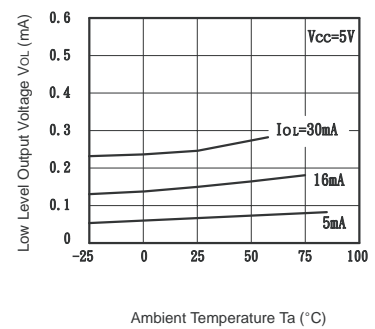


Fig.7 Propagation Delay Time vs. Forward Current

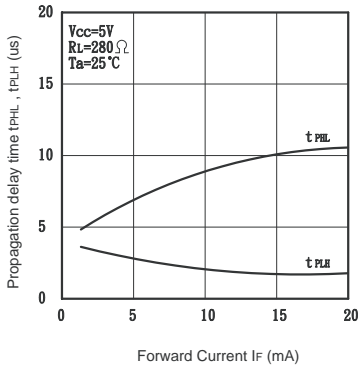


Fig.8 Low Level Output Voltage vs. Low Level Output Current

