SHARP

| | |
|---|---|
| Under development | |
| New product | ● |

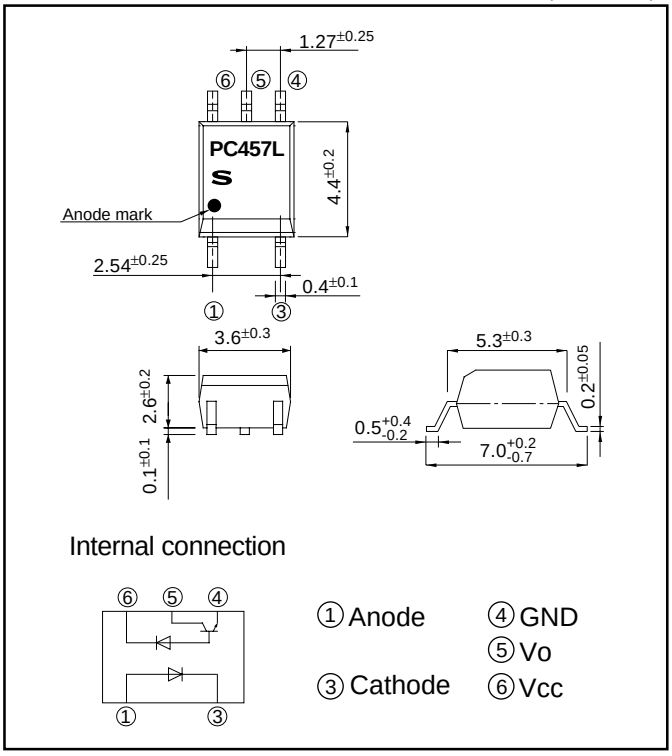
# PC457L0NIP Photocoupler

## High Speed and High CMR *OPIC Photocoupler

### ■ Features

(1) High instantaneous common mode rejection voltage (CMR:MIN. 15kV/μs)
(2) High speed response
($t_{PHL}$:MAX. 0.8μs , $t_{PLH}$:MAX. 0.8μs)
(3) Isolation voltage(Viso(rms) : 3.75kV)
(4) Mini-flat package
(5) Flow soldering : 280˚C for 6s or less
(6) Under preparation for UL and VDE standard

### ■ Outline Dimensions (Unit:mm)




Internal connection




① Anode ④ GND
⑤ Vo
③ Cathode ⑥ Vcc

### ■ Applications

(1) Programmable controller
(2) Inverter

* "OPIC" (Optical IC) is a trademark of the SHARP Corporation. An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

### ■ Absolute Maximum Ratings

(Ta=25˚C)

| Parameter | | Symbol | Rating | Unit |
|---|---|---|---|---|
| Input | *1 Forward current | $I_F$ | 25 | mA |
| | Reverse voltage | $V_R$ | 5 | V |
| | Power dissipation | P | 45 | mW |
| Output | *2 Supply voltage | $V_{CC}$ | - 0.5 to +30 | V |
| | Output voltage | $V_O$ | - 0.5 to +20 | V |
| | Output current | $I_O$ | 8 | mA |
| | Power dissipation | $P_O$ | 100 | mW |
| Total power dissipation | | $P_{tot}$ | 100 | mW |
| *3 Isolation voltage | | $V_{iso(rms)}$ | 3.75 | kV |
| Operating temperature | | $T_{opr}$ | - 55 to +100 | ˚C |
| Storage temperature | | $T_{stg}$ | - 55 to +125 | ˚C |
| *4 Soldering temperature | | $T_{sol}$ | 270 | ˚C |

*1 Ta=0 to +70˚C
*2 MAX. 1 minute
*3 40 to 60% RH, AC for 1 minute
*4 For 10s at the portion of 0.2mm or more from the root of lead pins

## ■ Electro-optical Characteristics

(Ta=25˚C)

| Parameter | | Symbol | Conditions | MIN. | TYP. | MAX. | Unit |
|---|---|---|---|---|---|---|---|
| Input | Forward voltage | $V_F$ | $I_F$=16mA | – | 1.7 | 1.95 | V |
| | Reverse current | $I_R$ | $V_R$=5V | – | – | 10 | μA |
| | Terminal capacitance | $C_t$ | $V_F$=0, f=1MHz | – | 60 | 250 | pF |
| Output | High level output current | $I_{OH(1)}$ | $I_F$=0, $V_{CC}$=5.5V, $V_O$=5.5V | – | 3 | 500 | nA |
| | | $I_{OH(2)}$ | $I_F$=0, $V_{CC}$=15V, $V_O$=15V | – | – | 1.0 | μA |
| | | $I_{OH(3)}$ | $I_F$=0, $V_{CC}$=15V, $V_O$=15V *5 | – | – | 50 | |
| | Hifh level supply current | $I_{CCH(1)}$ | $I_F$=0, $V_{CC}$=15V, $V_O$=OPEN | – | 0.02 | 1.0 | μA |
| | | $I_{CCH(2)}$ | $I_F$=0, $V_{CC}$=15V, $V_O$=OPEN *5 | – | – | 2.0 | |
| | Low level supply current | $I_{CCL}$ | $I_F$=16mA, $V_{CC}$=15V, $V_O$=OPEN | – | 120 | – | μA |
| | Low level output voltage | $V_{OL}$ | $I_F$=16mA, $V_{CC}$=4.5V, $I_O$=2.4mA | – | – | 0.4 | V |
| Transfer characteristics | Current transfer ratio | CTR(1) | $I_F$=16mA, $V_{CC}$=4.5V, $V_O$=0.4V | 19 | – | 50 | % |
| | | CTR(2) | $I_F$=16mA, $V_{CC}$=4.5V, $V_O$=0.4V *5 | 15 | – | – | |
| | Isolation resistance | $R_{ISO}$ | DC500V, 40 to 60%RH | $5\times10^{10}$ | $10^{11}$ | – | Ω |
| | Floating capacitance | $C_f$ | V=0V, f=1MHz | – | 0.6 | 1.0 | pF |
| | "High→Low" transfer time | $t_{PHL}$ | $I_F$=16mA, $V_{CC}$=5V, $R_L$=1.9kΩ | – | 0.2 | 0.8 | μs |
| | "Low→High" transfer time | $t_{PLH}$ | | – | 0.6 | 0.8 | |
| | Instantaneous common mode rejection voltage "Output: High level" | $CM_H$ | $I_F$=0mA, $R_L$=1.9kΩ, $V_{CM}$=1.0k$V_{P-P}$, $V_{CC}$=5V | 15 | 30 | – | kV/μs |
| | Instantaneous common mode rejection voltage "Output: Low level" | $CM_L$ | $I_F$=16mA, $R_L$=1.9kΩ, $V_{CM}$=1.0k$V_{P-P}$, $V_{CC}$=5V | –15 | –30 | – | kV/μs |

*5 Ta=0 to 70˚C

As of September 2001

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  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

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  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

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