SHARP

Under development	
New product	●

PC957L0NSZ

Photocoupler

High Speed and High CMR *OPIC Photocoupler

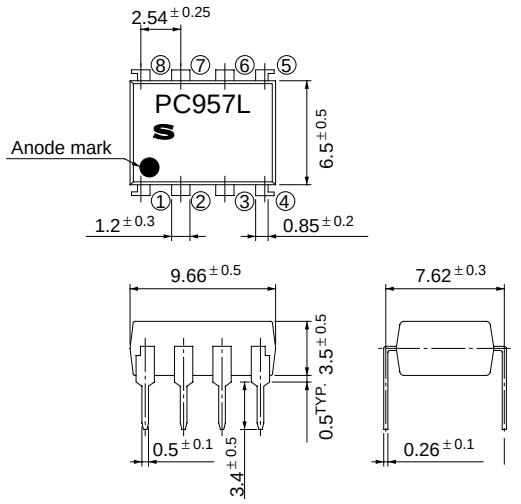
■ Features

(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) : 5.0kV)
(4) 8-pin DIP package
(5) Flow soldering : 280˚C for 6s or less
(6) Recognized by UL (file No. E64380)
Under preparation for VDE standard

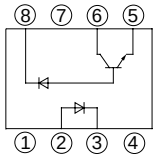
■ Applications

(1) Programmable controller
(2) Inverter

■ Outline Dimensions (Unit: mm)



Internal connection



① NC ⑤ GND
② Anode ⑥ Vo
③ Cathode ⑦ NC
④ NC ⑧ Vcc

* "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	Forward current	I_F	25	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P	45	mW
Output	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
*1	Isolation voltage	$V_{iso(rms)}$	5.0	kV
	Operating temperature	T_{opr}	−55 to +100	˚C
	Storage temperature	T_{stg}	−55 to +125	˚C
*2	Soldering temperature	T_{sol}	270	˚C

*1 40 to 60% RH, for 1 minute
*2 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	–	0.01	1.0	μA
		$I_{OH(3)}$	I_F=0, V_{CC}=15V, V_O=15V *3	–	–	50	
	High 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 *3	–	–	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	–	0.1	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 *3	15	–		
	Isolation resistance	R_{ISO}	DC500V, 40 to 60%RH	5×10^{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}=1.0kV_{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}=1.0kV_{P-P}, V_{CC}=5V	−15	−30	–	kV/μs

*3 Ta=0 to 70˚C

NOTICE

- The circuit application examples in this publication are provided to explain representative applications of SHARP devices and are not intended to guarantee any circuit design or license any intellectual property rights. SHARP takes no responsibility for any problems related to any intellectual property right of a third party resulting from the use of SHARP's devices.
- Contact SHARP in order to obtain the latest device specification sheets before using any SHARP device. SHARP reserves the right to make changes in the specifications, characteristics, data, materials, structure, and other contents described herein at any time without notice in order to improve design or reliability. Manufacturing locations are also subject to change without notice.
- Observe the following points when using any devices in this publication. SHARP takes no responsibility for damage caused by improper use of the devices which does not meet the conditions and absolute maximum ratings to be used specified in the relevant specification sheet nor meet the following conditions:

  (i) The devices in this publication are designed for use in general electronic equipment designs such as:
  --- Personal computers
  --- Office automation equipment
  --- Telecommunication equipment [terminal]
  --- Test and measurement equipment
  --- Industrial control
  --- Audio visual equipment
  --- Consumer electronics

  (ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
  --- Transportation control and safety equipment (i.e., aircraft, trains, automobiles, etc.)
  --- Traffic signals
  --- Gas leakage sensor breakers
  --- Alarm equipment
  --- Various safety devices, etc.

  (iii) SHARP devices shall not be used for or in connection with equipment that requires an extremely high level of reliability and safety such as:
  --- Space applications
  --- Telecommunication equipment [trunk lines]
  --- Nuclear power control equipment
  --- Medical and other life support equipment (e.g., scuba).

- Contact a SHARP representative in advance when intending to use SHARP devices for any "specific" applications other than those recommended by SHARP or when it is unclear which category mentioned above controls the intended use.
- If the SHARP devices listed in this publication fall within the scope of strategic products described in the Foreign Exchange and Foreign Trade Control Law of Japan, it is necessary to obtain approval to export such SHARP devices.
-
- Contact and consult with a SHARP representative if there are any questions about the contents of this publication.