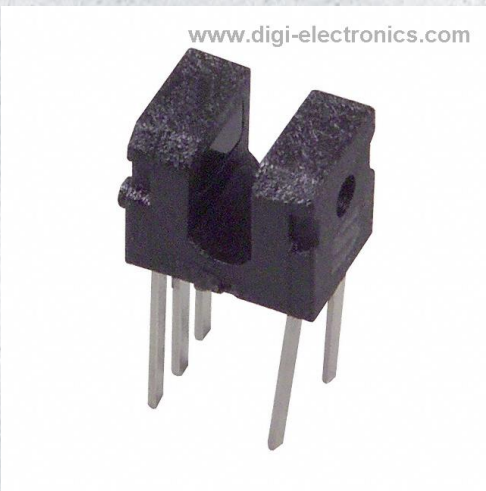
GP1A91LC Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	GP1A91LC-DG
Manufacturer	Sharp Microelectronics
Manufacturer Product Number	GP1A91LC
Description	SENSOR OPTICAL 1.2MM PCB MOUNT
Detailed Description	Optical Sensor Through-Beam 0.047" (1.2mm) PCB Mount

This model GP1A91LC is available at DiGi Electronics.

DiGi Electronics offers a global database of semiconductor and electronic component datasheets.

We welcome your inquiries regarding pricing, lead time, or other product-related questions.

Request a Quote

Datasheet Search

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
GP1A91LC	Sharp Microelectronics
Series:	Product Status:
OPIC™	Obsolete
Sensing Distance:	Sensing Method:
0.047" (1.2mm)	Through-Beam
Output Configuration:	Mounting Type:
NPN - Open Collector	Through Hole
Current - Supply:	Voltage - Supply:
700 µA	1.4V ~ 7V
Response Time:	Operating Temperature:
600ns, 200ns	-25°C ~ 85°C (TA)
Package / Case:	
PCB Mount	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
RoHS non-compliant	1 (Unlimited)
ECCN:	HTSUS:
EAR99	8541.49.8000

GP1A91LR/GP1A91LC

Subminiature OPIC Photointerrupter

■ Features

1. Compact package (3.7 × 2.6 × 3.1mm)
2. Can be directly connected to C-MOS logic and microcomputer
3. Low voltage operation, low dissipation current
   (Operating supply voltage : 1.4 to 7.0V
   OFF-state consumption current : MAX. 0.5mA)
4. Gap width 1.2mm, slit width 0.23mm
5. General purpose

■ Applications

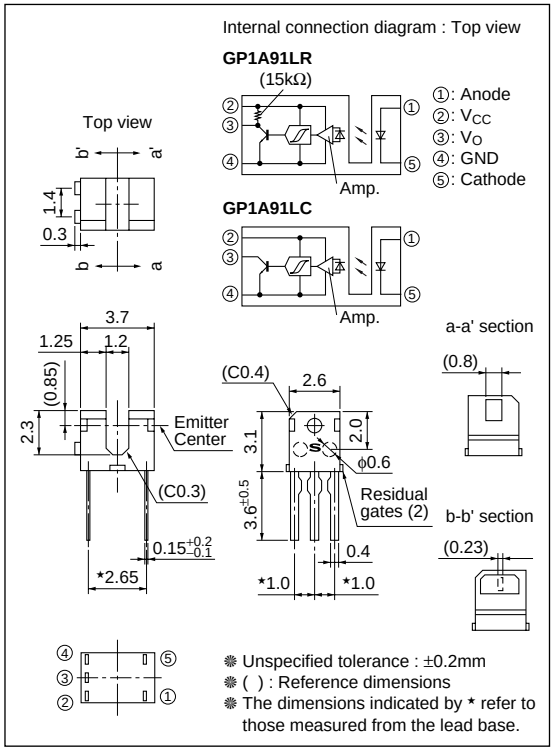
1. Cameras
2. CD-ROM drives

■ Absolute Maximum Ratings (Ta=25°C)

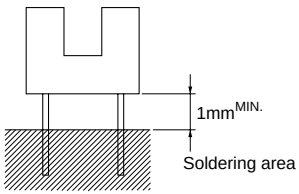
Parameter		Symbol	Rating	Unit
Input	Forward current	I_F	50	mA
	Reverse voltage	V_R	6	V
	Power dissipation	P	75	mW
Output	Supply voltage	V_{CC}	7.0	V
	Low level Output current	I_O	2.0	mA
	Power dissipation	P_O	80	mW
Operating temperature		T_{opr}	−25 to +85	°C
Storage temperature		T_{stg}	−40 to +100	°C
*1 Soldering temperature		T_{sol}	260	°C

*1 The derating factors of absolute maximum ratings due to ambient temperature are shown in Fig.3, 4, 5
*2 For 5s or less

■ Outline Dimensions (Unit : mm)



*"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.



■ Electro-optical Characteristics

(Ta=25°C)

Parameter		Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	V_F	I_F=5mA	–	1.15	1.25	V
	Reverse current	I_R	V_R=3V	–	–	10	μA
Output	Operating supply voltage	V_{CC}	–	1.4	–	7.0	V
	Low level output voltage	V_{OL}	V_{CC}=3V, I_{OL}=1mA, I_F=5mA	–	0.1	0.4	V
	High level output voltage	V_{OH}	V_{CC}=3V, I_F=0mA	2.9	–	–	V
	Low level supply current	I_{CCL}	V_{CC}=3V, I_F=5mA	–	0.7	1.2	mA
	High level supply current	I_{CCH}	V_{CC}=3V, I_F=0mA	–	0.3	0.5	mA
Transfer characteristics	*3 "High→Low" threshold input current	I_{FHL}	V_{CC}=3V	–	1.2	3.5	mA
	*4 Hysteresis	I_{FLH}/I_{FHL}	V_{CC}=3V	0.55	0.8	0.95	–
	Response time "Low→High" propagation delay time	t_{PLH}	V_{CC}=3V	–	10	30	μs
	Response time "High→Low" propagation delay time	t_{PHL}	I_F=5mA	–	3	15	
	Response time Rise time	t_r	R_L=3kΩ (**GP1A91LR**)	–	0.6	3.0	
	Response time Fall time	t_f	R_L=2.4kΩ (**GP1A91LC**)	–	0.2	1.0	

*3 I_{FHL} represents forward current when output goes from High to Low.
*4 Hysteresis stands for I_{FLH}/I_{FHL}
GP1A91LC---R_L (15kΩ) is applied to V_{CC}-V_O (Condition during measureing response time : R_L=2.4kΩ)

Fig.1 Test Circuit for Response Time

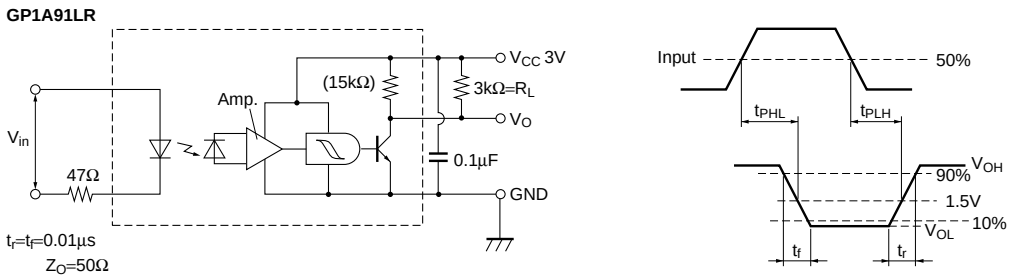


Fig.2 Test Circuit for Response Time

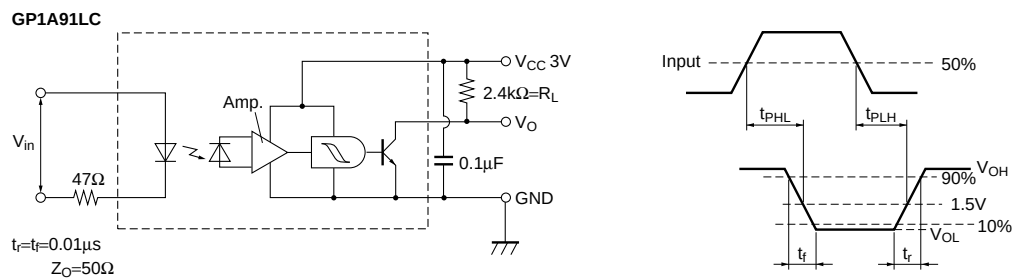


Fig.3 Forward Current vs. Ambient Temperature

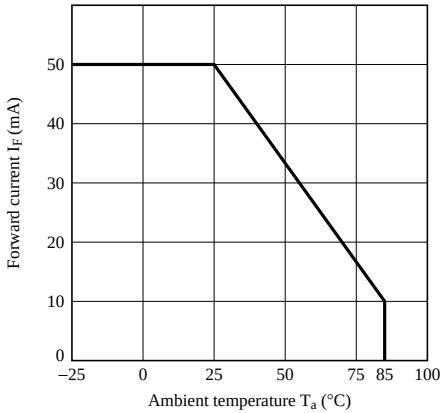


Fig.4 Output Current vs. Ambient Temperature

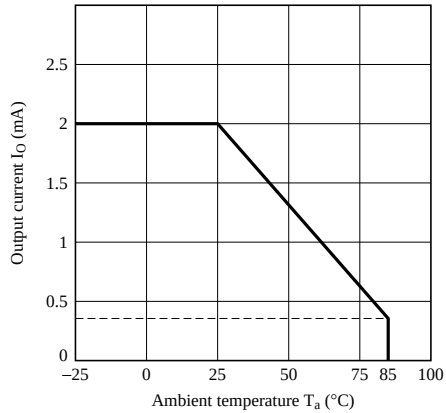


Fig.5 Output Power Dissipation vs. Ambient Temperature

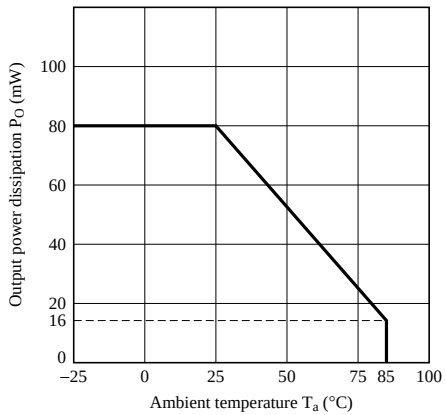


Fig.6 Forward Current vs. Forward Voltage

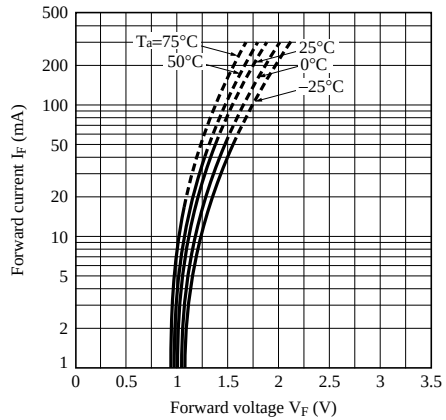


Fig.7 Relative Threshold Input Current vs. Supply Voltage

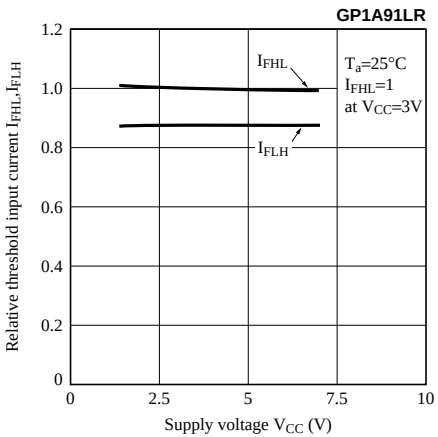


Fig.8 Relative Threshold Input Current vs. Supply Voltage

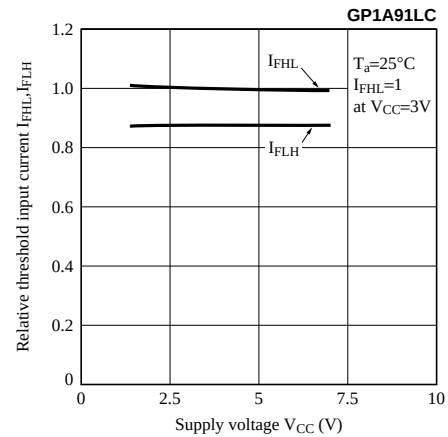


Fig.9 Relative Threshold Input Current vs. Ambient Temperature

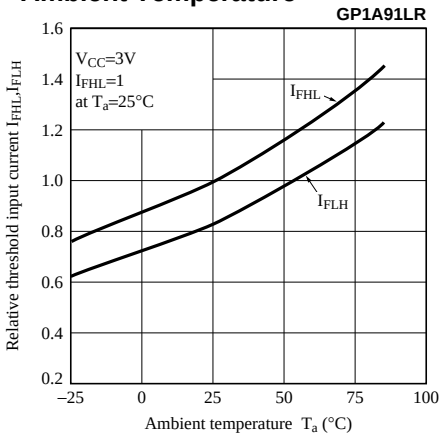


Fig.10 Relative Threshold Input Current vs. Ambient Temperature

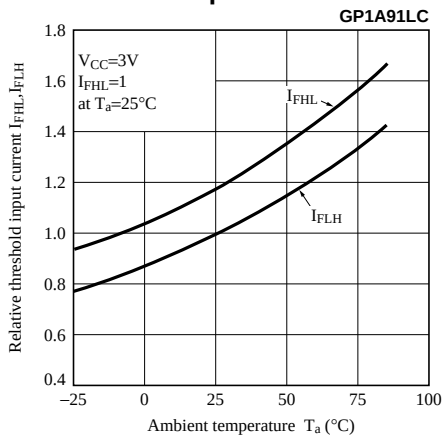


Fig.11 Low Level, High Level Supply Current vs. Supply Voltage (1)

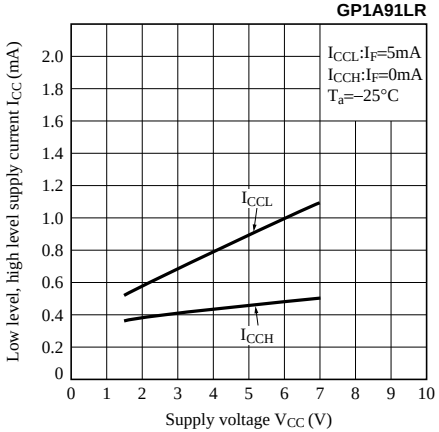


Fig.12 Low Level, High Level Supply Current vs. Supply Voltage (1)

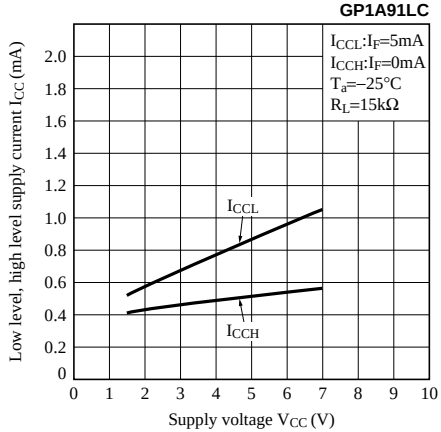


Fig.13 Low Level, High Level Supply Current vs. Supply Voltage (2)

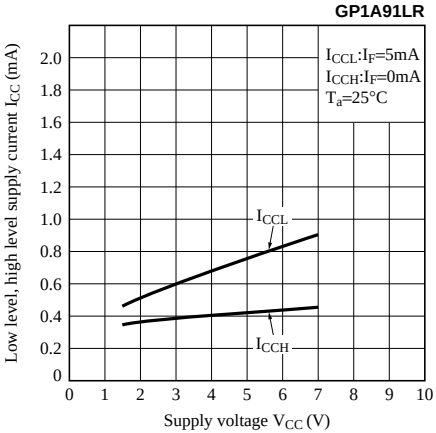


Fig.14 Low Level, High Level Supply Current vs. Supply Voltage (2)

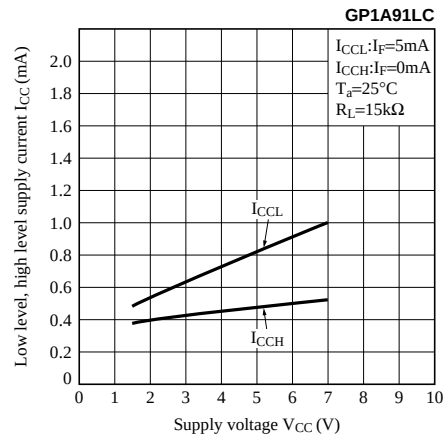


Fig.15 Low Level, High Level Supply Current vs. Supply Voltage (3)

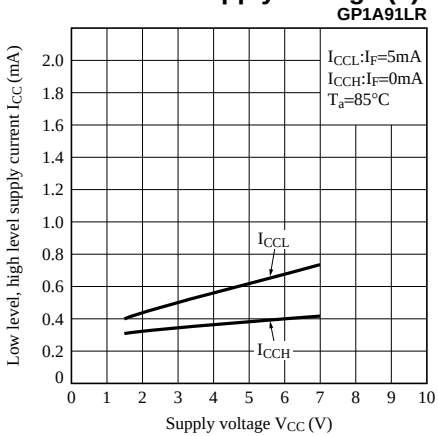


Fig.16 Low Level, High Level Supply Current vs. Supply Voltage (3)

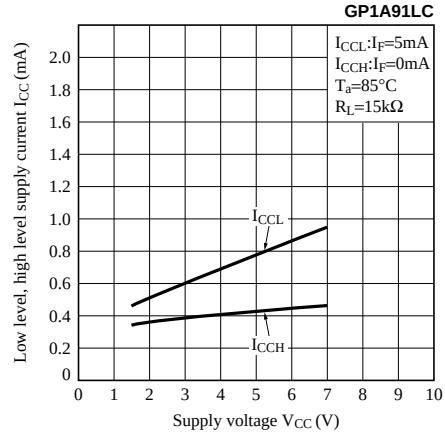


Fig.17 Low Level Output Voltage vs. Low Level Output Current

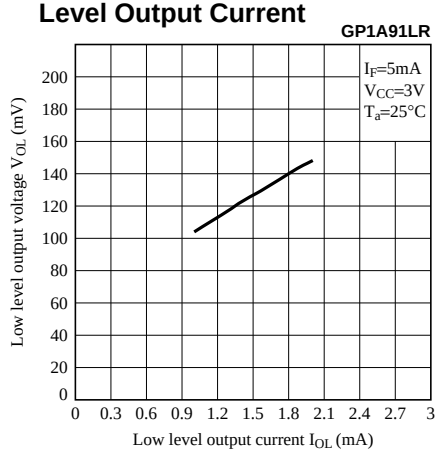


Fig.18 Low Level Output Voltage vs. Low Level Output Current

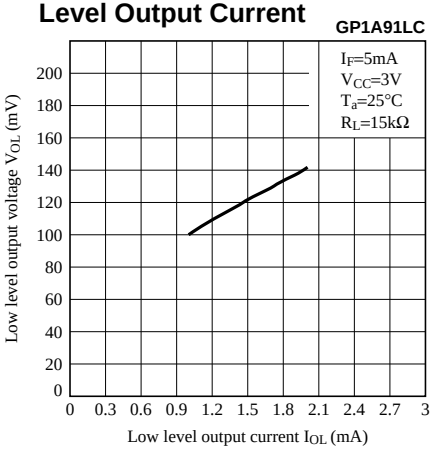


Fig.19 Low Level Output Voltage vs. Ambient Temperature

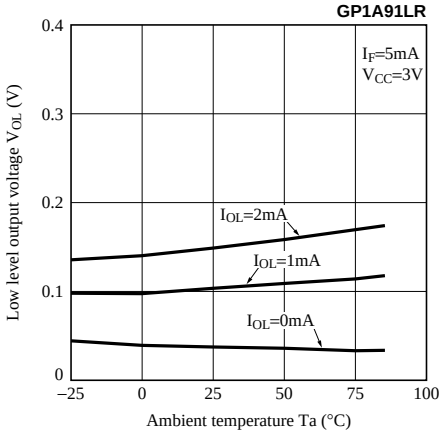


Fig.20 Low Level Output Voltage vs. Ambient Temperature

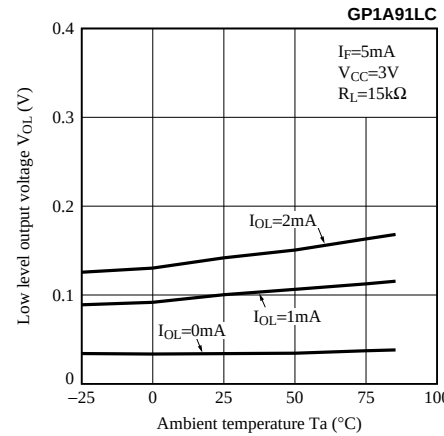


Fig.21 Rise Time, Fall Time vs. Load Resistance

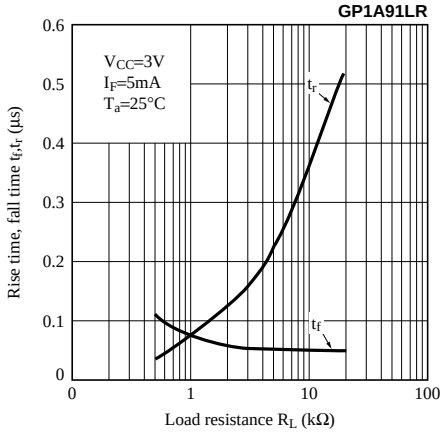


Fig.22 Rise Time, Fall Time vs. Load Resistance

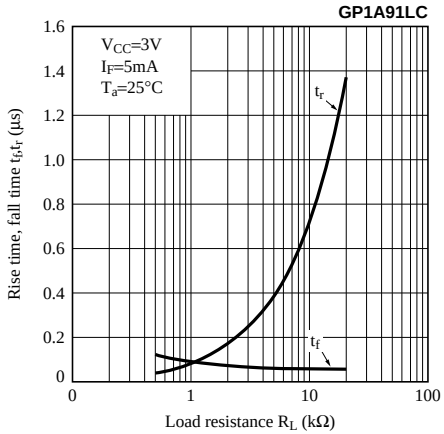


Fig.23 Propagation Delay Time vs. Forward Current

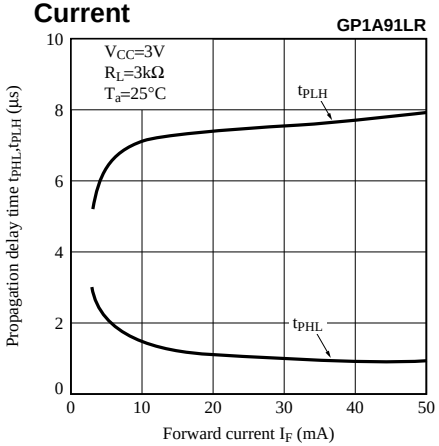


Fig.24 Propagation Delay Time vs. Forward Current

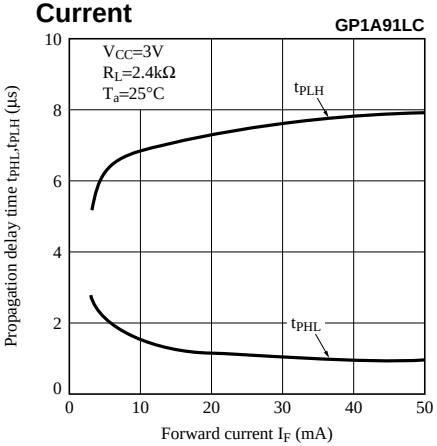


Fig.25 Low, High Level Output vs. Shield Distance (1) (Typical Value)

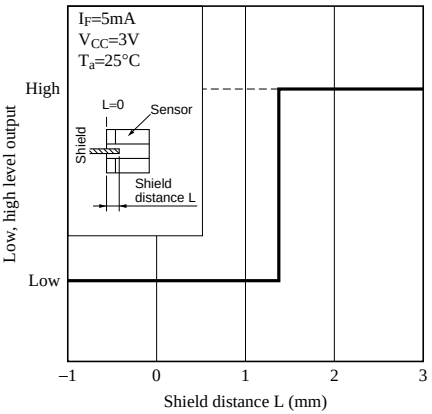
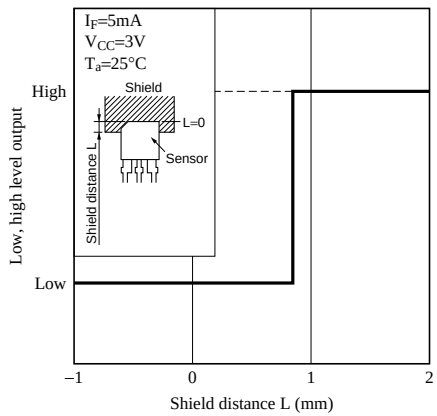


Fig.26 Low, High Level Output vs. Shield Distance (2) (Typical Value)



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

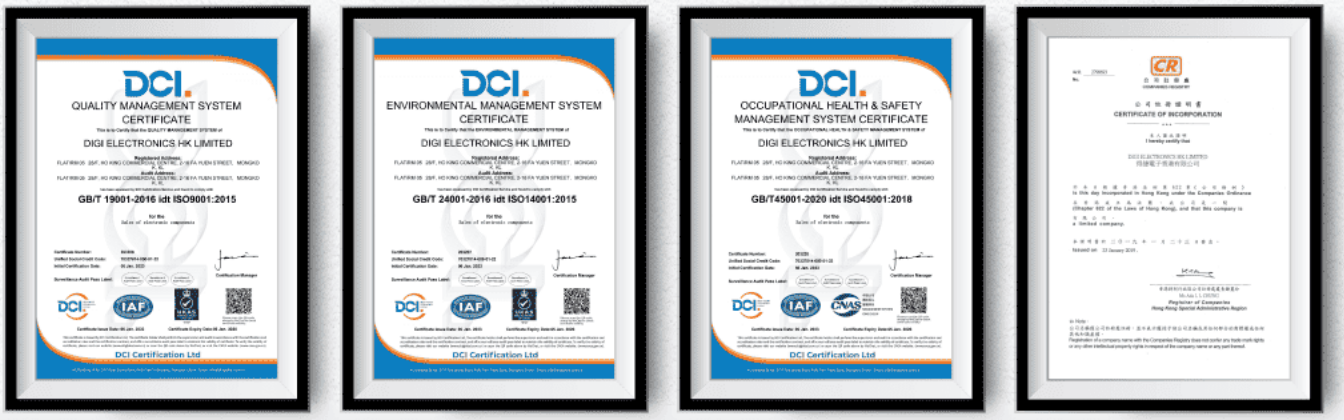
(ii) Measures such as fail-safe function and redundant design should be taken to ensure reliability and safety when SHARP devices are used for or in connection with equipment that requires higher reliability such as:
— Transportation control and safety equipment (i.e., aircraft, trains, automobiles,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

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we striciy control the quality of products and services. Welcome your RFQ to Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.