GP2S40

Features

- 1. Ultra compact DIP package (Volume: 1/3 of **GP2S05**)
- 2. Long focal distance type (focal distance: 3mm)
- 3. Effective detection distance: 1.5 to 6.5mm

Applications

- 1. Copiers
- 2. Facsimiles
- 3. Printers

Long Focal Distance, Subminiature Photointerrupter

Outline Dimensions

(Unit : mm)



Absolute Maximum Ratings

$(Ta = 25^{\circ}C)$

_ /	•		`	14 20 0)	
	Parameter	Symbol	Rating	Unit	
	Forward current	IF	50	mA	
Input	Reverse voltage	VR	6	V	
	Power dissipation	P _D	75	mW	
	Collector-emitter voltage	VCEO	35	V	
0	Emitter-collector voltage	VECO	6		
Output –	Collector current	Ic	20	mA	
	Collector power dissipation	Pc	75	mW	
	Total power dissipation	Ptot	100	mW	
	Operating temperature	T opr	- 25 to + 85	°C	
	Storage temperature	T stg	- 40 to + 100	°C	
*1Soldering temperature		T sol	260	°C	



*1 For 5 seconds

" In the absence of confirmation by device specification sheets, SHARP takes no responsibility for any defects that occur in equipment using any of SHARP's devices, shown in catalogs, data books, etc. Contact SHARP in order to obtain the latest version of the device specification sheets before using any SHARP's device."

Electro-optical Characteristics

 $(Ta = 25^{\circ}C)$

	•							
Parameter			Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V _F	$I_F = 20 m A$	-	1.2	1.4	V
	Reverse current		IR	$V_R = 3V$	-	-	10	μΑ
Output	Collector dark current		Iceo	$V_{CE} = 20V$	-	1	100	nA
Transfer chara cteristics	Collector current		Ic	$V_{CE} = 5V, I_F = 20mA$	0.5	-	3.0	mA
	*2Leak current		I LEAK	$V_{CE} = 5V, I_F = 20mA$	-	-	500	nA
	*3Response time	Rise time	tr	$V_{CE} = 2V, I_C = 100 \mu A$	-	50	150	μs
		Fall time	tf	$R_{\rm L}\!=1~000\Omega$, $d\!=4mm$	-	50	150	μs

*2 No reflective object

*3"d" is glass thickness of reflective mirror.

Test Arrangement of Collector Current





Fig. 2 Power Dissipation vs. Ambient Temperature



Fig. 3 Forward Current vs. Forward Voltage











Fig. 4 Collector Current vs. Forward Current



Fig. 6 Relative Collector Current vs. Ambient Temperature



Fig. 8 Response Time vs. Load Resistance







Fig. 11 Relative Collector Current vs. Distance



• Please refer to the chapter "Precautions for Use".

Test Circuit for Response Time







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.
- •This publication is the proprietary product of SHARP and is copyrighted, with all rights reserved. Under the copyright laws, no part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, in whole or in part, without the express written permission of SHARP. Express written permission is also required before any use of this publication may be made by a third party.
- •Contact and consult with a SHARP representative if there are any questions about the contents of this publication.