

# GP2S40

## Long Focal Distance, Subminiature Photointerrupter

### ■ Features

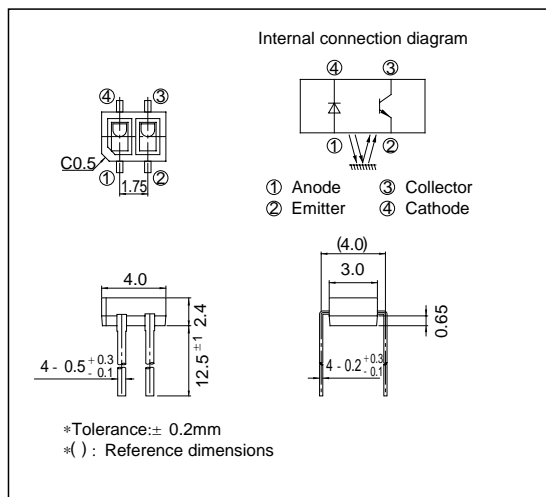
1. Ultra compact DIP package  
(Volume: 1/3 of **GP2S05**)
2. Long focal distance type  
(focal distance: 3mm)
3. Effective detection distance: 1.5 to 6.5mm

### ■ Applications

1. Copiers
2. Facsimiles
3. Printers

### ■ Outline Dimensions

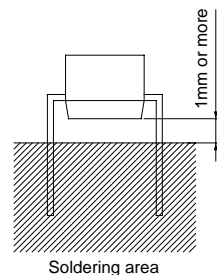
(Unit : mm)



### ■ Absolute Maximum Ratings

( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Rating	Unit
Input	Forward current	$I_F$	50
	Reverse voltage	$V_R$	6
	Power dissipation	$P_D$	75
Output	Collector-emitter voltage	$V_{CEO}$	35
	Emitter-collector voltage	$V_{ECO}$	6
	Collector current	$I_C$	20
	Collector power dissipation	$P_C$	75
Total power dissipation		$P_{tot}$	100
Operating temperature		$T_{opr}$	- 25 to + 85
Storage temperature		$T_{stg}$	- 40 to + 100
*1 Soldering temperature		$T_{sol}$	260



\*1 For 5 seconds

■ Electro-optical Characteristics

(Ta= 25°C)

Parameter			Symbol	Condition	MIN.	TYP.	MAX.	Unit
Input	Forward voltage		V <sub>F</sub>	I <sub>F</sub> = 20mA	-	1.2	1.4	V
	Reverse current		I <sub>R</sub>	V <sub>R</sub> = 3V	-	-	10	μ A
Output	Collector dark current		I <sub>CEO</sub>	V <sub>CE</sub> = 20V	-	1	100	nA
Transfer chara cteristics	Collector current		I <sub>C</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 20mA	0.5	-	3.0	mA
	*2Leak current		I <sub>LEAK</sub>	V <sub>CE</sub> = 5V, I <sub>F</sub> = 20mA	-	-	500	nA
	*3Response time	Rise time	t <sub>r</sub>	V <sub>CE</sub> = 2V, I <sub>C</sub> = 100μ A	-	50	150	μ s
		Fall time	t <sub>f</sub>	R <sub>L</sub> = 1 000Ω , d = 4mm	-	50	150	μ s

\*2 No reflective object  
\*3 “d” is glass thickness of reflective mirror.

Test Arrangement of Collector Current

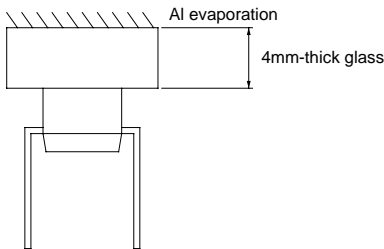


Fig. 1 Forward Current vs. Ambient Temperature

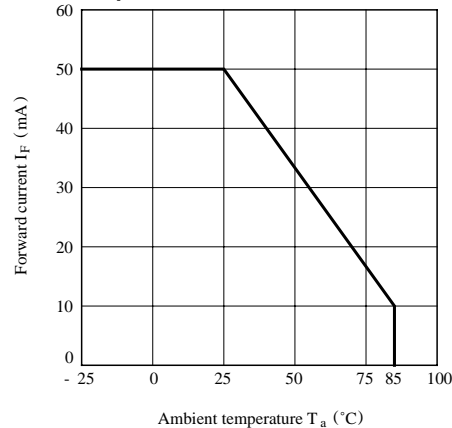


Fig. 2 Power Dissipation vs. Ambient Temperature

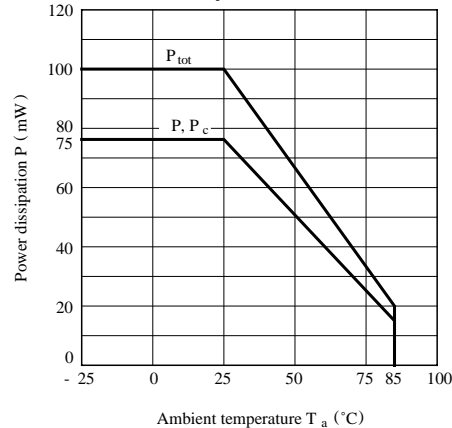


Fig. 3 Forward Current vs. Forward Voltage

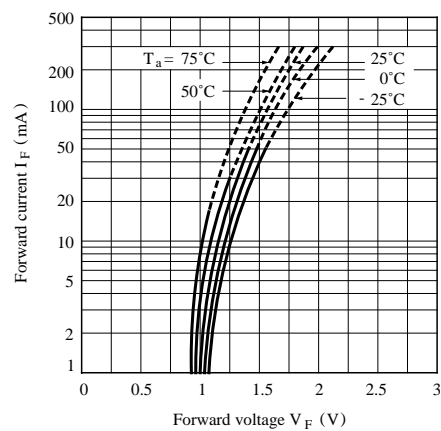


Fig. 4 Collector Current vs. Forward Current

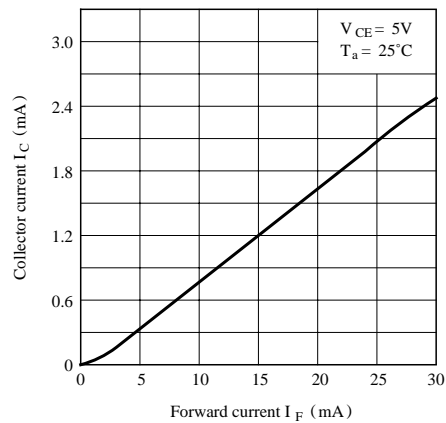


Fig. 5 Collector Current vs. Collector-emitter Voltage

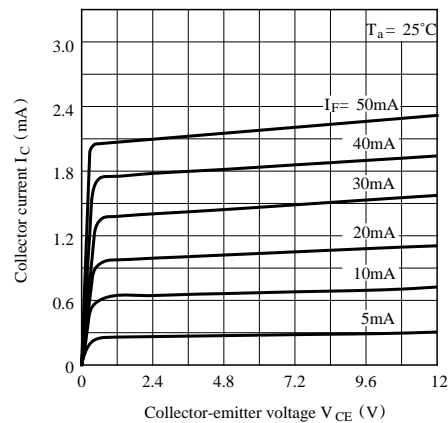


Fig. 6 Relative Collector Current vs. Ambient Temperature

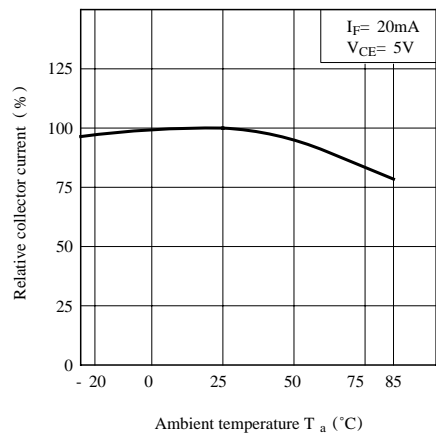
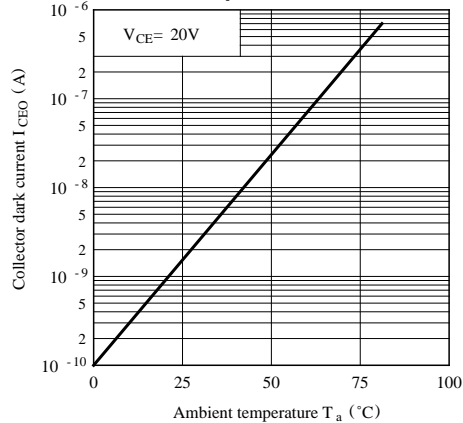
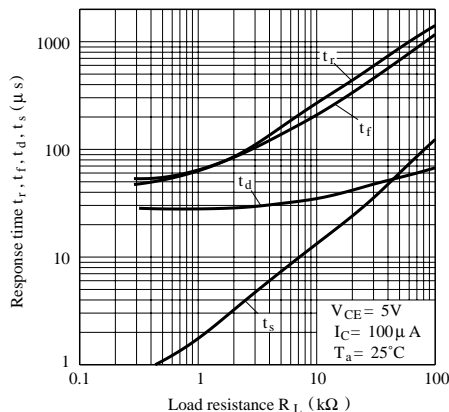


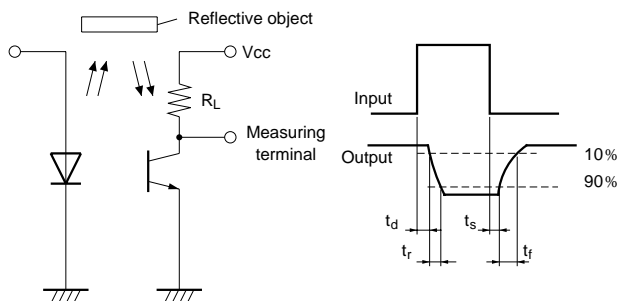
Fig. 7 Collector Dark Current vs. Ambient Temperature



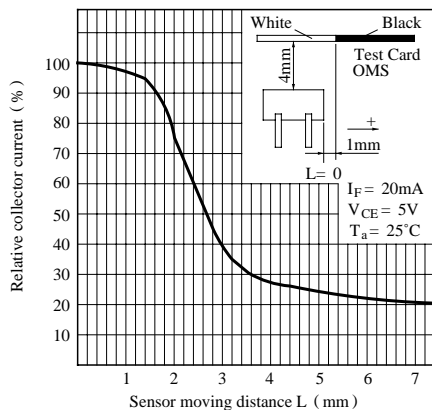
**Fig. 8 Response Time vs. Load Resistance**



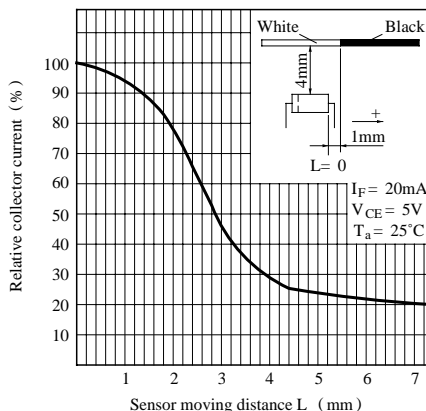
**Test Circuit for Response Time**



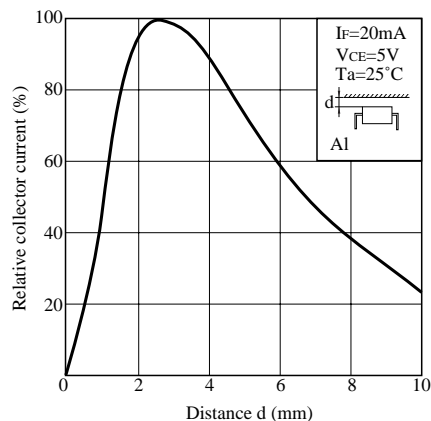
**Fig. 9 Relative Collector Current vs. Sensor moving Distance (1)**



**Fig.10 Relative Collector Current vs. Sensor moving Distance (2)**



**Fig. 11 Relative Collector Current vs. Distance**



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Datasheets for electronics components.