

SHARP ELEK/ MELEC DIV

RoboPardaz.com

GP2S04/GP2S06/GP2S07  
/GP2S09/GP2S10

مرجع دیتاشیت و اطلاعات (روباتیک)

■ Features

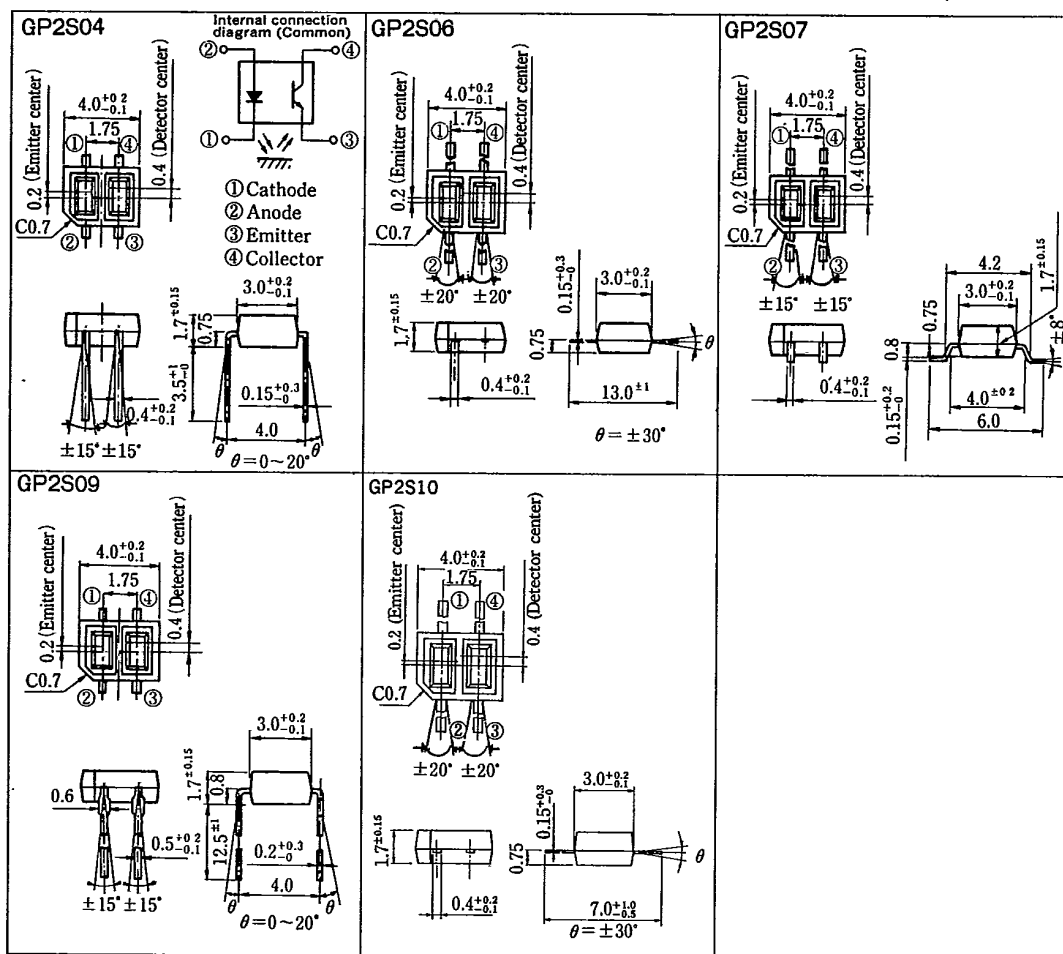
1. Compact and thin  
GP2S04 : Compact DIP type  
GP2S06 : Flat lead type  
GP2S07 : Mini-flat package type  
GP2S09 : Compact DIP, long lead type  
GP2S10 : Short flat lead type
2. Optical detection distance : 0.8~1mm
3. Visible light cut-off type

■ Applications

1. Cassette tape recorders, VCRs
2. Floppy disk drives
3. Various microcomputerized control equipment

■ Outline Dimensions

(Unit : mm)



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Absolute Maximum Ratings

(Ta=25°C)

T-41-73

Parameter	Symbol	Rating	Unit
Input	Forward current	$I_F$	50 mA
	Reverse voltage	$V_R$	6 V
	Power dissipation	$P_D$	75 mW
Output	Collector-emitter voltage	$V_{CE0}$	35 V
	Emitter-collector voltage	$V_{ECO}$	6 V
	Collector current	$I_C$	20 mA
	Collector power dissipation	$P_C$	75 mW
	Total power dissipation	$P_{tot}$	100 mW
	Operating temperature	$T_{opr}$	-25 ~ +85 °C
Storage temperature	$T_{stg}$	-40 ~ +100 °C	
*1 Soldering temperature	$T_{sol}$	260 °C	

\*1 Within 5 seconds (Soldering areas for each model are shown below.)

GP2S04, GP2S09

Soldering area  
The hatched area more than 1mm<sup>2</sup> away from the lower edge of package as shown in the figure below.

GP2S06

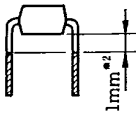
Soldering area  
The hatched area more than 2.0mm away from the both edges of package as shown in the figure below.

GP2S07

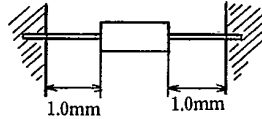
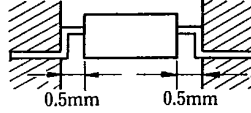
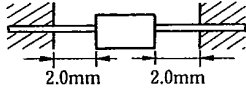
Soldering area  
The hatched area more than 0.5mm away from the both edges of package as shown in the figure below.

GP2S10

Soldering area  
The hatched area more than 1.0mm away from the both edges of package as shown in the figure below.



\*2 GP2S09 : 4mm



Electro-optical Characteristics

(Ta=25°C)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit
Input	Forward voltage	$I_F=20mA$	—	1.2	1.4	V
	Reverse current	$V_R=6V$	—	—	10	$\mu A$
Output	Collector dark current	$V_{CE}=20V$	—	$1 \times 10^{-9}$	$1 \times 10^{-7}$	A
	*3 Collector current	$I_F=4mA, V_{CE}=2V$	20	45	120	$\mu A$
Transfer characteristics	Response time (Rise)	$V_{CE}=2V, I_C=100\mu A$	—	20	100	$\mu s$
	Response time (Fall)	$R_L=1k\Omega, d=1mm$	—	20	100	$\mu s$
	*4 Leak current	$I_F=4mA, V_{CE}=2V$	—	—	0.1	$\mu A$

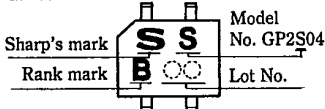
\*3 The condition and arrangement of the reflective object are shown in the right drawing.

\*4 Without reflective object

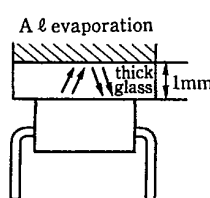
The ranking of collector current shall be classified into the following 6 ranks.  
(GP2S04, GP2S06, GP2S07, GP2S09)

Rank	$I_C (\mu A)$	Rank mark
A	20~42	A
B	34~71	B
C	58~120	C
A or B	20~71	A or B
B or C	34~120	B or C
A, B or C	20~120	A, B or C

Marking example  
GP2S04



Test Condition and Arrangement for Collector Current



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Fig. 1 Forward Current vs. Ambient Temperature

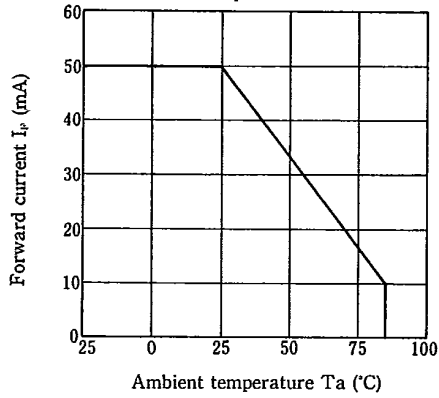


Fig. 2 Power Dissipation vs. Ambient Temperature

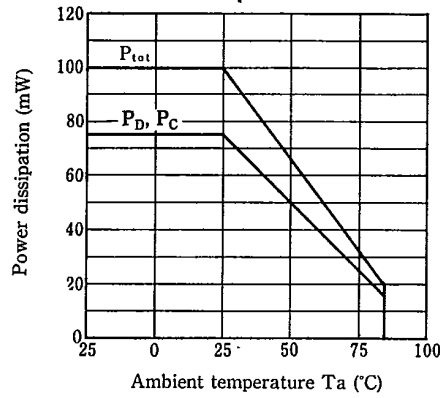


Fig. 3 Forward Current vs. Forward Voltage

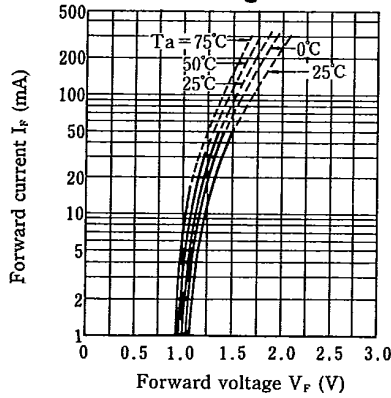


Fig. 4 Collector Current vs. Forward Voltage

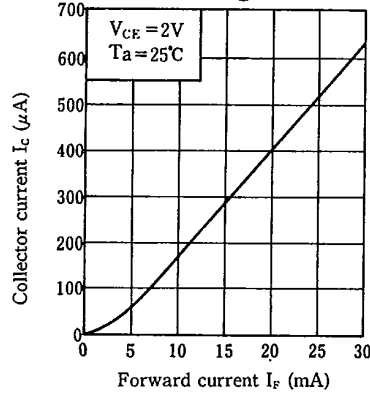
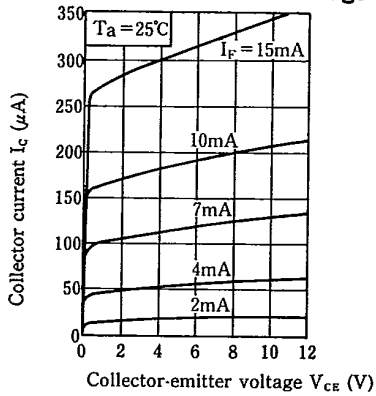


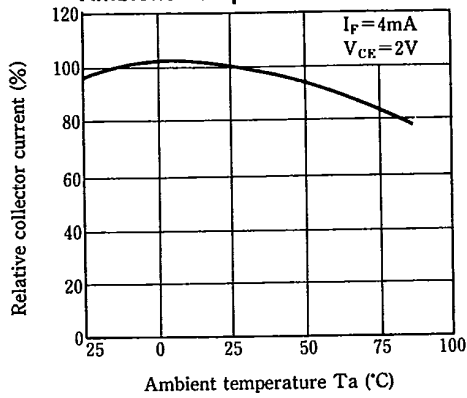
Fig. 5 Collector Current vs. Collector-emitter Voltage



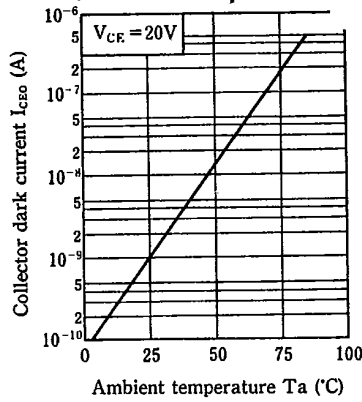
Photointerrupters

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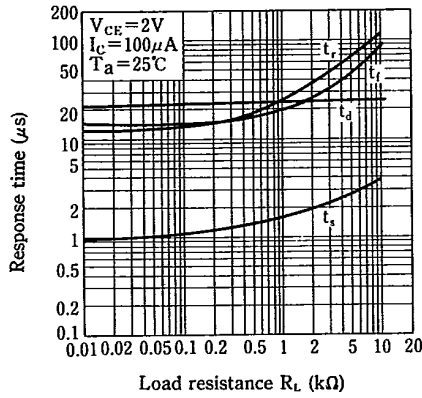
**Fig. 6 Relative Collector Current vs. Ambient Temperature**



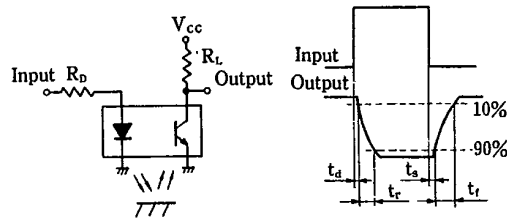
**Fig. 7 Collector Dark Current vs. Ambient Temperature**



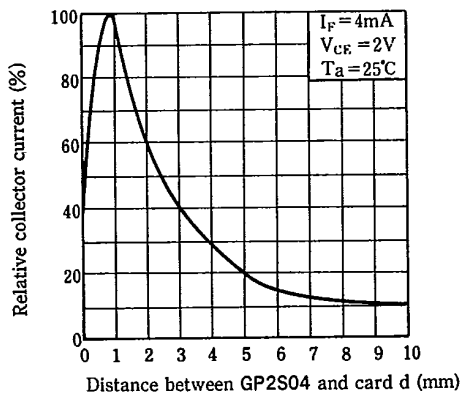
**Fig. 8 Response Time vs. Load Resistance**



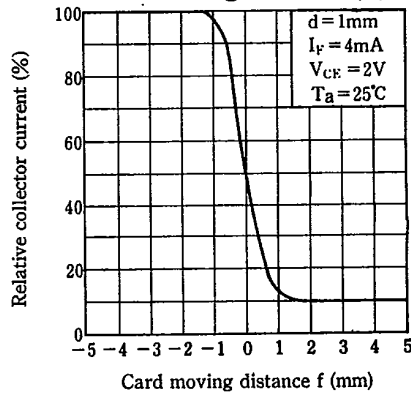
**Test Circuit for Response Time**



**Fig. 9 Relative Collector Current vs. Distance between GP2S04 and Card**

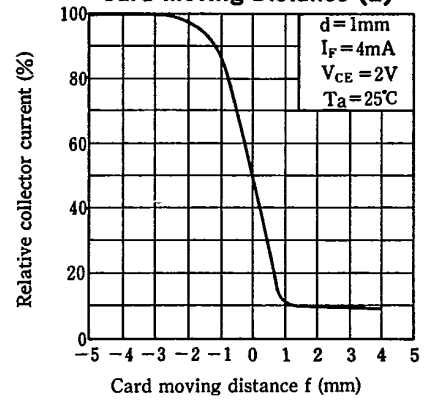


**Fig. 10 Relative Collector Current vs. Card Moving Distance (1)**



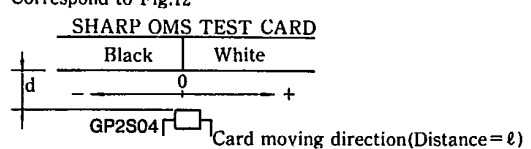
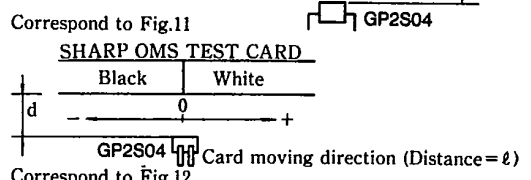
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**Fig. 11 Relative Collector Current vs. Card Moving Distance (2)**

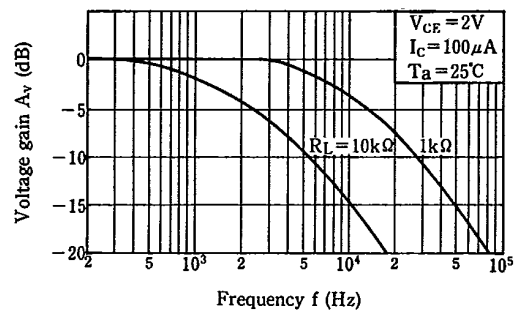


**Test Condition for Distance & Detecting Position Characteristics**

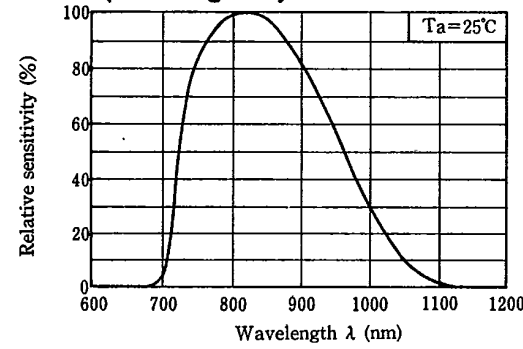
Correspond to Fig.10  
 SHARP OMS TEST CARD (White) *T-41-73*



**Fig. 12 Frequency Response**



**Fig. 13 Spectral Sensitivity (Detecting Side)**



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