Surface Mount type 4 Direction Detector

RPI-1035 Data sheet

●Applications

- DSC(Digital still camera)
- DVC(Digital video camera)
- Smart phone
- Fan heater
- Projector

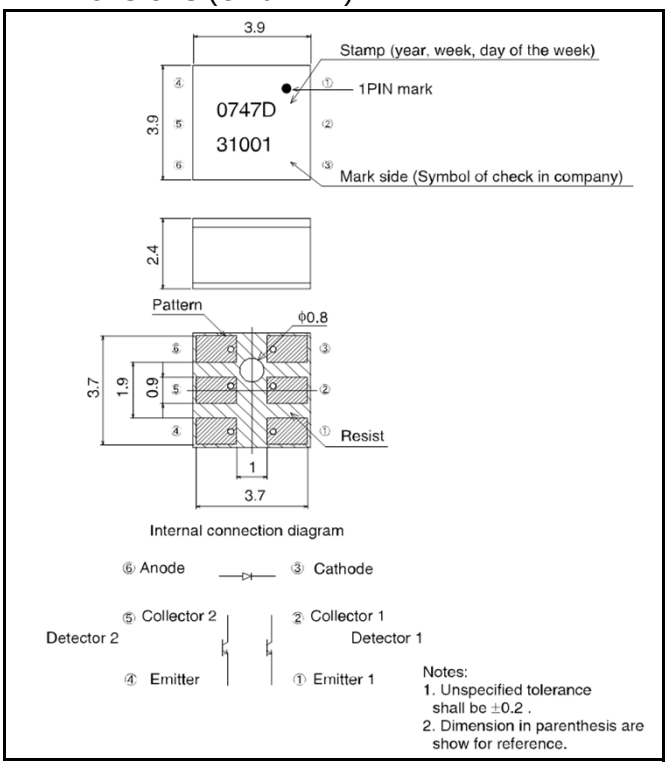
●Features

1) Surface Mount type

2) Optical Sensor

3) 4 Direction Detector

●Dimensions (Unit : mm)



●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Input (LED)	Forward current	I_F	50	mA
	Reverse voltage	V_R	5	V
	Power dissipation	P_D	80	mW
Output (Phototransistor)	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	4.5	V
	Collector current	I_C	30	mA
	Collector dissipation	P_C	80	mW
Operating temperature		T_{opr}	−25 to +85	°C
Storage temperature		T_{stg}	−30 to +85	°C

●Electrical and optical characteristics (Ta = 25°C)

1) Input characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Forward voltage	V_F	I_F =50mA	-	1.3	1.6	V
Reverse current	I_R	V_R =5V	-	-	10	μA

2) Output characteristics

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Dark current	I_{CED}	V_{CE} =10V	-	-	0.5	μA
Peak sensitivity wavelength	λ_p	-	-	800	-	nm

3) Transfer characteristics

Parameter		Symbol	Conditions	Values			Unit
				Min.	Typ.	Max.	
Collector current		I_C	V_{CE} =5V, I_F =5mA	100	-	-	μA
DC leakage current		I_{leak}	V_{CE} =5V, I_F =5mA	-	-	15	
Collector-emitter saturation voltage		$V_{CE(sat)}$	I_F =20mA, I_C =0.1mA	-	-	0.4	V
Response time	Rise time	tr	V_{CC} =5V, I_F =20mA	-	10	-	ms
	Fall time	tf	R_L=100Ω	-	10	-	

4) Infrared light emitter diode

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Cut-off frequency	f_C	I_F =50mA*1	-	1	-	MHz
Peak light emitting wavelength	λ_P		-	950	-	nm

*1 Non-coherent Infrared light emitting diode used.

5) Phototransistor

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Response time	tr·tf	V_{CC}=5V, I_C=1mA, R_L=100W*2	-	10	-	μs
Maximum sensitivity wavelength	λ_P	-	-	800	-	nm

*2 This product is not designed to be protected against electromagnetic wave.

●Electrical and optical characteristic curves

Fig.1 Forward Current A Falloff

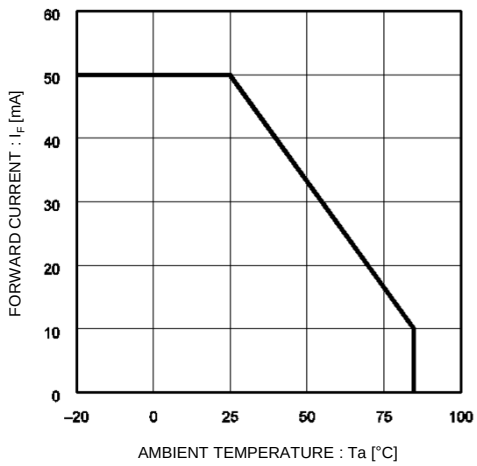


Fig.2 Forward Current vs. Forward Voltage

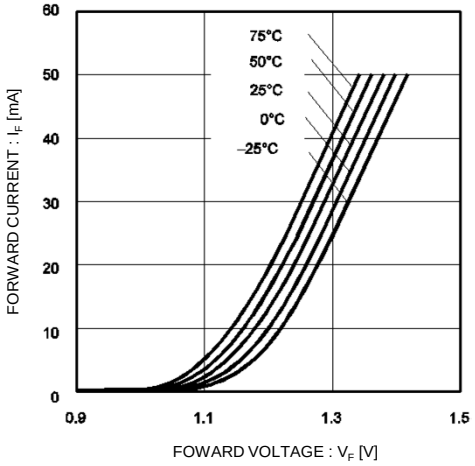


Fig.3 Power Dissipation / Collector Power Dissipation vs. Ambient Temperature

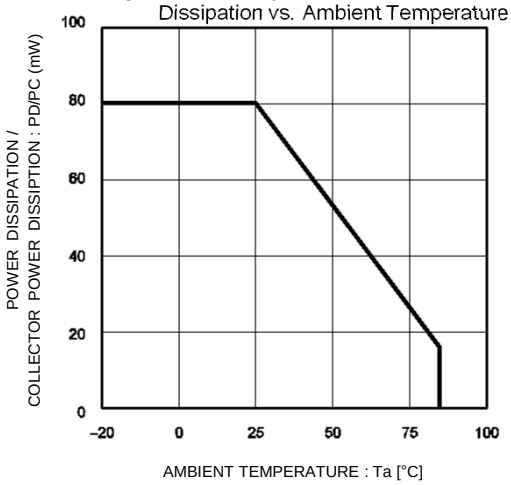


Fig.4 Relative Output vs. Ambient Temperature

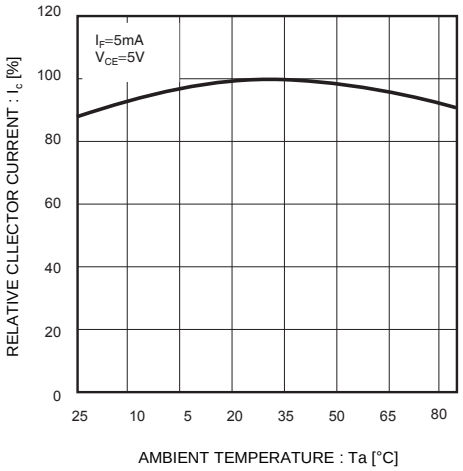


Fig.5 Collector Current vs. Forward Current

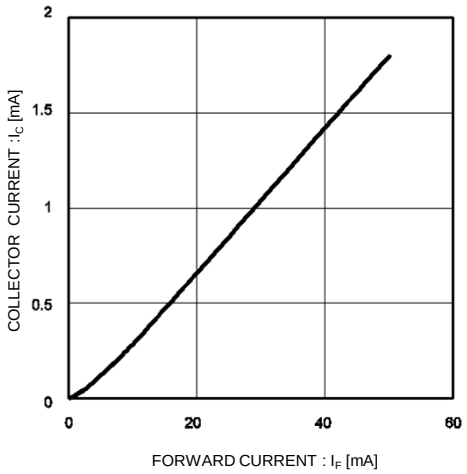
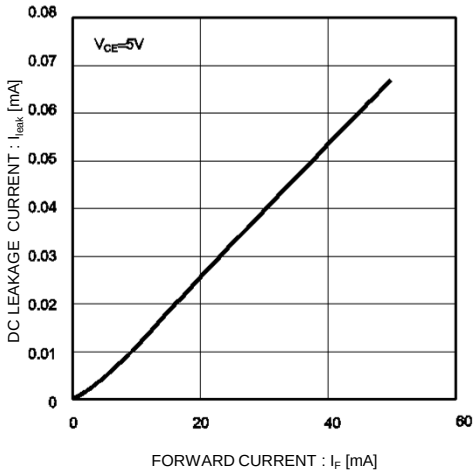


Fig.6 DC Leakage Current vs. Fforward Current



●Electrical and optical characteristic curves

Fig.7 Response Time vs. Collector Current

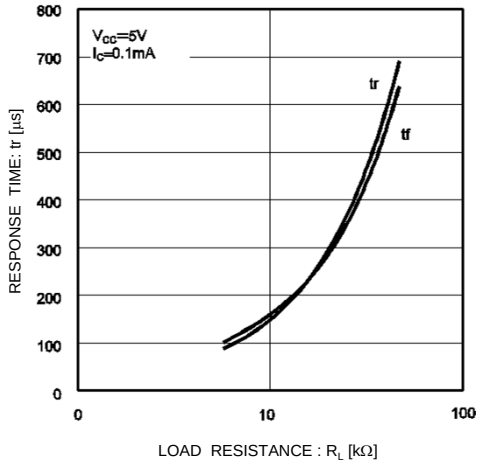


Fig.8 Dark Current vs. Ambient Temperature

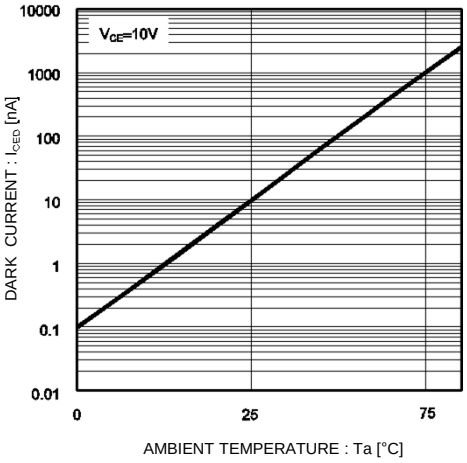


Fig.9 Output Characteristics

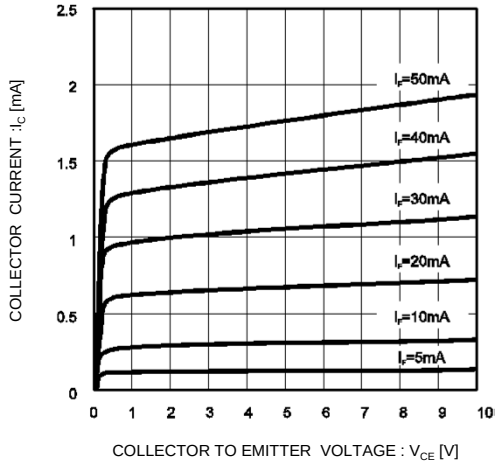


Fig.10 Response Time Measurement Circuit