RPI-1031

Surface Mount type 4 Direction Detector

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 (photo-transistor)	Collector-emitter voltage	V_{CEO}	30	V
	Emitter-collector voltage	V_{ECO}	4.5	V
	Collector current	I_C	30	mA
	Collector power dissipation	P_C	80	mW
	Operating temperature	Topr	−25 to +85	°C
	Storage temperature	Tstg	−30 to +85	°C

Applications

DSC(Digital steal camera)
DVC(Digital video camera)
Digital handy phone, Fan herater,
Projector

Features

1) Surface Mount type
2) Optical Sensor
3) 4 Pirection Detector

Electrical and optical characteristics (Ta=25°C)

	Parameter		Symbol	Min.	Typ.	Max.	Unit	Conditions
Input characteristics	Forward voltage		V_F	–	1.3	1.6	V	I_F=50mA
	Reverse current		I_R	–	–	10	μA	V_R=5V
Output characteristics	Dark current		I_{CEO}	–	–	0.5	μA	V_{CE}=10V
	Peak sensitivity wavelength		λ_P	–	800	–	nm	–
Transfer characteristics	Collector current		I_C	100	–	–	μA	V_{CE}=5V, I_F=5mA
	DC leakage current		I_{leak}	–	–	15	μA	V_{CE}=5V, I_F=5mA
	Collector-emitter saturation voltage		$V_{CE(sat)}$	–	–	0.4	V	I_F=20mA, I_C=0.1mA
	Response time	Rise time	tr	–	10	–	μs	V_{CC}=5V, I_F=20mA, R_L=100Ω
		Fall time	tf	–	10	–	μs	
Infrared light emitter diode	Cut-off frequency		fc	–	1	–	MHz	I_F=50mA ∗ Non-coherent Infrared light emitting diode used.
	Peak light emitting wavelength		λ_P	–	950	–	nm	
Photo transistor	Response time		tr・tf	–	10	–	μs	V_{CC}=5V, I_C=1mA, R_L=100Ω ∗ This product is not designed to be protected against electromagnetic wave.
	Maximum sensitivity wavelength		λ_P	–	800	–	nm	–

Electrical and optical characteristics curves

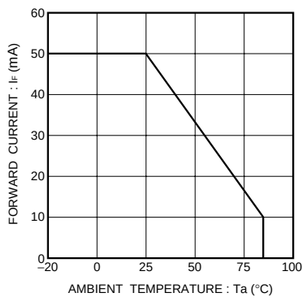


Fig.1 Forward current falloff

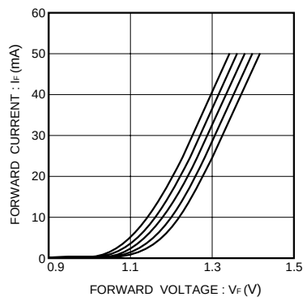


Fig.2 Forward current vs. forward voltage

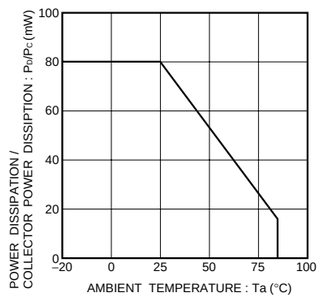


Fig.3 Power dissipation / collector power dissipation vs. ambient temperature

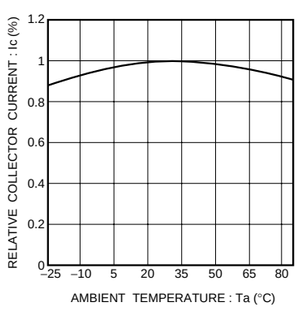


Fig.4 Relative output vs. ambient temperature

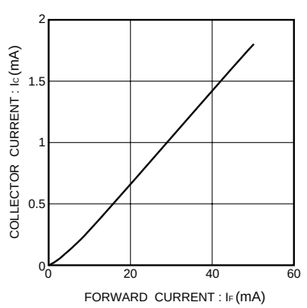


Fig.5 Collector current vs. forward current

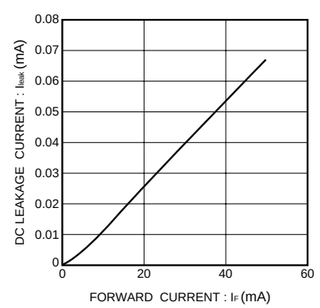
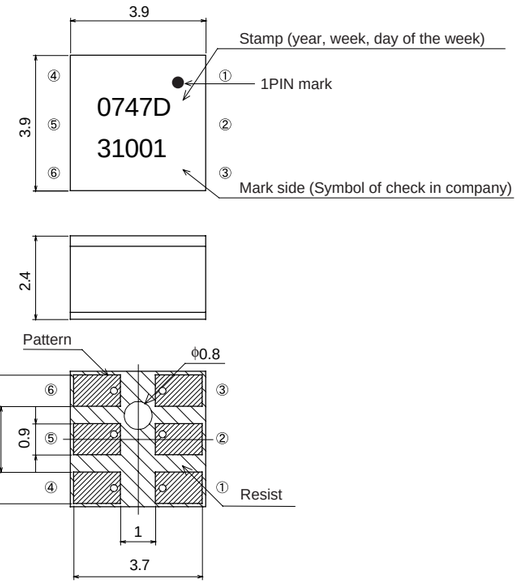
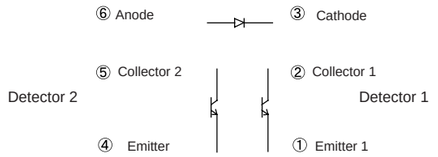


Fig.6 DC leakage current vs. forward current

Dimensions (Unit : mm)



Internal connection diagram



Notes:
1. Unspecified tolerance shall be ±0.2 .
2. Dimension in parenthesis are show for reference.

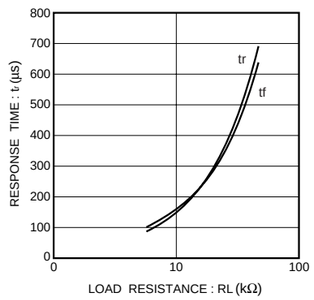


Fig.7 Response time vs. collector current

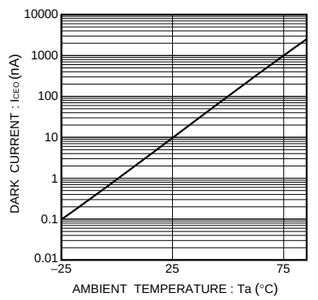


Fig.8 Dark current vs. ambient temperature

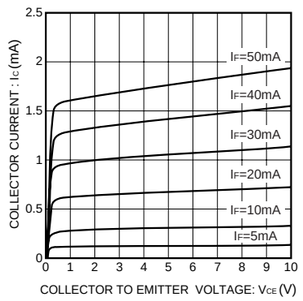


Fig.9 Output characteristics

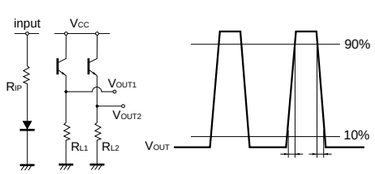


Fig.10 Response time measurement circuit

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