

IS1604

OPIC Light Detector for 4 times Speed CD-ROM Drive

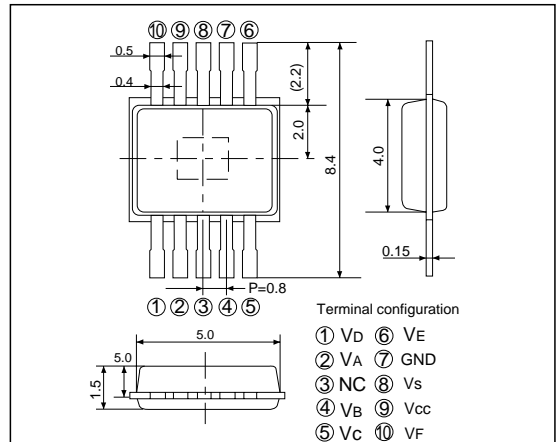
■ Features

- OPIC light detector for RF signal detection
(6-division PIN and amplifier IC integrated onto single chip)
- High speed response type (response frequency : MIN. 8MHz)
- Compact and thin package
(Package dimension : 5.0 x 4.0 x 1.5 mm)
- Customer-compatible light detector pattern

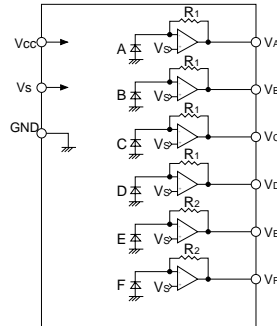
*PINPD : PIN type photodiode

■ Outline Dimensions

(Unit : mm)

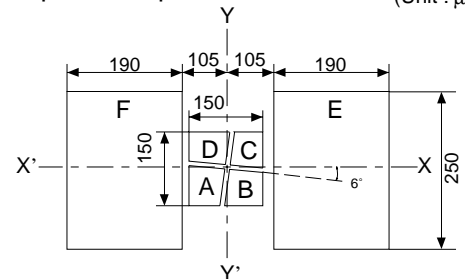


Internal block diagram



Shape of detector portion

(Unit : μm)



■ Applications

- CD-ROM drive (4 times speed)

■ Absolute Maximum Ratings

(Ta=25°C)

Parameter	Symbol	Rating	Unit
Supply voltage	V _{CC}	9	V
*1 Output voltage	V _O	V _{CC}	°C
Operating temperature	T _{opr}	- 20 to + 80	°C
Storage temperature	T _{stg}	- 40 to + 85	°C
*2 Soldering temperature	T _{sol}	260	°C

*1 To apply to individual terminals of V_A to V_F.

*2 For MAX. 3 seconds at the position of 1.0 mm from the resin edge

* OPIC (Optional IC) is a trademark of the SHARP Corporation.

An OPIC consists of a light-detecting element and signal-processing circuit integrated onto a single chip.

■ Recommended Operating Conditions

Parameter	Symbol	MIN.	TYP.	MAX.	Unit
Operating supply voltage range 1	V _{cc}	4.5	5	5.5	V
Operating supply voltage range 2	V _s	V _{cc} /2	V _{cc} /2	V _{cc} /2	V
*3 Incident light quantity range 1	φ P1	-	6	10	μ W
*4 Incident light quantity range 2	φ P2	-	6	10	μ W

*3 To apply to individual detectors of A,B, C and D.

*4 To apply to individual detectors of E and F.

■ Electro-optical Characteristics

(T_a = 25°C, V_{cc} = 5V, V_s = 2.5V)

Parameter	Symbol	Conditions	MIN.	TYP.	MAX.	Unit	Application
Supply current	I _{cc}	-	0.6	1.5	4	mA	V _{cc}
Output offset voltage	V _{od}	Specified in pressure difference from V _s	-15	0	+15	mV	V _{AtO} V _F
Output offset voltage differenc	Δ V _{od}	A - B	-15	0	+15	mV	V _A , V _B
		C - D	-15	0	+15		V _C , V _D
		(A + C) - (B + D)	-15	0	+15		V _{AtO} V _D
		E - F	-15	0	+15		V _E , V _F
*5 Sensitivity 1	R _{p1}	-	18	33	53	mV/μ W	V _{AtO} V _D
*5 Sensitivity 2	R _{p2}	-	32	58	93	mV/μ W	V _E , V _F
*5 Sensitivity ratio	R _{p2} /R _{p1}	-	1.6	1.9	2.2	-	V _{AtO} V _F
*5 Sensitivity temperature coefficient	R _{pt}	T _a = -20 to +80°C	-	4 000	-	ppm/°C	V _{AtO} V _F
Response frequency 1	f _{c1}	-3dB, CL = 30pF	8	11	-	MHz	V _{AtO} V _D
Response frequency 2	f _{c2}	-3dB, CL = 30pF	1	1.5	-	MHz	V _E , V _F
Output noise level	V _n	f = 2.9MHz, BW = 10kHz	-	-76	-64	dBm	V _{AtO} V _F

*5 5μ W DC light (λ = 780 nm laser diode) is radiated to vicinity of the center of each detector at 30μφ.

Assuming the then output voltage as V_p and the dark output voltage as V_{od}, sensitivity R_p is defined according to the following formula.

$$R_p = (V_p - V_{od}) / 5 \text{ m W}$$

Fig. 1 Response Frequency vs. Supply voltage

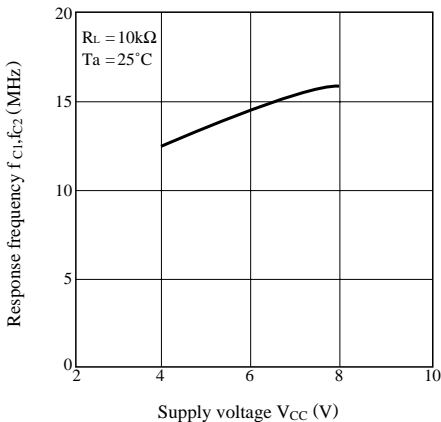
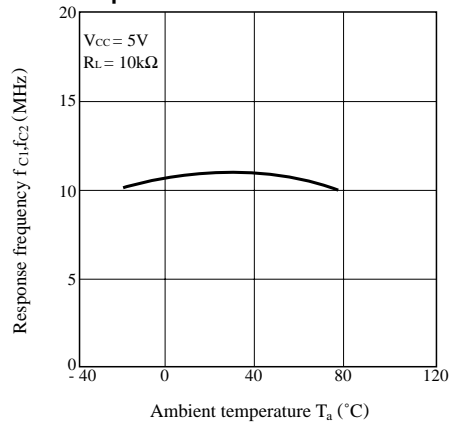


Fig. 2 Response Frequency vs. Ambient Temperature



● Please refer to the chapter "Precautions for Use". (Page 78 to 93)