

LA0205

Recommended Operating Conditions at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Ratings	Unit
Recommended supply voltage	V_{CC}	5.0	V
Operating supply voltage range	V_{CCOPG}	4.5 to 5.5	V
Recommended reference voltage	V_{REF}	2.5	V
Reference voltage range	V_{REFOPG}	2.0 to 2.8	V

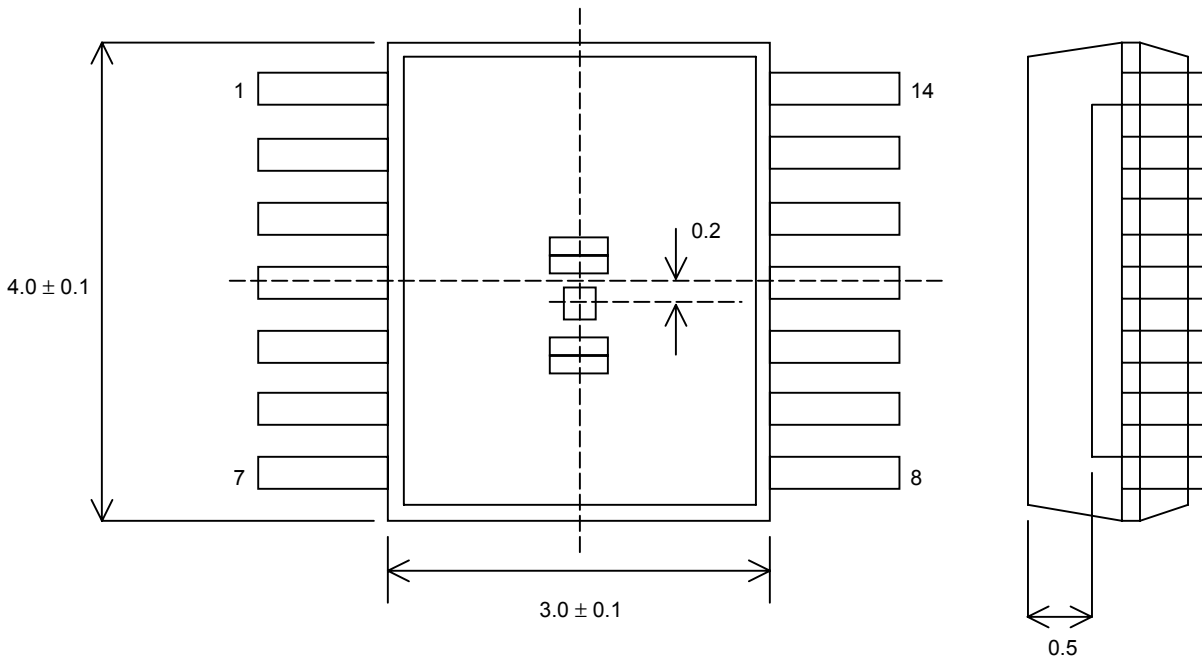
Optoelectronic Characteristics at $T_a = 25^\circ\text{C}$, $V_{CC} = 5\text{ V}$, $V_{REF} = 2.5\text{ V}$, $R_L = 4.7\text{ k}\Omega$, $C_L = 22\text{ pF}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Supply current	I_{CCO}	With the light shaded	10	14	19	mA
Output voltage	V_{oAD}	Pins A to D: $PI=10\ \mu\text{W}$, $\lambda=780\text{ nm}$	64	80	96	mV
	V_{oEH}	Pins E to H: $PI=10\ \mu\text{W}$, $\lambda=780\text{ nm}$	160	200	240	mV
Output offset voltage	V_{ofset}	Pins A to H: with the light shaded	-10	0	10	mV
Difference of offset voltage	ΔV_{ofset}	With the light shaded, (A+B)-(C+D)	-15	0	15	mV
		With the light shaded, (A+D)-(B+C)	-15	0	15	mV
		With the light shaded, (A+C)-(B+D)	-15	0	15	mV
		With the light shaded, (E+H)-(F+G)	-15	0	15	mV
Sum of output offset voltage	$V_{ofsetAD}$	Pins A to D: with the light shaded, A+B+C+D	-20	0	20	mV
	$V_{ofsetEH}$	Pins E to H: with the light shaded, E+F+G+H	-22	0	22	mV
Output offset / reference voltage fluctuation	V_{ofsAD}	Pins A to D: output offset fluctuation when the voltage is increased by +100 mV to the V_{REF} of 2.5 V		-0.3		mV
	V_{ofsEH}	Pins E to H: output offset fluctuation when the voltage is increased by +100 mV to the V_{REF} of 2.5 V		-0.6		mV
Limiter voltage	V_{limit}	Pins A to D: $PI=300\ \mu\text{W}$, $\lambda=780\text{ nm}$	3.8	4.1		V
	V_{limit}	Pins E to H: $PI=100\ \mu\text{W}$, $\lambda=780\text{ nm}$	3.8	4.1		V
Frequency characteristics	F_{cAD}	Pins A to D: $\lambda=780\text{ nm}$, -3dB points for 100 KHz	45	65		MHz
	F_{cEH}	Pins E to H: $\lambda=780\text{ nm}$, -3dB points for 100 KHz	15	25		MHz
Group delay deviation	ΔG_d	Pins A to D: 100 KHz to 23 MHz		1.5	2	ns
Settling time	T_{setAD5}	Pins A to D: output 1.8 V to 18 mV			50	ns
	T_{setAD8}	Pins A to D: output 1.8 V to 1.8 mV			80	ns
	T_{setEH}	Pins R to H: output 1.8 V to 18 mV			50	ns
Output noise level	V_{nAD}	Pins A to D: $F=23\text{ MHz}$, $RBW=30\text{ KHz}$		-90	-85	dBm
Output impedance	R_{oAD}	Pins A to D		100		Ω
	R_{oEH}	Pins E to H		125		Ω

- Note:
1. Output voltage and output offset voltage are referenced to V_{REF} .
 2. Limiter voltage is referenced to GND.
 3. Output voltage, frequency characteristics, group delay, settling time, output noise voltage, and output impedance are design confirmation values.

Photo Diode Layout

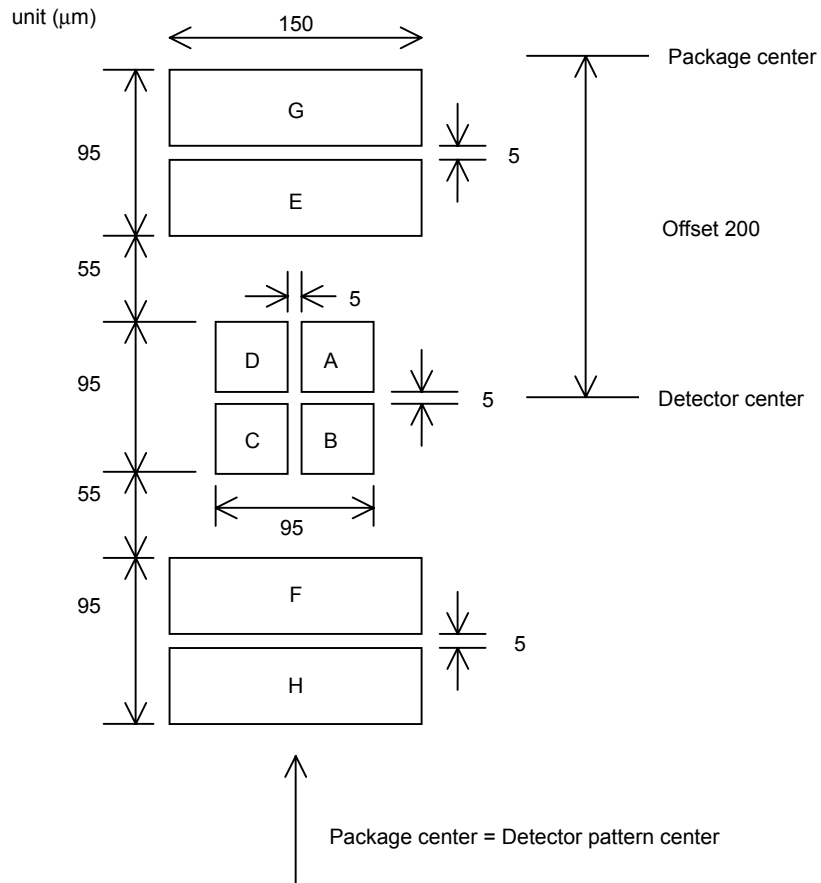
unit (mm)



The tolerance between the package center and the detector pattern center :

X,Y direction ± 0.2 max
Z direction ± 0.2 max

Detecting Pattern of Photo Diode



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Pin Description

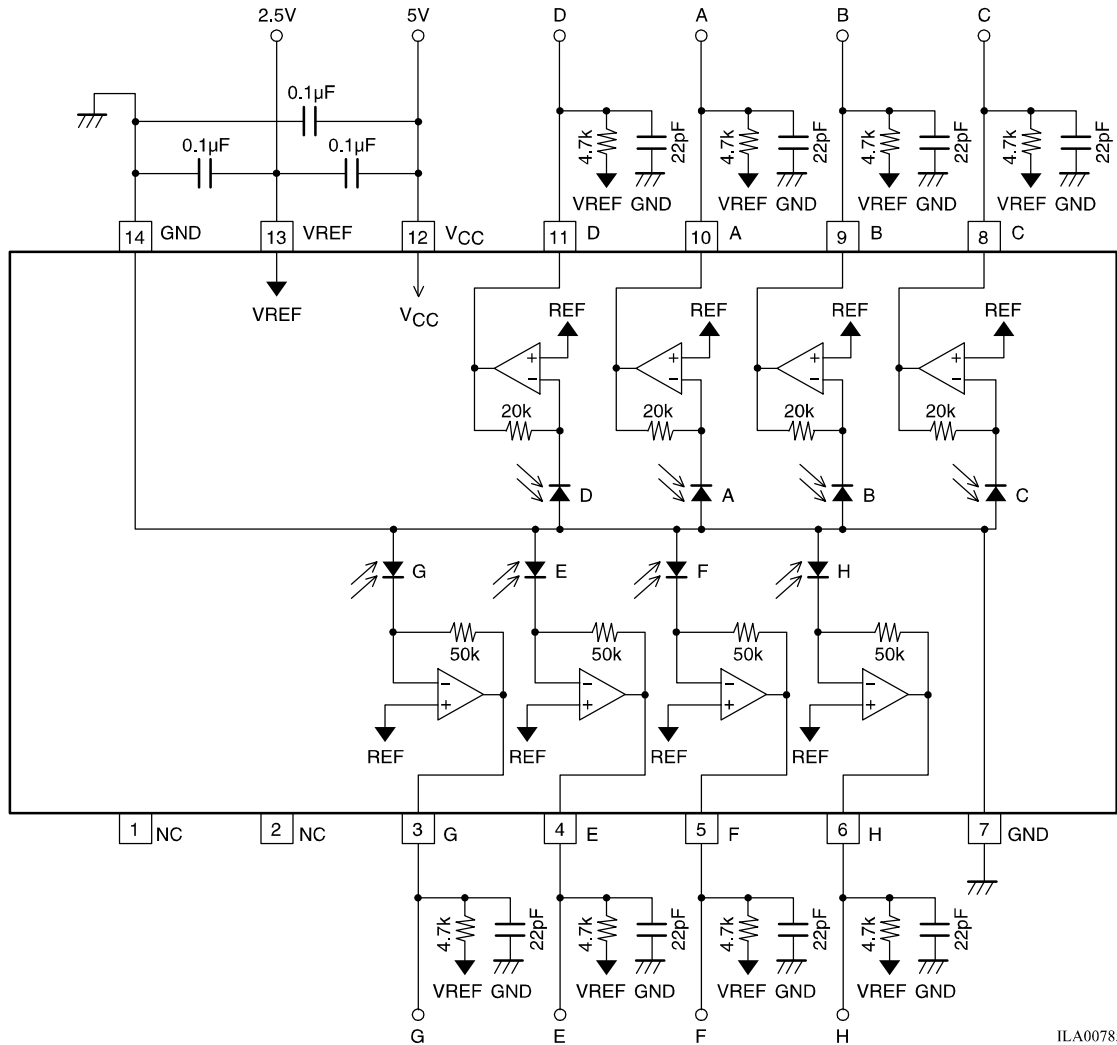
Pin no.	Pin name	Equivalent circuit	Note
1 2	NC NC		No connection pins
3 4 5 6 8 9 10 11	G E F H C B A D		Output pins for each photo-diode
12	V _{CC}		
13	V _{ref}		<p>V_{ref} pin. This pin has no internal circuit to generate voltage. Therefore, external supply of voltage and about 20 μA current (up to 50 μA) as a differential amplifier base current is required.</p>
7, 14	GND		

Package Material Characteristics

Parameter	Reference values
Penetration efficiency	97.0% at 1.0 mmt, 780 nm
Refractive index	1.57 using Abbe technique

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Block Diagram and Test Circuit Diagram



ILA00785

Package: FP-14 (3 × 4)

- Notes:
1. Place the 0.1-µF capacitors between V_{CC} pin and GND pin as close as possible to the pins.
 2. The values of 22 pF capacitance and 4.7 kΩ resistance for output pins are test circuit load conditions.

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