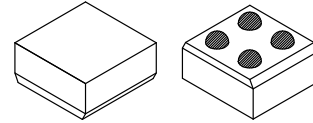


Ambient Light Sensor, Logarithmic Current Output, with Standby Function

LV0111CF



ODCSP4J
CASE 570AD

Overview

LV0111CF is a Photo IC for ultra-small package ambient light sensor which has the characteristics of spectral response similar to that of human eyes. It is suitable for the applications like mobile phone (for Digital-TV, One-segment), LCD-TV, laptop computer, PDA, DSC and Camcorder. It is goods for a free halogen.

Features

- Logarithm Current Output
- Excellent Luminous Efficiency Function
- Built-in Sleep Function
- Low Current Consumption
- This is a Pb-Free and Halogen Free Device

Typical Applications

- Ambient Light Sensor
- Feature Phone, Smart Phone, ...
- Digital TV (CRT, LCD, OLED, ...)
- DSC, DVC, DSLR, Mirrorless, ...

SPECIFICATIONS

ABSOLUTE MAXIMUM RATINGS (at $T_A = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Ratings	Unit
Maximum Supply Voltage	V_{CC} max		6	V
Operating Temperature	T_{opr}		-30 to +85	$^\circ\text{C}$
Storage Temperature	T_{stg}		-40 to +100	$^\circ\text{C}$

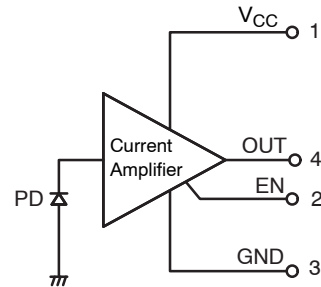
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

RECOMMENDED OPERATING CONDITIONS AND OPERATING VOLTAGE RANGE (at $T_A = 25^\circ\text{C}$)

Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Recommended Supply Voltage	VCC		2.3	2.5	5.5	V
SW Pin Low Voltage	V_L	Sleep mode	0	-	0.4	V
SW Pin High Voltage	V_H	Normal mode	1.5	-	V_{CC}	V

Functional operation above the stresses listed in the Recommended Operating Ranges is not implied. Extended exposure to stresses beyond the Recommended Operating Ranges limits may affect device reliability.

INTERNAL BLOCK DIAGRAM



ORDERING INFORMATION

Device	Package	Shipping [†]
LV0111CF-TLM-H	ODCSP4J (Pb-Free / Halogen Free)	5000 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

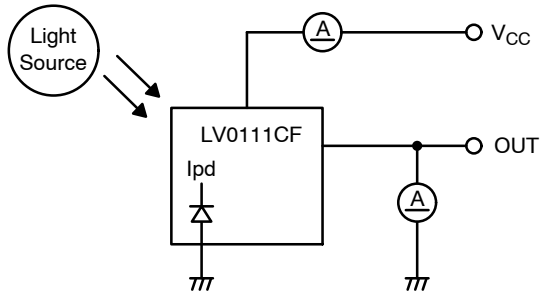
LV0111CF

ELECTRICAL AND OPTICAL CHARACTERISTICS (at $T_A = 25^\circ\text{C}$, $V_{CC} = 2.5\text{ V}$)

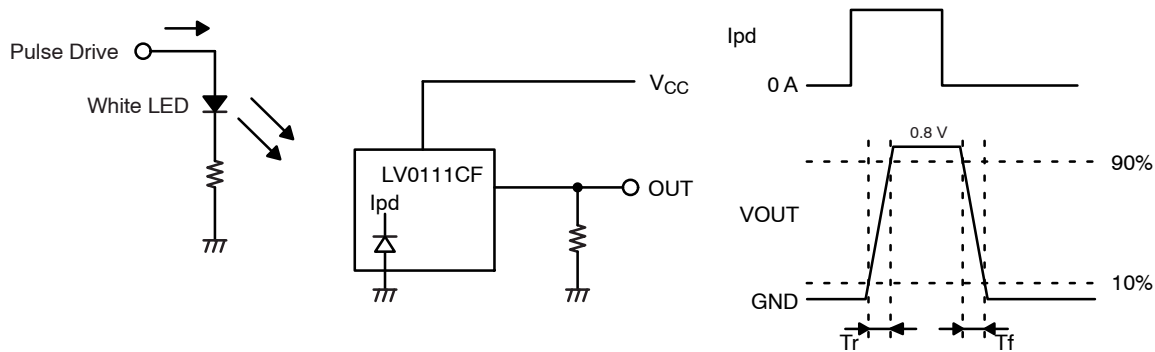
Parameter	Symbol	Conditions	Ratings			Unit
			Min	Typ	Max	
Current Dissipation (Note 1, 3)	I_{CC}	$E_v = 1000\text{ lx}$, $R_L = 27\text{ k}\Omega$	50	75	100	μA
Sleep Current	I_{sl}	$E_v = 0\text{ lx}$	–	0.01	0.1	μA
Output Current (1) (Note 1, 3)	I_{O1}	$E_v = 100\text{ lx}$	18	21	24	μA
Output Current (2) (Note 1, 3)	I_{O2}	$E_v = 1000\text{ lx}$	27	31	35	μA
Dark Current	I_{leak}	$E_v = 0\text{ lx}$	–	0.35	0.5	μA
Temperature Coefficient (Note 2)	I_{tc}	$E_v = 100\text{ lx}$	–	0.1	–	$\%/^\circ\text{C}$
Rise Time (Note 4)	T_{r1}	$E_v = 1000\text{ lx}$	–	40	100	μs
Fall Time (Note 4)	T_{f1}	$E_v = 1000\text{ lx}$	–	2	5	ms
Peak Sensitivity Wave Length (Note 2)	λ_p		–	550	–	nm

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

1. Measured with the standard light source A. White LED is used instead in the mass production line.
2. Design guaranteed item.
3. Test circuit for measuring current dissipation and output current.

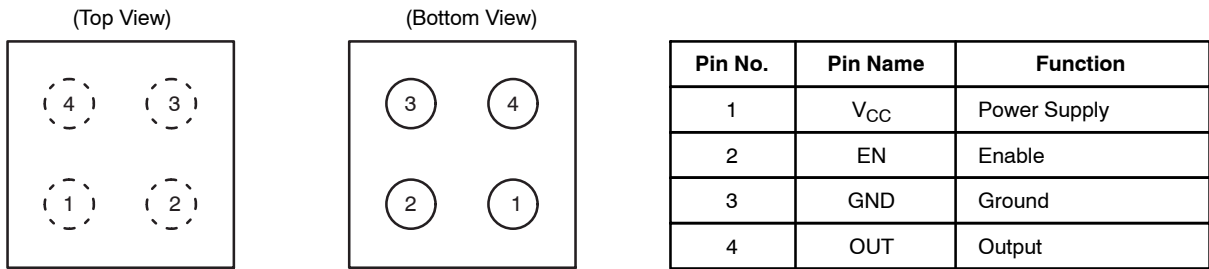


4. Measuring method of rise time (T_r) and fall time (T_f).



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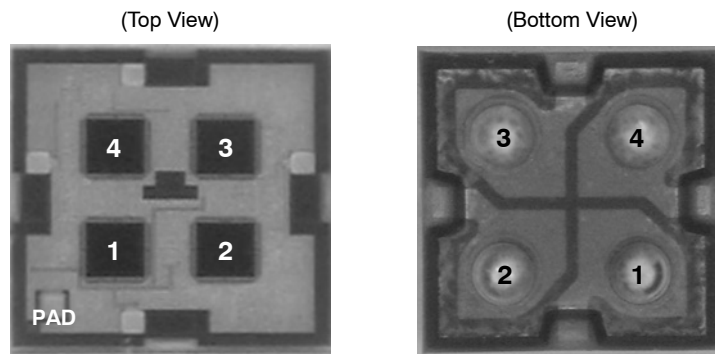
PAD LAYOUT



Ball Pitch: 0.5 mm, Ball Size: 0.25 mm ϕ

Figure 1. Pad Layout

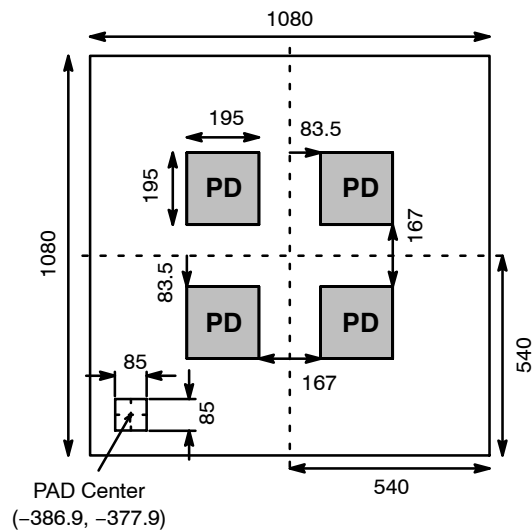
PAD LAYOUT (PHOTOS)



* The position with PAD becomes pin 1.

Figure 2. Pad Layout (Photos)

CHIP PATTERN DIAGRAM



* The PAD becomes pin 1.
unit: μm

Figure 3. Chip Pattern Diagram (Top View)

TYPICAL PERFORMANCE CHARACTERISTICS

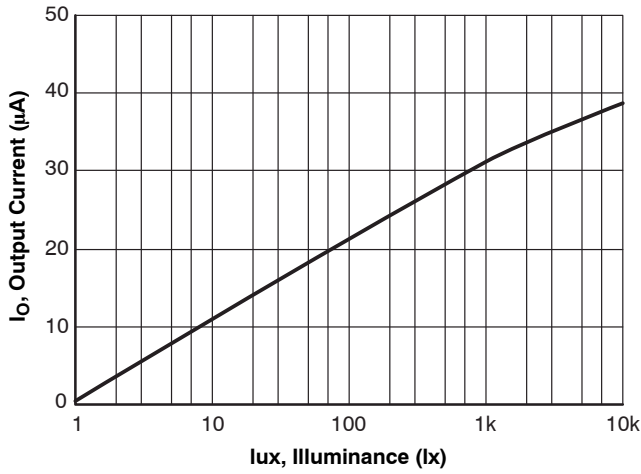


Figure 4. I_O - lux

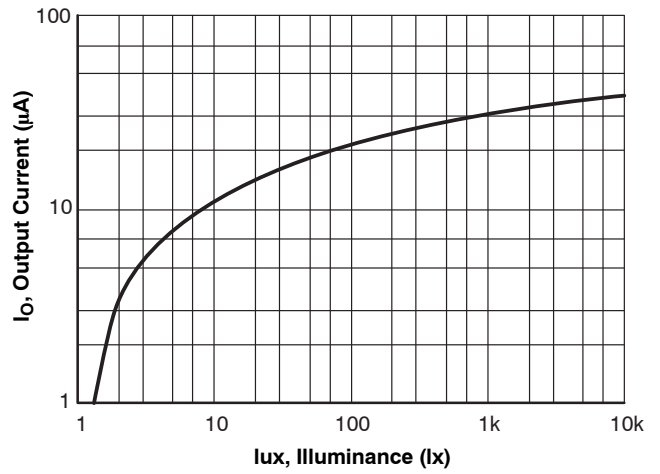


Figure 5. I_O - lux

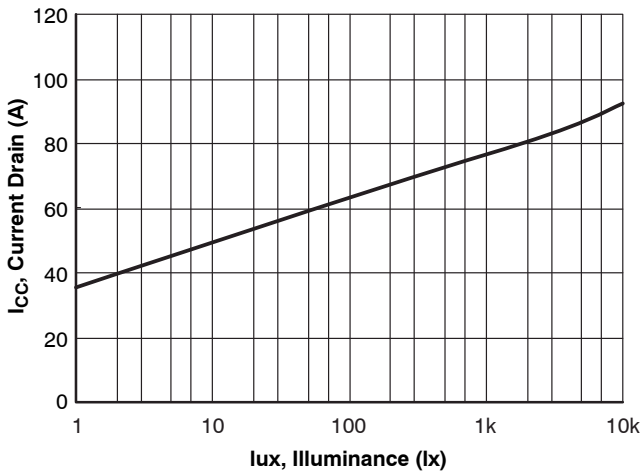


Figure 6. I_{CC} - lux

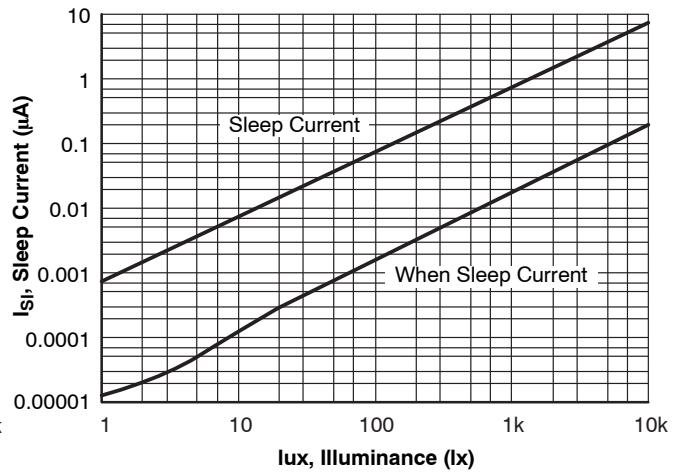


Figure 7. I_{SI} - lux

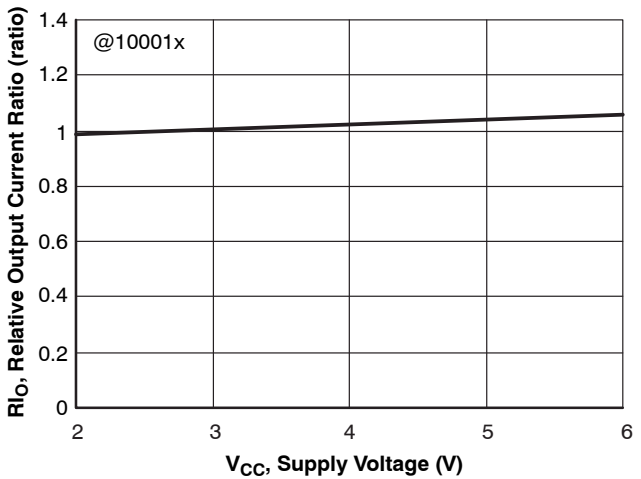


Figure 8. R_{IO} - V_{CC}

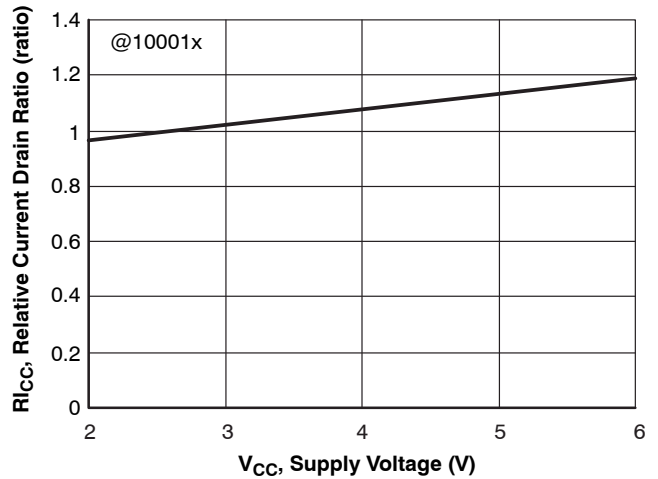


Figure 9. R_{ICC} - V_{CC}

TYPICAL PERFORMANCE CHARACTERISTICS (Continued)

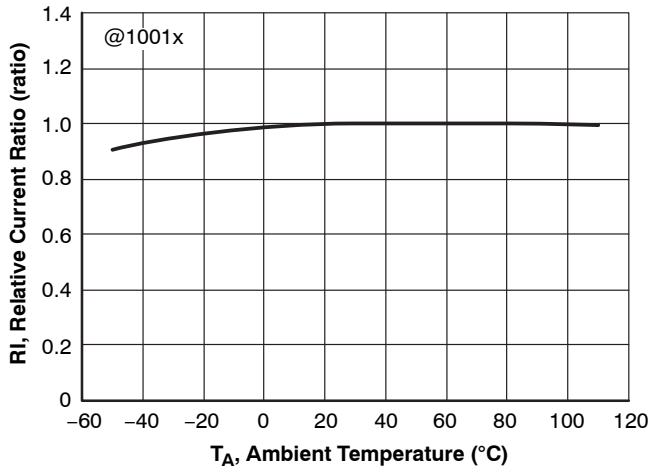


Figure 10. RI - T_A

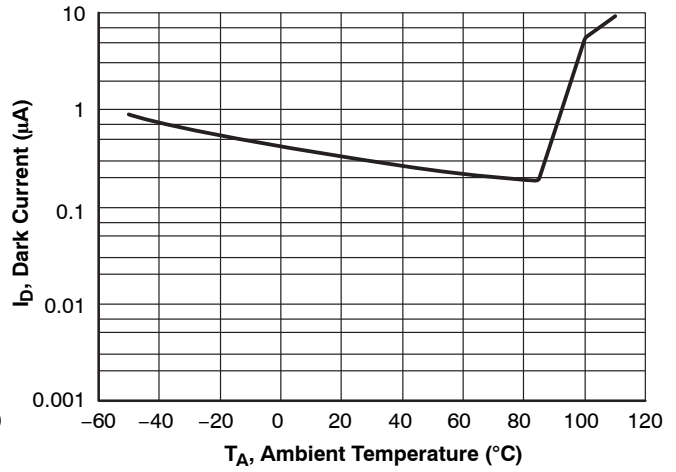


Figure 11. I_D - T_A

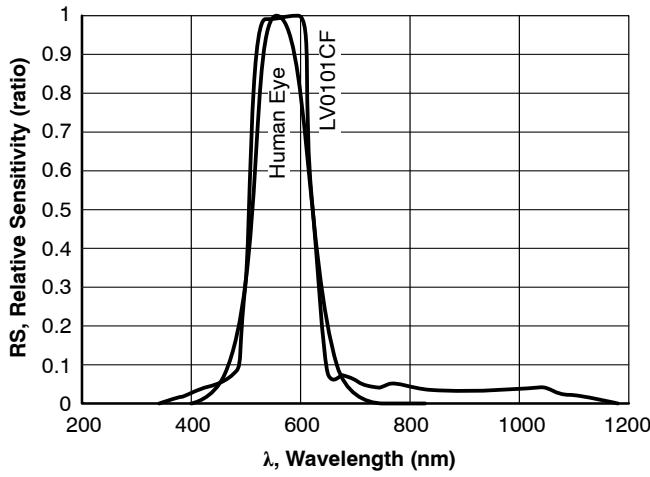


Figure 12. Spectral Response

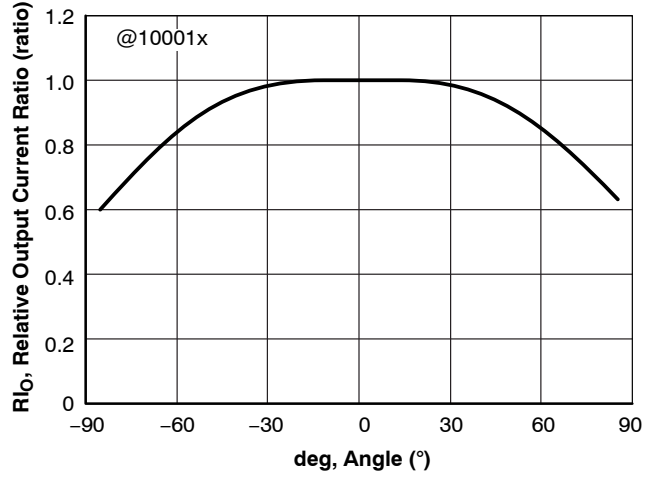


Figure 13. Directivity

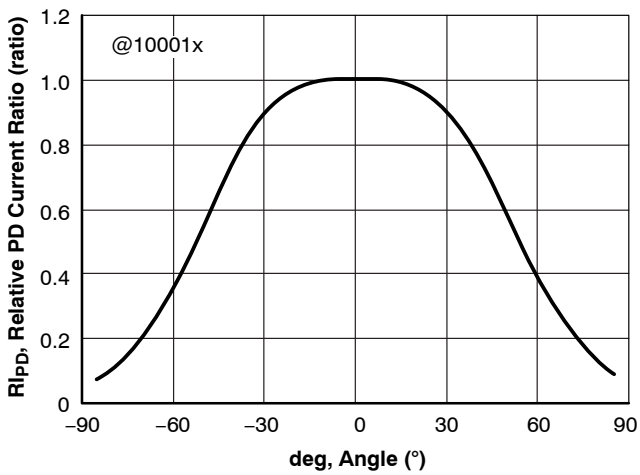
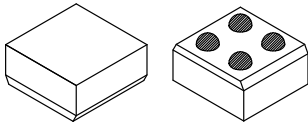


Figure 14. Directivity

MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

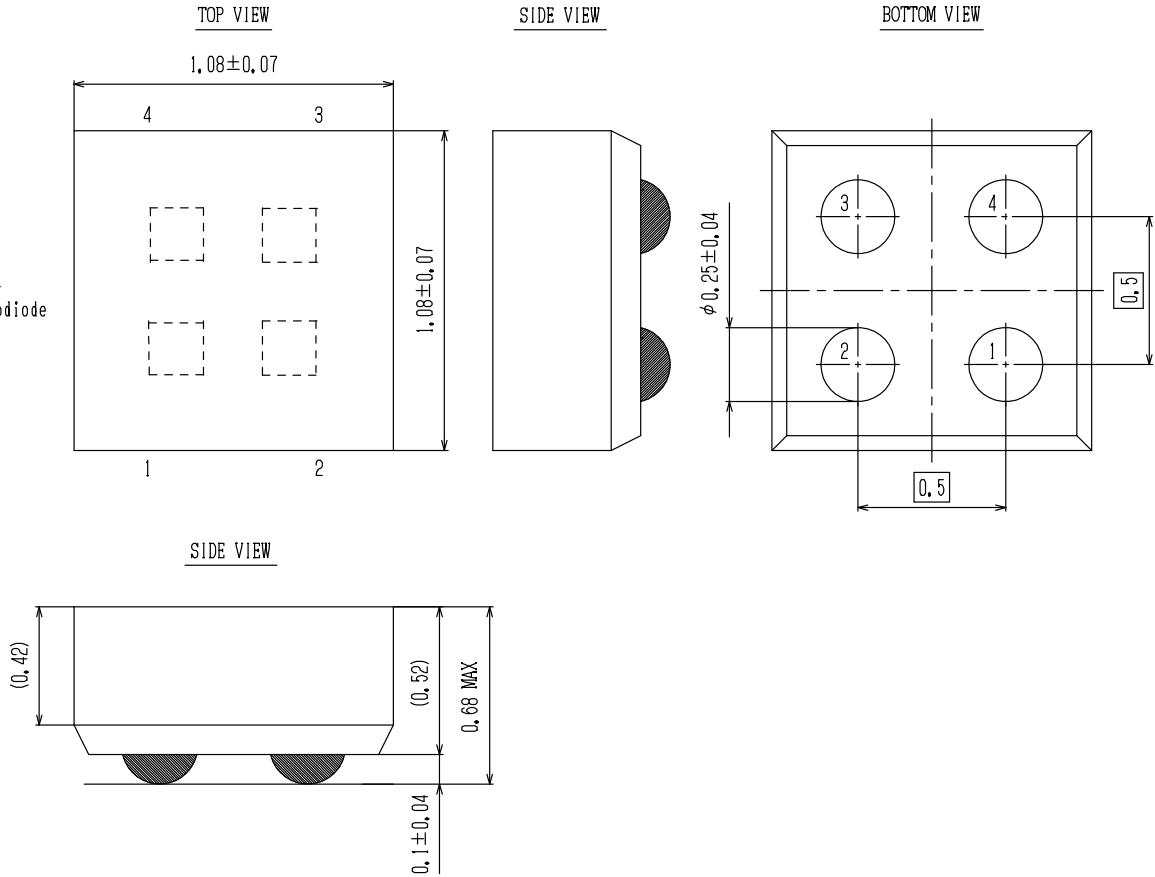
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CASE 570AD
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DATE 31 MAR 2012

<Note>
 No color-resist
 on each photodiode



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