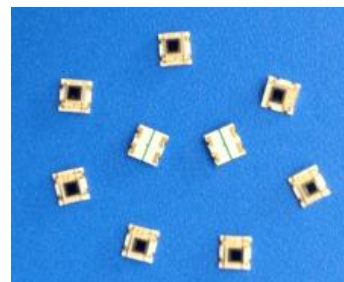


OSC250

Light-to-Voltage Optical Sensor IC



- 1. Description** The OSC250 is a light-to-voltage optical sensors IC. OSC250 IC built in photodiode and transimpedance amplifier (feedback resistor = 16M Ω) on a single monolithic IC. Output voltage is directly proportional to the light intensity (irradiance) on the photodiode.
- 2. Features**
- Monolithic silicon IC containing photodiode, operational amplifier, and feedback components
 - Converts light intensity to a voltage
 - Compact 3-lead clear plastic package
 - Single voltage supply operation
 - Low dark (offset) voltage... 10mV max
 - Low supply current... 1.1mA typical
 - Wide supply-voltage range... 2.7V to 5.5V
 - RoHS compliant
- 3. Application** Photo sensor for light to linear output application.
- Printer, Copier, ATM, Robot vaccum cleaner, Automation door & etc.
- 4. Absolute Maximum Ratings**

Parameter	Symbol	Min	Max	Unit
Supply voltage	V _{DD}		7	V
Output current	I _o		±10	mA
Duration of short-circuit current at (or below) 25°C			5	s
Operating free-air temperature range	T _A	-25	85	°C
Storage temperature range	T _{STRG}	-25	85	°C
Lead temperature 1.6mm (1/16 inch) from case for 10 seconds (S Package)			260	°C

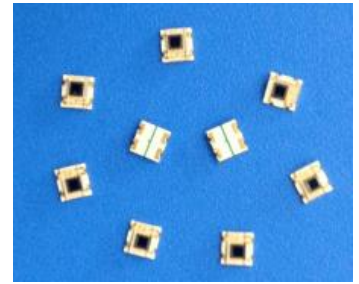
5. Electro-Optical Characteristics

▪ Recommended Operating Conditions

Parameter	Symbol	Min	Nom	Max	Unit
Supply voltage	V _{DD}	2.7		5	V
Operating free-air temperature	T _A	0		70	°C

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Light-to-Voltage Optical Sensor IC



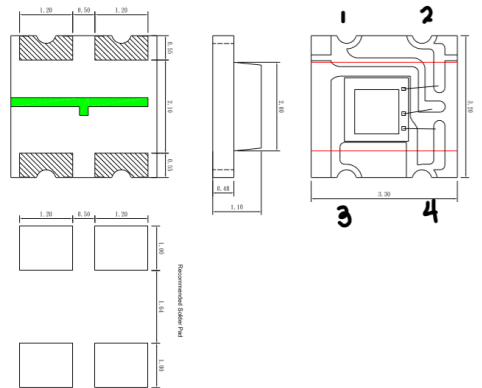
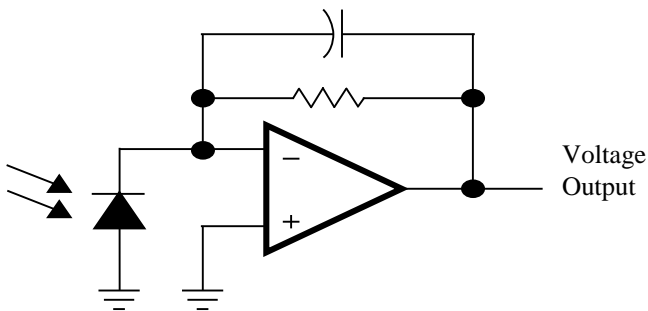
5. Electro-Optical Characteristics

- Electrical Characteristics

Electrical Characteristics at $V_{DD}=5V$, $T_A=25^\circ C$, $\lambda_p=650nm$, $R_L=10k\Omega$ unless otherwise noted.

Parameter	Symbol	Test Conditions	OSC250			Unit
			Min	Typ	Max	
Dark voltage	V_D	$E_e = 0$		6		mV
Maximum output voltage	V_{OM}	$V_{DD} = 5.0V$		4.8		V
Output voltage	V_O	$E_e = 14.6\mu W/cm^2$	1.5	2	2.5	V
		$E_e = 29.2\mu W/cm^2$	3.5	4	4.5	
Temperature coefficient of output voltage (VO)	α_{VO}	$E_e = 14.6\mu W/cm^2$		1.6		mV/ $^\circ C$
		$T_A = 0^\circ C$ to $70^\circ C$		0.08		%/ $^\circ C$
Irradiance responsivity	N_e	$\lambda_p = 650 nm$		137		mV/ ($\mu W/cm^2$)
Supply current	I_{DD}	$E_e = 14.6\mu W/cm^2$		1.1	1.7	mA
Output pulse rise time	t_r	$V_{DD} = 5V$, $\lambda_p = 635nm$		10		μs
Output pulse fall time	t_f	$V_{DD} = 5V$, $\lambda_p = 635nm$		10		μs
Output noise voltage	V_n	$V_{DD} = 5V$, $E_e = 0$, $f = 1000Hz$		0.8		$\mu V/\sqrt{Hz}$

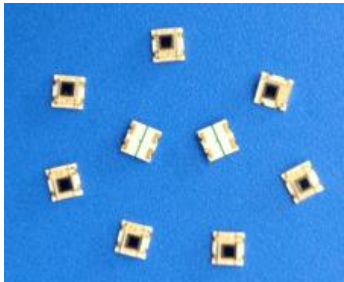
6. Block Diagram & Application Circuit



Terminal		Description
PIN No.	Name	
1	VDD	Supply voltage
2	OUT	Output voltage
3,4	GND	Ground (substrate). All voltages are referenced to GND.

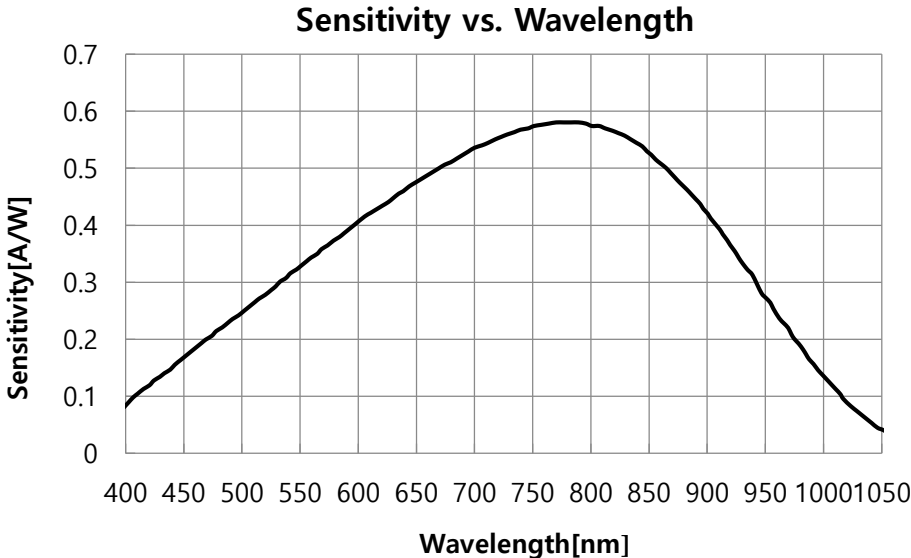
OSC250

Light-to-Voltage Optical Sensor IC

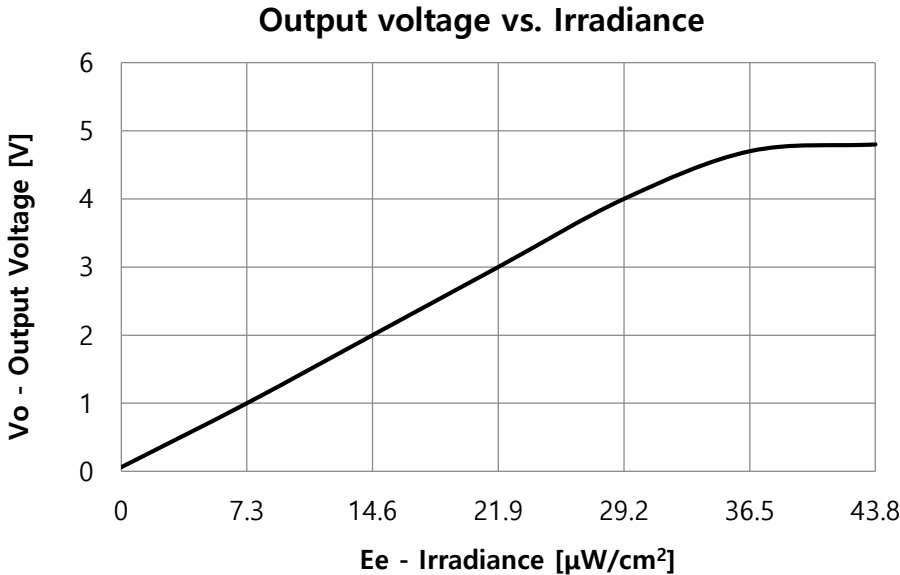


7. Typical Characteristics

- Photo Diode Sensitivity

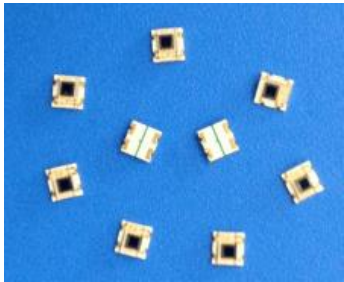


- Output Voltage



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Light-to-Voltage Optical Sensor IC



8. Package Dimensions

