

GUVA-S12SD



UV Index or UV Lamp Monitoring

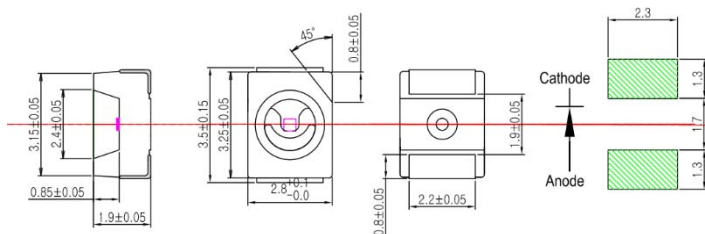
➤ Features

- Gallium Nitride Based Material
- Schottky Type Photodiode
- Photovoltaic Mode Operation
- Good Visible Blindness
- High Responsivity & Low Dark Current
- Chip Size : 0.4mm × 0.4mm (Active Area : 0.076mm²)
- SMD Type (Si Encapsulant)

➤ Applications

- UV Index Monitoring on Portable Device (Mobile Phone..)
- UV-A Lamp Monitoring
- UV LED Monitoring (< 360nm)
- UV Curing

➤ Package Dimension



➤ Absolute Maximum Rating

| Parameter | Symbol | Min. | Max. | Unit | Remark |
|-----------------------|----------------------|------|------|------|----------------------|
| Storage Temperature | T _{st} | -40 | 90 | °C | |
| Operating Temperature | T _{op} | -30 | 85 | °C | |
| Reverse Voltage | V _{r, max.} | | 5 | V | I _r =1 μA |
| Forward Current | I _{f, max.} | | 1 | mA | |
| Soldering Temperature | T _{sol} | | 260 | °C | within 10 sec. |

➤ Electro-Optical Characteristics (at 25°C, RT)

| Parameter | Min. | Typ. | Max. | Unit |
|--|------|-----------------------------|------|------|
| Dark Current (V _r =1V) | | | 1 | nA |
| Photo Current (1 mW/cm ² of UVA lamp) | 101 | 113 | 125 | nA |
| Photo Current (1 UVI, offset 83nA) | | 21 | | nA |
| Peak Responsivity (352nm) | | 0.14 | | A/W |
| Spectral Detection Range | 240 | | 370 | nm |
| Viewing Angle | | 100 | | ° |
| Temperature Coefficient | | 0.08 | | %/°C |
| Bias Capacitance (@V _r = 0V) | | ~ 100 | | pF |
| Shunt resistance | | ~ Middle x 10 ¹⁰ | | Ω |
| Series resistance | | ~ Low x 10 ² | | Ω |

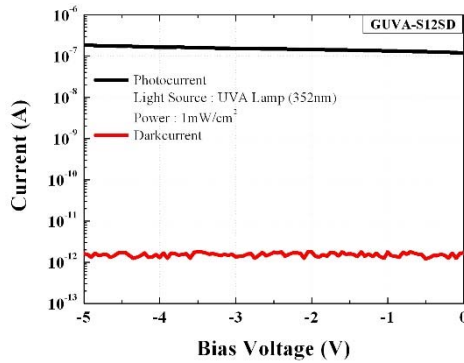
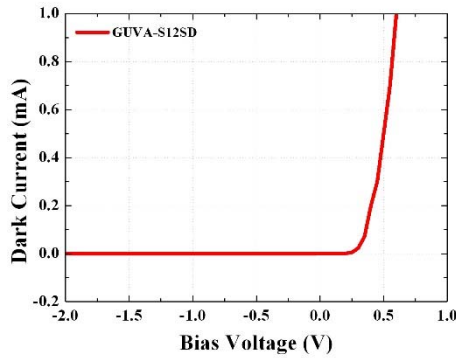
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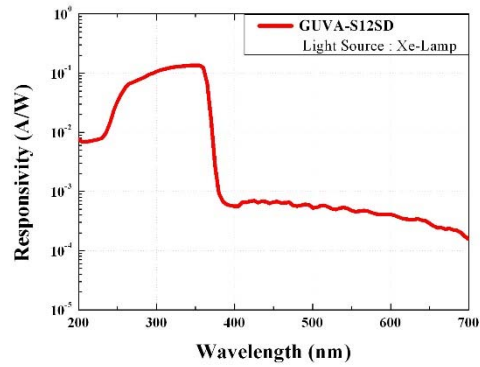
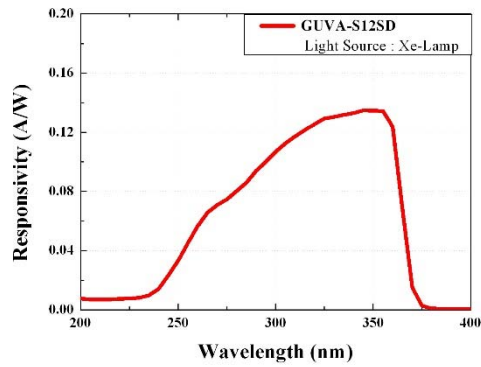
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➤ Characteristic Curve

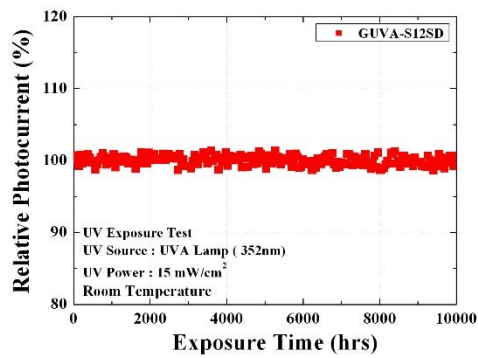
▪ I-V Curve



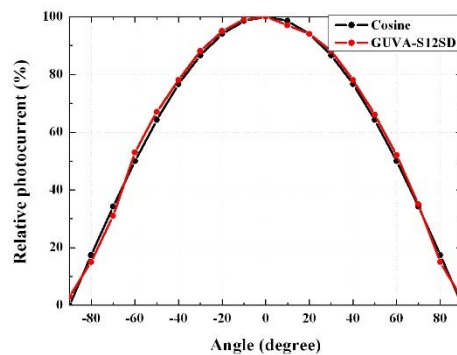
▪ Responsivity Curve



▪ Reliability due to UV Exposure



▪ Angular Response



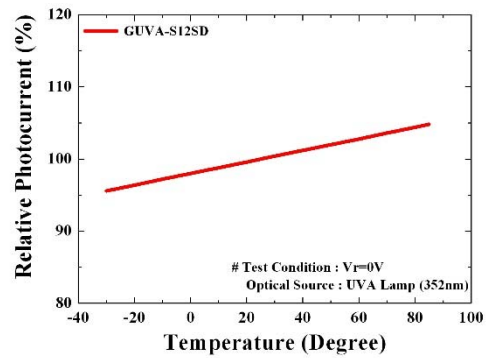
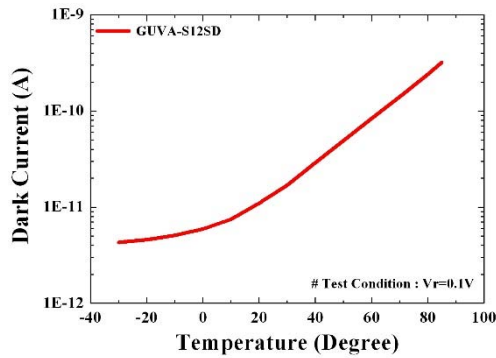
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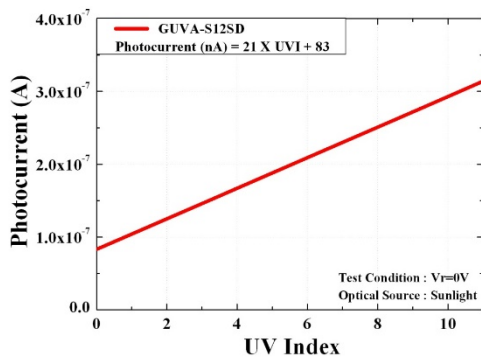
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➤ Characteristic Curve

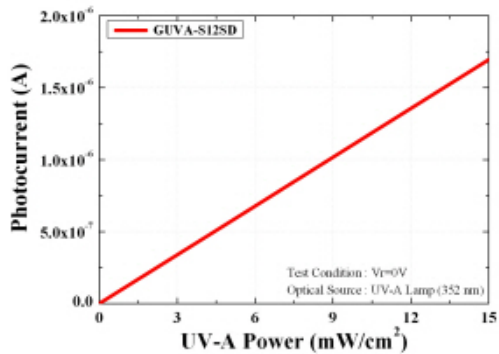
- Temperature Dependence (Dark Current & Photo Current)



- Photocurrent along UV Index



- Photocurrent along UVA Power



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➤ Application Circuit

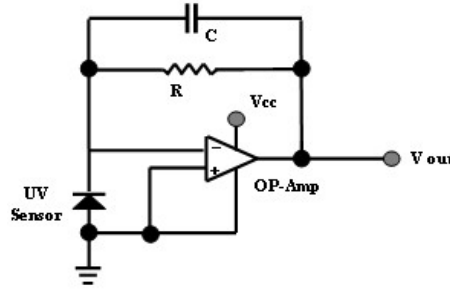
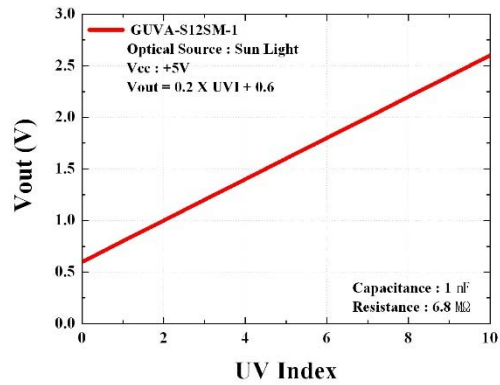
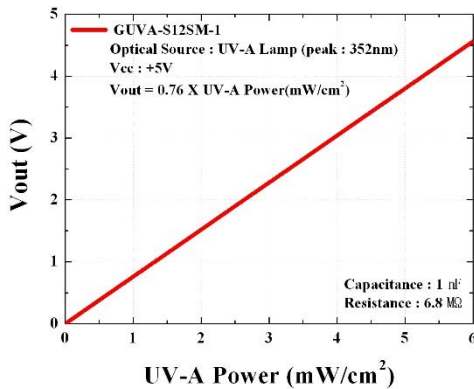


Fig. 1. Application Circuit (Basic)

| Name | Part No. | Function | Model or Value | Remark |
|-----------|----------|----------------------------|-----------------------------------|----------------------------------|
| OP-Amp | OP-Amp | Amplification | MCP6241 (Microchip Technology) | Vcc : 1.8 ~ 5.5V |
| Capacitor | C | Decreasing the Input Noise | 1 nF | Capacitor Controls Response Time |
| Resistor | R | Gain Control | 6.8 MΩ | Gain : R |

* Output Voltage = Gain × Photo Current



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