

## Photovoltaic MOSFET Driver

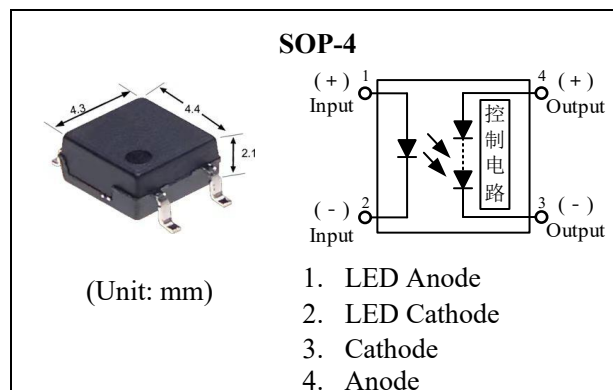
### General Features

- High-speed Switching
- Space Saving
- Drop-out Voltage: 8V (Typ.)
- Short Circuit Current: 30 $\mu$ A (Typ.)
- Isolation Voltage: 2500Vrms (Min.)

| $V_{OC}$ (Typ.) | $I_{SC}$ (Typ.)            | $T_{ON}$ (Typ.) |
|-----------------|----------------------------|-----------------|
| <b>8V</b>       | <b>30<math>\mu</math>A</b> | <b>0.23mS</b>   |

### Application

- MOSFET Gate Drivers
- Solid-State Relays
- Battery Management Systems
- Power Supply for Electronic Circuits
- Measuring Instruments



### Ordering Information

| Part Number | Package | Marking  | Packing Quantity |
|-------------|---------|----------|------------------|
| OPV1122S    | SOP-4   | OPV1122S | 2000pcs/Reel     |

### Absolute Maximum Ratings

$T_A=25^{\circ}\text{C}$  unless otherwise specified

| Item                                 |                          | Symbol    | Note                           | Value      | Unit               |
|--------------------------------------|--------------------------|-----------|--------------------------------|------------|--------------------|
| Input                                | LED Forward Current      | $I_F$     | --                             | 50         | mA                 |
|                                      | LED Peak Forward Current | $I_{FP}$  | $f = 100\text{Hz}$ , duty = 1% | 1000       | mA                 |
|                                      | LED Reverse Voltage      | $V_R$     | --                             | 5          | V                  |
|                                      | Input Power Dissipation  | $P_{In}$  | --                             | 75         | mW                 |
| I/O Isolation Voltage <sup>[1]</sup> |                          | $V_{IO}$  | $RH \leq 60\%$ , 60s           | 2500       | Vrms               |
| Operating Temperature                |                          | $T_{opr}$ | --                             | -40 to 85  | $^{\circ}\text{C}$ |
| Storage Temperature                  |                          | $T_{stg}$ | --                             | -40 to 100 | $^{\circ}\text{C}$ |

Caution: Stresses beyond those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

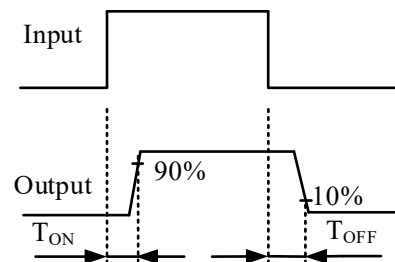
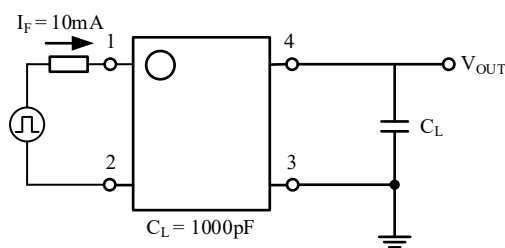
## Electrical Characteristics

 $T_A = 25^\circ\text{C}$  unless otherwise specified

| Item         |                          | Symbol     | Min.      | Typ. | Max. | Unit          | Test Conditions                                |
|--------------|--------------------------|------------|-----------|------|------|---------------|------------------------------------------------|
| Input        | LED Forward Voltage      | $V_F$      | --        | 1.2  | 1.4  | V             | $I_F = 10\text{mA}$                            |
|              | Operation LED Current    | $I_{FOn}$  | --        | 0.5  | 3.0  | mA            | $V_{OC} = 5\text{V}$                           |
|              | Recovery LED Current     | $I_{FOff}$ | --        | 0.35 | 0.5  | mA            | $V_{OC} = 1\text{V}$                           |
| Output       | Drop-out Voltage         | $V_{OC}$   | 6         | 8    | --   | V             | $I_F = 10\text{mA}$                            |
|              | Short Circuit Current    | $I_{SC}$   | --        | 30   | --   | $\mu\text{A}$ | $I_F = 10\text{mA}$                            |
| Transmission | Turn-on Time             | $T_{ON}$   | --        | 0.23 | --   | ms            | $I_F = 10\text{mA}$ ,<br>$C_L = 1000\text{pF}$ |
|              | Turn-off Time            | $T_{OFF}$  | --        | 0.03 | --   | ms            |                                                |
| Coupled      | I/O Capacitance          | $C_{IO}$   | --        | 0.8  | 1.5  | pF            | $f = 1\text{MHz}$                              |
|              | I/O Isolation Resistance | $R_{IO}$   | $10^{10}$ | --   | --   | $\Omega$      | DC = 500V                                      |

Note:

[1] This device is considered as a two-terminal device: Pins 1 and 2 are shorted together, and pins 3 and 4 are shorted together.



## Characteristics Curves

Figure 1. Drop-out voltage vs. Ambient temperature

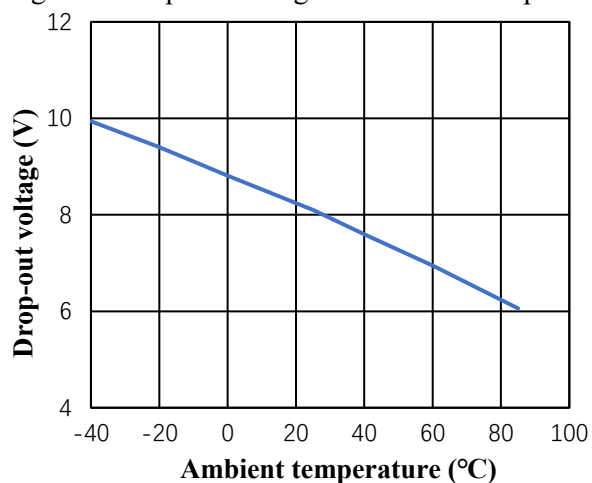


Figure 2. Short circuit vs. Ambient temperature

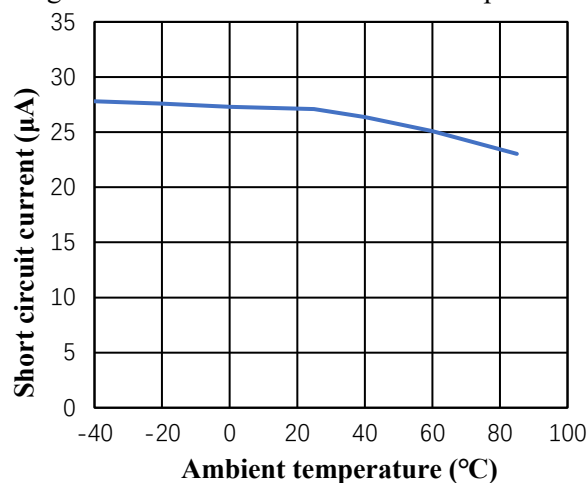


Figure 3. LED operate current vs. Ambient temperature

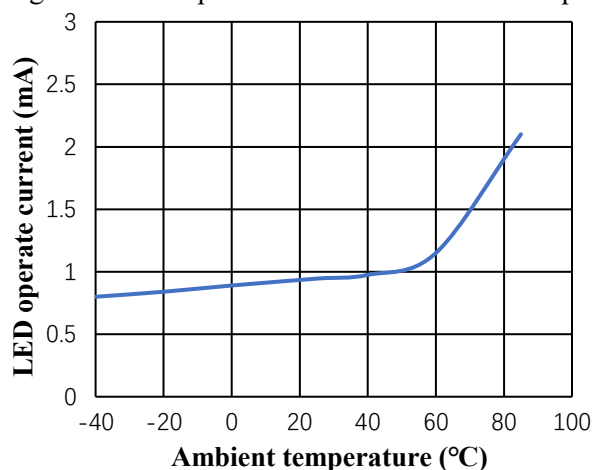


Figure 4. LED turn off time vs. Ambient temperature

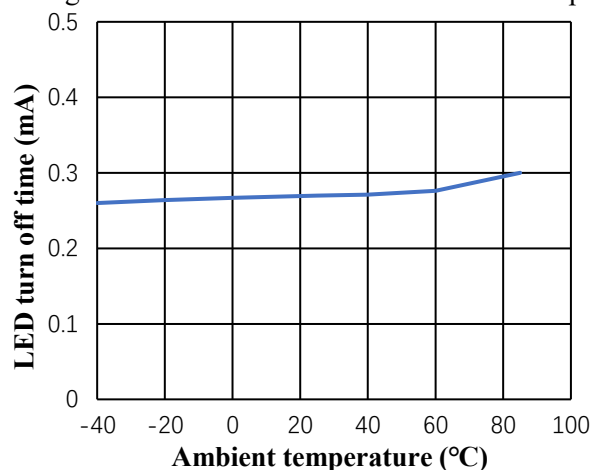


Figure 5. Turn on time vs. Ambient temperature

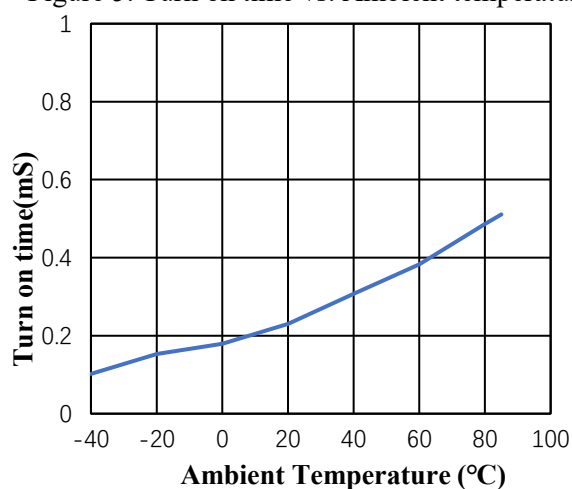
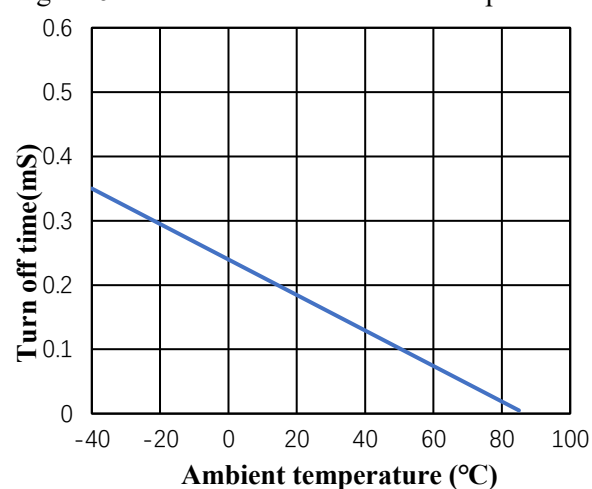
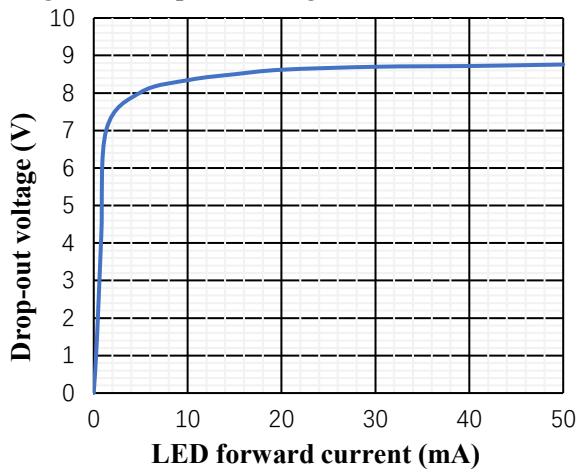
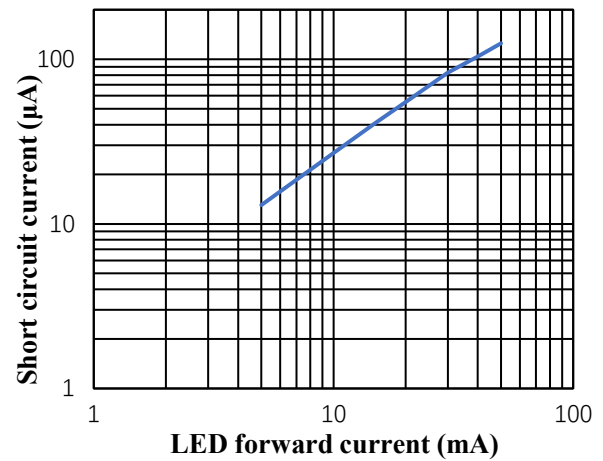
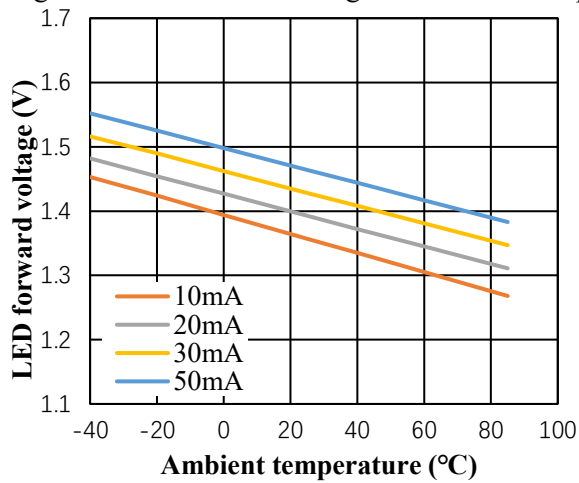


Figure 6. Turn off time vs. Ambient temperature



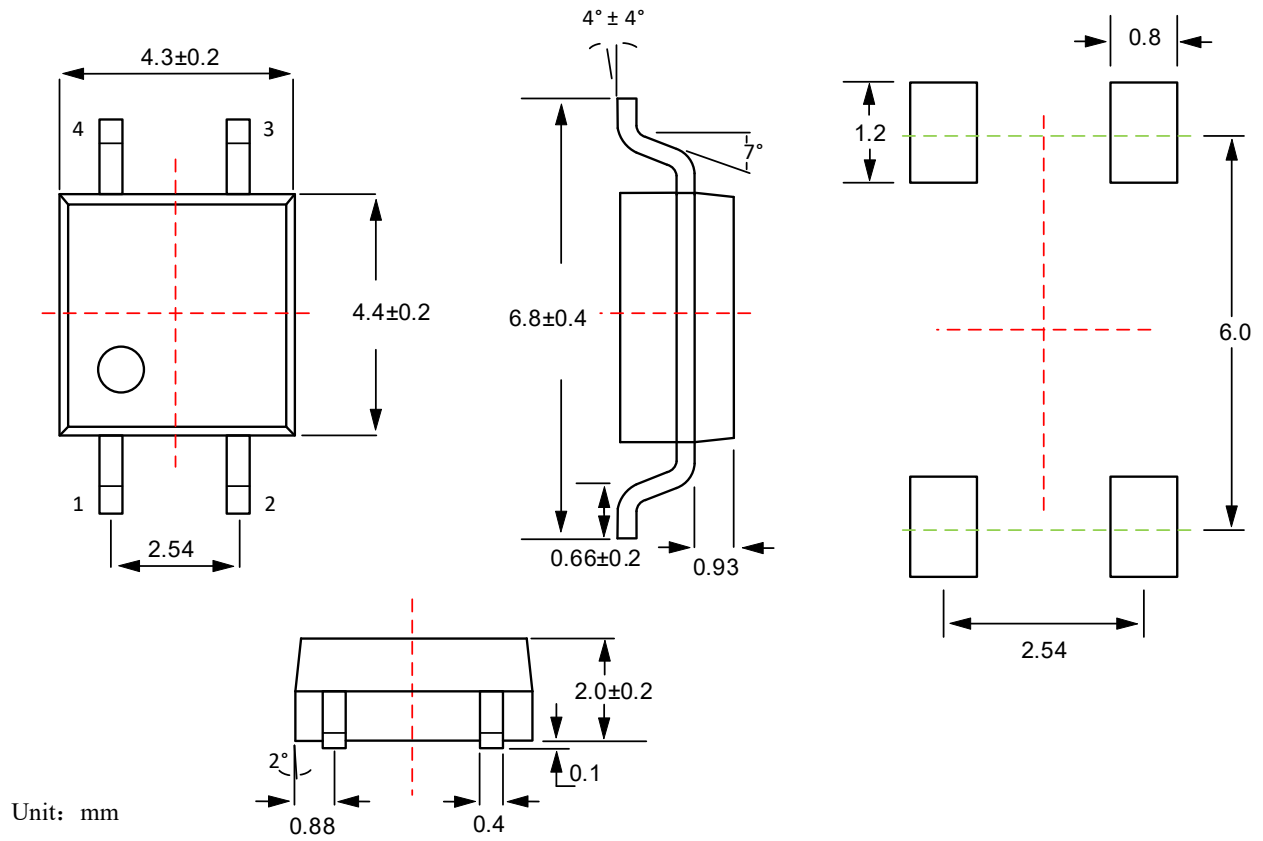
**Figure 7. Drop-out voltage vs. LED forward current**

**Figure 8. Short circuit current vs. LED forward current**

**Figure 9. LED forward voltage vs. Ambient temperature**


*Note:*

*The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.*

## Package Dimensions

### SOP - 4



**Published by****ARK Microelectronics Co., Ltd.****Add: D26, UESTC National Science Park, No. 1 Shuangxing Avenue, Chengdu, Sichuan****Tel: +86 (028) 8523-2215****Email: [sales@ark-micro.com](mailto:sales@ark-micro.com)****Website: [www.ark-micro.com](http://www.ark-micro.com)****All Rights Reserved.**

## Disclaimers

---

ARK Microelectronics Co., Ltd. reserves the right to make change without notice in order to improve reliability, function or design and to discontinue any product or service without notice. Customers should obtain the latest relevant information before orders and should verify that such information is current and complete. All products are sold subject to ARK Microelectronics Co., Ltd.'s terms and conditions supplied at the time of order acknowledgement.

ARK Microelectronics Co., Ltd. warrants performance of its hardware products to the specifications at the time of sale. Testing, reliability and quality control are used to the extent ARK Microelectronics Co., Ltd. deems necessary to support this warrantee. Except where agreed upon by contractual agreement, testing of all parameters of each product is not necessary performed.

ARK Microelectronics Co., Ltd. does not assume any liability arising from the use of any product or circuit designs described herein. Customers are responsible for their products and applications using ARK Microelectronics Co., Ltd.'s components. To minimize risk, customers must provide adequate design and operating safeguards.

ARK Microelectronics Co., Ltd. does not warrant or convey any license either expressed or implied under its patent rights, nor the rights of others. Reproduction of information in ARK Microelectronics Co., Ltd.'s data sheets or data books is permissible only if reproduction is without modification or alteration. Reproduction of this information with any alteration is an unfair and deceptive business practice. ARK Microelectronics Co., Ltd. is not responsible or liable for such altered documentation.

Resale of ARK Microelectronics Co., Ltd.'s products with statements different from or beyond the parameters stated by ARK Microelectronics Co., Ltd. for the product or service voids all express or implied warranties for the associated ARK Microelectronics Co., Ltd.'s product or service and is unfair and deceptive business practice. ARK Microelectronics Co., Ltd. is not responsible or liable for any such statements.

---

### Life Support Policy:

ARK Microelectronics Co., Ltd.'s products are not authorized for use as critical components in life support devices or systems without the express written approval of ARK Microelectronics Co., Ltd.

As used herein:

1. Life support devices or systems are devices or systems which:
    - a. Are intended for surgical implant into the human body,
    - b. Support or sustain life, or
    - c. When used in accordance with instructions provided in their labeling, whose failure to perform can be reasonably expected to result in significant injury to the patient.
  2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to:
    - a. Cause the failure of the life support device or system, or
    - b. Affect its safety or effectiveness.
-