

## Photovoltaic MOSFET drivers of wide variation

## Photovoltaic MOSFET Driver (APV1, 2)

### FEATURES

#### 1. High-speed switching

Since release time is typ. 0.1 ms, the MOSFET can be turned off quickly in a urgent situation.

#### 2. High insulation

DIP type: 5,000 V

SOP type: 2,500 V

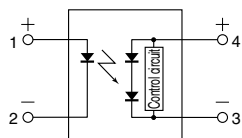
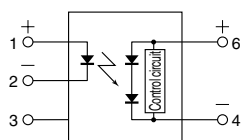
SSOP type: 1,500 V

#### 3. Extensive product lineup

Products include SSOP, SOP4-pin and DIP6-pin.

### TYPICAL APPLICATIONS

- Power supply (Vcc) for electronic circuits
- Driving MOSFET



RoHS compliant

### TYPES

| Output rating                |                              | Package    | Part No.              |                        |                             |           | Packing quantity                                        |               |
|------------------------------|------------------------------|------------|-----------------------|------------------------|-----------------------------|-----------|---------------------------------------------------------|---------------|
| Drop-out voltage (Typ.)      | Short circuit current (Typ.) |            | Through hole terminal | Surface-mount terminal |                             |           |                                                         |               |
|                              |                              |            | Tube packing style    | Tube packing style     | Tape and reel packing style |           | Tube                                                    | Tape and reel |
| Picked from 1/2/3-pin side*1 | Picked from 4/5/6-pin side*2 |            |                       |                        |                             |           |                                                         |               |
| 8.7V                         | 14μA                         | DIP6-pin   | APV1122               | APV1122A               | APV1122AX                   | APV1122AZ | 1 tube contains 50 pcs.<br>1 batch contains 500 pcs.    | 1,000 pcs.    |
| 8.7V                         | 14μA                         | SOP4-pin*3 | —                     | APV1121S               | APV1121SX                   | APV1121SZ | 1 tube contains 100 pcs.<br>1 batch contains 2,000 pcs. |               |
| 8.2V                         | 8μA                          |            | —                     | APV2121S               | APV2121SX                   | APV2121SZ |                                                         |               |
| 8.2V                         | 8μA                          | SSOP*4     | —                     | —                      | APV2111VY                   | APV2111VW | —                                                       | 3,500 pcs.    |

Notes: \*1 SOP type is picked from 1/2-pin side, SSOP type is picked from 1/4-pin side.

\*2 SOP type is picked from 3/4-pin side, SSOP type is picked from 2/3-pin side.

\*3 For space reasons, the two initial letters of the part number "AP", package (SOP) indicator "S" and the packing style indicator "X" or "Z" are not marked on the device. (Ex. the label for product number APV1121SX is V1121).

\*4 Tape and reel package is the standard packing style.

For space reasons, the two initial letters of the part number "AP", package (SSOP) indicator "V" and the packing style are not marked on the device. (Ex. the label for product number APV2111VY is V2111).

### RATING

#### 1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

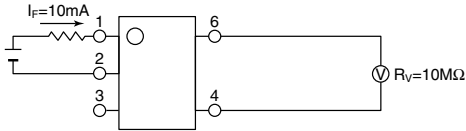
| Item                  |                      | Symbol           | APV1122(A)                      | APV1121S  | APV2121S  | APV2111V  | Remarks                            |
|-----------------------|----------------------|------------------|---------------------------------|-----------|-----------|-----------|------------------------------------|
| Input                 | LED forward current  | I <sub>F</sub>   | 50mA                            |           |           |           |                                    |
|                       | LED reverse voltage  | V <sub>R</sub>   | 5V                              |           |           |           |                                    |
|                       | Peak forward current | I <sub>FP</sub>  | 1A                              |           |           |           | f = 100 Hz,<br>Duty Ratio = 0.1%   |
|                       | Power dissipation    | P <sub>in</sub>  | 75mW                            |           |           |           |                                    |
| I/O isolation voltage |                      | V <sub>iso</sub> | 5,000V AC                       | 2,500V AC | 2,500V AC | 1,500V AC |                                    |
| Temperature limits    | Operating            | T <sub>opr</sub> | -40°C to +85°C -40°F to +185°F  |           |           |           | Non-condensing at low temperatures |
|                       | Storage              | T <sub>stg</sub> | -40°C to +100°C -40°F to +212°F |           |           |           |                                    |

# Photovoltaic MOSFET Driver

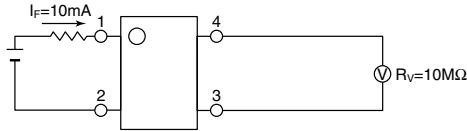
## 2. Electrical characteristics (Ambient temperature: 25°C 77°F)

| Item                     |                         |                                  | Symbol            | APV1122(A)       | APV1121S | APV2121S | APV2111V | Condition                                          |
|--------------------------|-------------------------|----------------------------------|-------------------|------------------|----------|----------|----------|----------------------------------------------------|
| Input                    | LED operate current     | Typical                          | I <sub>Fon</sub>  | 0.6mA            |          | 0.85mA   |          | V <sub>OC</sub> = 5V                               |
|                          |                         | Maximum                          |                   | 3mA              |          |          |          |                                                    |
|                          | LED turn off current    | Minimum                          | I <sub>Foff</sub> | 0.2mA            |          |          |          | V <sub>OC</sub> = 1V                               |
|                          |                         | Typical                          |                   | 0.5mA            |          | 0.75mA   |          |                                                    |
|                          | LED dropout voltage     | Typical                          | V <sub>F</sub>    | 1.15V            |          |          |          | I <sub>F</sub> = 10mA                              |
|                          |                         | Maximum                          |                   | 1.5V             |          |          |          |                                                    |
| Output                   | Drop-out voltage*       | Minimum                          | V <sub>OC</sub>   | 6V               |          | 5V       |          | I <sub>F</sub> = 10mA                              |
|                          |                         | Typical                          |                   | 8.7V             |          | 8.2V     |          |                                                    |
|                          | Short circuit current** | Minimum                          | I <sub>SC</sub>   | 5μA              |          | 3μA      |          | I <sub>F</sub> = 10mA                              |
|                          |                         | Typical                          |                   | 14μA             |          | 8μA      |          |                                                    |
| Transfer characteristics | Turn on time***         | Typical                          | T <sub>on</sub>   | 0.4ms            |          | 0.8ms    |          | I <sub>F</sub> = 10mA,<br>C <sub>L</sub> = 1,000pF |
|                          | Turn off time***        | Typical                          | T <sub>off</sub>  | 0.1ms            |          |          |          | I <sub>F</sub> = 10mA,<br>C <sub>L</sub> = 1,000pF |
|                          | I/O capacitance         | Typical                          | C <sub>iso</sub>  | 0.8pF            |          |          |          | V <sub>B</sub> = 0V,<br>f = 1MHz                   |
|                          |                         | Maximum                          |                   | 1.5pF            |          |          |          |                                                    |
|                          |                         | Initial I/O isolation resistance | Minimum           | R <sub>iso</sub> | 1,000MΩ  |          |          |                                                    |

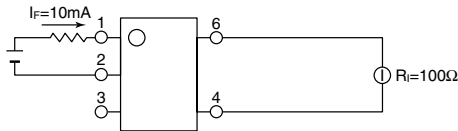
\*Drop-out voltage measurement circuit  
APV1122(A)



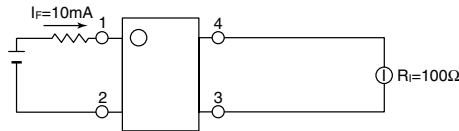
APV1121S, APV2121S, APV2111V



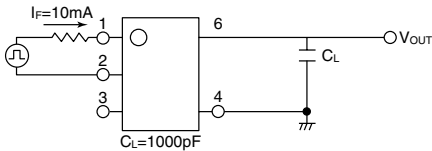
\*\*Short circuit current measurement circuit  
APV1122(A)



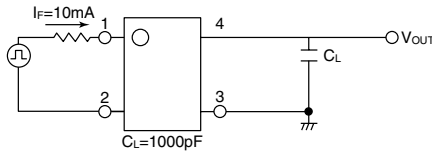
APV1121S, APV2121S, APV2111V



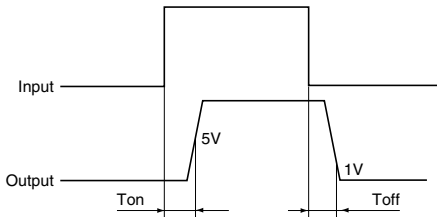
\*\*\*Turn on/Turn off time measurement circuit  
APV1122(A)



APV1121S, APV2121S, APV2111V



\*\*\*Turn on time



## RECOMMENDED OPERATING CONDITIONS

Please obey the following conditions to ensure proper device operation and resetting.

| Item              | Symbol | Recommended value | Unit |
|-------------------|--------|-------------------|------|
| Input LED current | $I_F$  | 10                | mA   |

■ For Dimensions.

■ For Schematic and Wiring Diagrams.

■ For Cautions for Use.

■ These products are not designed for automotive use.

If you are considering to use these products for automotive applications, please contact your local Panasonic Corporation technical representative.

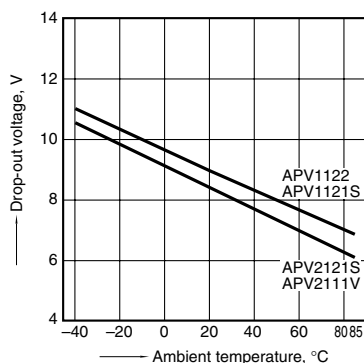
For more information.

# Photovoltaic MOSFET Driver

## REFERENCE DATA

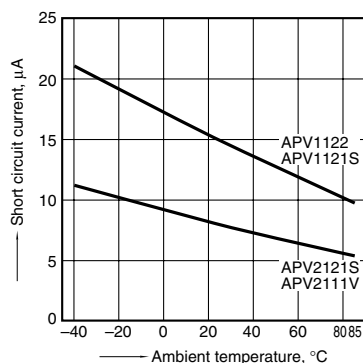
1. Drop-out voltage vs. ambient temperature characteristics

Input current: 10mA



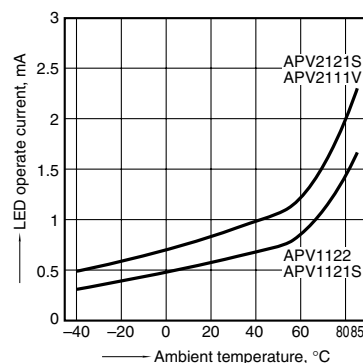
2. Short circuit current vs. ambient temperature characteristics

Input current: 10mA



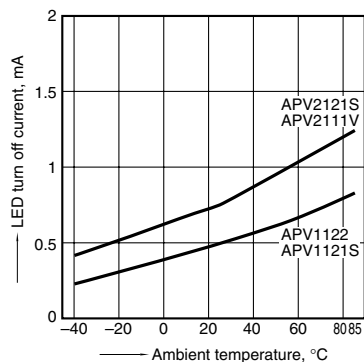
3. LED operate current vs. ambient temperature characteristics

Drop-out voltage: 5V



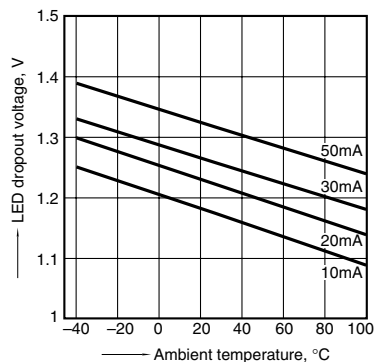
4. LED turn off current vs. ambient temperature characteristics

Drop-out voltage: 1V



5. LED dropout voltage vs. ambient temperature characteristics

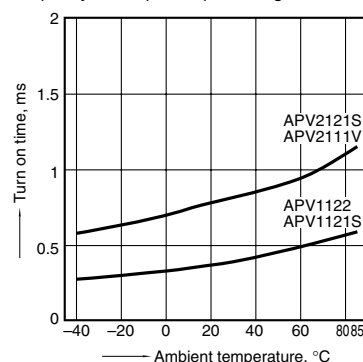
LED forward current: 5 to 50mA



6. Turn on time vs. ambient temperature characteristics

LED forward current: 10mA

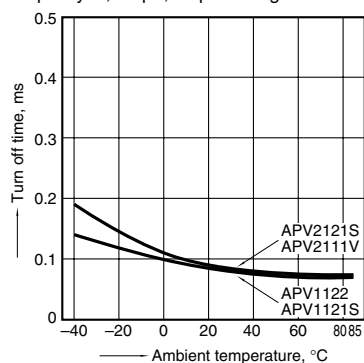
Load capacity: 1,000pF; output voltage: 5V



7. Turn off time vs. ambient temperature characteristics

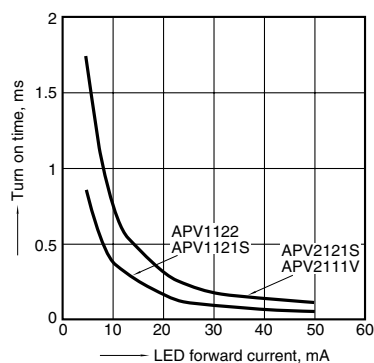
LED forward current: 10mA

Load capacity: 1,000pF; output voltage: 1V



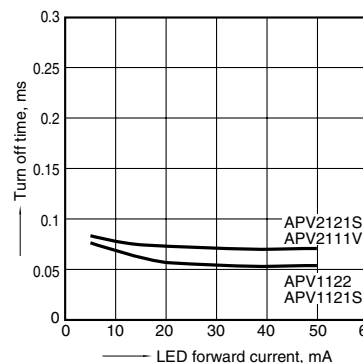
8. Turn on time vs. LED forward current characteristics

Load capacity: 1,000pF; output voltage: 5V

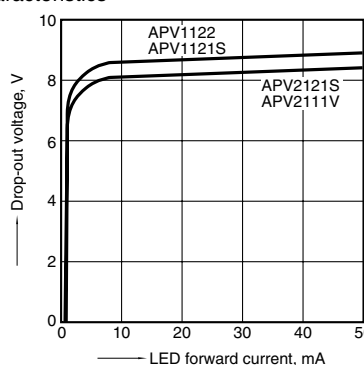


9. Turn off time vs. LED forward current characteristics

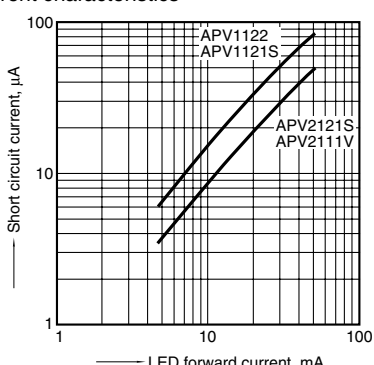
Load capacity: 1,000pF; output voltage: 1V



10. Drop-out voltage vs. LED forward current characteristics



11. Short circuit current vs. LED forward current characteristics





Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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