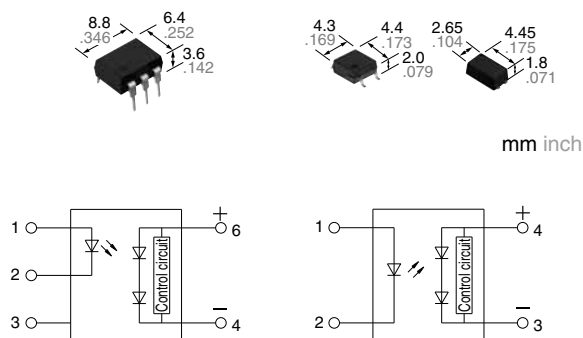


Photovoltaic MOSFET drivers of wide variation

Photovoltaic MOSFET Driver (APV1, 2)



RoHS compliant

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 Vrms
SOP type: 2,500 Vrms
SSOP type: 1,500 Vrms
- 3. Extensive product lineup**
Products include SSOP, SOP4-pin and DIP6-pin.

TYPICAL APPLICATIONS

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

TYPES

| Output rating | | Package | Part No. | | | | Packing quantity | |
|-------------------------|------------------------------|------------|-----------------------|------------------------|------------------------------|------------------------------|---|---------------|
| Drop-out voltage (Typ.) | Short circuit current (Typ.) | | Through hole terminal | Surface-mount terminal | | | Tube | Tape and reel |
| | | | Tube packing style | Tube packing style | Tape and reel packing style | | | |
| | | | | | 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. 1 batch contains 500 pcs. | 1,000 pcs. |
| 8.7V | 14μA | SOP4-pin*3 | — | APV1121S | APV1121SX | APV1121SZ | 1 tube contains 100 pcs. 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. Packing quantity of 1,000 pieces is possible. Please contact our sales office.
 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 _F | 50mA | | | | |
| | LED reverse voltage | V _R | 5V | | | | |
| | Peak forward current | I _{FP} | 1A | | | | f = 100 Hz, Duty Ratio = 0.1% |
| | Power dissipation | P _{in} | 75mW | | | | |
| I/O isolation voltage | V _{iso} | 5,000Vrms | 2,500Vrms | 2,500Vrms | 1,500Vrms | | |
| Ambient temperature | Operating | T _{opr} | -40 to +85°C -40 to +185°F | | | | (Non-icing at low temperatures) |
| | Storage | T _{stg} | -40 to +100°C -40 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 | 0.6mA | | 0.85mA | | $V_{oc} = 5V$ |
| | | Maximum | 3mA | | | | |
| | LED turn off current | Minimum | 0.2mA | | | | $V_{oc} = 1V$ |
| | | Typical | 0.5mA | | 0.75mA | | |
| LED dropout voltage | Typical | 1.15V | | | | $I_f = 10mA$ | |
| | Maximum | 1.5V | | | | | |
| Output | Drop-out voltage* | Minimum | 6V | | 5V | | $I_f = 10mA$ |
| | | Typical | 8.7V | | 8.2V | | |
| | Short circuit current** | Minimum | 5 μ A | | 3 μ A | | $I_f = 10mA$ |
| | | Typical | 14 μ A | | 8 μ A | | |
| Transfer characteristics | Turn on time*** | Typical | 0.4ms | | 0.8ms | | $I_f = 10mA$, $C_L = 1,000pF$ |
| | Turn off time*** | Typical | 0.1ms | | | | $I_f = 10mA$, $C_L = 1,000pF$ |
| | I/O capacitance | Typical | 0.8pF | | | | $V_B = 0V$, $f = 1MHz$ |
| | | Maximum | 1.5pF | | | | |
| Initial I/O isolation resistance | Minimum | 1,000M Ω | | | | 500V DC | |

*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



3. Recommended operating conditions (Ambient temperature: 25°C 77°F)

Please use under recommended operating conditions to obtain expected characteristics.

| Item | Symbol | Min. | Max. | Unit |
|-------------|--------|------|------|------|
| LED current | I_f | 10 | 30 | mA |

■ 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.

REFERENCE DATA

1. Drop-out voltage vs. ambient temperature characteristics

Input current: 10mA



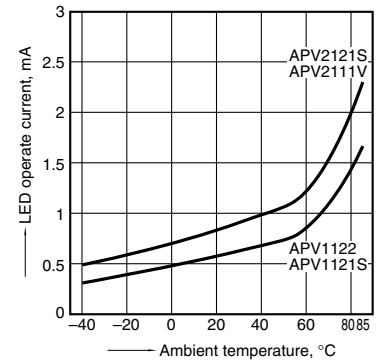
2. Short circuit current vs. ambient temperature characteristics

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

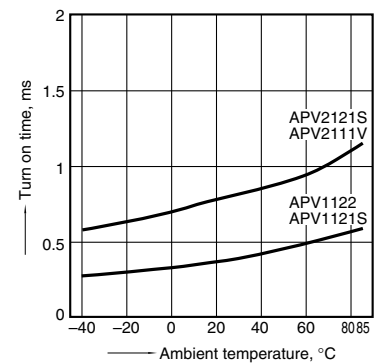
LED forward current: 10 to 50mA



6. Turn on time vs. ambient temperature characteristics

LED forward current: 10mA

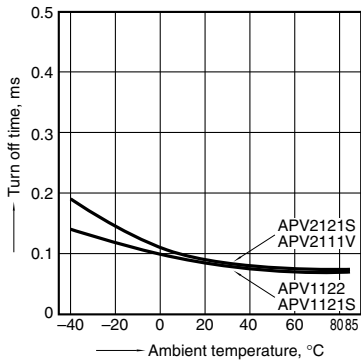
Load capacity: 1,000pF; output voltage: 5V



7. Turn off time vs. ambient temperature characteristics

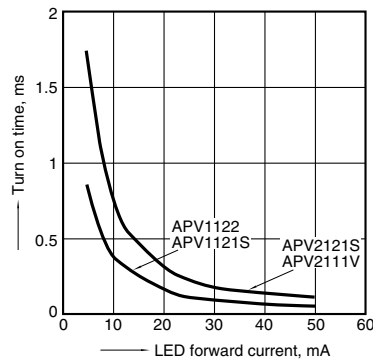
LED forward current: 10mA

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



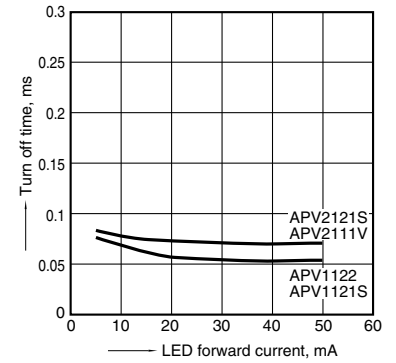
8. Turn on time vs. LED forward current characteristics

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

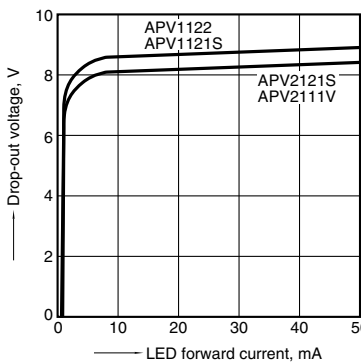


9. Turn off time vs. LED forward current characteristics

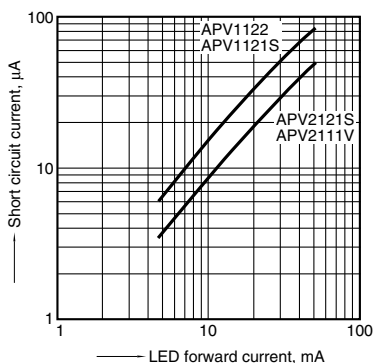
Load capacity: 1,000pF; output voltage: 1V



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



11. Short circuit current vs. LED forward current characteristics



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