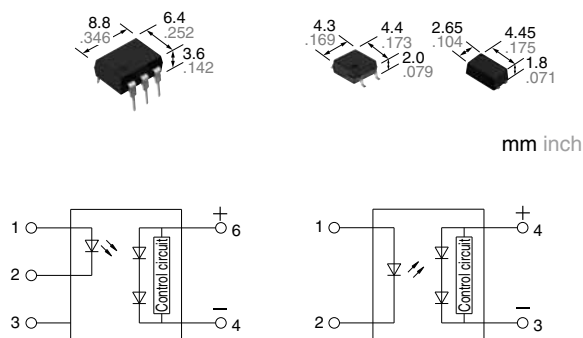


### Photovoltaic MOSFET drivers of wide variation

## 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 <sub>F</sub>	50mA				
	LED reverse voltage	V <sub>R</sub>	5V				
	Peak forward current	I <sub>FP</sub>	1A				f = 100 Hz, Duty Ratio = 0.1%
	Power dissipation	P <sub>in</sub>	75mW				
I/O isolation voltage		V <sub>iso</sub>	5,000Vrms	2,500Vrms	2,500Vrms	1,500Vrms	
Ambient temperature	Operating	T <sub>opr</sub>	-40 to +85°C -40 to +185°F				(Non-icing at low temperatures)
	Storage	T <sub>stg</sub>	-40 to +100°C -40 to +212°F				

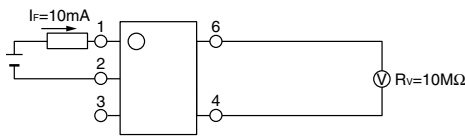
# Photovoltaic MOSFET Driver

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

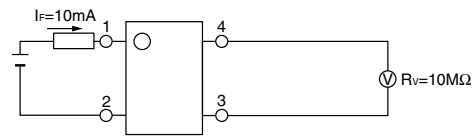
Item		Symbol	APV1122(A)	APV1121S	APV2121S	APV2111V	Condition
Input	LED operate current	Typical	0.6mA		0.85mA		$V_{oc} = 5V$
		Maximum	3mA				
	LED turn off current	Minimum	0.2mA				$V_{oc} = 1V$
		Typical	0.5mA		0.75mA		
LED dropout voltage	Typical	1.15V				$I_f = 10mA$	
	Maximum	1.5V					
Output	Drop-out voltage*	Minimum	6V		5V		$I_f = 10mA$
		Typical	8.7V		8.2V		
	Short circuit current**	Minimum	5 $\mu$ A		3 $\mu$ A		$I_f = 10mA$
		Typical	14 $\mu$ A		8 $\mu$ 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	$R_{iso}$	1,000M $\Omega$			500V DC	

### \*Drop-out voltage measurement circuit

APV1122(A)

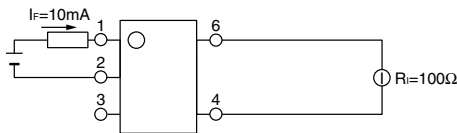


APV1121S, APV2121S, APV2111V

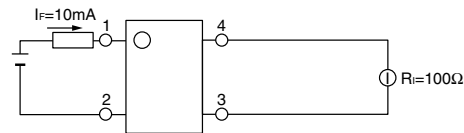


### \*\*Short circuit current measurement circuit

APV1122(A)

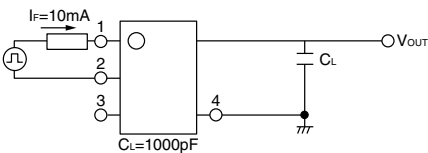


APV1121S, APV2121S, APV2111V

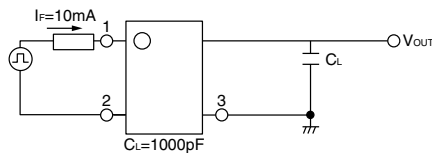


### \*\*\*Turn on/Turn off time measurement circuit

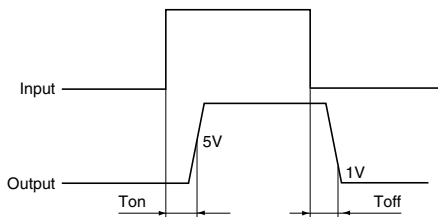
APV1122(A)



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

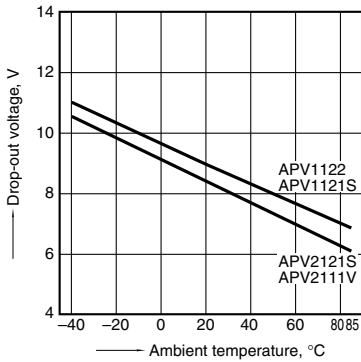
### ■ These products are not designed for automotive use.

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

## REFERENCE DATA

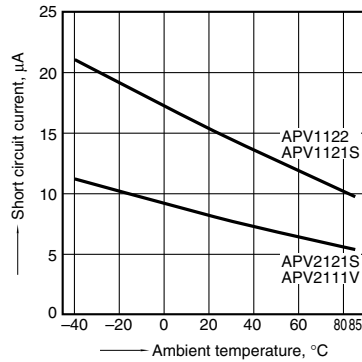
1. Drop-out voltage vs. ambient temperature characteristics

Input current: 10mA



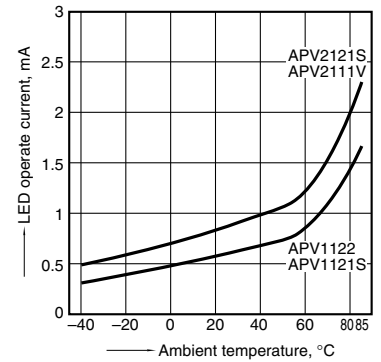
2. Short circuit current vs. ambient temperature characteristics

Input current: 10mA



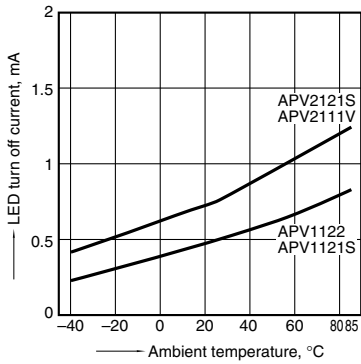
3. LED operate current vs. ambient temperature characteristics

Drop-out voltage: 5V



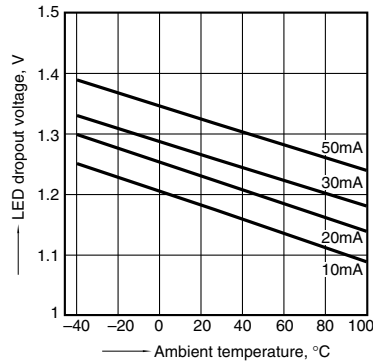
4. LED turn off current vs. ambient temperature characteristics

Drop-out voltage: 1V



5. LED dropout voltage vs. ambient temperature characteristics

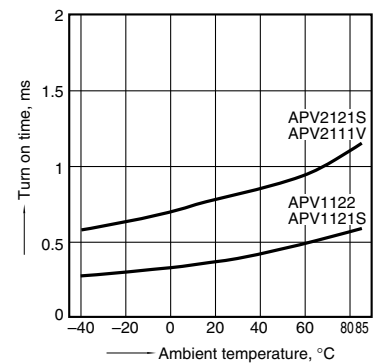
LED forward current: 10 to 50mA



6. Turn on time vs. ambient temperature characteristics

LED forward current: 10mA

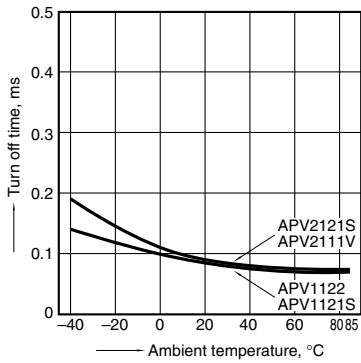
Load capacity: 1,000pF; output voltage: 5V



7. Turn off time vs. ambient temperature characteristics

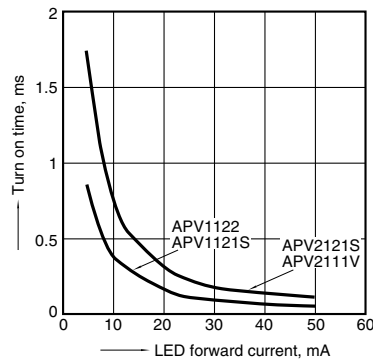
LED forward current: 10mA

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



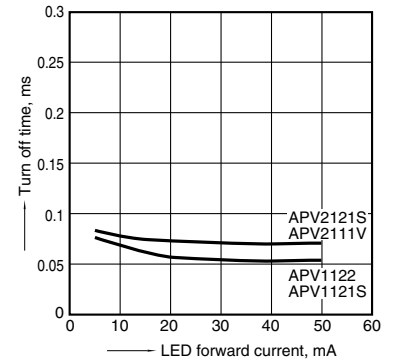
8. Turn on time vs. LED forward current characteristics

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

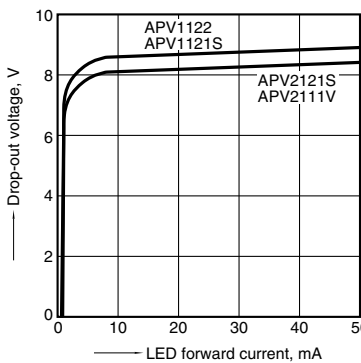


9. Turn off time vs. LED forward current characteristics

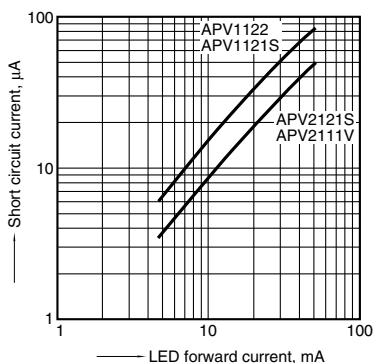
Load capacity: 1,000pF; output voltage: 1V



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



11. Short circuit current vs. LED forward current characteristics



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[APV2121SZ](#) [APV2111V](#)

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