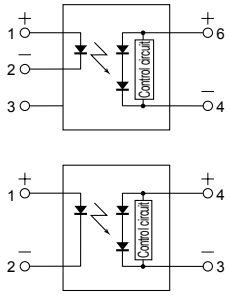
Panasonic
ideas for life

PHOTOVOLTAIC MOSFET DRIVER

PHOTOVOLTAIC MOSFET DRIVER (APV1,2)



FEATURES

1. High-speed switching
Since release time is 0.1 ms, the MOSFET can be turned off quickly in urgent situations.

2. Space saving
With a built-in control circuit, an external resistor is not needed. This contributes to making substrates more compact.

3. High insulation
DIP type: 5,000 V
SOP type: 2,500 V
SSOP type: 1,500 V

4. Extensive product lineup
Products include the industry's smallest SSOP type, SOP4 type, and DIP 6 type.

TYPICAL APPLICATIONS

MOSFET driver
Power supply (Vcc) for electronic circuits

TYPES

Type	Output rating		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		
DIP6pin	8.7V	14μA	APV1122	APV1122A	APV1122AX	APV1122AZ	1 tube contains 50 pcs. 1 batch contains 500 pcs.	1,000 pcs.
SOP4pin	8.7V	14μA	—	—	APV1121SX	APV1121SZ	—	
SOP4pin*3	8.2V	8μA	—	—	APV2121SX	APV2121SZ		
SSOP*4	8.2V	8μA	—	—	APV2111VY	APV2111VW	—	

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 Tape package is the standard packing style. Also available in tube.
(Part No. suf x "X" or "Y" is not needed when ordering; Tube: 100 pcs.; Case: 2,000 pcs.)
For space reasons, the initial letters of the product number "AP" and "S" are omitted on the product seal.
The package type indicator "X" and "Z" are omitted from the seal. (Ex. the label for product number APV1121SX is V1121).
*4 Tape package is the standard packing style.
For space reasons, the initial letters of the product number "AP" and "V" are omitted on the product seal.
The package type indicator "Y" and "W" are omitted from the seal. (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}	75mA				
I/O isolation voltage		V_{iso}	5,000V AC	2,500V AC	2,500V AC	1,500V AC	
Temperature limits	Operating	T_{opr}	–40°C to +85°C –40°F to +185°F				Non-condensing at low temperatures
	Storage	T_{stg}	–40°C to +100°C –40°F to +212°F				

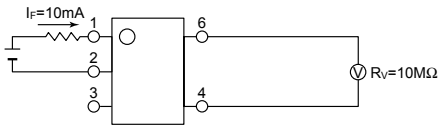
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item			Symbol	APV1122(A)	APV1121S	APV2121S	APV2111V	Condition
Input	LED operate current	Typical	I_{Fon}	0.6mA		0.85mA		V_{OC} = 5V
		Maximum		3mA				
	LED turn off current	Minimum	I_{Foff}	0.2mA				V_{OC} = 1V
		Typical		0.5mA		0.75mA		
	LED dropout voltage	Typical	V_F	1.15V				I_F = 10mA
		Maximum		1.5V				
Output	Drop-out voltage*	Minimum	V_{OC}	6V		5V		I_F = 10mA
		Typical		8.7V		8.2V		
	Short circuit current**	Minimum	I_{SC}	5μA		3μA		I_F = 10mA
		Typical		14μA		8μA		
Transfer characteristics	Turn on time***	Typical	T_{on}	0.4ms		0.8ms		I_F = 10mA, C_L = 1,000pF
	Turn off time***	Typical	T_{off}	0.1ms				I_F = 10mA, C_L = 1,000pF
	I/O capacitance	Typical	C_{iso}	0.8pF				V_B = 0V, f = 1MHz
		Maximum		1.5pF				
	Initial I/O isolation resistance	Minimum	R_{iso}	1,000MΩ				500V DC

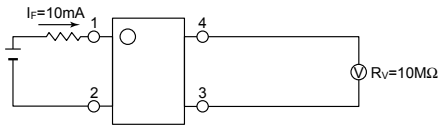
Note: Recommended LED forward current I_{FT}: 10mA.

*Drop-out voltage measurement circuit

APV1122(A)

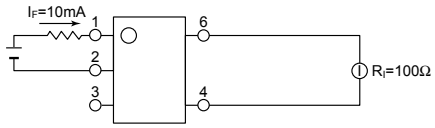


APV1121S, APV2121S, APV2111V

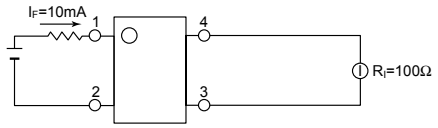


**Short circuit current measurement circuit

APV1122(A)

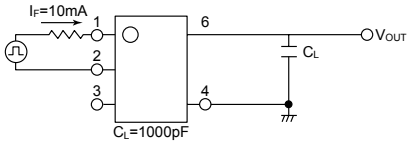


APV1121S, APV2121S, APV2111V

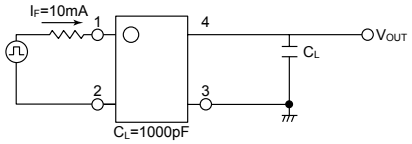


***Turn on/Turn off time measurement circuit

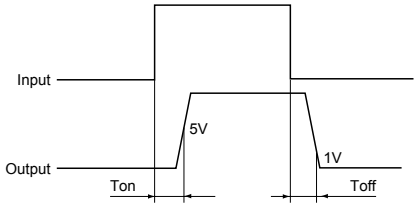
APV1122(A)



APV1121S, APV2121S, APV2111V

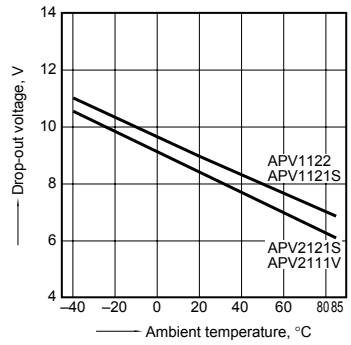


***Turn on time

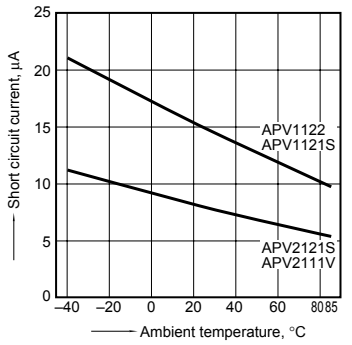


REFERENCE DATA

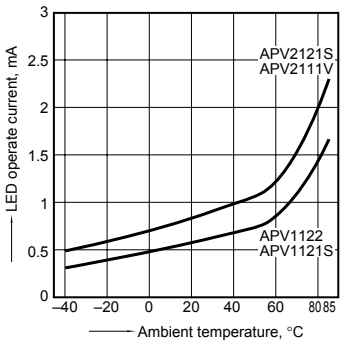
1. Drop-out voltage vs. ambient temperature characteristics
Input current: 10mA



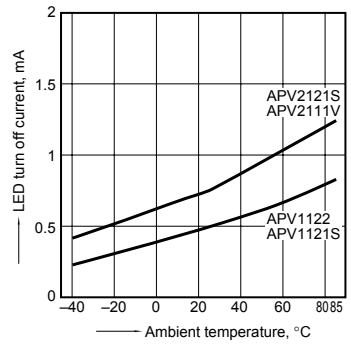
2. Short circuit current vs. ambient temperature characteristics
Input current: 10mA



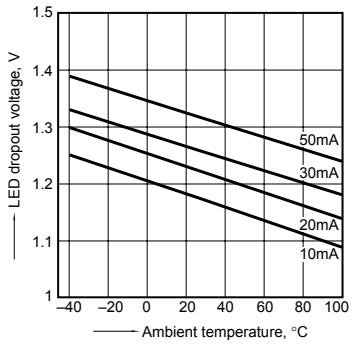
3. LED operate current vs. ambient temperature characteristics
Drop-out voltage: 5V



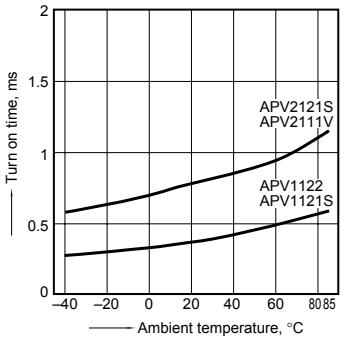
4. LED turn off current vs. ambient temperature characteristics
Drop-out voltage: 1V



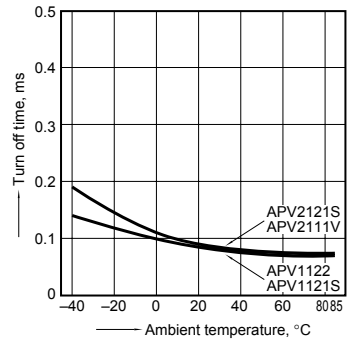
5. LED dropout voltage vs. ambient temperature characteristics
LED forward current: 5 to 50mA



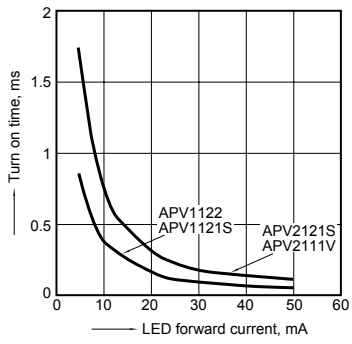
6. Turn on time vs. ambient temperature characteristics
LED forward current: 10mA
Load capacity: 1,000pF; output voltage: 5V



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