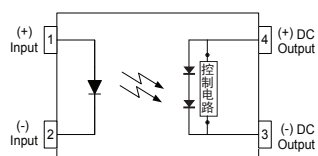
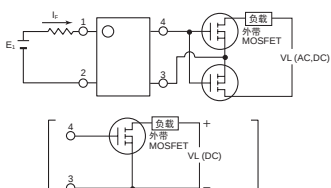




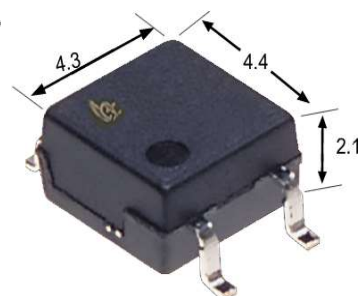
E534710

Parameter	Symbol	Rating	Units
Short circuit current	I_{sc}	8	μA
Drop-out voltage	V_{oc}	12	V
Turn-On Time	T_{on}	0.23	ms
I/O Breakdown Voltage	V_{io}	2500	V_{rms}



1. LED Anode
2. LED Cathode
3. Cathode
4. Anode

(Unit: mm)



Function

1. High-speed switching

Since release time is 0.1 ms, the MOSFET or other load 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.

Applications

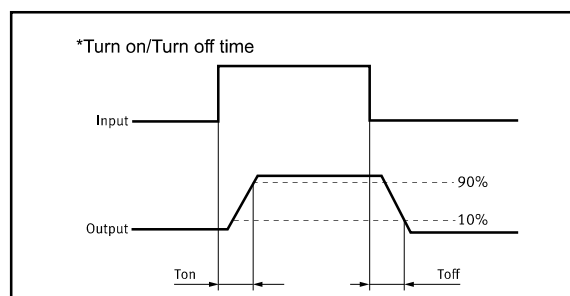
These advantages make APSEI Photorelays the ideal choice for:

MOSFET driver

Power supply (V_{cc}) for electronic circuits

TPYES

Category	Output Rating		Package	Part No.	Packing Quantity
	Drop-out voltage (Typ.)	Short circuit current (Typ.)			
Driver	12V	8 μA	SOP-4	APV1123S	2000pcs /reel



Absolute Maximum Ratings (Ta = 25°C)

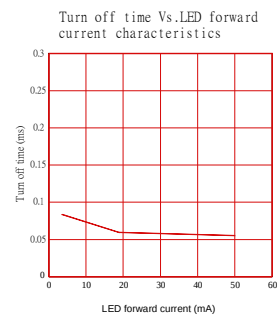
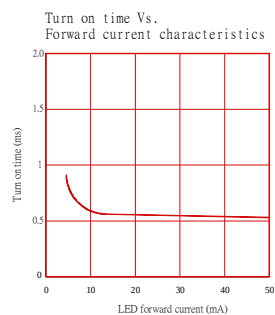
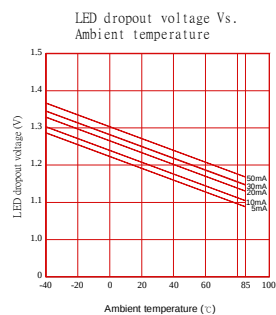
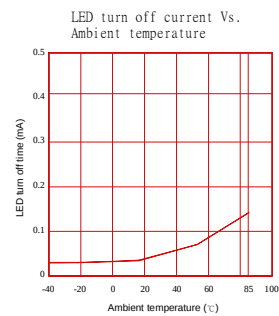
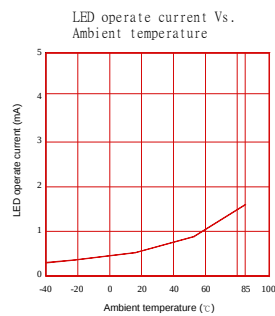
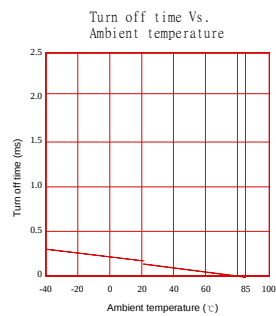
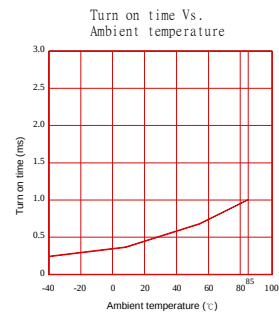
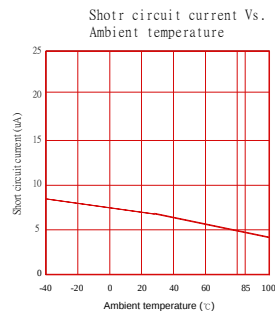
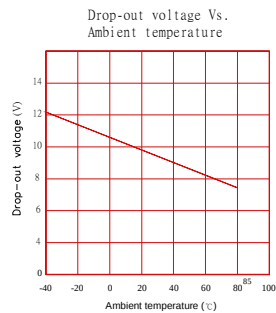
Item		Symbol	Value	Units	Note
Input	Continuous LED Current	I _F	50	mA	
	Peak LED Current	I _{FP}	1000	mA	f=100Hz, duty=1%
	LED Reverse Voltage	V _R	5	V	
	Input Power Dissipation	P _{In}	75	mW	
I/O Breakdown Voltage		V _{I/O}	2500	V _{rm}	RH=60%, 1min
Operating Temperature		T _{Opr}	-40 to +85	°C	
Storage Temperature		T _{Stg}	-40 to +100	°C	

Electrical Characteristics (Ta = 25°C)

Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input	LED Forward Voltage	V _F		1.2	1.4	V	I _F =10mA
	Operation LED Current	I _{F On}		0.5	3.0	mA	V _{oc} =5V
	Recovery LED Current	I _{F Off}		0.35	0.5	mA	V _{oc} =1V
Output	Drop-out Voltage	V _{oc}	10	12		V	I _F =10mA
	Short Circuit Current	I _{sc}	1	8		uA	I _F =10mA
Transmis sion	Turn-On Time	T _{On}		0.23		ms	I _F =10mA
	Turn-Off Time	T _{Off}		0.03		ms	C _L =1000pF
Coupled	I/O Isolation Resistance	R _{I/O}	10 ¹⁰			Ω	DC500V
	I/O Capacitance	C _{I/O}		0.8	1.5	pF	f=1MHz

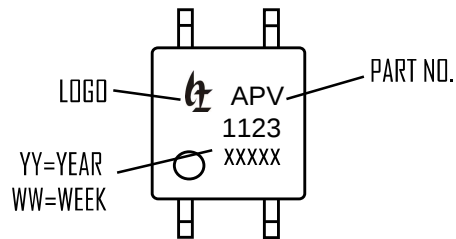
Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value): I_F ≥5mA and ≤30mA

Engineering Data

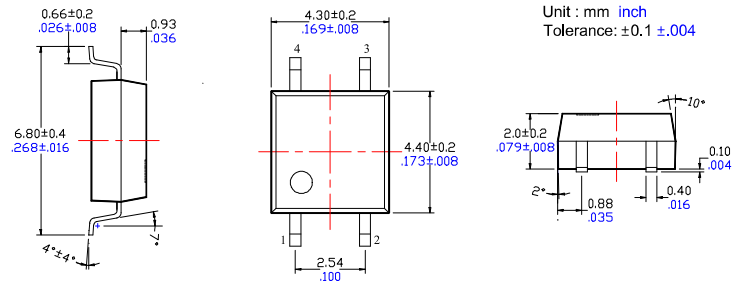


Dimensions and Package

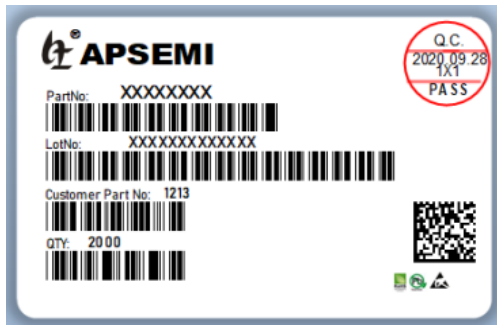
Marking



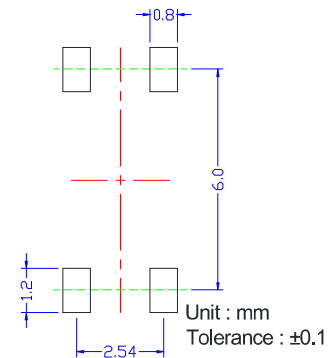
Surface mount terminal type



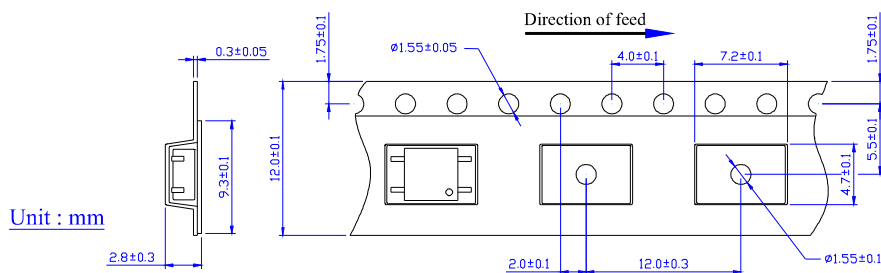
Lable



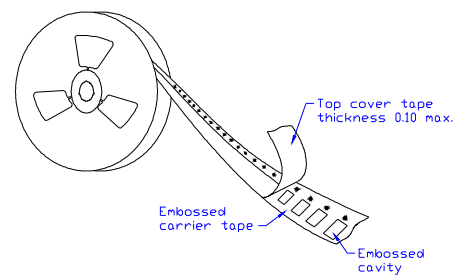
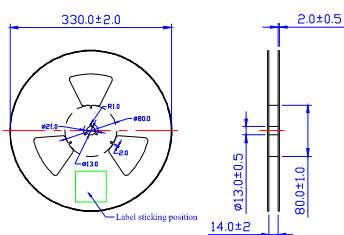
Recommended mounting pad (Top view)



Tape dimensions



Dimensions of tape reel





Using Methods

Examples of resistance value to control LED forward current ($I_F=5\text{mA}$)



E1	R1 (Approx)
3.3V	300 Ω
5.0V	600 Ω
12V	1.9K Ω
24V	4.1K Ω

LED forward current must be more than 5mA , at $I(\text{MIN})$,and less than 30mA , at $I(\text{MAX})$.



Recommended Operating Conditions

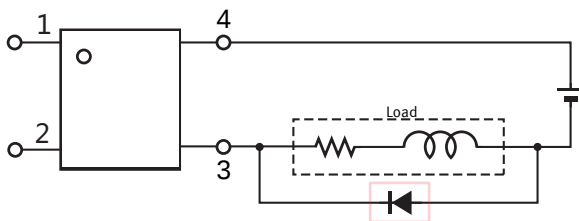
Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value):

Characteristic	Symbol	Min	Typ.	Max	Unit
Forward current	I_F	5.0	7.0	30	mA

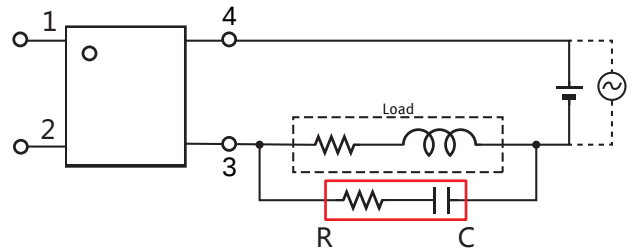
Protection Circuit

Output spike voltages:if an inductive load generates spike voltages which exceed heabsolute maximum rating, the spike voltage shall be limited.

Clamp diode is connected in parallel with the load.
Absorb capacity with external diode.



CR Snubber is connected in parallel with the load.
Absorb capacity with buffer capacity.



When adding diodes, buffer circuits (C-R), and other protections, they need to be installed near the MOS RELAY to be effective.
Adding protection elements may result in a slow reset time, so adjust them according to the actual situation before use.

Note: When developing designs using this product, perform the expected performance of the equipment under the operating conditions recommended by the guidelines in this document. Continuous use under heavy loads (including, but not limited to, the application of high temperatures/current/voltage and significant changes in temperature, etc.) may result in deterioration of the reliability of this product.

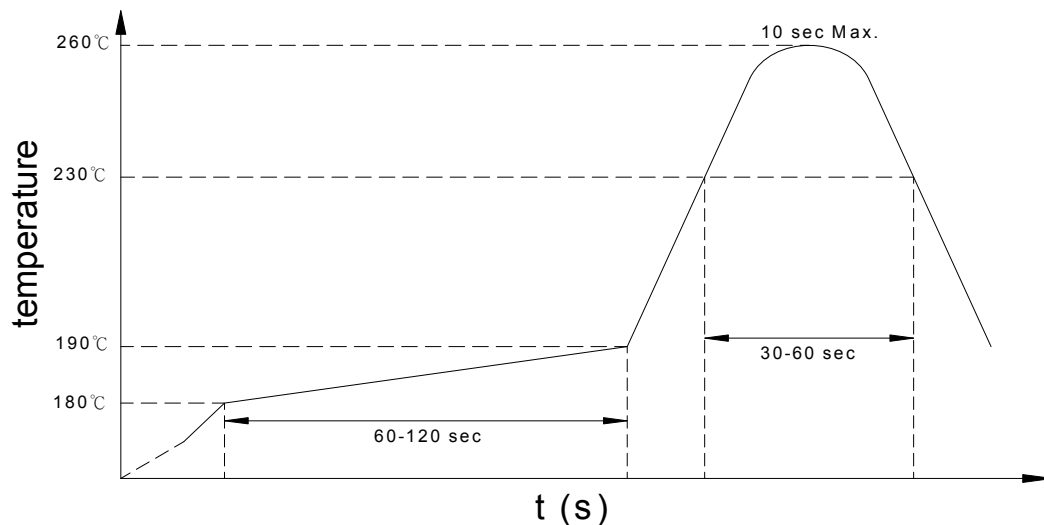


Recommended Soldering Conditions

(a) Infrared reflow soldering :

- Peak reflow soldering : 260°C or below (package surface temperature)
- Time of peak reflow temperature : 10 sec
- Time of temperature higher than 230°C : 30-60 sec
- Time to preheat temperature from 180~190°C : 60-120 sec
- Time(s) of reflow : Two
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

Recommended Temperature Profile of Infrared Reflow



(b) Wave soldering :

- Temperature : 260°C or below (molten solder temperature)
- Time : 10 seconds or less
- Preheating conditions : 120°C or below (package surface temperature)
- Time(s) of reflow : One
- Flux : Rosin flux containing small amount of chlorine (The flux with a maximum chlorine content of 0.2 Wt% is recommended.)

(c) Cautions :

- Fluxes : Avoid removing the residual flux with freon-based and chlorine-based cleaning solvent.
- Avoid shorting between portion of frame and leads.



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