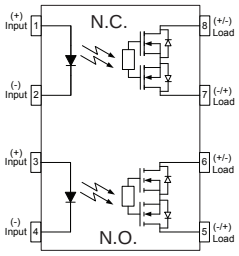
Parameter	Symbol	Rating	Units
Load Voltage	V_L	400	V
Load Current	I_L	0.12	A
On-Resistance	R_{on}	20	Ω
I/O Breakdown Voltage	V/IO	5000	Vrms

E534710

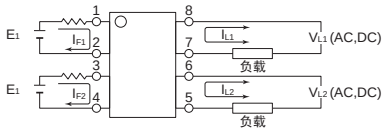
SMD-8

DIP-8

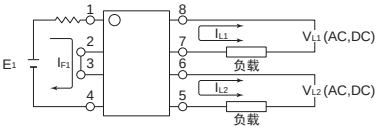


1,3. LED Anode
2,4. LED Cathode
5,6. Drain (MOS FET)
7,8. Drain (MOS FET)

(1) 1a1b 2input



(2) 1a1b 1input



APSEMI PhotoRelays

APSEMI Photorelays are the most reliable, technically advanced logic-to-power interface devices. Their basic function is to take a low current signal from a microprocessor to control the switching of both AC and DC loads, while providing an isolation barrier between logic and power.
While this function is common to all relays, Photorelays provide distinct advantages over their mechanical counterparts including:

- Long life (No limit on mechanical and electrical
- lifetime)Bounce-free switching
- Higher speed and high frequency switching
- Higher sensitivity (less power consumption)
- Immunity to EMI or RFI
- No have voltaic arc, bounce, and noise More
- resistant to vibration and impact AC or DC load
- switching
- Small package size

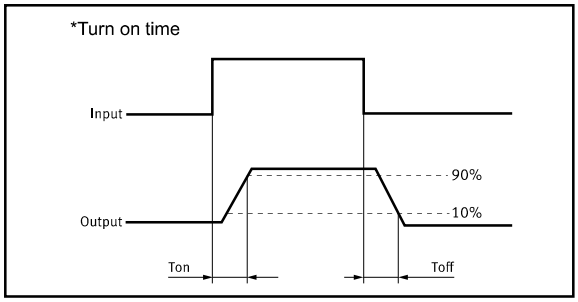
Applications

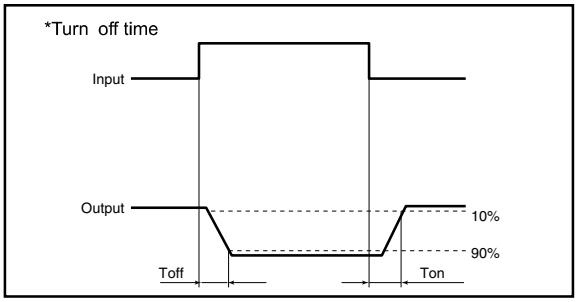
These advantages make APSEI Photorelays the ideal choice for:

- Telecom/Datacom switching
- Multiplexers
- Meter reading systems
- Data acquisition
- Medical equipment
- Battery monitoring
- I/O Sub-Systems
- Robotics
- Aerospace
- Home/Safety security systems
- Process Control
- Energy Management
- Reed Relay EMR Replacement
- Programmable Controllers

TPYES

Category	Output Rating		Package	Part No.	Packing Quantity
	Load Voltage	Load Current			
AC/DC	400V	120mA	DIP-8	APW614E	50pcs /tube
			SMD-8	APW614EH	1000pcs /reel





Absolute Maximum Ratings (Ta = 25°C)

Item		Symbol	Value	Units	Note
Input	Continuous LED Current	IF	50	mA	
	Peak LED Current	IFP	1000	mA	f=100Hz, duty=1%
	LED Reverse Voltage	VR	5	V	
	Input Power Dissipation	PIn	75	mW	
Output	Load Voltage	VL	400	V(AC peak or DC)	
	Load Current	IL	120	mA	
	Peak Load Current	IPeak	0.6	A	1ms(1 pulse)
	Output Power Dissipation	Pout	450	mW	
Total Power Dissipation		PT	500	mW	
I/O Breakdown Voltage		VI/O	5000	Vrms	RH=60%, 1min
Operating Temperature		TOpr	-40 to +85	-40 to +85	
Storage Temperature		TStg	-40 to +100	-40 to +100	
Pin Soldering Temperature		TSol	260	260	10 sec max.

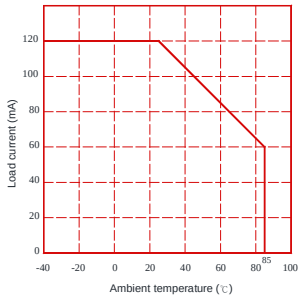
Electrical Characteristics (Ta = 25°C)

Item		Symbol	MIN.	TYP.	MAX.	Units	Conditions
Input	LED Forward Voltage	V_F		1.2	1.5	V	I_F=10mA
	Operation LED Current	$I_{F\,On}$		0.5	5.0	mA	
	Recovery LED Current	$I_{F\,Off}$		0.35	0.5	mA	
	Recovery LED Voltage	$V_{F\,Off}$	0.5			V	
Output	On-Resistance	R_{On}		20(N.O.)	30(N.O.)	Ω	I_F=5mA (N.O.) I_F=0mA (N.C) I_L=100mA Time to flow is within 1 sec.
				20(N.C.)	50(N.C.)		
	Off-State Leakage Current	I_{Leak}			1(N.O.)	uA	I_F=0mA (N.O.) I_F=5mA (N.C) V_L= Rating
					10(N.C.)		
	Output Capacitance	C_{Out}		150		pF	I_F=5mA,V_L=0, f=1MHz
Transmis sion	Turn-On Time	T_{On}		0.23 (N.O.)	0.5 (N.O.)	ms	I_F=5mA, I_L=50mA
				0.2 (N.C.)	1.0 (N.C.)		
	Turn-Off Time	T_{Off}		0.03 (N.O.)	0.2 (N.O.)	ms	
				0.5 (N.C.)	3.0 (N.C.)		
Coupled	I/O Isolation Resistance	$R_{I/O}$	10^{10}			Ω	DC500V
	I/O Capacitance	$C_{I/O}$		0.8		pF	f=1MHz

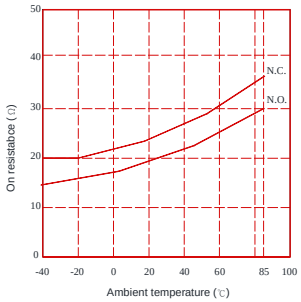
Please obey the following conditions to ensure proper device operation and resetting. Input LED current (Recommended value): IF ≥5mA and ≤30mA

Engineering Data

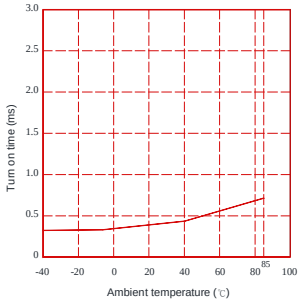
Load current Vs.
Ambient temperature



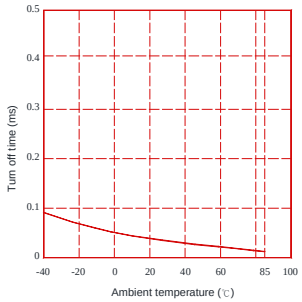
On resistance Vs.
Ambient temperature



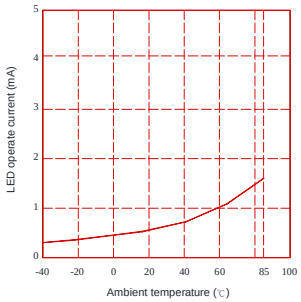
Turn off time Vs.
Ambient temperature



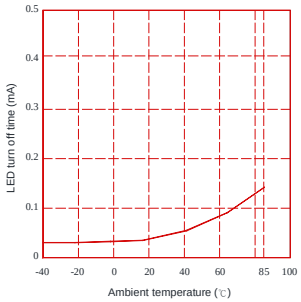
Turn on time Vs.
Ambient temperature



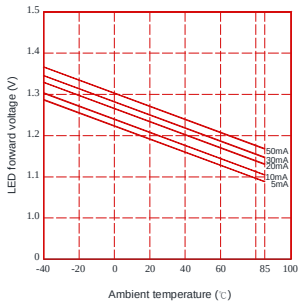
LED operate current Vs.
Ambient temperature



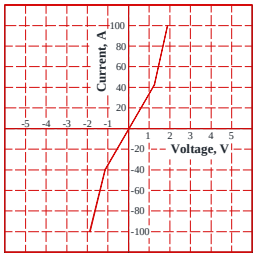
LED turn off current Vs.
Ambient temperature



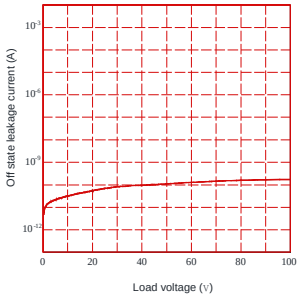
LED forward voltage Vs.
Ambient temperature



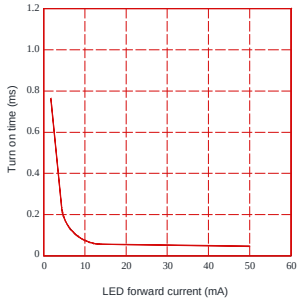
Voltage Vs. currennt characteristics
of output at MOS portion



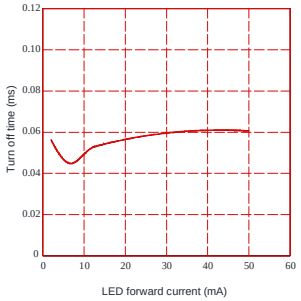
Off state leakage current



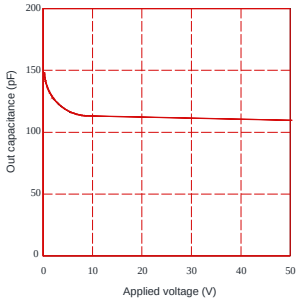
LED foward current Vs.
turn on time characteristics



LED foward current Vs.
turn off time characteristics



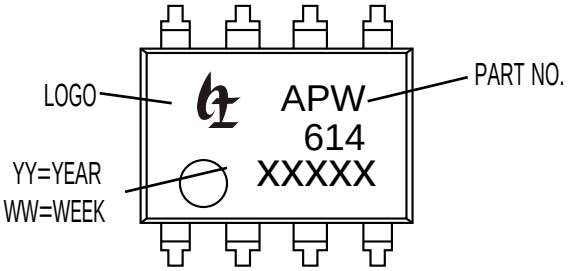
Applied voltage Vs.
output capacitance characteristics



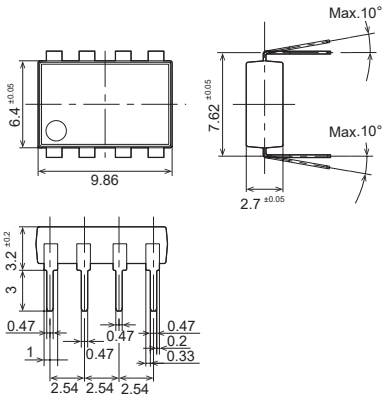
Dimensions and DIP-8 Package

Unit: mm

Marking

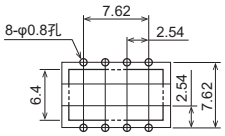


Through hole terminal type



Lable

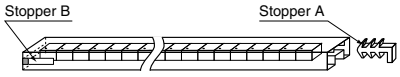
PC board pattern (Bottom view)



DIP Tape dimensions

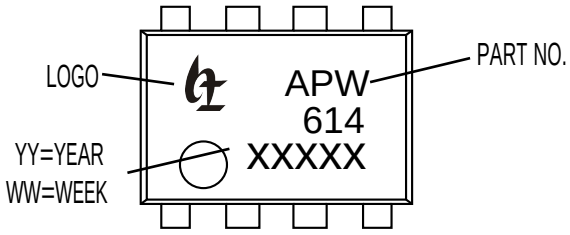
Unit : mm

Devices are packaged in a tube so that pin No. 1 is on the stopper B side. Observe correct orientation when mounting them on PC boards.

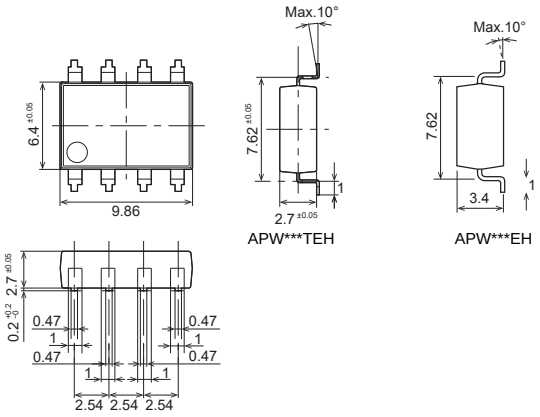


Dimensions and SMD-8 Package Unit: mm

Marking



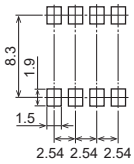
Surface mount terminal type



Lable

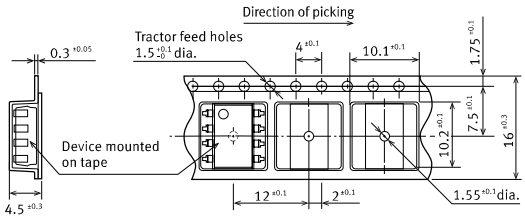
Recommended mounting pad

(Top view)

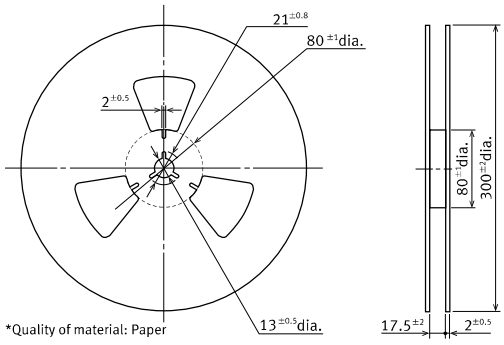


Tape dimensions (tape reel)

Tape dimensions (Unit: mm)

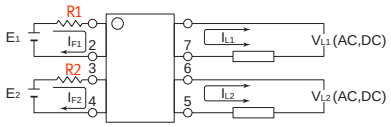


Dimensions of paper tape reel (Unit: mm)



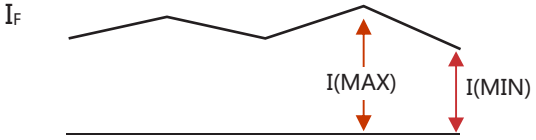
Using Methods

Examples of resistance value to control LED forward current (I_F=5mA)



E1 E2	R1 R2(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(MIN) ,and less than 30mA , at I(MAX).



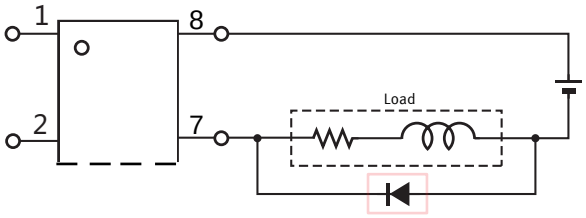
Recommended Operating Conditions

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

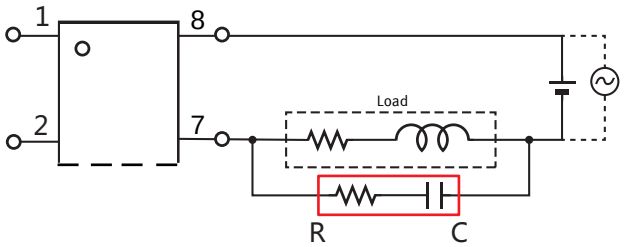
Characteristic	Symbol	Min	Typ.	Max	Unit
Forward current	I_F	5.0	7.0	30	mA

Protection Circuit

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.

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