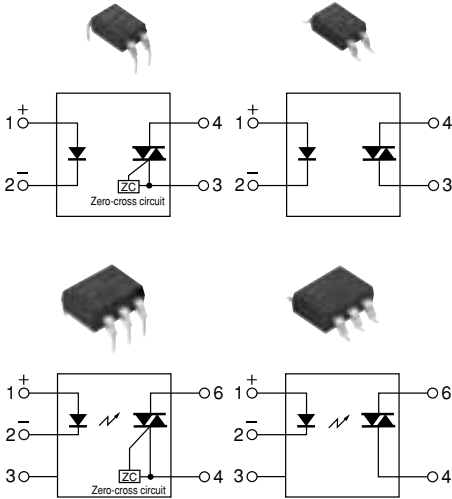


NAIS

Phototriac Coupler Wide Terminal Type (IEC compliant reinforced insulation)

Phototriac Coupler (APT1200W)



FEATURES

1. Distance between input and output terminals is 10.16 mm .400 inch. (IEC335 standard of min. 8 mm .315 inch maintained.)

2. Only ours handles both 100 and 200 V AC loads

This relay handles both voltages in a single product it is not necessary for users that use both types to manage separate part numbers.

3. I/O isolation resistance of 5,000 V AC realized!

4. Two types available: Zero-cross type and Non zero-cross type

5. Two package design available: DIP type and SMD type

6. Pin No. 5 is completely molded for high resistance against extraneous noise.

TYPICAL APPLICATIONS

1. Triac driver for SSRs
2. Heater control for copiers and other products
3. Industrial equipment such as NC machines, chip mounters, Robotics and so on
4. Control of heated-water motors and flush valve for personal hygiene systems
5. AC fan-motor controls of air conditioner

TYPES

Type	Output rating*		Type	Package size	Part No.				Packing quantity	
	Repetitive peak OFF-state voltage	ON-state RMS current			Through hole terminal	Surface-mount terminal		Tube	Tape and reel	
						Tube packing style				Tape and reel packing style
AC type	600 V	100 mA	Zero-cross	DIP4pin	APT1211W	APT1211WA	APT1211WAY (Picked from the 1/4-pin side)	APT1211WAW (Picked from the 2/3-pin side)	[DIP4pin] 1 tube contains 100 pcs. [DIP6pin] 1 batch contains 1,000 pcs.	
			Non zero-cross		APT1221W	APT1221WA	APT1221WAY (Picked from the 1/4-pin side)	APT1221WAW (Picked from the 2/3-pin side)		
			Zero-cross	DIP6pin	APT1212W	APT1212WA	APT1212WAY (Picked from the 1/6-pin side)	APT1212WAW (Picked from the 3/4-pin side)		
			Non zero-cross		APT1222W	APT1222WA	APT1222WAY (Picked from the 1/6-pin side)	APT1222WAW (Picked from the 3/4-pin side)		

Note: For space reasons the initial letters "APT" of the product number for the DIP 4-pin type, the letter "WA", which indicates the SMD terminal shape for the DIP 4-pin and 6-pin types, and the package type indications "Y" and "W" have been omitted from the product label. (Example: The label for product number APT1221WAY is 1221.)
 * Repetitive peak OFF-state voltage and surge on current express the peak AC.

RATING

1. Absolute maximum ratings (Ambient temperature: 25°C 77°F)

Item		Symbol	APT1211W(A)	APT1221W(A)	APT1212W(A)	APT1222W(A)	Remarks
Input	LED forward current	I_F	50 mA				
	LED reverse voltage	V_R	6 V				
	Peak forward current	I_{FP}	1 A				f = 100 Hz, Duty Ratio = 0.1%
Output	Repetitive peak OFF-state voltage	V_{DRM}	600 V				
	ON-state RMS current*	$I_{T(RMS)}$	0.1 A				AC
	Non-repetitive surge current	I_{TSM}	1.2 A				In one cycle at 60Hz
Total power dissipation		P_T	500 mW				
I/O isolation voltage		V_{iso}	5,000 V AC				
Temperature limits	Operating	T_{opr}	-40°C to +100°C -40°F to +212°F				Non-condensing at low temperatures
	Storage	T_{stg}	-40°C to +125°C -40°F to +257°F				

* Do not exceed 50 mA of ON state RMS current in case of following load voltage condition.
 APT1211W, APT1221W: more than 100 V AC; APT1212W, APT1222W: more than 120 V AC

Phototriac Coupler (APT1200W)

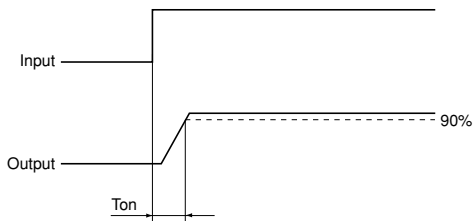
2. Electrical characteristics (Ambient temperature: 25°C 77°F)

Item		Symbol	APT1211W, APT1212W	APT1221W, APT1222W	Condition
Input	LED dropout voltage	Typical	1.18 V		$I_F = 10 \text{ mA}$
		Maximum	1.3 V		
	LED reverse current	Typical	—		$V_R = 6 \text{ V}$
		Maximum	10 μA		
Output	Peak OFF-state current	Typical	—		$I_F = 0 \text{ mA}$
		Maximum	1 μA		$V_{\text{DRM}} = 600 \text{ V}$
	Peak On-state voltage	Typical	1.3 V		$I_F = 10 \text{ mA}$
		Maximum	2.5 V		$I_{\text{TM}} = 0.05 \text{ A}$
	Holding current	Typical	0.3 mA		
		Maximum	3.5 mA		
	Critical rate of rise of OFF-state voltage	Minimum	500 V/ μs		$V_{\text{DRM}} = 600 \text{ V} \times 1/\sqrt{2}$
Transfer characteristics	Trigger LED current*	Maximum	10 mA		$V_D = 6 \text{ V}$ $R_L = 100 \Omega$
	Zero-cross voltage**	Maximum	50 V	—	$I_F = 10 \text{ mA}$
	Turn on time***	Maximum	100 μs		$I_F = 20 \text{ mA}$ $V_D = 6 \text{ V}$ $R_L = 100 \Omega$
	I/O capacitance	Maximum	1.5 pF		$f = 1 \text{ MHz}$ $V_B = 0$
	I/O resistance	Minimum	50 G Ω		500 V DC

*Recommended LED current $I_F = 20 \text{ mA}$

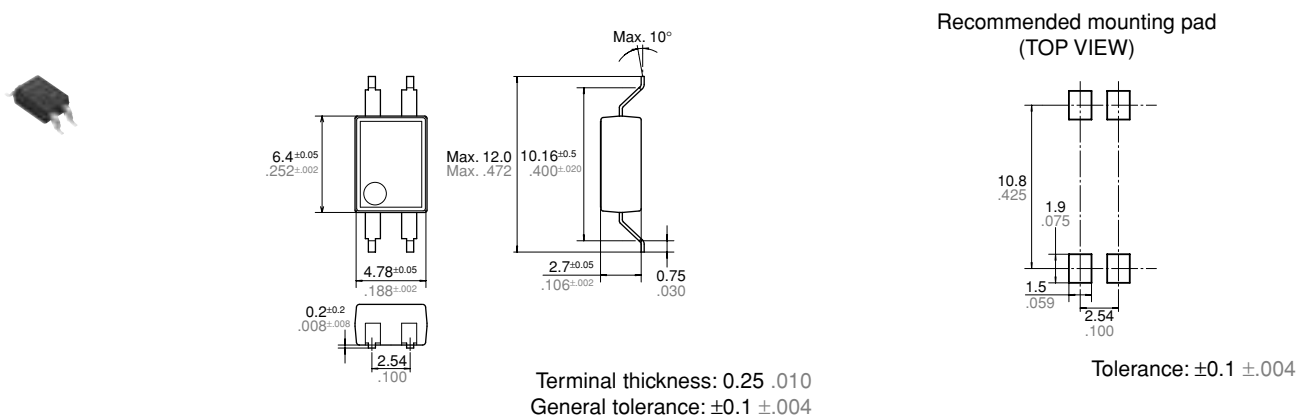
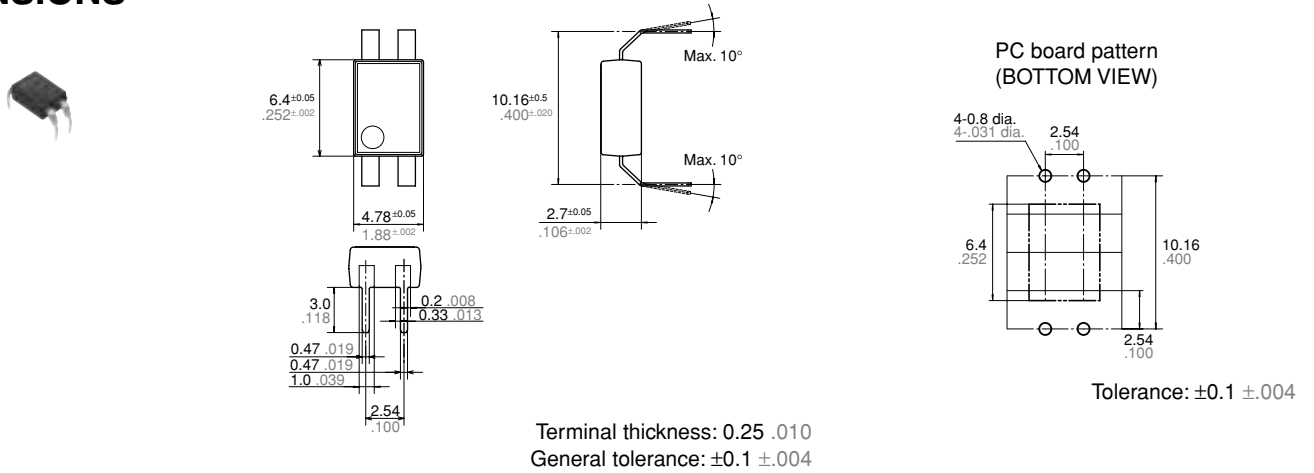
**Applicable part numbers: APT1211W and APT1212W.

***Turn on time



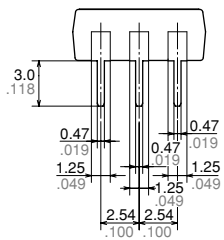
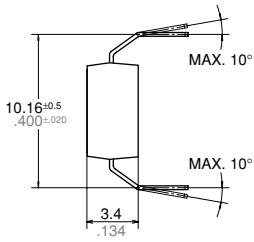
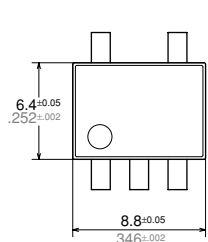
DIMENSIONS

mm inch

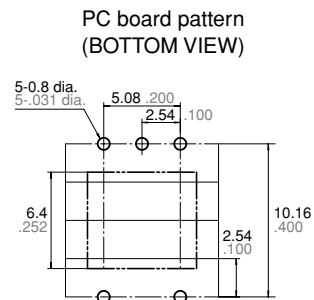


Phototriac Coupler (APT1200W)

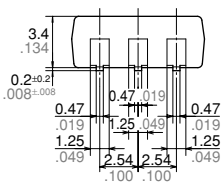
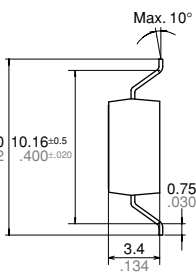
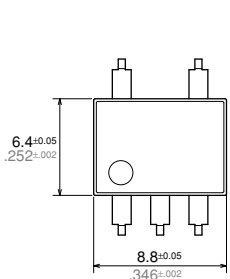
mm inch



Terminal thickness: 0.25 .010
General tolerance: ±0.1 ±.004

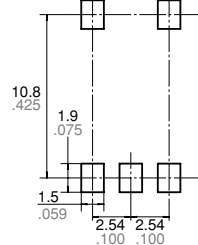


Tolerance: ±0.1 ±.004



Terminal thickness: 0.25 .010
General tolerance: ±0.1 ±.004

Recommended mounting pad (TOP VIEW)



Tolerance: ±0.1 ±.004

SCHEMATIC AND WIRING DIAGRAMS

Notes: E₁: Power source at input side; I_F: Trigger LED forward current; V_L: Load voltage; I_L: Load current;

Schematic	Output configuration	Load	Wiring diagram
	1a	AC	

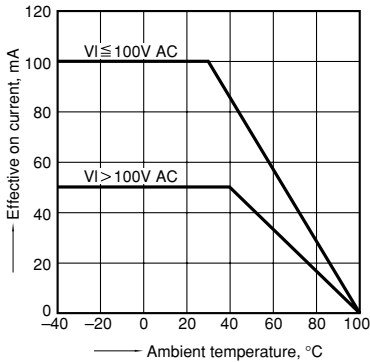
Phototriac Coupler (APT1200W)

REFERENCE DATA

1. Effective on current vs. Ambient temperature characteristics

Allowable ambient temperature: -40°C to $+100^{\circ}\text{C}$
 -40°F to $+212^{\circ}\text{F}$

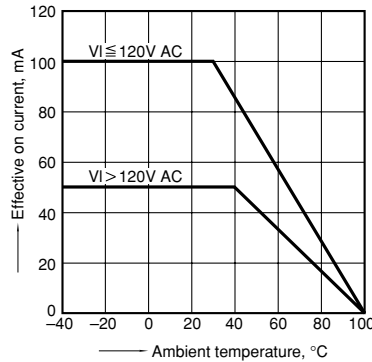
Tested sample: APT1211W, APT1221W



2. Effective on current vs. Ambient temperature characteristics

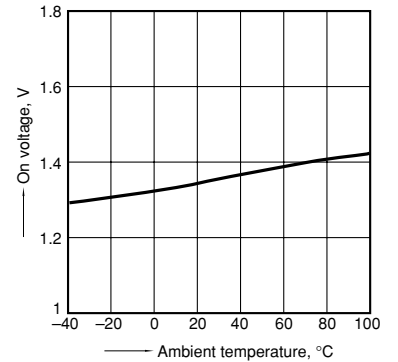
Allowable ambient temperature: -40°C to $+100^{\circ}\text{C}$
 -40°F to $+212^{\circ}\text{F}$

Tested sample: APT1212W, APT1222W



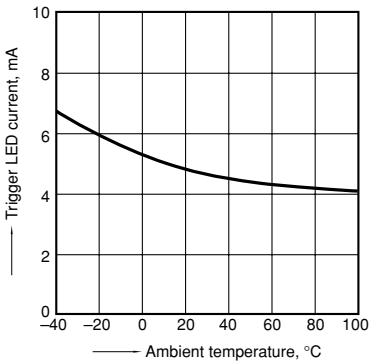
3. On voltage vs. Ambient temperature characteristics

Trigger LED current: 10 mA
 ON current: 50 mA AC



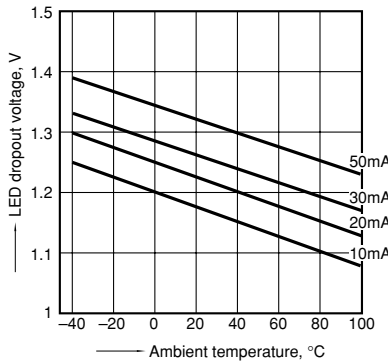
4. Trigger LED current vs. Ambient temperature characteristics

Load voltage: 6 V DC; Load resistance: 100Ω



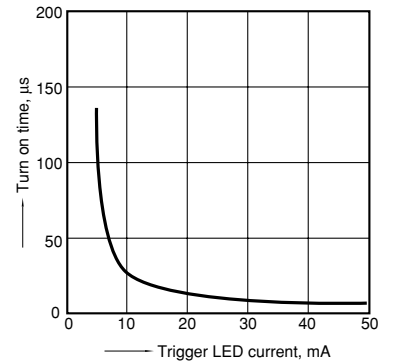
5. LED dropout voltage vs. Ambient temperature characteristics

LED current: 10 to 50 mA



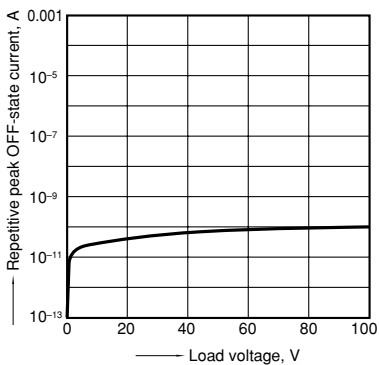
6. Turn on time vs. Trigger LED current characteristics

Load voltage: 6 V DC; Load resistance: 100Ω

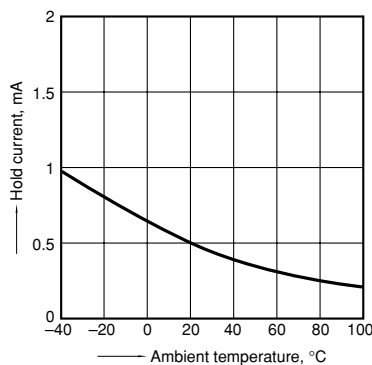


7. Repetitive peak OFF-state current vs. Load voltage characteristics

LED current: 0 mA; Ambient temperature: 25°C 77°F



8. Hold current vs. Ambient temperature characteristics



9. Zero-cross voltage vs. Ambient temperature characteristics

Trigger LED current: 10 mA (APT1211W, APT1212W)

