



### »» Features

- High voltage DC load control.
- High performance power relay for xEV vehicle.
- Complies with RoHS-Directive 2011/65/EU.

### »» Type List

Terminal style	Contact form	Designation (provided with)	
		Flux tight	Flanged cover (Flux tight)
Plug-in terminal	1A (SPDM)	HV012-1AH-C	HV012-1AH-C1
		HV012H-1AH-C	HV012H-1AH-C1
PCB terminal		HV012P-1AH-C	-----
		HV012HP-1AH-C	-----

### »» Ordering Information

HV012            -    1A    H    -    C      

          1        2        3            4        5            6            7

1. HV012 -- Basic series designation
2. Blank -- Standard type  
H -- High power type
3. Blank -- Plug-in terminal  
P -- PCB terminal
4. 1A -- Form A, single-pole, double-make (SPDM)
5. H -- Contact material Ag alloy
6. C -- Flux tight  
C1 -- Flanged cover (Flux tight)
7.  -- Coil voltage (please refer to the coil rating data for the availability)

### »» Contact Rating

Type	Standard type	High power type
Rated load (Resistive)	20A 400VDC	25A 400VDC

### »» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Pick up voltage (Max.) at 23°C	Drop out voltage (Min.) at 23°C	Max. continuous voltage at 23°C <sup>(1)</sup>	Power consumption at rated voltage
12	104	115	75 % of rated voltage	5 % of rated voltage	116 % of rated voltage	approx. 1.25W
24	52	460				

- Notes : (1) Without continuous contact current.  
 (2) Coil terminal with polarity sensitivity, please follow the layout instruction.

### »» Specification

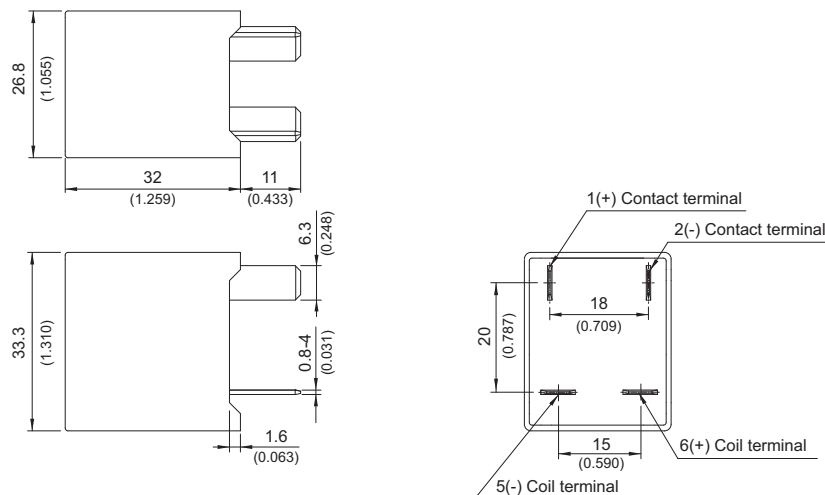
Contact material	Ag alloy	
Voltage drop <sup>(1)</sup>	Typ. 40mV at 10A	
Operate time <sup>(1)</sup>	30ms Max.	
Release time <sup>(1)</sup>	15ms Max.	
Insulation resistance <sup>(1)</sup>	100MΩ Min. (DC 500V)	
Dielectric strength <sup>(1)</sup>	Between open contact	: AC 2000V, 50/60Hz 1 min.
	Between contact and coil	: AC 2500V, 50/60Hz 1 min.

Vibration resistance	Operating extremes	10~500Hz, 5.0G	
	Damage limits	10~500Hz, 5.0G	
Shock resistance	Operating extremes	10G	
	Damage limits	100G	
Life expectancy	Mechanical	500,000 ops. (frequency 9,000 ops./hr)	
	Electrical	Rated switching capacity (Resistive)	Standard type: 20A 400VDC: 5,000 ops. High power type: 25A 400VDC: 5,000 ops. (frequency 180 ops./hr).
		Overload switching capacity	Standard type: 30A 400VDC: 50 ops. High power type: 37.5A 400VDC: 50 ops.
		Short term carrying current	30A 10min., 45A 5sec.
Operating ambient temperature	-40~+85°C (no freezing)		
Weight	Approx. 65g, 70g (flanged cover)		

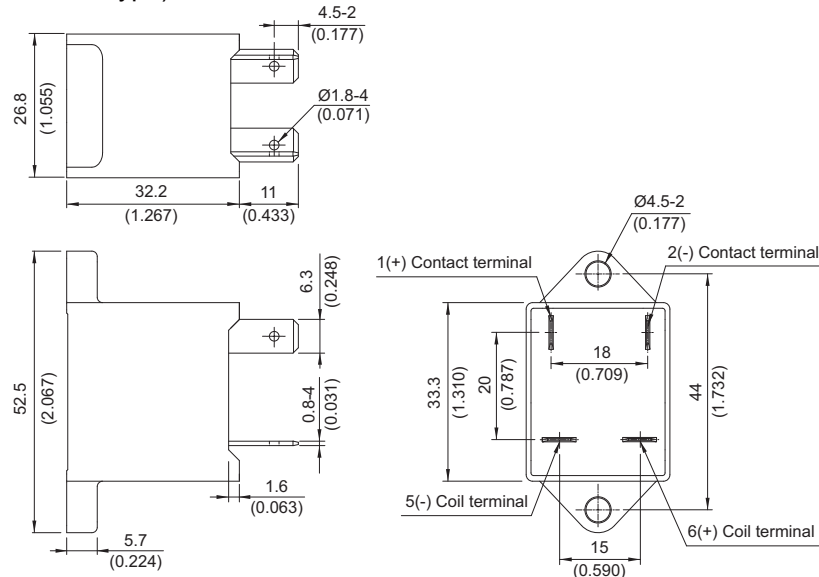
- Notes :
- (1) Initial value. Operate and release time excluding contact bounce.
  - (2) Coil and contact sides with polarities (+) and (-).
  - (3) Unless otherwise specified, all tests are under room temperature and humidity.
  - (4) Consider the heat of PCB is necessary, please check the actual condition of PCB.
  - (5) Applying no diode to this relay. The life expectancy will be lower when a diode is used. To use a varistor (ZNR) could absorb the coil surge of relay that is recommended.
  - (6) Do not use the relay exceeding the coil rating, contact rating and life expectancy, or this may cause the risk of overheating.
  - (7) To assure optimum performance, avoid the relay from dropping, hitting, or other unnecessary shocks.
  - (8) Take care to avoid cross connections as they may cause malfunctions or overheating.
  - (9) To avoid mounting the relay in strong magnetic fields (near a transformer or magnet) or close to an object that radiates heat.
  - (10) Do not switch the contacts without any load as the contact resistance may become increased rapidly.
  - (11) Use suitable harnesses and bus bars according to the current as below:  
20A type : Min. 3 mm<sup>2</sup>
  - (12) To avoid unexpected damage, when tightening a screw, use no exceeding specified torque range as below:  
M4 screw : 2.5 ~ 3 N.m
  - (13) Please contact Song Chuan for the detailed information.

## »» Outline Dimensions

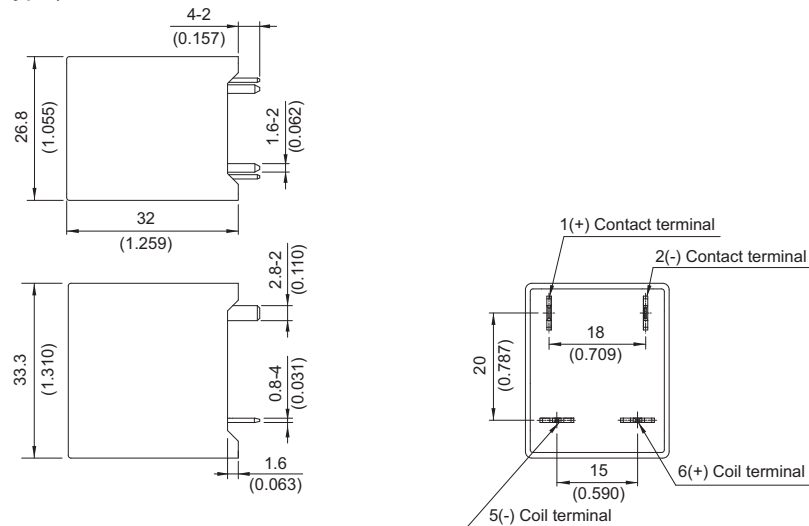
### ◆ HV012/HV012H (-C cover type)



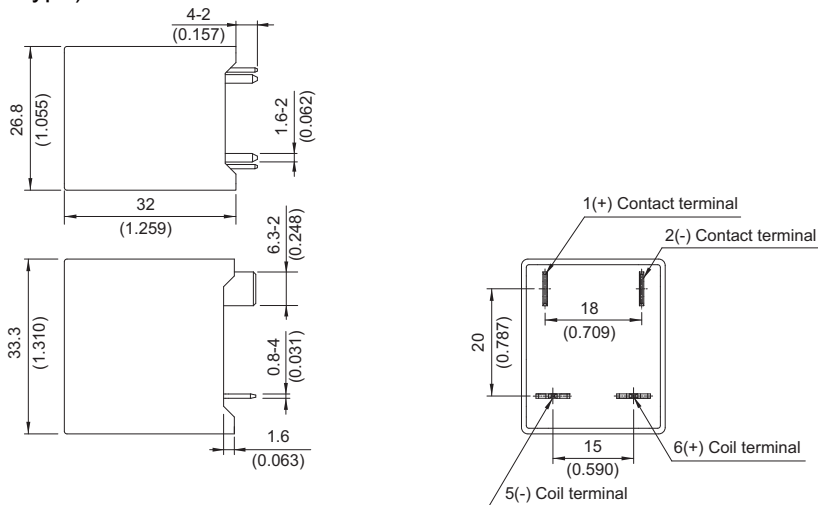
◆ HV012/HV012H (-C1 cover type)



◆ HV012P (-C cover type)

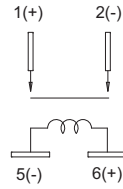


◆ HV012HP (-C cover type)



TOLERANCE:  
 LESS THAN: 1(0.039)  $\pm 0.1(0.004)$   
 5(0.197)  $\pm 0.3(0.012)$   
 20(0.787)  $\pm 0.5(0.020)$   
 MORE THAN: 20(0.787)  $\pm 1(0.039)$

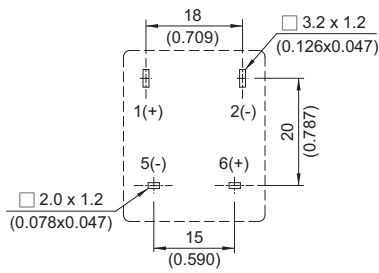
## »» Wiring Diagram (Bottom view)



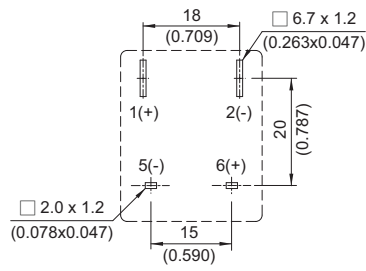
Load sides and coil terminals are with polarities (+) and (-).

## »» PC Board Layout (Bottom view)

◆ HV012P



◆ HV012HP



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