

## Direct-current relay

SEF40



### Feature:

- New energy vehicle precharge relay
- Rated 40A contact switching capability
- Normal mounting and flange mounting are available
- Environmental protection products, meet RoHS requirements

### Contact Data

Arrangement		1 Form A
Rated load current		40A
contact resistance		$\leq 5\text{m}\Omega$ (at 1A)
Maximum switching voltage		850VDC (at 2A)
Maximum breaking current		50A (450VDC) 5times
Maximum switching power		22.5KW
The durability of electricity	Capacitive load	Making: $1 \times 10^3$ (750VDC, $t=1\text{ms}$ , impact 200A steady state 40A)
	Impedance load	Switching: $3 \times 10^3$ , (40A, 450VDC) Making: $1 \times 10^5$ , (40A, 450VDC)
current-carrying capability		40A: continuous
		60A: 1h
		80A: 20min
		160A: 30s
		240A: 10s
		400A: 0.6s

### Parameter Data

Mechanical durability	$5 \times 10^5$ Times	
Insulation resistance	1000M $\Omega$ (500VDC)	
Actuation time (at rated voltage)	$\leq 30\text{ms}$	
Raleasing time (at rated voltage)	$\leq 10\text{ms}$	
Medium pressure	Contact between	2500VAC 1min 10mA
	Contacts and coils	2500VAC 1min 10mA
Shock	Functional	$196\text{m/s}^2$ (20G)
	Destructive	$490\text{m/s}^2$ (50G)
Vibration	10Hz~500Hz $49\text{m/s}^2$ (5G)	
Operating ambient temperature	$-40^\circ\text{C} \sim 85^\circ\text{C}$	
Working environment humidity	5%~85% RH	
Weight	Approx 50 g	
Length × width × height (mm)	30.1×44×30	

## Coil Data

Rated voltage (VDC)	Maximum operating voltage (VDC)	Suction voltage (VDC)	Release voltage (VDC)	Coil resistance ( $\Omega$ )	Coil power (W)
12	18	$\leq 7.2$	$\geq 1.2$	55.4	2.6
24	36	$\leq 14.4$	$\geq 2.4$	222	
48	72	$\leq 28.8$	$\geq 4.8$	886	

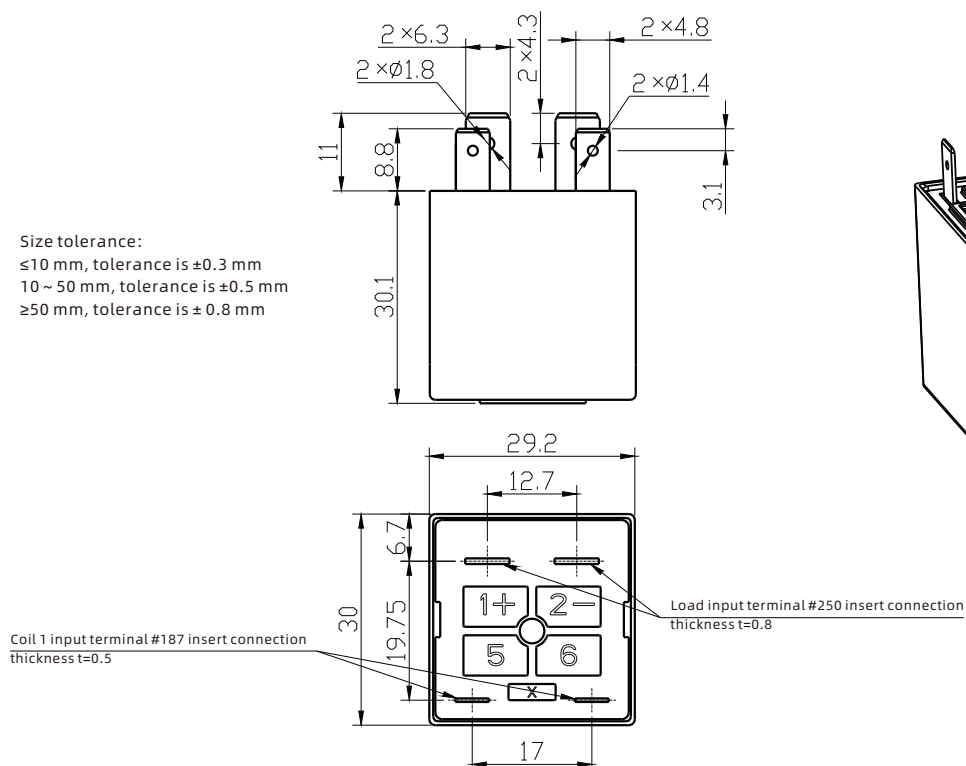
注:

- (1) Unless otherwise indicated, the ambient temperature of the electrical durability test is 23°C, and the on-off ratio is 0.6s: 5.4s  
 (2) The ambient temperature is 23°C, and the traverse area is  $\geq 4\text{mm}^2$ .  
 (3) If other rated voltage is required, special order can be made.

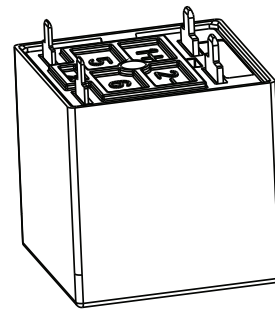
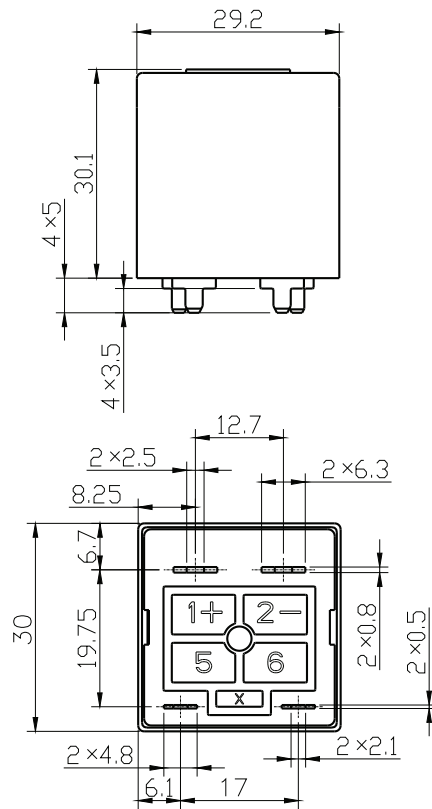
## Ordering Information

SEF40	-S	-M	24	P	X	XX	
							Customer Feature Number None: There is no special requirement Numbers or letters: customer specific requirements, independent of structure
							Way to install: None: Common installation. G, G2, G3: Flange installation
							Terminal form: None: Fast access terminal      P: PCB terminal
							The coil voltage(VDC):12/24
							Contact group: M: 1 set of normally open contacts
							Encapsulated type: S: Plastic seal
							The basic model:SEF40

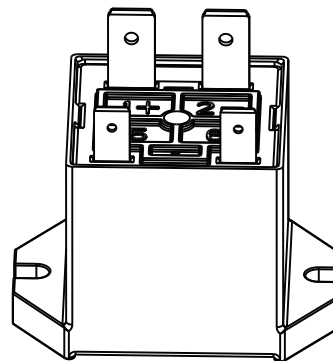
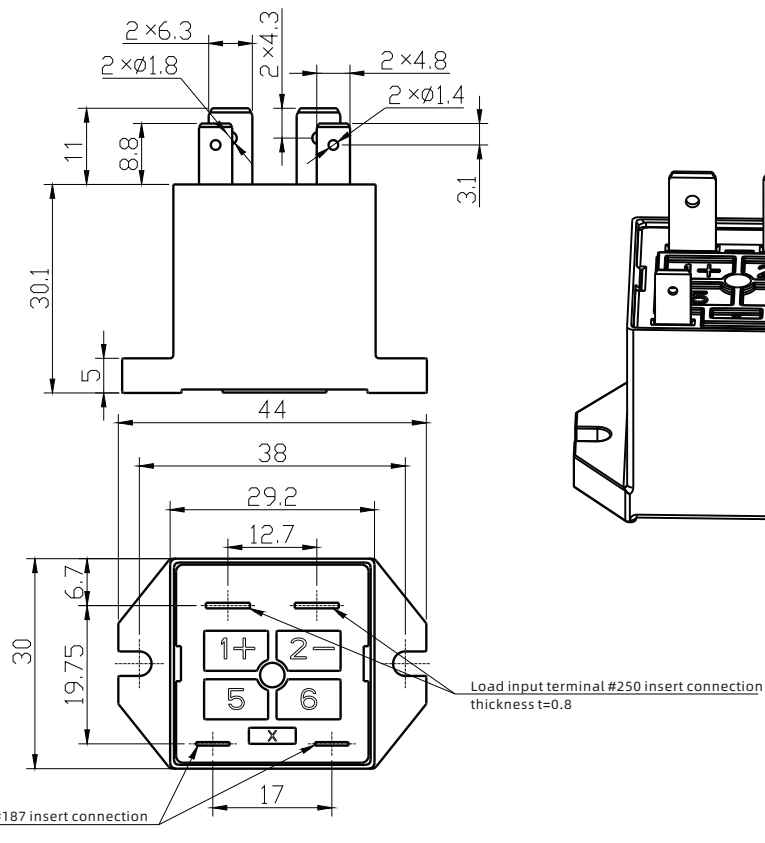
## Overall size (quick plug type)



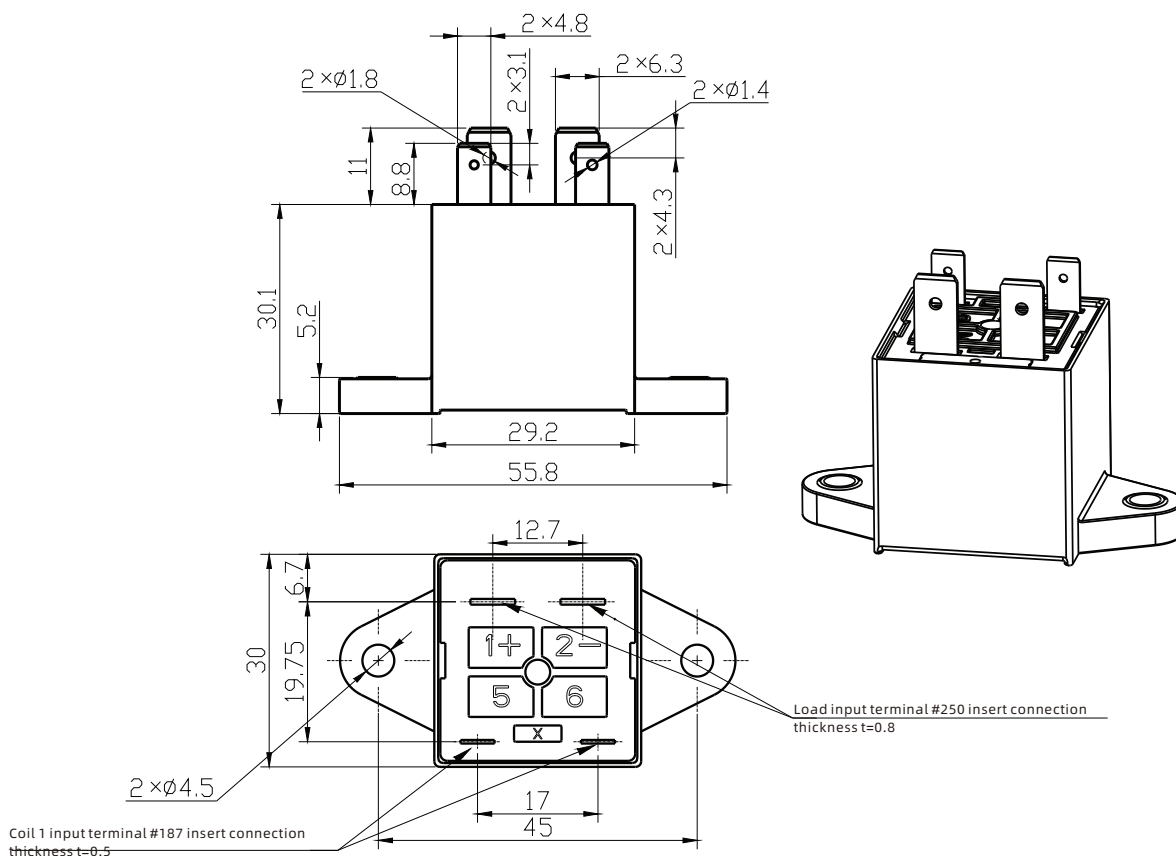
## Overall size (PCB)



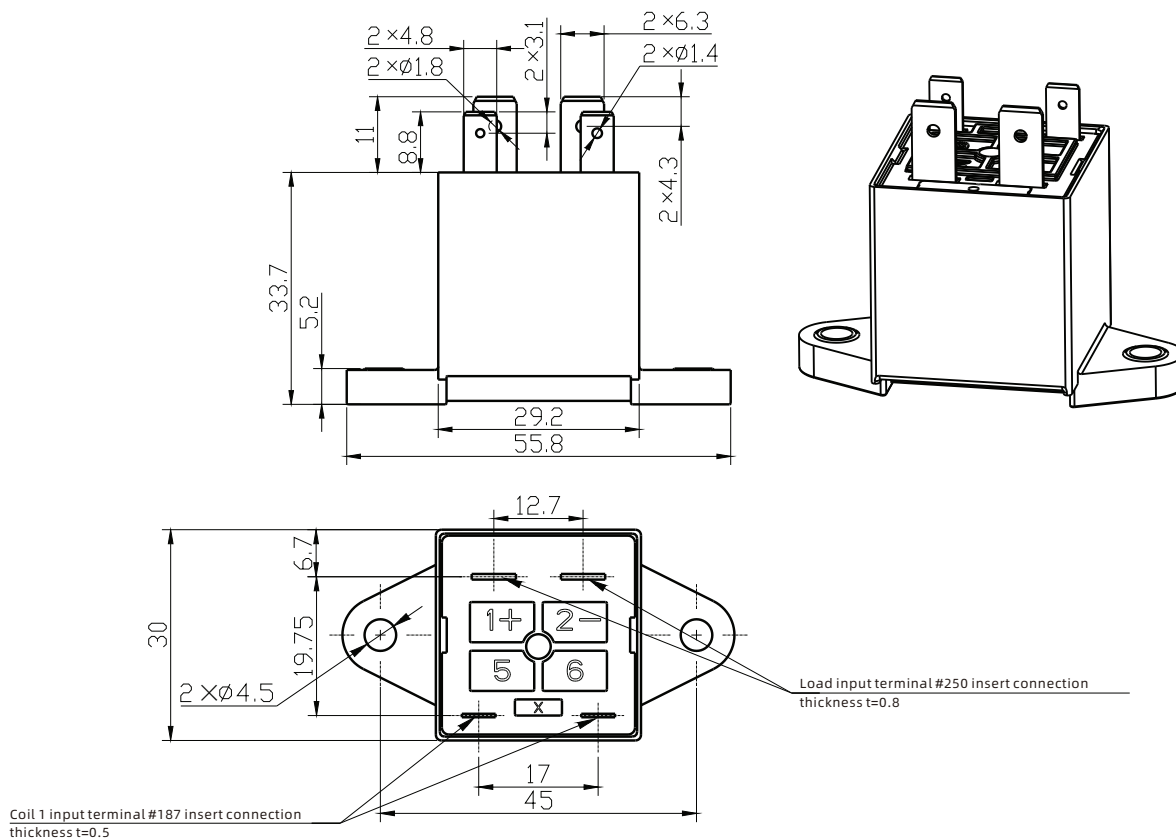
## Overall size (TYPE G)



## Overall size (TYPE G2)

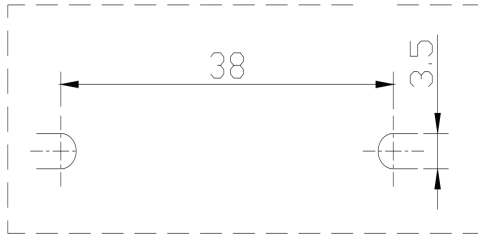


## Overall size (TYPE G3)

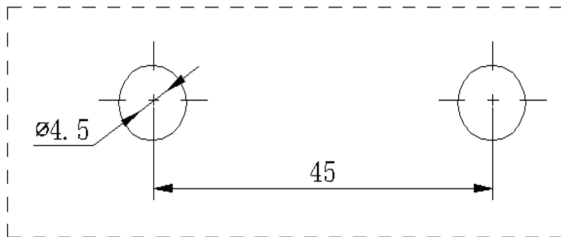


## Mounting dimension

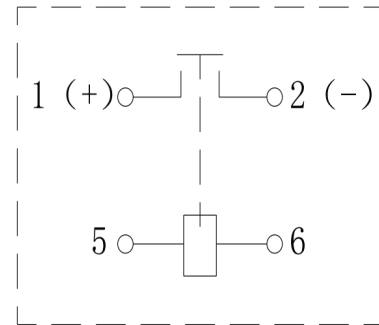
G mounting dimensions



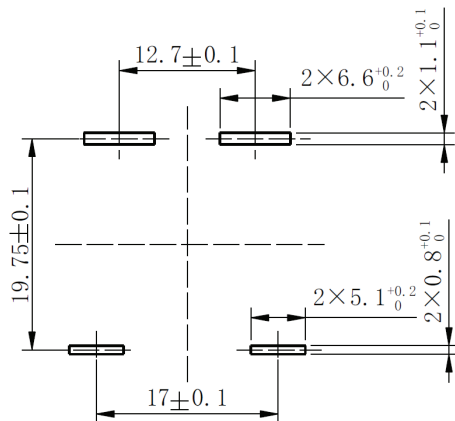
G2,G3 mounting dimensions



## Schematic diagram

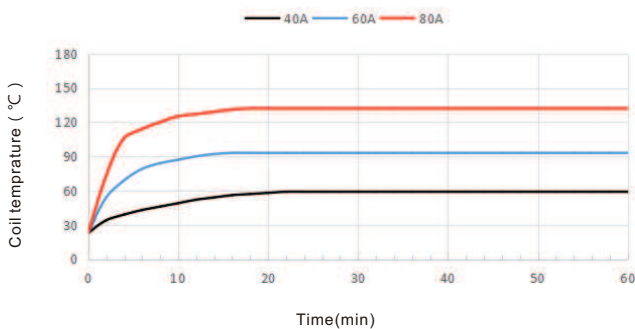


## P.C.B. Layout (bottom view)

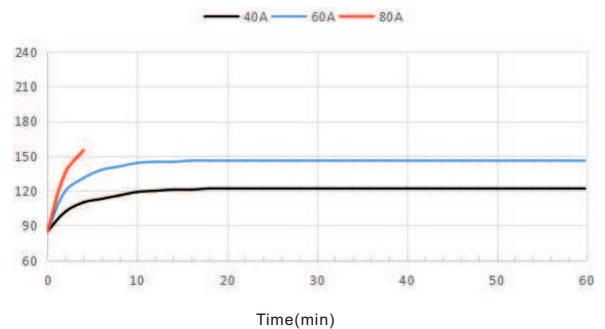


## Characteristic Curves

Terminal temperature rise curve  
 Test items: SEF40-450M12G(2.6W)  
 Amount: 3PCS  
 Coil voltage: 12VDC  
 Load current: 40A, 60A, 80A  
 Environment temperature: 23°C



Terminal temperature rise curve  
 Test items: SEF40-450M12G(2.6W)  
 Amount: 3PCS  
 Coil voltage: 12VDC  
 Load current: 40A, 60A, 80A  
 Environment temperature: 85°C



**Description:****●Precautions for relay installation**

1. When installing the relay, make sure to use washers to prevent screw loosening;
2. When installing the relay, the torsional torque of the load end of the locking relay and the torsional torque of the mounting hole should be controlled within the recommended range. If the torsional torque exceeds the recommended range, the terminal sliding teeth or the shell may be damaged.
3. Keep away from the strong magnetic field and heat source when installing the relay.

**●Matters needing attention in connection of relay load end**

1. Please avoid excessive load applied to the product. If it exceeds the rated range, the performance of the product cannot be guaranteed;
2. Please regard the relay as a product with cut-off life and do not exceed the capacity and service life of the switch. To ensure safety, it should be replaced in time;
3. The load terminal of the relay is polar, please connect the load according to the polarity requirements marked on the appearance of the product, otherwise the product performance cannot be guaranteed;
4. If foreign matter or oil is stuck to the load terminal, heat dissipation of the load terminal may be abnormal. Use the following wire or copper bar with nominal cross-sectional area.

10A	Min. 2mm <sup>2</sup> nominal cross-sectional area
20A	Min. 3mm <sup>2</sup> nominal cross-sectional area
40A	Min. 10mm <sup>2</sup> nominal cross-sectional area
60A	Min. 15mm <sup>2</sup> nominal cross-sectional area
100A	Min. 35mm <sup>2</sup> nominal cross-sectional area
150A	Min. 45mm <sup>2</sup> nominal cross-sectional area
250A	Min. 80mm <sup>2</sup> nominal cross-sectional area
300A	Min. 100mm <sup>2</sup> nominal cross-sectional area

**●Matters needing attention in connection of relay coil end**

1. When the diode absorbs the reverse voltage of the coil, the release time of the relay will be prolonged and the load switching performance of the relay will decline. Therefore, variable resistance is recommended.
2. When the relay is in use, considering the ambient temperature and conditions, the action and release voltage of the relay will change, it is recommended to use the rated voltage to supply power to the coil to ensure the normal operation of the relay;
3. Do not continuously load the maximum voltage on the coil;
4. For products with energy-saving board (200A and above), it is recommended to use fast rise (step power supply mode) for coil drive;
5. For products with energy-saving board (200A and above), coil current will be automatically switched after 0.1s. Please do not switch coil voltage repeatedly within 0.1s, otherwise the product performance cannot be guaranteed.

**Statement:**

This product specification is for reference only, subject to change without prior notice. We could not evaluate all test conditions for every possible application, thus customers should be in a right position to choose suitable products for their own application. If in doubt, please contact Sanyou for more technical support. However, it's the customer's responsibility to determine which product should be used.