三友继电器
® SANYOU RELAYS
Relays for advanced technology

Direct-current relay SEF40

Feature:

- New energy vehicle precharge relay
- Rated40A 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		≤5mΩ（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: 1×10^3 (750VDC,t=1ms, impact 200A steady state40A)
	Resistive load	Switching: 3×10^3, (40A,450VDC)
		Making: 1×10^5 ,(40A,450VDC)
current-carrying capability		40A：continuous
		60A：1h
		80A：20min
		160A：30s
		240A：10s
		400A：0.6s

Parameter Data

Mechanical endurance	5×10^5 Times	
Insulation resistance	1000MΩ (500VDC)	
Operate time (at rated voltage)	≤30ms	
Raleasing time (at rated voltage)	≤10ms	
Dielectric strengh	Contact between	2500VAC 1min 10mA
	Contacts and coils	2500VAC 1min 10mA
Shock	Functional	196m/s²（20G）
	Destructive	490m/s²（50G）
Vibration	10Hz~500Hz 49m/s²（5G）	
Operating ambient temperature	-40℃~85℃	
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)	Operate voltage (VDC)	Release voltage (VDC)	Coil resistance (Ω)	Coil power (W)
12	18	≤7.2	≥1.2	55.4×(1±10%)	2.6
24	36	≤14.4	≥2.4	222×(1±10%)	
48	72	≤28.8	≥4.8	886×(1±10%)	

注:

（1） Unless otherwise indicated, the ambient temperature of the electrical durability test is 23℃, and the on-off ratio is 0.6s: 5.4s

（2） The ambient temperature is 23℃, and the traverse area is ≥10mm^2.

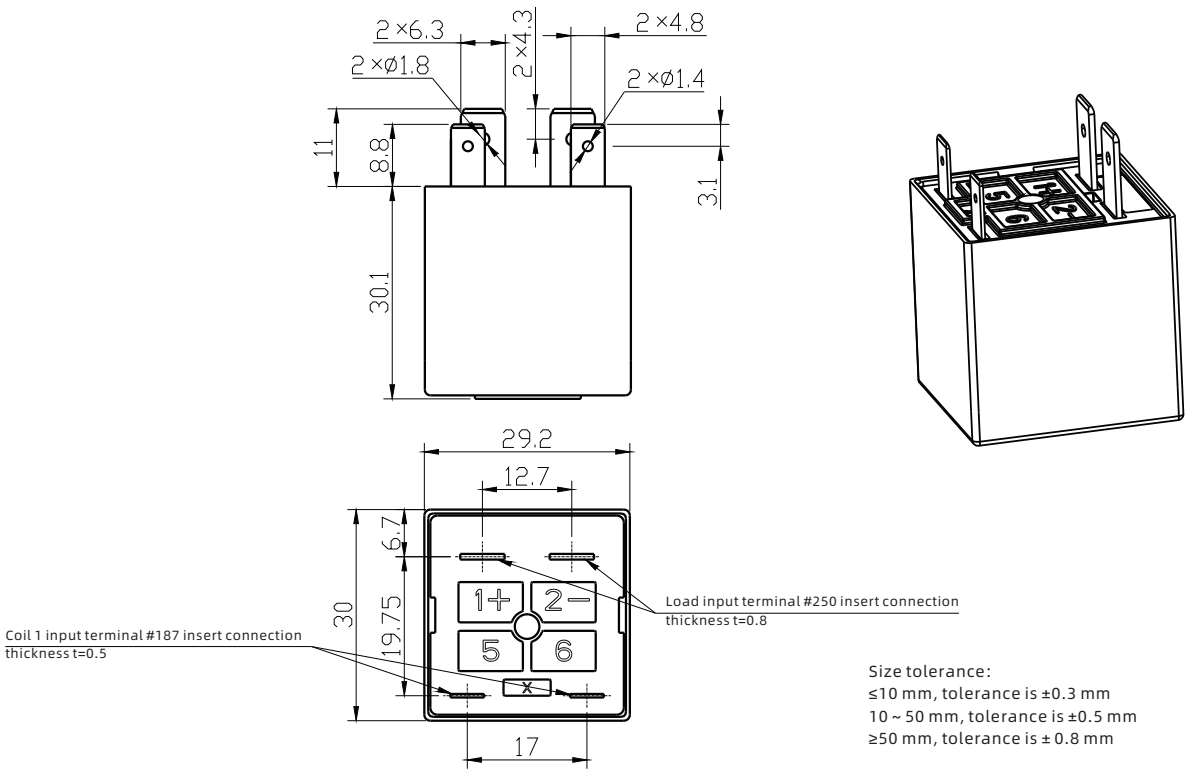
（3） If other rated voltage is required, special order can be made.

Ordering Information

SEF40 -S -M 24 P X XX

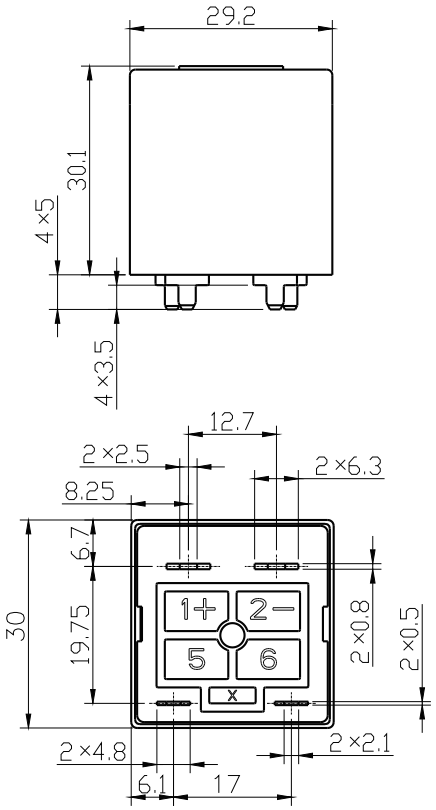
- XX: Customer Feature Number None: There is no special requirement Numbers or letters: customer specific requirements, independent of structure
- X: Way to install: None: Common installation. G, G2,G3: Flange installation
- P: Terminal form: None: QC terminal P: PCB terminal
- 24: The coil voltage(VDC):12/24/48
- -M: Contact group: M: 1 set of normally open contacts
- -S: Encapsulated type: S: Plastic seal
- SEF40: The basic model:SEF40

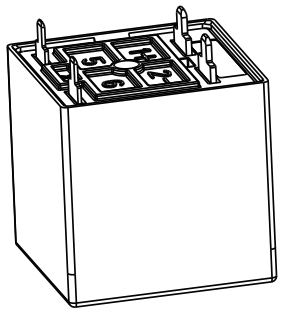
Overall size (quick plug type)



Size tolerance:
≤10 mm, tolerance is ±0.3 mm
10 ~ 50 mm, tolerance is ±0.5 mm
≥50 mm, tolerance is ± 0.8 mm

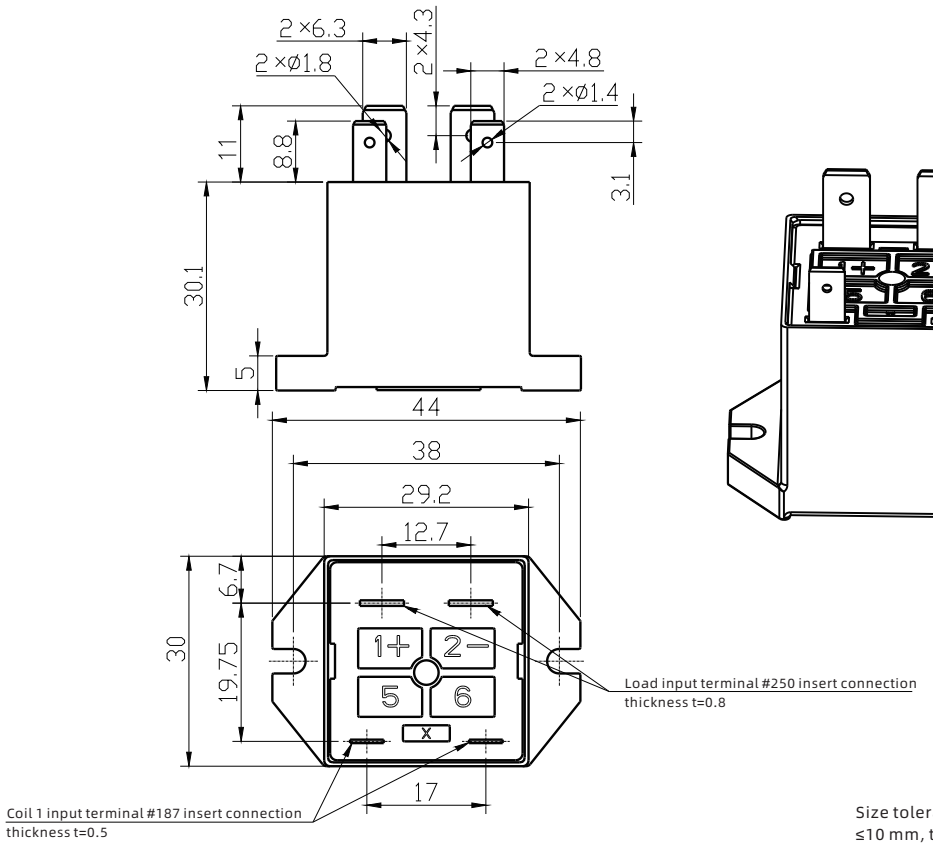
Overall size (PCB)

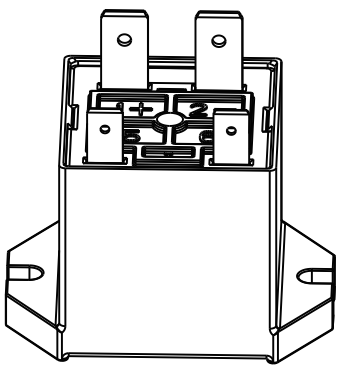




Size tolerance:
≤10 mm, tolerance is ±0.3 mm
10 ~ 50 mm, tolerance is ±0.5 mm
≥50 mm, tolerance is ± 0.8 mm

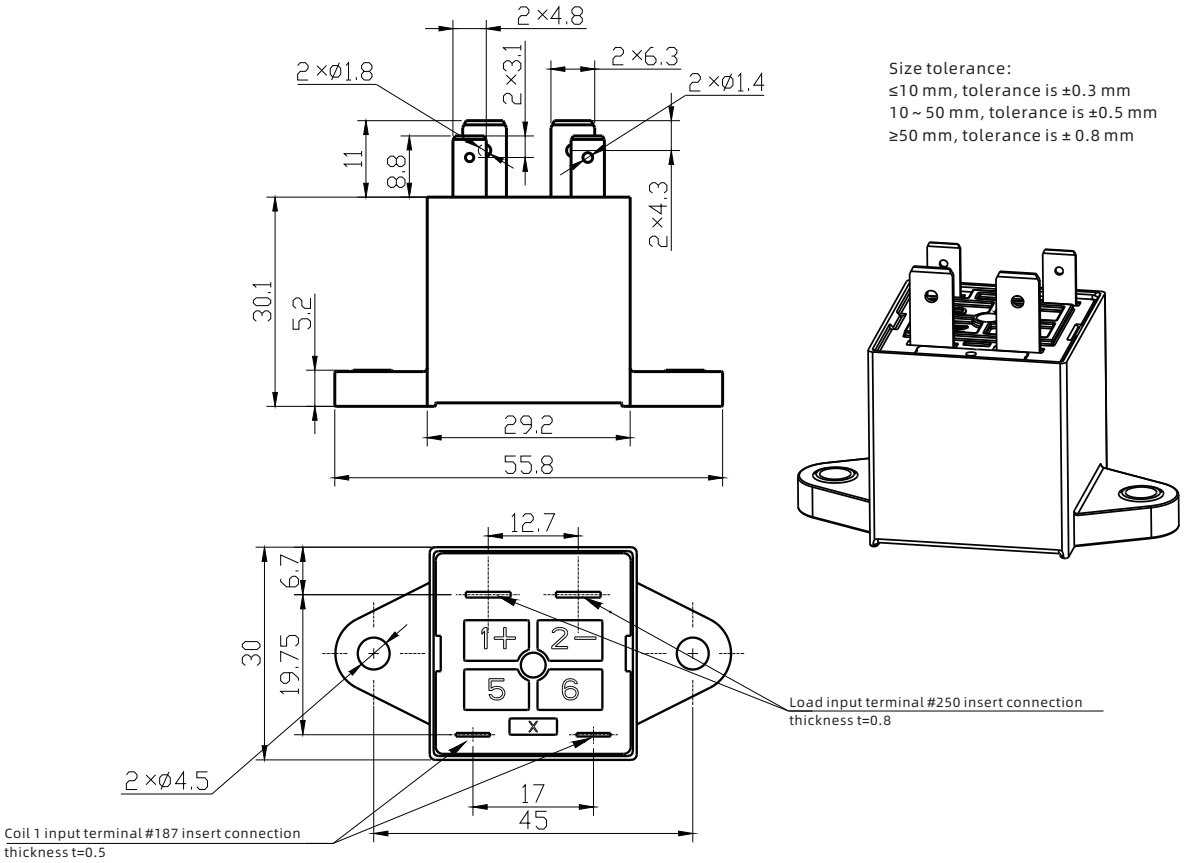
Overall size (TYPE G)





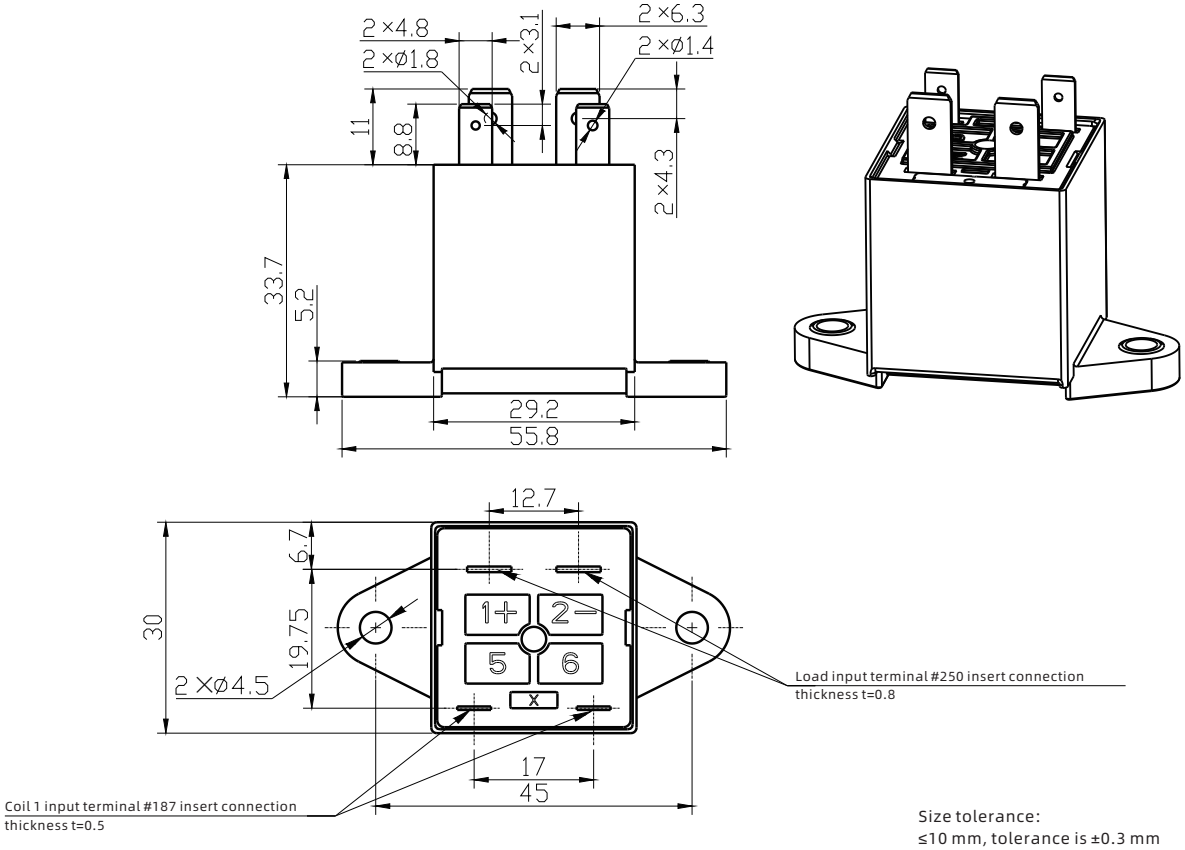
Size tolerance:
≤10 mm, tolerance is ±0.3 mm
10 ~ 50 mm, tolerance is ±0.5 mm
≥50 mm, tolerance is ± 0.8 mm

Overall size (TYPE G2)



Size tolerance:
≤10 mm, tolerance is ±0.3 mm
10 ~ 50 mm, tolerance is ±0.5 mm
≥50 mm, tolerance is ± 0.8 mm

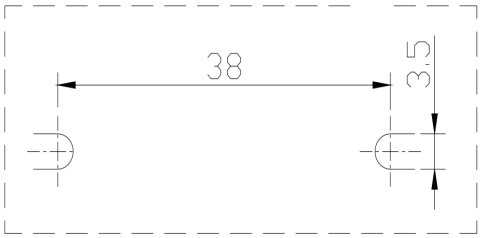
Overall size (TYPE G3)



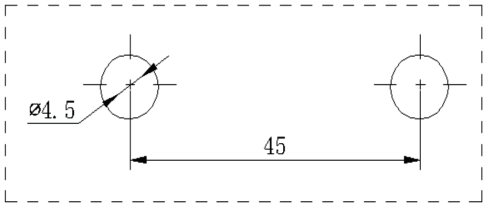
Size tolerance:
≤10 mm, tolerance is ±0.3 mm
10 ~ 50 mm, tolerance is ±0.5 mm
≥50 mm, tolerance is ± 0.8 mm

Mounting dimension

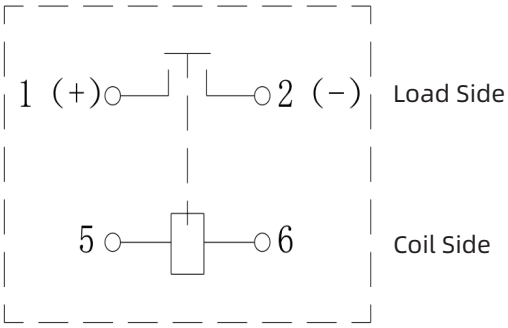
G mounting dimensions



G2,G3 mounting dimensions

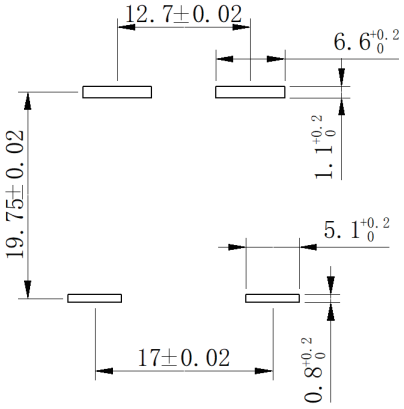


Schematic diagram



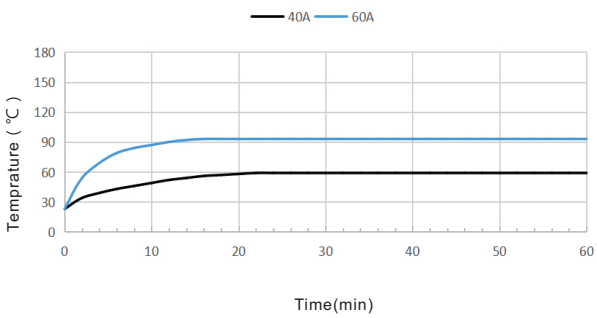
Note:No polarity on coil side,polarity on load side

PCB Layout (bottom view)

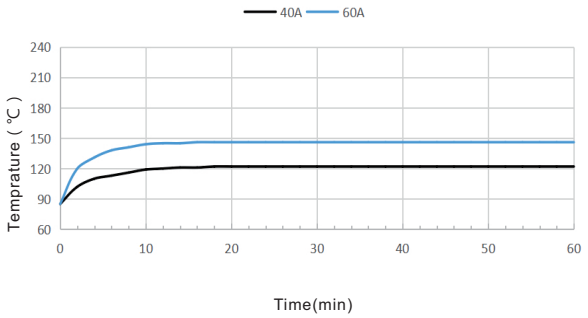


Characteristic Curves

Terminal temperature rise curve
Test items:SEF40
Load current:40A,60A
Environment temperature:23℃

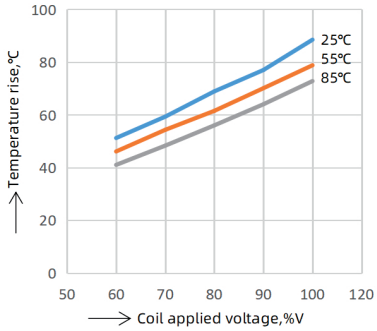


Terminal temperature rise curve
Test items:SEF40
Load current:40A,60A
Environment temperature:85℃



Characteristic Curves

Coil temperature rise
Measured portion: Inside the coil
Contact current:40A
Ambient temperature: 25℃,55℃,85℃



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.

●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.

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