HFE9 MINIATURE HIGH POWER LATCHING RELAY

c UL us
File No.:E133481

CQC
File No.:CQC02001001950

Features

- 60A switching capability
- 4kV dielectric strength (between coil and contacts)
- Heavy load up to 15000VA
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (38.0 x 30.0 x 16.0) mm

CONTACT DATA

Contact arrangement	1A		
Contact resistence	2mΩ (at 1A 24VDC)		
Contact material	$AgSnO_2$, AgCdO		
Contact rating (Res. load)	60A 250VAC	50A 250VAC	40A 250VAC
	5000 OPS	10000 OPS	100000 OPS
Max. switching voltage	250VAC		
Max. switching current	60A		
Max. switching power	15000VA		
Mechanical endurance	1×10^6 OPS Meter: 1×10^5 OPS		
Electrical endurance	1×10^5OPS (at 40A 250VAC)		

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1500VAC 1min
Creepage distance		8mm
Operate time (at nomi. volt.)		20ms max.
Release time (at nomi. volt.)		20ms max.
Shock resistance	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		98% RH, 40˚C
Ambient temperature		-40˚C to 70˚C
Termination		PCB & QC
Unit weight		Approx. 33g
Construction		Wash tight, Dust protected

Notes: The data shown above are initial values.

COIL

Coil power	Single Coil: 1.0W; Double Coil: 2.0W

COIL DATA

Nominal Voltage VDC	Pick-up Voltage VDC	Pulse Duration ms	Coil Resistance x (1±10%) Ω	
5	3.5	50	Single Coil	24
6	4.2	50		35
9	6.3	50		80
12	8.4	50		145
24	16.8	50		575
48	33.6	50		2270
5	3.5	50	Double Coils	12+12
6	4.2	50		17.5+17.5
9	6.3	50		40+40
12	8.4	50		72+72
24	16.8	50		285+285
48	33.6	50		1135+1135

Notes: When requiring other nominal voltage, special order allowed.

SAFETY APPROVAL RATINGS

UL&CUL	40A 250VAC at 70˚C
	50A 250VAC at 70˚C
	60A 250VAC at 70˚C

Notes: Only some typical ratings are listed above. If more details are required, please contact us.

ORDERING INFORMATION

	HFE9	-3	12	-H	S	T	-R	X	X-X	(XXX)

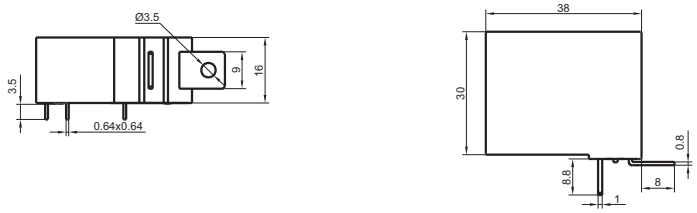
Type	
Version	**1:** 1 type (1 coil latching) **2:** 2 type (1 coil latching) **3:** 3 type (2 coil latching)
Coil voltage	5, 6, 9, 12, 24, 48VDC
Contact form	**H:** 1 Form A
Construction [1]	**S:** Wash tight **Nil**: Dust protected
Contact material	**T:** $AgSnO_2$ **Nil**: AgCdO
Polarity	**R:** Negative polarity **Nil**: Positive polarity
Solder direction of twisted wire	**A to S:** See below direction of solder wire **Nil:** Without solder wire
Twisted copper wire length	**First X:** length of left side **Second X:** length of right side
Customer special code	**(124):** Inrush load type

Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, wash tight type is recommended; Please test the relay in real applications. If the ambience allows, dust protected type is preferentially recommended.

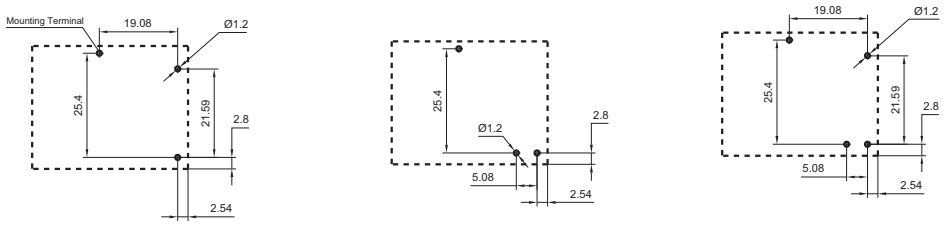
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions



PCB Layout (Bottom view)



JE9-1 JE9-2 JE9-3

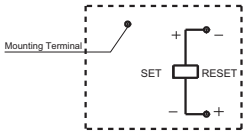
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

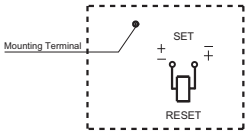
Unit: mm

Wiring Diagram (Bottom view)

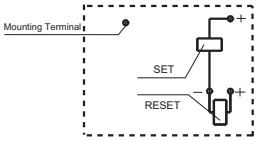
Positive polarity



JE9-1

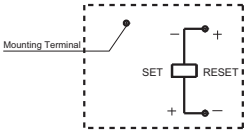


JE9-2

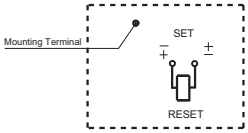


JE9-3

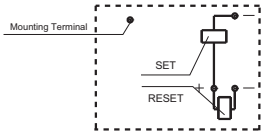
Negative polarity



JE9-1

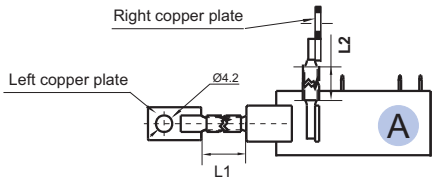


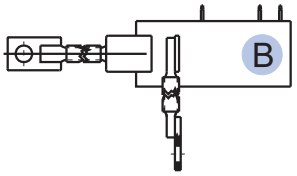
JE9-2

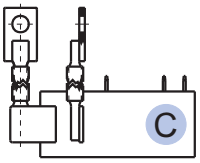


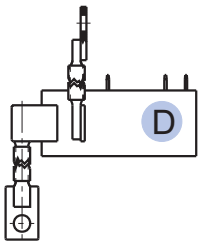
JE9-3

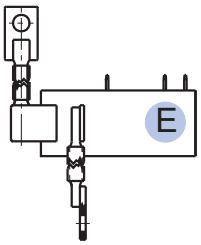
The welding direction of flex wire(A to S)

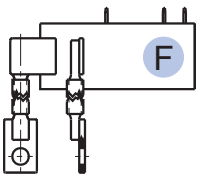


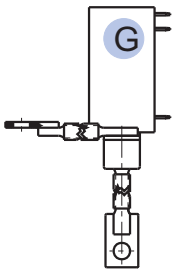


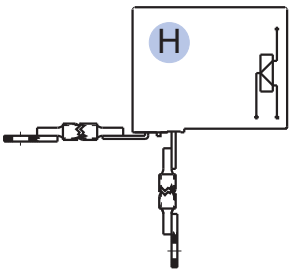


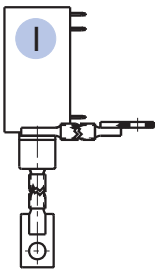


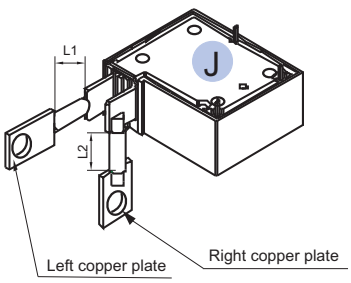


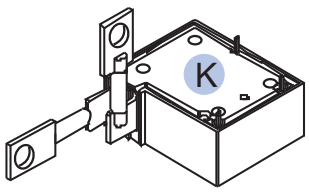


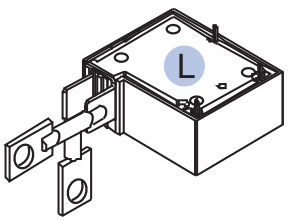








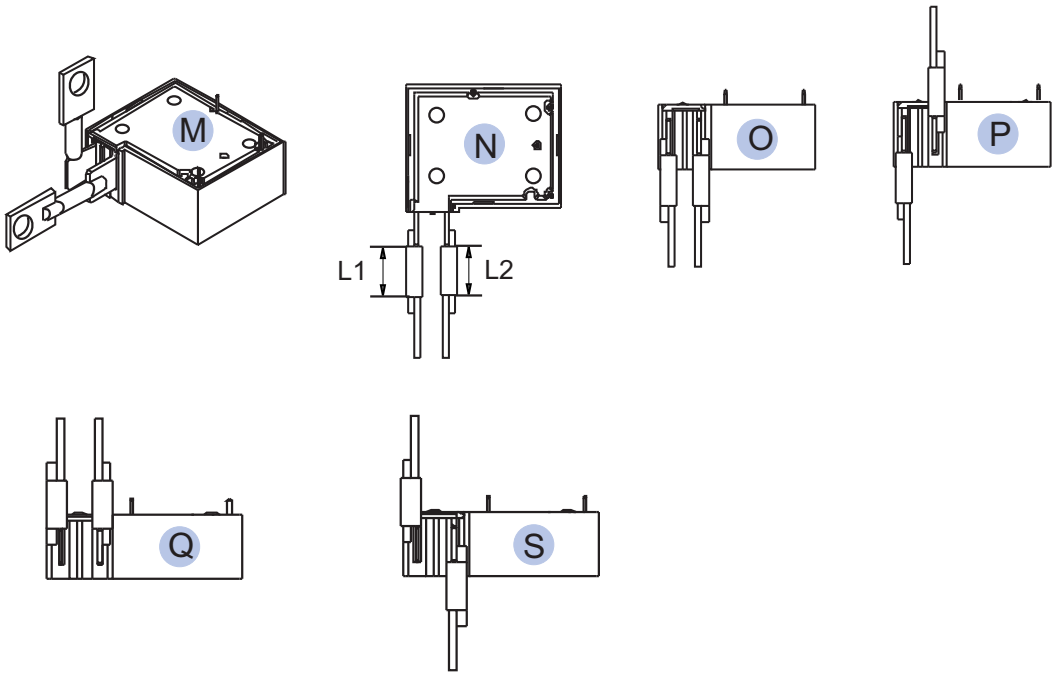




OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

The welding direction of
flex wire(A to S)



Note：

1. Melt both ends of the flex wire at 5mm, then weld it together with copper plate and relay terminals(anti-tensile strength≥50N)
2. Weld the copper plate with flex wire. the anti-tensile strength should be 50N, please see the sketch map from right side to left side
3. The welding direction of flex wire should be orientated to state-spring.
4. ORDERING INFORMATION： JE9-X/XX-HS-R A 50 / 80

   Welding sketch map: A type

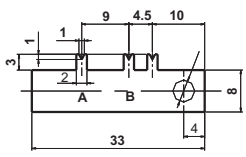
   The length of flex wire

   ●The length of right side flex wire L1=50mm:

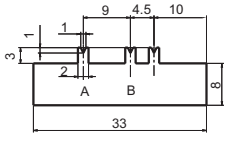
   ●The length of left side flex wire L2=50mm:

Style of manganin shunt

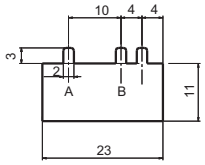
Notes: Style F1 to F44,the thickness of shunt: h=1 or h=2, R: resistance of shunt between A-B（μΩ,±6%）



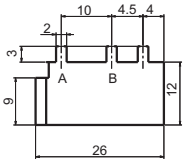
F1(h=1,R=500), **F2**(h=2,R=250)



F3(h=1,R=500), **F4**(h=2,R=250)



F5(h=1,R=400), **F6**(h=2,R=200)



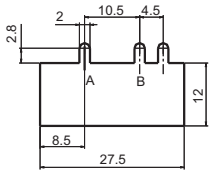
F7(h=1,R=360), **F8**(h=2,R=180)

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

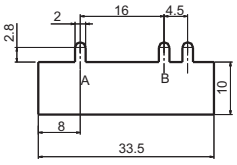
Unit: mm

Style of manganin shunt

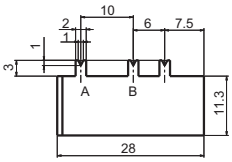
Notes: Style F1 to F44,the thickness of shunt: h=1 or h=2, R: resistance of shunt between A-B（μΩ,±6%）



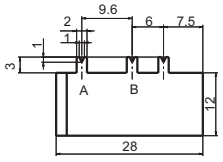
F9(h=1,R=370), **F10**(h=2,R=185)



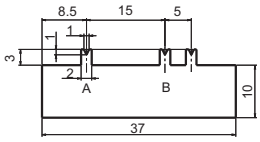
F11(h=1,R=700), **F12**(h=2,R=350)



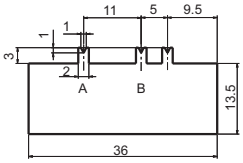
F13(h=1,R=390), **F14**(h=2,R=195)



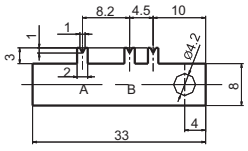
F15(h=1,R=350), **F16**(h=2,R=175)



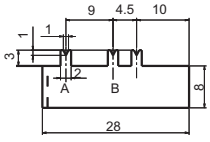
F17(h=1,R=660), **F18**(h=2,R=330)



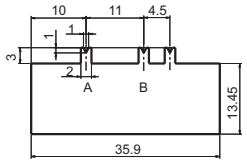
F19(h=1,R=360), **F20**(h=2,R=180)



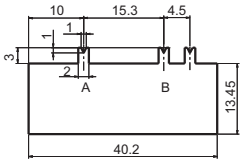
F21(h=1,R=450), **F22**(h=2,R=225)



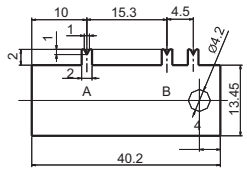
F23(h=1,R=500), **F24**(h=2,R=250)



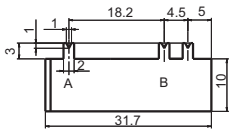
F25(h=1,R=380), **F26**(h=2,R=190)



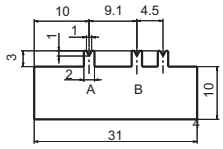
F27(h=1,R=500), **F28**(h=2,R=250)



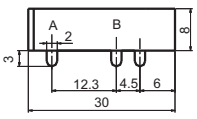
F29(h=1,R=500), **F30**(h=2,R=250)



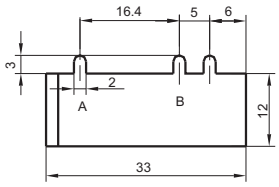
F31(h=1,R=800), **F32**(h=2,R=400)



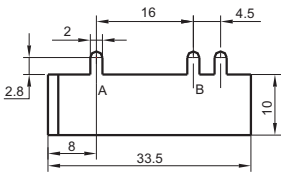
F33(h=1,R=400), **F34**(h=2,R=200)



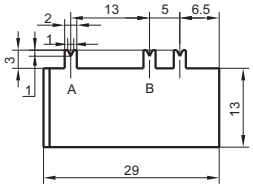
F35(h=1,R=600), **F36**(h=2,R=300)



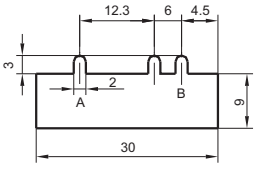
F37(h=1,R=600), **F38**(h=2,R=300)



F39(h=1,R=700), **F40**(h=2,R=350)



F41(h=1,R=440), **F42**(h=2,R=220)

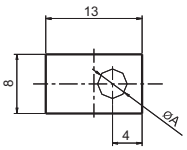


F43(h=1,R=600), **F44**(h=2,R=300)

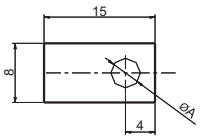
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

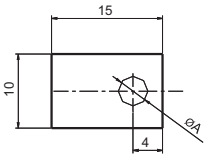
Connetor style



Style 056：A=Ø4.2
Style 056-1：A=Ø5.2

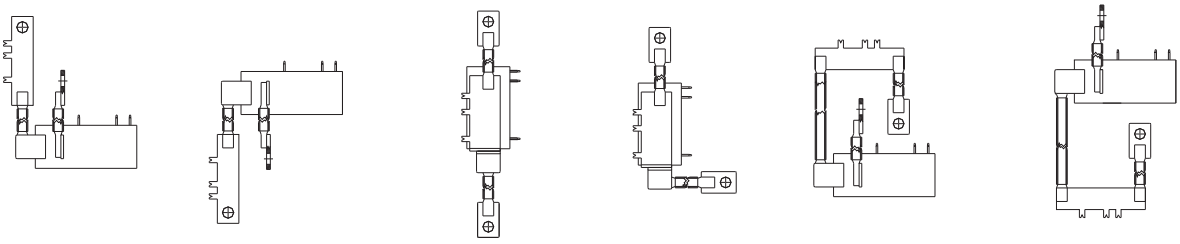


Style 076：A=Ø4.2
Style 076-1：A=Ø5.2



Style 077：A=Ø4.2
Style 077-1：A=Ø5.2
Style 077-2：A=Ø6.2

Typical shunt connection ways



Notes: We can make special connection according to custormer's requirement.
Please provide us with the drawing, and shunt specification and copper plate's specificatiion.

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension ＞1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension ＞5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.

Notice

1. Relay is on the “set” status when being released from stock, with the consideration of shock risen from transit and relay mounting, relay would be changed to “reset” status, therefore, when application (connecting the power supply), please reset the relay to “set” or “reset” status on request.
2. In order to maintain “set” or “reset” status, energized voltage to coil should reach the rated voltage, impulse width should be 5 times more than “set” or “reset” time. Do not energize voltage to “set” coil and “reset” coil simultaneously. And also long energized time (more than 1 min) should be avoided.
3. The terminals of relay without flex wire can not be tin-soldered, can not be moved willfully, more over two terminals can not be fixed at the same time.

Disclaimer

This datasheet is for the customers’ reference. All the specifications are subject to change without notice.
We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user’s responsibility to determine which product should be used only.