

# HF177F

# MINIATURE HIGH POWER RELAY



File No:E133481



File No.: R 50440159



File No.: CQC19002230667



## Features

- In series connection 10kA/in parallel connection 20kA lightning-proof current.
- 2 form A in series 400VDC 25A switching capability 40A 277VAC switching capability @(954) type
- Contact gap: 2.3mm
- 10kV dielectric strength(between coil and contacts)
- Contact category : CC2
- UL insulation system:class F available

RoHS compliant

## CONTACT DATA

Type	HF177F(954)	HF177F
Contact arrangement	2A	
Contact resistance (initial)	10mΩ max(at 6VDC 20A)	
Contact material	AgSnO <sub>2</sub>	
Contact rating (Res. load)	40A 277VAC 32A 277VAC	2 form A in series: 25A 400VDC
Max. switching voltage	277VAC	400VDC
Max. switching current	40A	25A
Max. switching power	11080VA	10000W
Mechanical endurance	2 x 10 <sup>5</sup> OPS	
Electrical endurance	1 x 10 <sup>4</sup> OPS (40A 277VAC, Resistive load, at 85°C, 1s on 9s off) 5 x 10 <sup>4</sup> OPS ((32A 277VAC, Resistive load, at 85°C, 1s on 9s off)	1 x 10 <sup>4</sup> OPS (25A 400VDC, Resistive load, 2 form A in series, at 85°C, 1s on 9s off)

Notes: The data shown above are initial values.

## COIL

Coil power	Approx.4.0W
Holding voltage	40% to 70%U <sub>N</sub> (at 23°C) 45% to 55%U <sub>N</sub> (at 85°C)

Notes: 1)The coil holding voltage is the voltage applied to coil 100ms after the rated voltage.  
2)To avoid overheating and burning, the coil can not be consistently applied to with voltage larger than maximum holding voltage.

## SAFETY APPROVAL RATINGS

UL/CUL TUV CQCC	Standard type	25A 300VDC 85°C,Resistance load 25A 400VDC 85°C,Resistance load 14A 400VDC 85°C,Resistance load (2 form A in series)
	(954) type	40A 277VAC, 85°C,Resistance load 32A 277VAC, 85°C,Resistance load

Notes: 1) All values unspecified are at room temperature.  
2) Only typical loads are listed above. Other load specifications can be available upon request.

## CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between open contacts	2500VAC 1min
	Between contacts	2500VAC 1min
	Between coil & contacts	5000VAC 1min
Surge voltage (between coil & contacts)	10kV(1.2 / 50μs)	
Operate time (at nomi. volt.)	20ms max.	
Release time (at nomi. volt.)	10ms max.	
Coil temperature rise	70K max.(Contact load current 40A,Applied voltage of coil 100% rated voltage for 100ms holding voltage of coil 50% rated voltage, at 85°C)	
Shock resistance	Functional	98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx.67g	
Construction	Flux proofed	

Notes: The data shown above are initial values.

## COIL DATA

at 23°C

Nominal Voltage VDC <sup>1)</sup>	Pick-up Voltage VDC max. <sup>1)</sup>	Drop-out Voltage VDC min. <sup>1)</sup>	Max. Voltage VDC <sup>2)</sup>	Coil Resistance Ω
6	4.2	0.3	6.6	9 x (1±10%)
9	6.3	0.45	9.9	20.3 x (1±10%)
12	8.4	0.6	13.2	36 x (1±10%)
24	16.8	1.2	26.4	144 x (1±10%)
48	33.6	2.4	52.8	576 x (1±10%)

Notes: 1) The data shown above are initial values.  
2) \*Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.



HONGFA RELAY

ISO9001, IATF16949, ISO14001, ISO45001, IECQ QC 080000, ISO/IEC 27001 CERTIFIED

2025 Rev. 1.00

## ORDERING INFORMATION

Type	HF177F/	12	-2H	T	F	(XXX)
Coil voltage	6, 9, 12, 24, 48VDC					
Contact arrangement	2H:2 Form A					
Contact material	T: AgSnO <sub>2</sub>					
Insulation standard	F: Class F					
Special code	XXX: Customer special requirement Nil: Standard 954: AC load					

**Notes:** 1) Please avoid using the relay in an environment containing organic silicon, otherwise the entry of organic silicon into the relay may acceleration contact failure. If there are harmful substances and elements such as water vapor, H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, Cl, P, dust, etc., as well as unknown harmful substances and elements, in the use of environmental gases, it may lead to increased contact resistance and poor contact during the use of relays. In the above situations, please control the materials that produce harmful substances and elements or use plastic sealed type and arrange relevant tests to confirm that it meets the requirements for actual use.

2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.

3) The customer special requirement express as special code after evaluating by Hongfa.

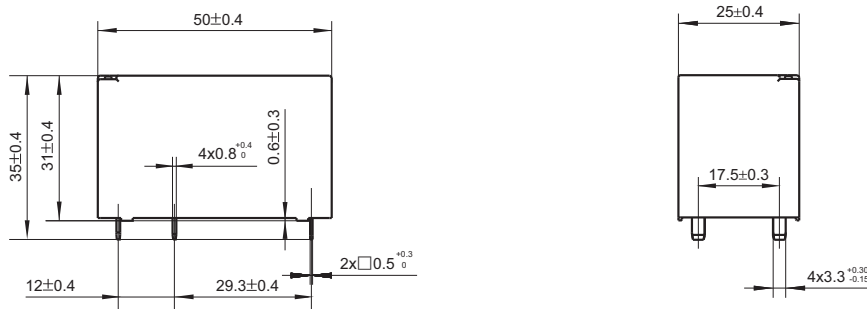
4) Short-circuit: HF177F can fulfill the short-circuit current test according to IEC 62955:2018.

Test sequence E: 9.11.2.3 a) 277 VAC, I<sub>p</sub> ≥ 2.6 kA, I<sub>t</sub> ≥ 6.5 kA<sup>2</sup>s (I<sub>n</sub> ≤ 32A, I<sub>nc</sub> = 10 000A) + 9.11.2.2 277 VAC, I<sub>m</sub> = 500A.

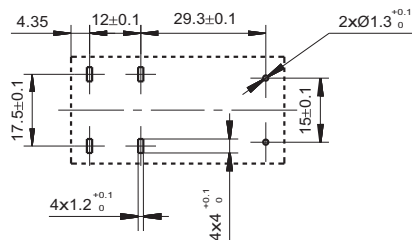
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

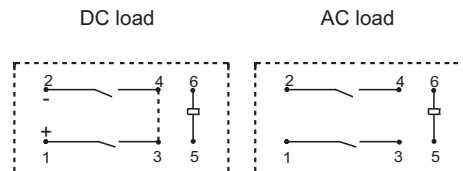
### Outline Dimensions



### PCB Layout (Bottom view)



### Wiring Diagram (Bottom view)



**Notes:** 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.

### Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications 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.

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