

# HF167F

# SOLAR RELAY



File No.: E133481



File No.: R50360703



File No.: CQC17002164558



## Features

- 90A switching capability  
100A loading current capability
- Applicable to solar photovoltaic inverter
- Contact gap:3.0 mm,4.0mm(764 Type)
- Explosion-proof products available
- A set of auxiliary contacts is optional
- Low coil holding voltage contributes to saving energy of equipment
- UL insulation system: Class F

RoHS compliant

## CONTACT DATA

Contact gap	3mm(Standard)	4mm(764 Type)
Contact arrangement	1H	1H
Contact resistance(initial)	Main contact: 10mΩ max. (6VDC 20A); Auxiliary contact: 100mΩ max.(6VDC 1A)	
Contact material	AgSnO <sub>2</sub> , AgNi	
Contact rating(Res. load)	Main contact: Making 30A carrying 100A breaking 30A 1000VAC; Auxiliary contact: 1A, 12VDC	
Max. switching voltage	Main contact: 1000VAC; Auxiliary contact: 12VDC	
Max. switching current	Main contact: 90A; Auxiliary contact: 1A	
Max. switching power	Main contact: 30000VA; Auxiliary contact: 12W	
Mechanical endurance	1 x 10 <sup>6</sup> OPS; 3x 10 <sup>5</sup> OPS(Auxiliary contact specifications )	
Electrical endurance	<b>Flux proofed:</b> <b>a.</b> 3 x 10 <sup>4</sup> OPS (Making 30A, carrying 100A, breaking 30A, 400VAC, Resistive load, at 85°C, 1s on 9s off) <b>b.</b> 1 x 10 <sup>3</sup> OPS (90A, 320VAC, Resistive load, at 85°C, 1s on 9s off) <b>c.</b> 3 x 10 <sup>4</sup> OPS (Making 30A, carrying 100A, breaking 30A, 1000VAC, Resistive load, at 85°C, 1s on 9s off) <b>Plastic sealed:</b> 3 x 10 <sup>4</sup> OPS (Making 30A, carrying 100A, breaking 30A, 400VAC, Resistive load, at 85°C, 1s on 9s off)	<b>Flux proofed:</b> Main contact: 3 x 10 <sup>4</sup> ops (Making 30A, carrying 100A, breaking 30A, 1000VAC, Resistive load, at 85°C, 1s on 9s off) Auxiliary contact: 3 x 10 <sup>4</sup> ops (1A, 12VDC, Resistive load, at 85°C, 1s on 9s off)

## COIL

Coil power	High power consumption type: Approx.1.92W
Holding voltage	40% to 100%U <sub>N</sub> (at 25°C) 50% to 60%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.

## COIL DATA

23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC <sup>1)</sup>	Coil Resistance Ω
6	4.2	0.6	6.6	18.8×(1±10%)
9	6.3	0.9	9.9	42.2×(1±10%)
12	8.4	1.2	13.2	75×(1±10%)
24	16.8	2.4	26.4	300×(1±10%)

**Notes:** Maximun voltage refers to the maximun voltage which relay coil could endure in a short period of time.

## CHARACTERISTICS

Insulation resistance		1000 MΩ (500VDC)
Dielectric strength	Between open main contacts	2000VAC 1min
	Between coil & main contacts	5000VAC 1min
	Between auxiliary contact & main contact	5000VAC 1min
Surge voltage (Between coil & Main contacts)		10kV(1.2/50μs)
Operate time (at rated. volt.)		30ms max.
Release time (at rated. volt.)		10ms max.
Temperature rise		70K max. (Contact load current 100A, Applied voltage of coil 100% rated voltage for 100ms holding voltage of coil 50% to 60% 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 (Coil rated voltage is reduced to holding voltage after 100ms of excitation)
Termination		PCB
Unit weight		Approx. 100g
Construction		Flux proofed/Plastic sealed

**Notes:** The data shown above are initial values.



HONGFA RELAY

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

2025 Rev. 2.00

## SAFETY APPROVAL RATINGS

UL/CUL	AgNi	HF167F...HF	90A 320VAC 85°C General use 60A 320VAC 85°C General use 40A 277VAC 85°C General use Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HF(764)	Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HSF	70A 24VDC, 85°C, Resistive 40A 277VAC, 85°C, General use(Open the vent.) Making 30A, carrying 100A, breaking 30A, 24VDC, 85°C, Resistive Making 30A, carrying 100A, breaking 30A, 415/400 VAC, 85°C, Resistive
	AgSnO <sub>2</sub>	HF167F...HTF	90A 320VAC 85°C General use 40A 277VAC 85°C Resistive TV-15 120VAC 85°C Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HTF(764)	Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HATF(764)	Main contact: Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive Auxiliary contact: 1A 12VDC at 85°C Resistive
		HF167F...HSTF	Making 30A, carrying 100A, breaking 30A, 415VAC, 85°C Resistive
	AgNi	HF167F...HF	90A 320VAC 85°C Resistive 40A 277VAC 85°C General use Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HF(764)	Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HSF	70A 24VDC, 85°C, Resistive 40A 277VAC, 85°C, General use(Open the vent.) Making 30A, carrying 100A, breaking 30A, 24VDC, 85°C, Resistive Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C, Resistive
TÜV	AgSnO <sub>2</sub>	HF167F...HTF	Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HTF(764)	Main contact: Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Main contact: Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HATF(764)	Auxiliary contact: 1A 12VDC at 85°C Resistive Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HSTF	Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive
	AgNi	HF167F...HF	90A 320VAC 85°C Resistive 60A 320VAC 85°C Resistive 40A 277VAC 85°C Resistive Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
CQC	AgNi	HF167F...HF(764)	Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C Resistive Making 30A, carrying 100A, breaking 30A, 1000VAC, 85°C Resistive
		HF167F...HSF	70A 24VDC, 85°C, Resistive 40A 277VAC, 85°C, General use(Open the vent.) Making 30A, carrying 100A, breaking 30A, 24VDC, 85°C, Resistive 接通30A, carrying 100A, breaking 30A, 400VAC, 85°C, Resistive

## SAFETY APPROVAL RATINGS

CQC	AgSnO <sub>2</sub>	HF167F...HTF	90A 320VAC 85°C Resistive
			60A 320VAC 85°C Resistive
			40A 277VAC 85°C Resistive
		Making 30A, carrying 100A, breaking 30A,400VAC,85°C Resistive	
		Making 30A, carrying 100A, breaking 30A,1000VAC,85°C Resistive	
		HF167F...HTF(764)	Making 30A, carrying 100A, breaking 30A,400VAC,85°C Resistive
Making 30A, carrying 100A, breaking 30A,1000VAC,85°C Resistive			
HF167F...HSTF	70A 24VDC, 85°C, Resistive		
	40A 277VAC, 85°C, General use(Open the vent.)		
	Making 30A, carrying 100A, breaking 30A, 24VDC, 85°C, Resistive		
	Making 30A, carrying 100A, breaking 30A, 400VAC, 85°C, Resistive		

Notes: 1) All values unspecified are at room temperature.

2) Only typical loads are listed above. Other load specifications can be available upon request.

## ORDERING INFORMATION

Type	HF167F	12	-H	A	S	T	F	(XXX)
Coil voltage	6,9,12,24VDC							
Contact arrangement	H: 1 Form A							
Auxiliary contact arrangement	A: 1 Form A (Only the 764 special specification model with flux-proof type is available for selection.) Nil: Standard type							
Construction	S: Plastic sealed Nil: Flux proofed							
Contact material	T: AgSnO <sub>2</sub> Nil: AgNi							
Insulation standard	F: Class F							
Special code	XXX: Customer special requirement Nil: Standard type 764: Contact gap ≥ 4mm 991: Auxiliary contacts are gold plated							

Notes: 1) When there is surge current in the load, it is recommended to use AgSnO<sub>2</sub> contact material and confirm it in actual use.

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

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

4) 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, etc. 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 or use plastic sealed type and arrange relevant tests to confirm.

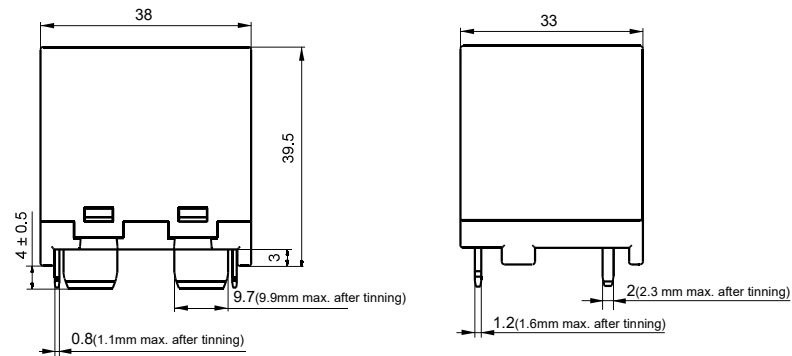
# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

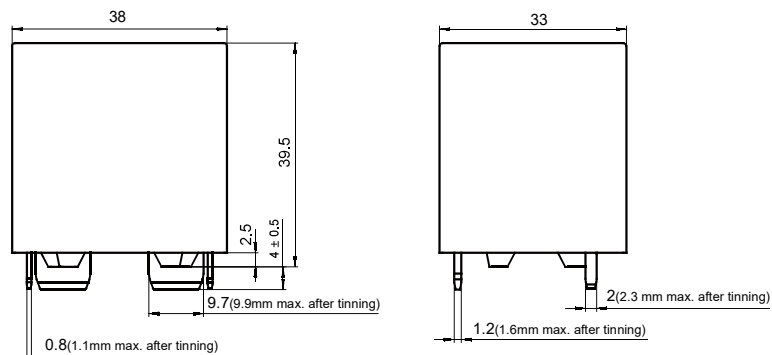
H

## Outline Dimensions

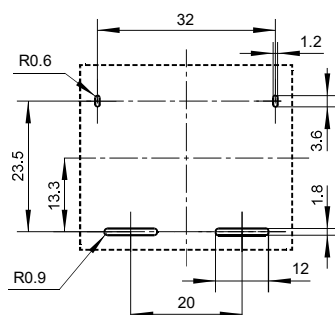
Flux proofed:



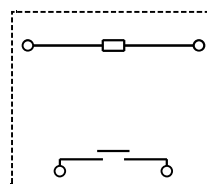
Plastic sealed:



## PCB Layout (Bottom view)



## Wiring Diagram (Bottom view)



Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .

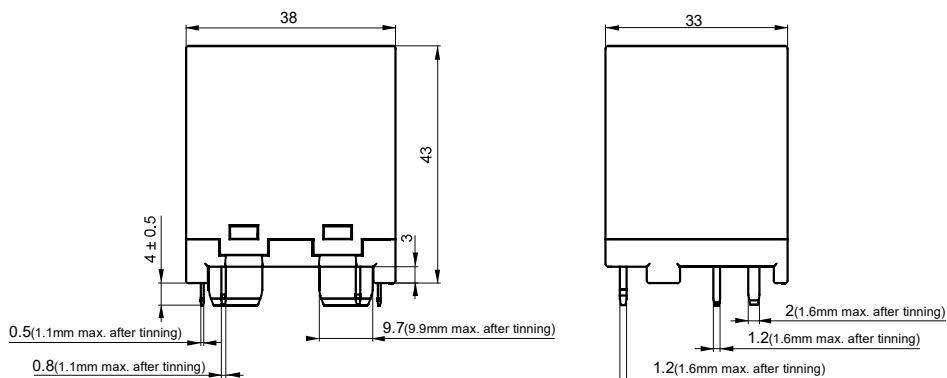
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Unit: mm

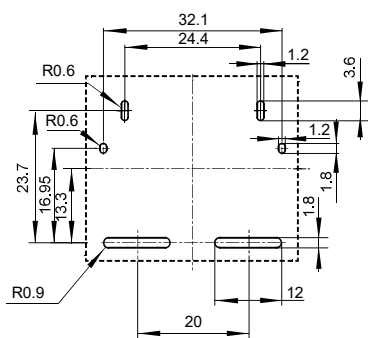
HA

## Outline Dimensions

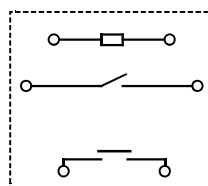
Flux proofed:



## PCB Layout (Bottom view)



## Wiring Diagram (Bottom view)



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## 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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