

# HF33F

# SUBMINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:125661



File No.:CQC09002028694



## Features

- 10A switching capability
- Creepage distance: 8mm (coil & contacts)
- Clearance distance: NO type 4.5mm, NC type 4mm
- 1 Form A and 1 Form C configurations
- Subminiature, standard PCB layout
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (20.5 x 10.2 x 15.3) mm

## CONTACT DATA

Contact arrangement	1A, 1C		
Contact resistance	100mΩ max.(at 1A 24VDC)		
Contact material	AgSnO <sub>2</sub> , AgNi, AgCdO		
Contact rating (Res. load)	1A	1C	
		NO	NC
	5A 250VAC 5A 30VDC 10A 125VAC	5A 250VAC 5A 30VDC 10A 125VAC	3A 250VAC 3A 30VDC
Max. switching current	10A		3A
Max. switching power	1250VA / 150W		750VA / 90W
Max. switching voltage	277VAC / 30VDC		
Mechanical endurance	1 x 10 <sup>7</sup> ops		
Electrical endurance	1 x 10 <sup>5</sup> ops		

## CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	4000VAC 1min
	Between open contacts	1000VAC 1min
Operate time (at nomi. volt.)	8ms max.	
Release time (at nomi. volt.)	5ms max.	
Ambient temperature	-40°C to 70°C	
Humidity	5% to 85% RH	
Shock resistance	Functional	98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance	10Hz to 55Hz 1.6mm DA	
Termination	PCB	
Unit weight	Approx. 7g	
Construction	Plastic sealed, Flux proofed	

- Notes:** 1) The data shown above are initial values.  
 2) Please find coil temperature curve in the characteristic curves below.  
 3) In order to obtain better electrical endurance, it's better not use this product in the high temperature environment.  
 4) UL insulation system: Class F, Class B.

## COIL

Coil power	Standard: Approx. 450mW; Sensitive: Approx. 200mW
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## COIL DATA

at 23°C

### Standard Type

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
3	2.25	0.15	3.9	20 x (1±10%)
5	3.75	0.25	6.5	55 x (1±10%)
6	4.50	0.30	7.8	80 x (1±10%)
9	6.75	0.45	11.7	180 x (1±10%)
12	9.00	0.60	15.6	320 x (1±10%)
18	13.5	0.90	23.4	720 x (1±10%)
24	18.0	1.20	31.2	1280 x (1±10%)
48	36.0	2.40	62.4	5120 x (1±10%)

### Sensitive type (Only for 1 Form A)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance Ω
3	2.25	0.15	4.5	45 x (1±10%)
5	3.75	0.25	7.5	125 x (1±10%)
6	4.50	0.30	9.0	180 x (1±10%)
9	6.75	0.45	13.5	400 x (1±10%)
12	9.00	0.60	18.0	720 x (1±10%)
18	13.5	0.90	27.0	1600 x (1±10%)
24	18.0	1.20	36.0	2800 x (1±10%)
48	36.0	2.40	72.0	11520 x (1±10%)



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2012 Rev. 1.01

## SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	AgCdO	5A 250VAC/30VDC at 40°C 8A 250VAC at 40°C 10A 125VAC at 40°C 10A 277VAC COSØ=0.4 at 40°C 1/10HP 125VAC, 1/6HP 250VAC at 40°C
		AgNi	5A 250VAC/30VDC at 70°C 8A 250VAC at 70°C 10A 125VAC at 70°C 10A 277VAC COSØ=0.4 at 70°C 1/10HP 125VAC, 1/6HP 250VAC at 70°C
		AgSnO <sub>2</sub>	5A 250VAC/30VDC at 70°C 10A 125VAC at 70°C 1A tungsten 120VAC at 105°C 15A LRA; 2.5A FLA 120VAC at 105°C 4A 120VAC at 105°C
	1 Form C	AgCdO	3A 250VAC at 40°C 3A 30VDC at 40°C
		AgNi AgSnO <sub>2</sub>	3A 250VAC at 70°C 3A 30VDC at 70°C
	VDE	1 Form A	AgNi
AgCdO AgSnO <sub>2</sub>			5A 250VAC at 70°C 5A 250VAC at 85°C
1 Form C		AgCdO AgNi	3A 250VAC at 70°C

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

## ORDERING INFORMATION

HF33F / 012 -H S L 3 G F (XXX)	
Type	
Coil voltage	3, 5, 6, 9, 12, 18, 24, 48VDC
Contact arrangement	H: 1 Form A Z: 1 Form C
Construction <sup>1)</sup>	S: Plastic sealed Nil: Flux proofed
Coil power	L: Sensitive (Only for 1 Form A) Nil: Standard
Contact material	T: AgSnO <sub>2</sub> 3: AgNi Nil: AgCdO
Contact plating	G: Gold plated Nil: No gold plated
Insulation standard	F: Class F Nil: Class B
Customer special code	

**Notes:** 1) Under the ambience with dangerous gas like H<sub>2</sub>S, SO<sub>2</sub> or NO<sub>2</sub>, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.  
If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

# OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

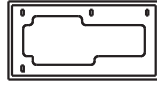
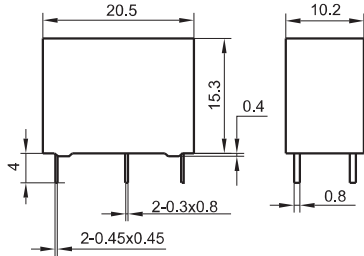
Unit: mm

## Outline Dimensions

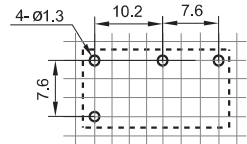
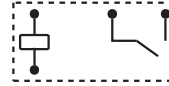
## Wiring Diagram (Bottom view)

## PCB Layout (Bottom view)

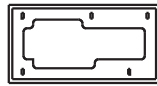
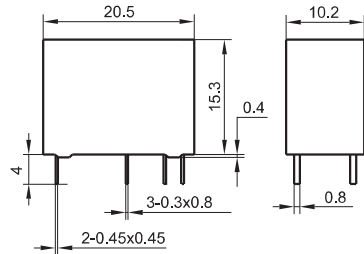
### 1 Form A



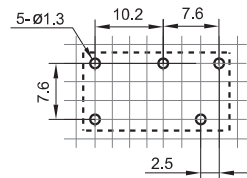
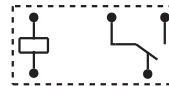
(Bottom view)



### 1 Form C



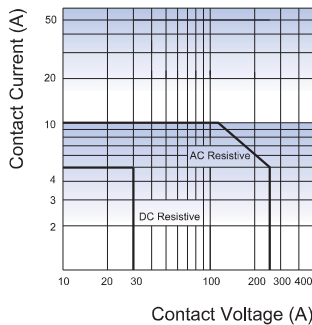
(Bottom view)



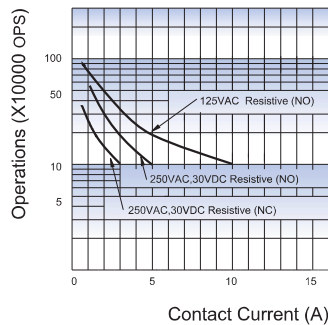
- Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
 2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .  
 3) The width of the gridding is 2.54mm.

# CHARACTERISTIC CURVES

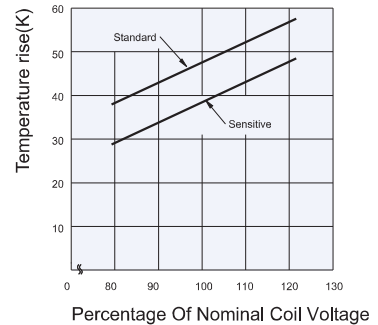
## MAXIMUM SWITCHING POWER



## ENDURANCE CURVE



## COIL TEMPERATURE RISE



## 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.

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