

**HF158F****MINIATURE HIGH POWER RELAY**

File No.:E134517



File No.:40032833

**Features**

- 20A switching capability
- Low height: 15.7 mm
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm, meet reinforce insulation
- UL insulation system: Class F
- Product in accordance to IEC 60335-1 available
- Sockets available
- Plastic sealed and flux proofed types available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (29.0 x 12.7 x 15.7) mm

**CONTACT DATA**

Contact arrangement	1A, 1C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgNi, AgSnO <sub>2</sub>
Contact rating	16A 250VAC
Max. switching voltage	440VAC
Max. switching current	20A
Max. switching power	5000VA
Mechanical endurance	2 x 10 <sup>7</sup> OPS
Electrical endurance	1 x 10 <sup>5</sup> OPS (See approval reports for more details)

**CHARACTERISTICS**

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between open contacts	1000VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 / 50μs)	
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	8ms max.	
Temperature rise (at nomi. volt.)	60K max.	
Shock resistance *	Functional	98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance *	10Hz to 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 11.5g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.

2) \* Index is not that of relay length direction.

**COIL**

Coil power	Approx. 400mW
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**COIL DATA**

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC *	Coil Resistance Ω
5	3.50	0.5	9.0	62 x (1±10%)
6	4.20	0.6	10.8	90 x (1±10%)
9	6.30	0.9	16.2	202 x (1±10%)
12	8.40	1.2	21.6	360 x (1±10%)
18	12.6	1.8	32.4	810 x (1±10%)
24	16.8	2.4	43.2	1440 x (1±10%)
48	33.6	4.8	86.4	5760 x (1±15%)

Notes: \* The max. allowable voltage in the COIL DATA is coil overdrive voltage, it is the instantaneous max. voltage which the relay coil could endure in a very short time.

**SAFETY APPROVAL RATINGS**

UL/CUL	AgNi	AgSnO <sub>2</sub>
UL/CUL	16A 277VAC at 40°C 16A 24VDC at 40°C 10A 400VAC at 85°C 10A 250VAC at 105°C 20A 250VAC at 85°C	1HP 240VAC at 40°C B300/R300 at 85°C TV-5 120VAC at 40°C 16A 277VAC at 40°C 16A 24VDC at 40°C 10A 400VAC at 85°C 10A 250VAC at 105°C 20A 250VAC at 85°C
	VDE	13A 250VAC at 70°C 16A 250VAC at 85°C NO: 10A 250VAC at 25°C / at 105°C (Only for (217) type)
UL/CUL (HF158F-T)		16A 277VAC at 105°C

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



HONGFA RELAY

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

2013 Rev. 1.00

## ORDERING INFORMATION

	<b>HF158F /</b>	<b>12</b>	<b>-Z</b>	<b>S</b>	<b>3</b>	<b>3</b>	<b>G</b>	<b>(XXX)</b>
<b>Type</b>	HF158F: Standard HF158F-T: High temperature							
<b>Coil voltage</b>	5, 6, 9,12, 18, 24, 48VDC							
<b>Contact arrangement</b>	<b>H: 1 Form A</b>		<b>Z: 1 Form C</b>					
<b>Construction</b> 1)	<b>S: Plastic sealed</b>		<b>Nil: Flux proofed</b>					
<b>Version</b>	<b>3: 5.0mm</b>							
<b>Contact material</b>	<b>3: AgNi</b>		<b>T: AgSnO<sub>2</sub></b>					
<b>Contact plating</b>	<b>G: Gold plated</b>		<b>Nil: No gold plated</b>					
<b>Customer special code</b>	e.g. (217) stands for product with the electrical endurance of $3 \times 10^5$ ops at 10A load.							

**Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.).

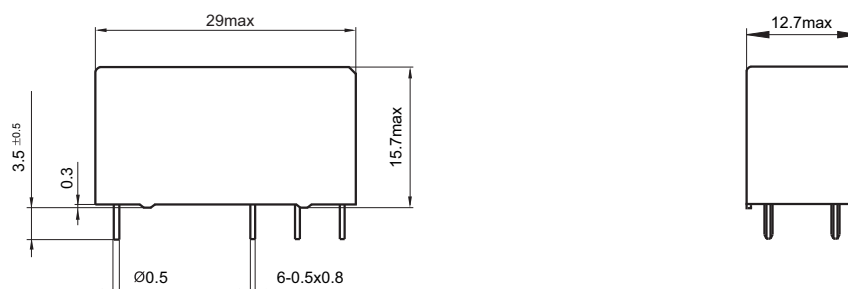
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc).

If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts

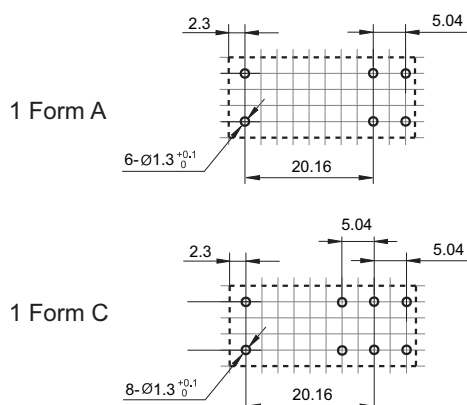
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

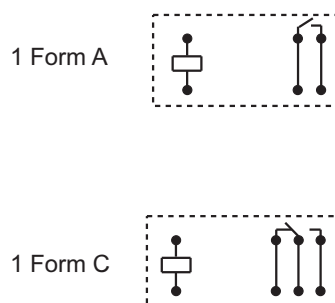
### Outline Dimensions



### PCB Layout (Bottom view)



### Wiring Diagram (Bottom view)



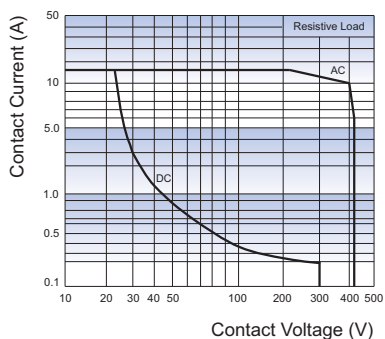
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1$ mm, tolerance should be  $\pm 0.2$ mm; outline dimension  $> 1$ mm and  $\leq 5$ mm, tolerance should be  $\pm 0.3$ mm; outline dimension  $> 5$ mm, tolerance should be  $\pm 0.4$ mm.

2) The tolerance without indicating for PCB layout is always  $\pm 0.1$ mm.

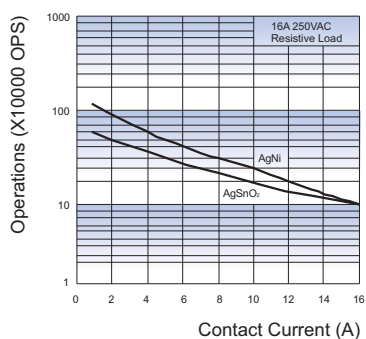
3) The width of the gridding is 2.52mm.

## CHARACTERISTIC CURVES

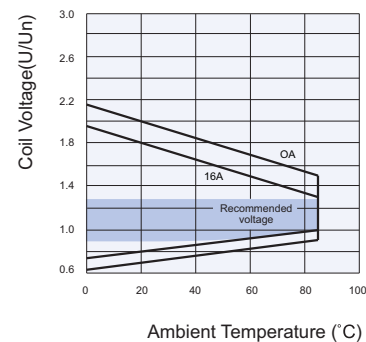
### MAXIMUM SWITCHING POWER



### ENDURANCE CURVE



### COIL OPERATING RANGE (DC) \*



**Notes:** \* The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the above range may damage the insulation of relay coil.

### 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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