

# HF115F

# MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:116934



File No.:CQC08002028130



### Features

- Low height: 15.7 mm
- 16A switching capability
- 5kV dielectric strength (between coil and contacts)
- Creepage distance: 10mm
- Meeting VDE 0700, 0631 reinforce insulation
- Product in accordance to IEC 60335-1 available
- Sockets available
- Wash tight 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, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ (at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 125VDC	
Max. switching current	12A / 16A	8A
Max. switching power	3000VA / 4000VA	2000VA
Mechanical endurance	1 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
	Between contact sets	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2 x 50μs)	
Operate time (at nomi. volt.)	15ms max.	
Release time (at nomi. volt.)	8ms max.	
Temperature rise (at nomi. volt.)	55K max.	
Shock resistance *	Functional	98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance *	10Hz to 150 Hz 10g/5g	
Humidity	35% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Wash tight, Flux proofed	

Notes: 1) The data shown above are initial values.  
2) \* Index is not that of relay length direction.

### COIL

Coil power	400mW
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### COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC	Drop-out Voltage VDC	Max. Allowable Voltage VDC	Coil Resistance Ω
5	3.50	0.5	7.5	62 x (1±10%)
6	4.20	0.6	9.0	90 x (1±10%)
9	6.30	0.9	13.5	202 x (1±10%)
12	8.40	1.2	18	360 x (1±10%)
18	12.60	1.8	27	810 x (1±10%)
24	16.80	2.4	36	1440 x (1±10%)
48	33.60	4.8	72	5760 x (1±15%)
60	42.00	6.0	90	7500 x (1±15%)
110	77.00	11.0	165	25200 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.



HONGFA RELAY

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

2009 Rev. 1.01

## SAFETY APPROVAL RATINGS

### VDE

Contact material	Specifications	Ratings	Ambient Temperature
AgCdO	HF115F....2(H;Z)(S)4(G)(F)	8A 250VAC	at 70°C
	HF115F....1H(S)(1;2)(G)(F)	12A 250VAC	at 70°C
		10A 250VAC	at 70°C
	HF115F....1Z(S)(1;2)(G)(F)	12A 250VAC	at 70°C
	HF115F....1H(S)3(G)(F)	16A 250VAC	at 70°C
		10A 250VAC	at 70°C
9A 250VAC COS $\phi$ =0.4		at 70°C	
HF115F....1Z(S)3(G)(F)	16A 250VAC	at 70°C	
	9A 250VAC COS $\phi$ =0.4	at 70°C	
AgNi	HF115F....2(H;Z)(S)4B(G)(F)	5A 400VAC	at 85°C
		8A 250VAC	at 85°C
	HF115F....1H(S)(1;2)B(G)(F)	12A 250VAC	at 85°C
	HF115F....1Z(S)(1;2)B(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3B(G)(F)	16A 250VAC	at 85°C
		12A 250VAC	at 85°C
		9A 250VAC COS $\phi$ =0.4	at 85°C
	HF115F....1Z(S)3B(G)(F)	16A 250VAC (NO only)	at 85°C
		12A 250VAC	at 85°C
		9A 250VAC COS $\phi$ =0.4 (NO only)	at 70°C
10(4)A 250VAC (NO only)		at 65°C	
	12(2)A 250VAC (NO only)	at 65°C	
AgSnO <sub>2</sub>	HF115F....2(H;Z)(S)4A(G)(F)	8A 250VAC	at 85°C
	HF115F....1(H;Z)(S)(1;2)A(G)(F)	12A 250VAC	at 85°C
	HF115F....1H(S)3A(G)(F)	16A 250VAC	at 85°C
		9A 250VAC COS $\phi$ =0.4	at 70°C
	HF115F....1Z(S)3B(G)(F)	16A 250VAC	at 85°C
		9A 250VAC COS $\phi$ =0.4 (NO only)	at 70°C

### UL&CUL

Version 1 or 2 (AgCdO)	12A 277VAC	Version 3 (AgSnO <sub>2</sub> )	16A 277 VAC
	1/2HP 250VAC		1/3HP 125VAC
	1/3HP 125VAC		1/2HP 250VAC
Version 1 or 2 (AgSnO <sub>2</sub> )	12A/ 277VAC	Version 3 (AgNi)	B300
	B300		R300
	R300		16A 277VAC
Version 1 or 2 (AgNi)	12A 277VAC		5FLA, 30LRA 250VAC
Version 3 (AgCdO)	16A 277 VAC	Version 4 (AgCdO)	10A 250VAC
	9A 250VAC at 105°C		8A 277VAC
	1HP 250VAC		1/2HP 250VAC
	1/2HP 125VAC		1/4HP 125VAC
	TV-5 125VAC		
		Version 4 (AgSnO <sub>2</sub> )	8A 277VAC
		Version 4 (AgNi)	8A 277VAC

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

## ORDERING INFORMATION

Type	HF115F / 012 -1H S 1 A F (XXX)					
Coil voltage	5, 6, 9, 12, 18, 24, 48, 60, 110VDC					
Contact arrangement	1H: 1 Form A 2H: 2 Form A		1D: 1 Form B 2D: 2 Form B		1Z: 1 Form C 2Z: 2 Form C	
Construction <sup>1)</sup>	S: Wash tight		Nil: Flux proofed			
Version	1: 3.5mm 1 pole 12A 3: 5.0mm 1 pole 16A		2: 5.0mm 1 pole 12A 4: 5.0mm 2 pole 8A			
Contact material <sup>2)</sup>	A: AgSnO <sub>2</sub> AG: AgSnO <sub>2</sub> + Au plated		B: AgNi		Nil: AgCdO G: AgCdO+ Au plated BG: AgNi+ Au plated	
Insulation standard	F: Class F		Nil: Class B			
Customer special code	e.g. (335) stands for product in accordance to IEC 60335-1 (GWT), for 1 pole type (253) stands for Reflow soldering version					

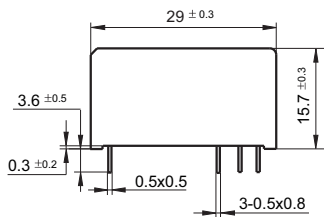
**Notes:** 1) We recommend flux proofed types for a clean environment (free from contaminations like H<sub>2</sub>S, SO<sub>2</sub>, NO<sub>2</sub>, dust, etc.). We suggest to choose wash tight types and validate it in real application for an unclean environment (with contaminations like H<sub>2</sub>S, 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.  
2) For gold plated type, the min. switching current and min. switching voltage is 100mA 5VDC.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

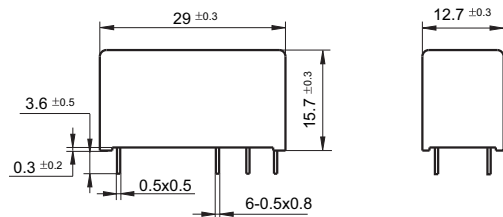
Unit: mm

### Outline Dimensions

3.5mm Pinning (HF115F/ □□□ -□□ -□ -1 -□□ )



5mm Pinning (HF115F/ □□□ -□□ -□ -2/3/4 -□□ )

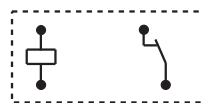


### Wiring Diagram (Bottom view)

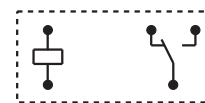
3.5/5mm Pinning, 1 Pole, 12A, HF115F/ □□□ -□□ -□ -1/2-□□



1 Form A

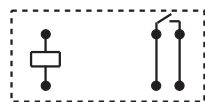


1 Form B



1 Form C

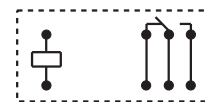
5mm Pinning, 1 Pole, 16A, HF115F/ □□□ -□□ -□ -3-□□



1 Form A

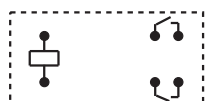


1 Form B

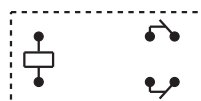


1 Form C

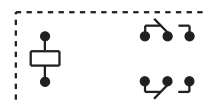
5mm Pinning, 2 Pole, 8A, HF115F/ □□□ -□□ -□ -4-□□



2 Form A

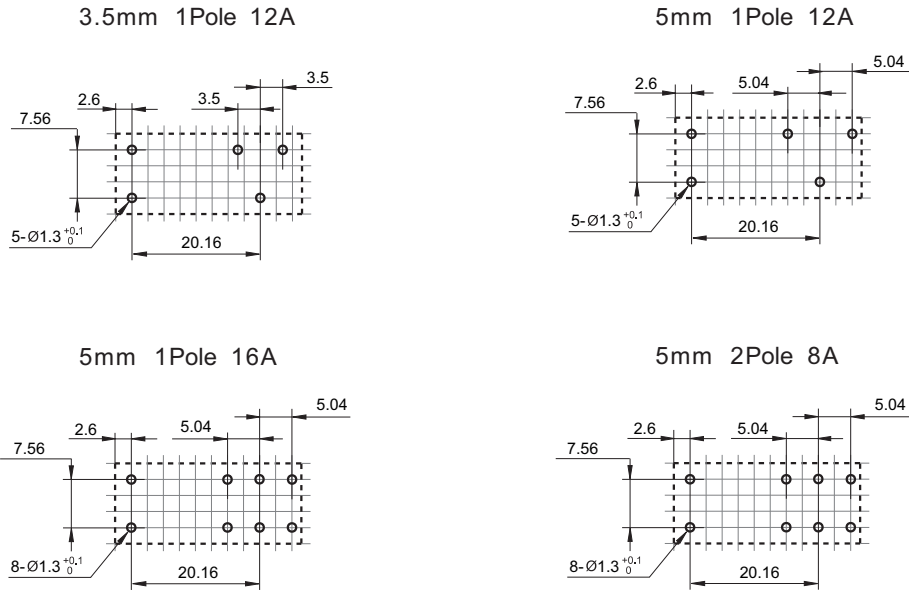


2 Form B



2 Form C

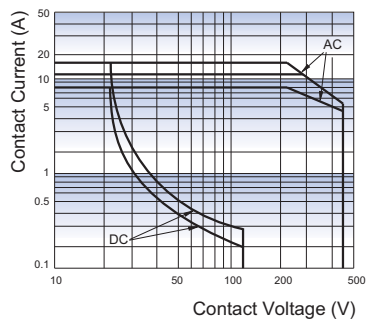
PCB Layout (Bottom view)



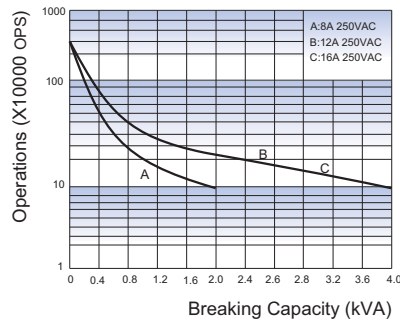
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension  $\leq 1\text{mm}$ , tolerance should be  $\pm 0.2\text{mm}$ ; outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , tolerance should be  $\pm 0.3\text{mm}$ ; outline dimension  $> 5\text{mm}$ , tolerance should be  $\pm 0.4\text{mm}$ .  
 2) The tolerance without indicating for PCB layout is always  $\pm 0.1\text{mm}$ .  
 3) The width of the gridding is 2.52mm.

**CHARACTERISTIC CURVES**

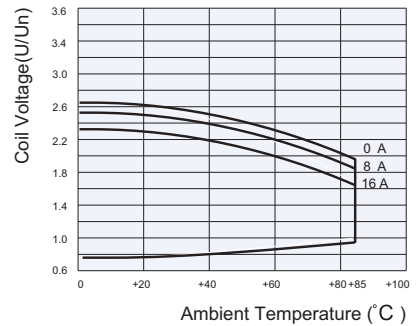
MAXIMUM SWITCHING POWER (23°C )



ENDURANCE CURVE



COIL OPERATING RANGE (DC)



**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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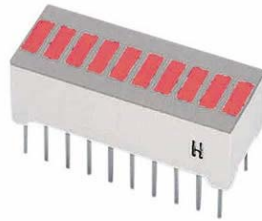


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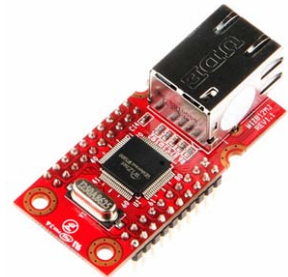
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LCD+Keyboard Shield



10-Segments LED Bar Display



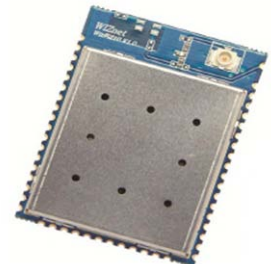
Ethernet Module



Arduino Uno



MicroSD Breakout Board



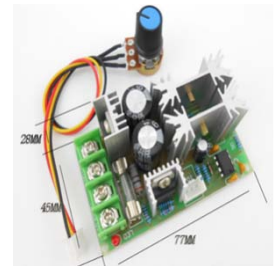
WiFi Module



20x4 LCD Display Module



Stepper Motor Driver



PWM Motor Speed Controller



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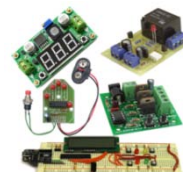
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