

Datasheet

**SPST-NO PCB Mount Non-Latching Relay, 12V dc**

RS Stock number [476-703](#)

Dimensions: mm

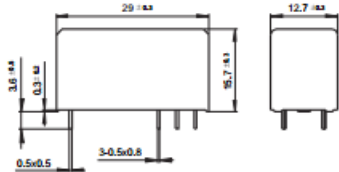
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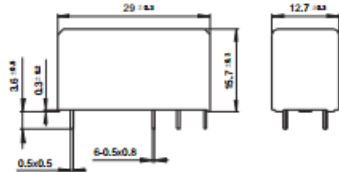


Outline Dimensions

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



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



Wiring Diagram (Bottom view)

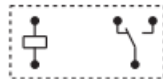
3.5/5mm Pinning, 1 Pole, 12A, HF115F/ □□□ -1□ -□ -1/2-□□



1 Form A



1 Form B



1 Form C

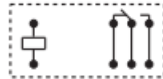
5mm Pinning, 1 Pole, 16A, HF115F/ □□□ -1□ -□ -3-□□



1 Form A

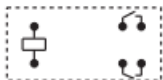


1 Form B

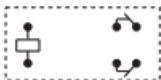


1 Form C

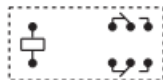
5mm Pinning, 2 Pole, 8A, HF115F/ □□□ -2□ -□ -4-□□



2 Form A

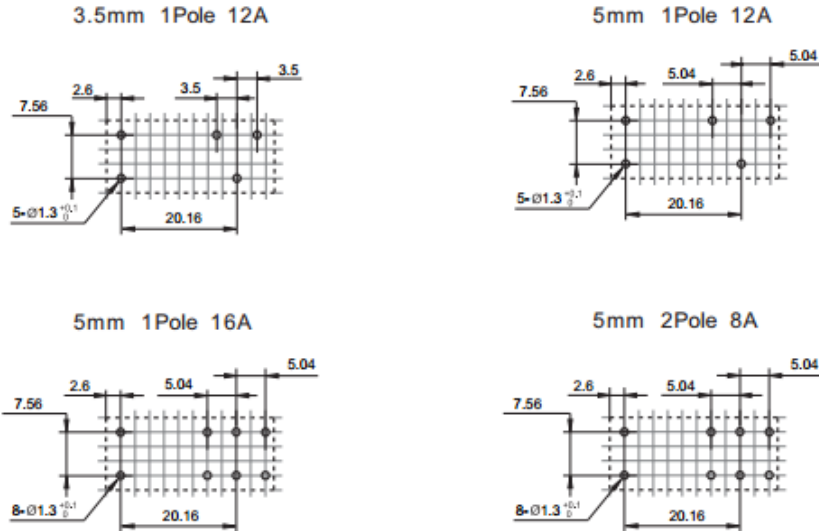


2 Form B



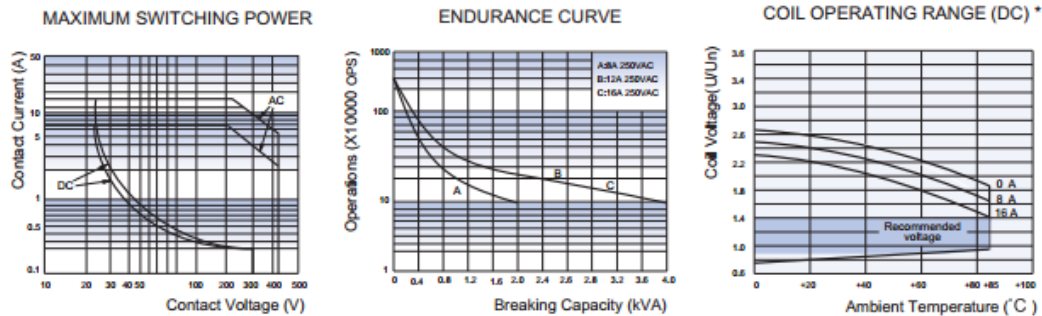
2 Form C

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



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.

### Features

- Low height- 15.7mm
- 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
- Plastic sealed and flux proofed types available
- UL insulation system: Class F available
- Environmental friendly product RoHS compliant



## Contact Data

Contact arrangement: 1A, 1B, 1C / 2A, 2B, 2C  
Contact resistance: 100m  $\Omega$  max. (at 1A 6VDC)  
Contact rating (Res.load) 12A/16A 250VAC / 8A 250VAC  
Max. switching voltage: 440VAC / 300VDC  
Max. switching current: 12A/ 16A / 8A  
Max. switching power: 3000VA ,4000VA / 2000VA  
Mechanical endurance: 1x10<sup>(7)</sup> OPS  
Electrical endurance: 1x10<sup>(5)</sup> OPS

## Characteristics

Insulation resistance: 1000M  $\Omega$  (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/ 50us)  
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  
Destructive 980m/s  
Vibration resistance: 10Hz to 150Hz 10g/5g  
Humidity: 5% to 85% RH  
Ambient temperature: -40degC to 85deg  
Termination: PBC  
Unit weight: Approx. 13.5g  
Construction: Plastic sealed  
Flux Proof

## Coil

Coil power: Approx. 400mW



Nominal Voltage VDC	Pick-Up voltage VDC max.	Drop- out voltage VDC min.	Max allowable voltage VDC.	Coil Resistance
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.

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)3A(G)(F)	16A 250VAC (NO only)	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	Version 4 (AgCdO)	5FLA, 30LRA 250VAC
	16A 277 VAC		10A 250VAC
Version 3 (AgCdO)	9A 250VAC at 105°C	Version 4 (AgSnO <sub>2</sub> )	8A 277VAC
	1HP 250VAC		1/2HP 250VAC
	1/2HP 125VAC		1/4HP 125VAC
	TV-5 125VAC	Version 4 (AgNi)	8A 277VAC
			8A 277VAC

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

**CONTACT DATA**

Contact arrangement	1A, 1B, 1C	2A, 2B, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)	
Contact material	See ordering info.	
Contact rating (Res. load)	12A/16A 250VAC	8A 250VAC
Max. switching voltage	440VAC / 300VDC	
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 / 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 150Hz 10g/5g	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Termination	PCB	
Unit weight	Approx. 13.5g	
Construction	Plastic sealed, Flux proofed	

- Notes:** 1) The data shown above are initial values.  
 2) \* Index is not in relay length direction.  
 3) UL insulation system: Class F, Class B.

**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	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.

**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)3A(G)(F)	16A 250VAC (NO only)	at 85°C
		9A 250VAC $\cos\phi=0.4$ (NO only)	at 70°C

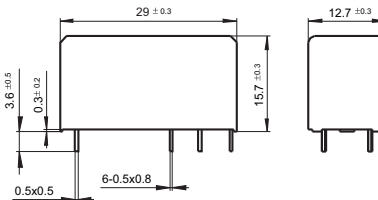
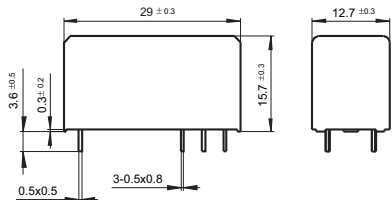
**UL/CUL**

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	Version 4 (AgCdO)	5FLA, 30LRA 250VAC
	16A 277 VAC		10A 250VAC
Version 3 (AgCdO)	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.

3.5mm Pinning (HF115F/ □□□-□□-□-1-□□)

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



(Bottom view)

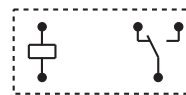
3.5/5mm Pinning, 1 Pole, 12A, HF115F/ □□□-1□-□-1/2-□□



1 Form A

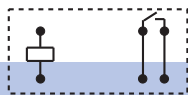


1 Form B

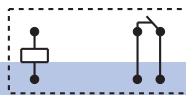


1 Form C

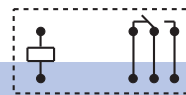
5mm Pinning, 1 Pole, 16A, HF115F/ □□□-1□-□-3-□□



1 Form A



1 Form B



1 Form C

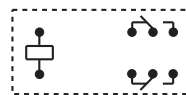
5mm Pinning, 2 Pole, 8A, HF115F/ □□□-2□-□-4-□□



2 Form A



2 Form B



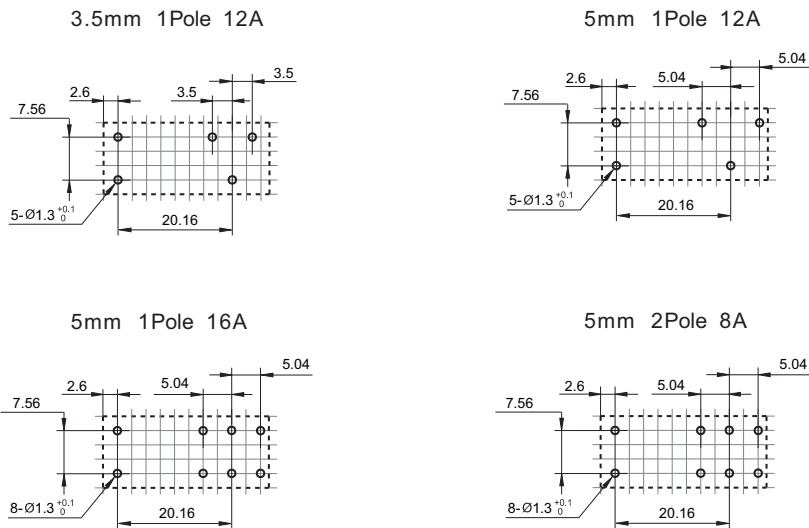
2 Form C



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

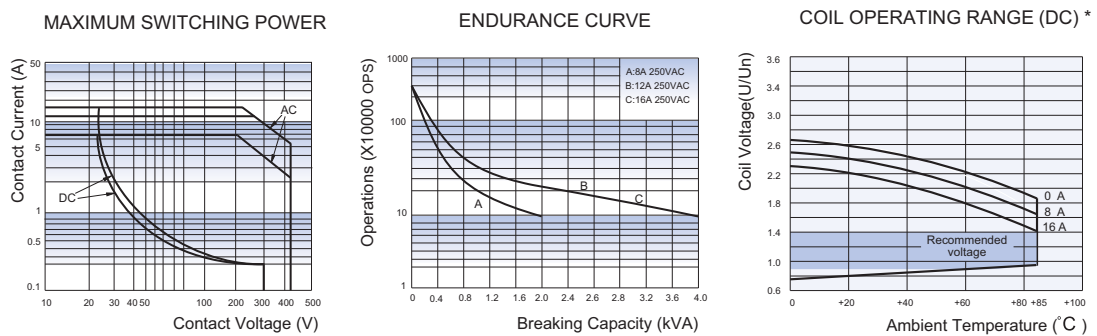
Unit: mm

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



**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.