

# HF140FF (NEW)

# MINIATURE INTERMEDIATE POWER RELAY



File No.:E134517



File No.:R50149131



File No.:CQC10002046173



### Features

- 12A switching capability
- 5kV dielectric strength  
(between coil and contacts)
- 1.5mm/2.0mm contact gap available
- Plastic sealed and flux proofed types available
- Sockets available
- UL insulation system:Class F

RoHS compliant

### CONTACT DATA

Contact arrangement	2A, 2C
Contact resistance	100mΩ max.(at 1A 6VDC)
Contact material	AgSnO <sub>2</sub>
Contact rating (Res. load)	12A/10A 250VAC, 8A 30VDC
Max. switching voltage	250VAC / 30VDC
Max. switching current	12A
Max. switching power	3000VA / 360W
Mechanical endurance	W(456) type: 3 x 10 <sup>5</sup> OPS W type: 5 x 10 <sup>5</sup> OPS
Electrical endurance	NO 3 x 10 <sup>4</sup> OPS, NC 1 x 10 <sup>4</sup> OPS (12A 250VAC, 1s on 9s off) 3 x 10 <sup>4</sup> ops (8A 30VDC, 1s on 9s off)

Notes: 1) The data shown above are initial values.  
2) For plastic sealed type, the venting-hole should be excised in electrical endurance test.

### CHARACTERISTICS

Insulation resistance	1000MΩ (at 500VDC)	
Dielectric strength	Between coil & contacts	5000VAC 1min
	Between contacts sets	3000VAC 1min
	Between open contacts	2500VAC 1min
Surge voltage (between coil & contacts)	10kV (1.2/50 μs)	
Operate time (at nomi. volt.)	20ms max.	
Release time (at nomi. volt.)	5ms max.	
Humidity	5% to 85% RH	
Ambient temperature	-40°C to 85°C	
Shock resistance	Functional	98m/s <sup>2</sup>
	Destructive	980m/s <sup>2</sup>
Vibration resistance	10Hz to 55Hz 1.5mmDA	
Termination	PCB	
Unit weight	Approx. 19g	
Construction	Plastic sealed, Flux proofed	

Notes: 1) The data shown above are initial values.  
2) Z type product Operate time ≤ 20ms.

### SAFETY APPROVAL RATINGS

UL	12A 250VAC AC Resistive load 85°C 1/3HP 125VAC NO/NC,40°C 3/4HP 250/240VAC,NO,40°C TV-5, 125VAC,40°C
TÜV	12A 250VAC AC Resistive load 85°C
CQC	12A 250VAC AC Resistive load 85°C

Notes: Only typical loads are listed above. Other load specifications can be available upon request.

### COIL

Coil power	W type(1.5mm): Approx. 0.8W W type(2.0mm): Approx. 1.4W
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HONGFA RELAY

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

2023 Rev. 1.01

## COIL DATA

at 23°C

### W Type (1.5mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	Coil Resistance $\Omega$
3	2.25	0.3	3.3	11.3 x (1±10%)
5	3.75	0.5	5.5	31 x (1±10%)
6	4.5	0.6	6.6	45 x (1±10%)
9	6.75	0.9	9.9	101 x (1±10%)
12	9	1.2	13.2	180 x (1±10%)
15	11.25	1.5	16.5	280 x (1±10%)
18	13.5	1.8	19.8	405 x (1±10%)
24	18	2.4	26.4	720 x (1±10%)
36	27	3.6	39.6	1620x (1±10%)
48	36	4.8	52.8	2880 x (1±10%)
60	45	6	66.0	4500 x (1±10%)
110	82.5	11	121.0	15100 x (1±10%)

### W Type (2.0mm)

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Allowable Voltage VDC	$\Omega$
3	2.25	0.3	3.3	6x (1±10%)
5	3.75	0.5	5.5	18 x (1±10%)
6	4.5	0.6	6.6	26 x (1±10%)
9	6.75	0.9	9.9	58 x (1±10%)
12	9	1.2	13.2	102 x (1±10%)
15	11.25	1.5	16.5	160 x (1±10%)
18	13.5	1.8	19.8	230 x (1±10%)
24	18	2.4	26.4	410 x (1±10%)
36	27	3.6	39.6	925x (1±10%)
48	36	4.8	52.8	1650 x (1±10%)
60	45	6	66.0	2570 x (1±10%)
110	82.5	11	121.0	8068 x (1±10%)

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

2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

3) In order to meet the stated product performance, please apply rated voltage to coil.

4) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

5) For the CO version whose contact gap is 1.5 mm/2.0mm, the operation voltage  $\leq 85\%$  of rated voltage, the coil resistance tolerance is (1±15%).

## ORDERING INFORMATION

Type		HF140FF /		012	-2H	S	W	T	G	F	(XXX)
Coil voltage	3, 5, 6, 9, 12, 15, 18, 24, 36, 48, 60, 110VDC										
Contact arrangement	2H: 2 Form A		2Z: 2 Form C								
Construction	S: Plastic sealed Nil: Flux proofed										
Contact Gap	W: Large contact gap										
Contact material	T: AgSnO <sub>2</sub>										
Contact plating	G: Gold plated Nil: No gold plated										
Insulation standard	F: Class F		Nil: Class F								
Special code	XXX: Customer special requirement					Nil: Standard					

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).

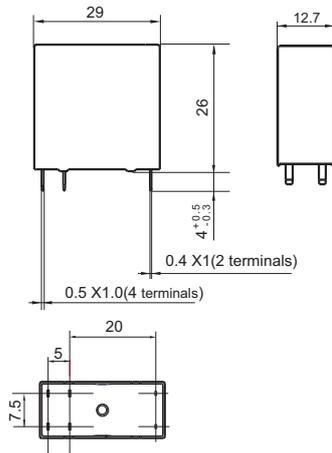
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

3) There are two specifications to W type: 1.5mm contact gap and 2.0mm contact gap. The default W type is 1.5mm. So please add the special code "(456)" when releasing order, if 2.0mm contact gap is required.

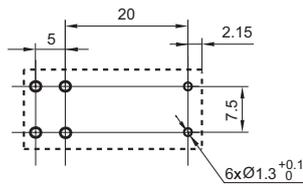
4) The customer special requirement express as special code after evaluating by Hongfa. e.g.(456) means contact gap can reach 2.0mm.

Outline Dimensions

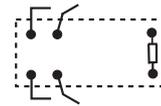
2 Form A



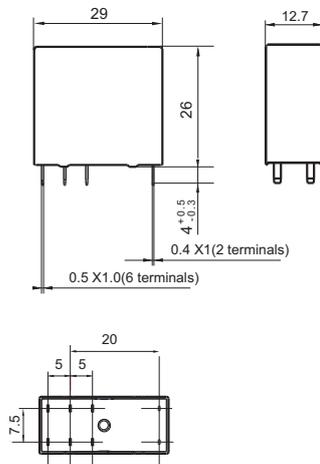
PCB Layout (Bottom view)



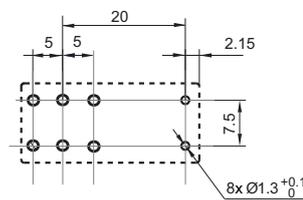
Wiring Diagram (Bottom view)



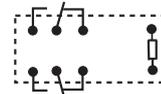
2 Form C



PCB Layout (Bottom view)



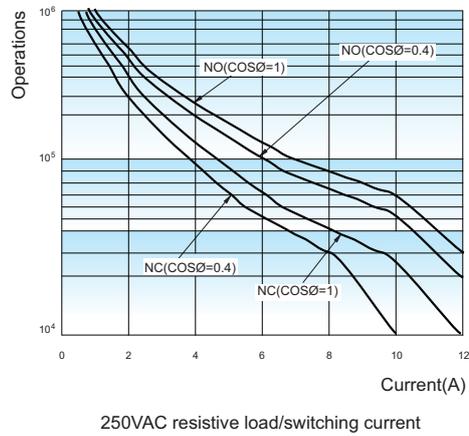
Wiring Diagram (Bottom view)



- Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.
- 2) 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 2.5mm.

## CHARACTERISTIC CURVES

### ENDURANCE CURVE



#### 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.