

HF7FD

SUBMINIATURE HIGH POWER RELAY



File No.:E134517



File No.: 40008374



File No.:CQC16002153649



Features

- 16A switching capability
- TV-8 load capability
- 2kV dielectric strength (between coil and contacts)
- Ambient temperature meets 105°C
- Product in accordance to IEC 60335-1 available
- Double pins type available
- 1 Form A and 1 Form C configurations
- Plastic sealed and flux proofed types available
- UL insulation system:Class F

CONTACT DATA

Contact arrangement	1H	1Z
Contact resistance ¹⁾	$\leq 100\text{m}\Omega$ (1A 24VDC)	
Contact material	AgSnO ₂	
Contact rating (Res.load)	16A 250VAC 12A 250VAC 10A 250VAC	NO: 16A 250VAC 12A 250VAC 7A 250VAC/28VDC NC: 7A 250VAC/28VDC
Max. switching voltage	250VAC / 28VDC	
Max. switching current	16A	16A
Max. switching power	4000VA / 280W	4000VA / 280W
Mechanical endurance	1 x 10 ⁷ OPS	
Electrical endurance (See approval reports for more details)	HF7FD	1H 85°C 16A 250VAC 5 x 10 ³ OPS Resistive load, 1s on 9s off 85°C 12A 250VAC 1 x 10 ³ OPS Resistive load, 1s on 9s off
		1Z NO:85°C 16A 250VAC 5 x 10 ³ OPS Resistive load, 1s on 9s off 85°C 12A 250VAC 1 x 10 ³ OPS Resistive load, 1s on 9s off NC:85°C 7A 277VAC 5 x 10 ³ OPS Resistive load, 5s on 5s off 85°C 10A 250VAC 1 x 10 ³ OPS Resistive load, 1s on 9s off
	HF7FD-T	1H 105°C 16A 250VAC 1 x 10 ³ OPS Resistive load, 1s on 9s off 85°C 16A 250VAC 5 x 10 ³ OPS Resistive load, 1s on 9s off
		1Z NO:105°C 10A 250VAC 1 x 10 ³ OPS Resistive load, 1s on 9s off 85°C 16A 250VAC 5 x 10 ³ OPS Resistive load, 1s on 9s off

Notes: 1) The data shown above are initial values.
2) Open the air permeability hole when testing plastic encapsulated products.

CHARACTERISTICS

Insulation resistance	100M Ω (at 500VDC)
Dielectric strength	Between coil & contacts 2000VAC 1min
	Between open contacts 750VAC 1min
Operate time (at nomi. volt.)	10ms max.
Release time (at nomi. volt.)	5ms max.
Humidity	5% to 85% RH
Shock resistance	Functional 98m/s ²
	Destructive 980m/s ²
Ambient temperature	HF7FD: -40°C to 85°C HF7FD-T: -40°C to 105°C
Vibration resistance	10Hz to 55Hz 1.5mm DA
Termination	PCB
Unit weight	Approx. 9.5g
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) UL insulation system: Class F, Class B.



HONGFA RELAY

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

2019 Rev. 1.00

COIL

Coil power Approx. 360mW

COIL DATA

at 23°C

Nominal Voltage VDC	Pick-up Voltage VDC max. ¹⁾	Drop-out Voltage VDC min. ¹⁾	Max. Voltage VDC ²⁾	Coil Resistance Ω
3	≤ 2.25	≥ 0.3	3.9	25 x (1 \pm 10%)
5	≤ 3.75	≥ 0.5	6.5	70 x (1 \pm 10%)
6	≤ 4.50	≥ 0.6	7.8	100 x (1 \pm 10%)
9	≤ 6.75	≥ 0.9	11.7	225 x (1 \pm 10%)
12	≤ 9.00	≥ 1.2	15.6	400 x (1 \pm 10%)
18	≤ 13.5	≥ 1.8	23.4	900 x (1 \pm 10%)
24	≤ 18.0	≥ 2.4	31.2	1600 x (1 \pm 15%)
48	≤ 36.0	≥ 4.8	62.4	6400 x (1 \pm 15%)

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.

SAFETY APPROVAL RATINGS

UL/CUL	HF7FD	1 Form A	16A 250VAC(85°C) 12A 250VAC(85°C, Double pin) 12A 250VAC(85°C, Single pin) 12A 125VAC(85°C) 10A 277VAC/250VAC(85°C) 10A 28VDC(85°C)
		1 Form C	NO:16A 250VAC(85°C) 12A 250VAC(85°C) 12A 125VAC(85°C) 10A 277VAC/250VAC(85°C) 10A 28VDC(85°C) 7A 277VAC(85°C) 7A 28VDC(85°C) NC:12A 125VAC(85°C) 10A 250VAC(85°C) 7A 277VAC(85°C) 7A 28VDC(85°C)
	HF7FD-T	1 Form A	16A 250VAC(85°C) 10A 250VAC(105°C) 8A 250VAC(105°C) 80W 120VAC Tungsten(105°C) 1/2HP 125VAC(40°C) 1/2HP 250VAC(40°C)
		1 Form C	NO:16A 250VAC(85°C) 10A 250VAC(105°C) 8A 250VAC(105°C) 80W 120VAC Tungsten(105°C) 1/2HP 125VAC(40°C) 1/2HP 250VAC(40°C) NC:12A 125VAC(85°C) 10A 277VAC/250VAC(85°C) 7A 277VAC(85°C)
VDE	HF7FD	1 Form A	10A 250VAC(85°C) 12A 250VAC(70°C)
		1 Form C	CO:10A 250VAC(85°C) 7A 250VAC(85°C)
	HF7FD-T	1 Form C	12A 250VAC(105°C)

Notes: 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

ORDERING INFORMATION

HF7FD / 012-1H P S T F (XXX)

Type HF7FD: 85°C, HF7FD-T: 105°C

Coil voltage 3, 5, 6, 9, 12, 18, 24, 48VDC

Contact arrangement 1H: 1 Form A 1Z: 1 Form C

Pin version P: Double pins type Nil: Single pin type

Construction¹⁾ S: Plastic sealed Nil: Flux proofed

Contact material T: AgSnO₂

Insulation standard F: Class F Nil: Class B

Special code¹⁾ XXX: Customer special requirement Nil: Standard

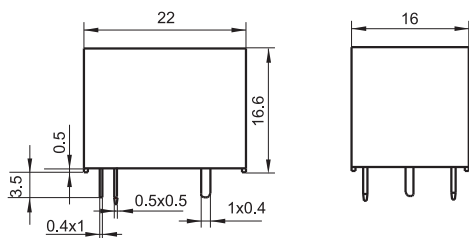
- Notes:** 1) Under the ambience with dangerous gas like H₂S, SO₂ or NO₂, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) If plastic sealed type is selected for cleaning purpose, the vent-hole cover should be excised after cleaning.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

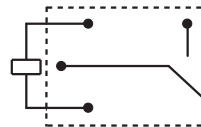
Unit: mm

Outline Dimensions

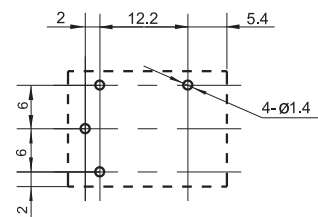
1 Form A (Single pin type)



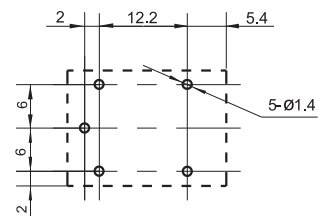
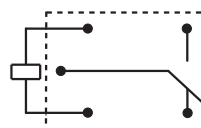
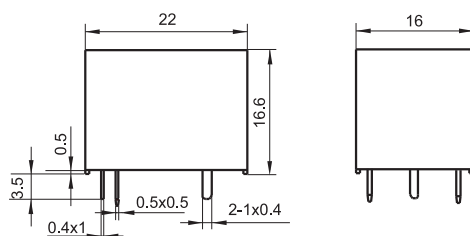
Wiring Diagram
(Bottom view)



PCB Layout
(Bottom View)



1 Form C (Single pin type)



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

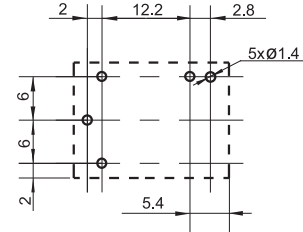
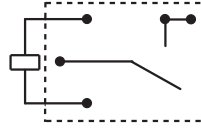
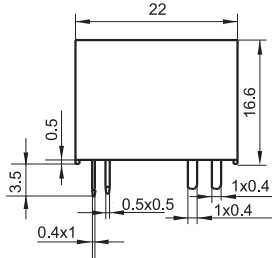
Unit: mm

Outline Dimensions

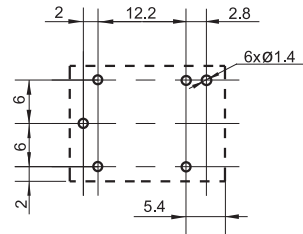
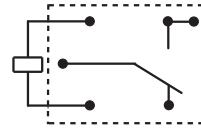
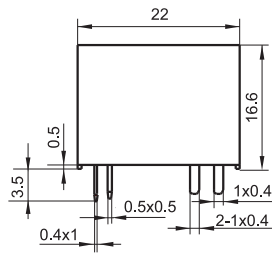
Wiring Diagram (Bottom View)

PCB Layout (Bottom view)

1 Form A (Double pins type)



1 Form C (Double pins type)

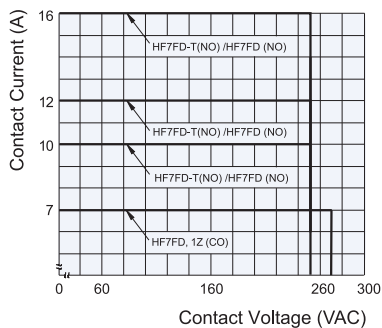


Remark:1) * The additional tin top is max. 1mm.

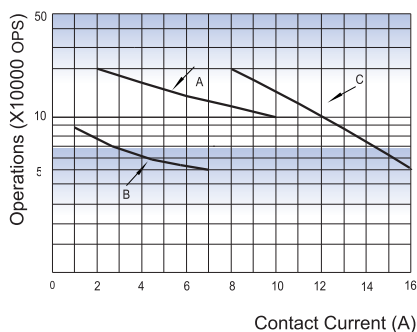
- 2) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.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

CHARACTERISTIC CURVES

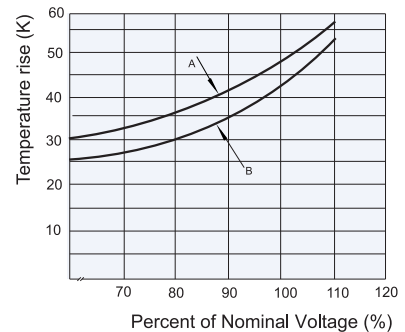
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



Test conditions:

Curve A: NO, Resistive load, 85°C,
flux proofed, 10A 277VAC, 1s on 9s off
Curve B: CO, Resistive load, 85°C,
flux proofed, 7A 277VAC, 5s on 5s off
Curve C: NO, Resistive load, Room temp.,
flux proofed, 16A 250VAC, 1s on 9s off

Test conditions::

A: 16A at 85°C.
B: 10A at 85°C.
Mounting distance: 25mm

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.