HF7FD SUBMINIATURE HIGH POWER RELAY

File No.:E134517

File No.: 40008374

File No.:CQC16002153649

Features

- 20A 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
- UL insulation system:Class F

CONTACT DATA

Contact arrangement	1A		1C
Contact resistance 1)	≤100mΩ (1A 24VDC)		
Contact material	$AgSnO_2$		
Contact rating (Res.load)	20A 125VAC 16A 250VAC 12A 250VAC 10A 250VAC		NO: 16A 250VAC 12A 250VAC 20A 125VAC NC: 7A 250VAC/28VDC 10A 250VAC
Max. switching voltage	277VAC / 28VDC		
Max. switching current	20A		20A
Max. switching power	4000VA / 280W		4000VA /280W
Mechanical endurance	1 x 10^7OPS		
Electrical endurance (See approval reports for more details)	HF7FD	1A	85°C 16A 250VAC 5 x 10^4OPS Resistive load, 1s on 9s off 85°C 12A 250VAC 1 x 10^5OPS Resistive load, 1s on 9s off
		1C	NO:85°C 16A 250VAC 5 x 10^4OPS Resistive load, 1s on 9s off 85°C 12A 250VAC 1 x 10^5OPS Resistive load, 1s on 9s off NC: 85°C 7A 277VAC 5 x 10^4OPS Resistive load, 5s on 5s off Room temp 10A 250VAC 5 x 10^4OPS Resistive load, 1s on 9s off
	HF7FD-T	1A	105°C 12A 250VAC 1 x 10^5OPS Resistive load, 1s on 9s off 85°C 16A 250VAC 5 x 10^4OPS Resistive load, 1s on 9s off
		1C	NO:105°C 12A 250VAC 1x 10^5OPS Resistive load, 1s on 9s off 85°C 16A 250VAC 5x 10^4OPS 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		100MΩ (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/s²
	Destructive	980m/s²
Ambient temperature		-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) If the ambient temperature is higher than 85 ℃, please contact Hongfa.

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±10%)
5	≤3.75	≥0.5	6.5	70 x (1±10%)
6	≤4.50	≥0.6	7.8	100 x (1±10%)
9	≤6.75	≥0.9	11.7	225 x (1±10%)
12	≤9.00	≥1.2	15.6	400 x (1±10%)
18	≤13.5	≥1.8	23.4	900 x (1±10%)
24	≤18.0	≥2.4	31.2	1600 x (1±15%)
48	≤36.0	≥4.8	62.4	6400 x (1±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) 20A 125VAC(85°C) 16A 250VAC/125VAC General use(85°C) 1HP 250VAC(40°C) 10A 277VAC/250VAC(85°C) 10A 28VDC(85°C) 10A 250VAC(105°C) TV-8 120VAC(40°C)
		1 Form C	NO:16A 250VAC (85°C) 12A 250VAC (85°C) 10A 277VAC/250VAC (85°C) 10A 250VAC (105°C) 10A 28VDC(85°C) 20A 125VAC (85°C) 16A 250VAC/125VAC General use(85°C) 1HP 250VAC(40°C) TV-8 120VAC (40°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) 20A 125VAC(85°C) 16A 250VAC/125VAC General use(85°C) 1HP 250VAC(40°C) 12A 250VAC(105°C) 1/2HP 125VAC(40°C) TV-8 120VAC (40°C)
		1 Form C	NO:16A 250VAC(85°C) 10A 250VAC(105°C) 8A 250VAC(105°C) 20A 125VAC(85°C) 16A 250VAC/125VAC General use(85°C) 1HP 250VAC(40°C) 12A 250VAC(105°C) 1/2HP 125VAC(40°C) TV-8 120VAC(40°C) NC:10A 277VAC/250VAC(85°C) 7A 277VAC(85°C) 12A 277VAC/250VAC/120VAC(105°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: 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**, **HF7FD-T**	
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
Construction[1)]	**S**: Plastic sealed	**Nil**: Flux proofed
Contact material	**T**: $AgSnO_2$	
Insutation standard	**F**: Class F	
Special code[1)]	**XXX:** Customer special requirement	**Nil:** Standard

Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, 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

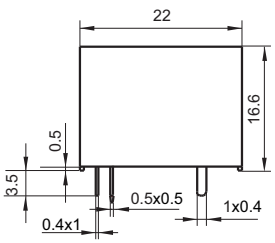
Unit: mm

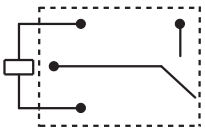
Outline Dimensions

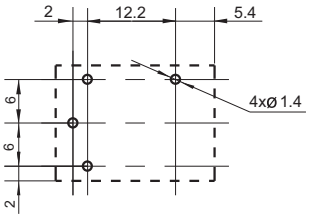
Wiring Diagram
(Bottom view)

PCB Layout
(Bottom View)

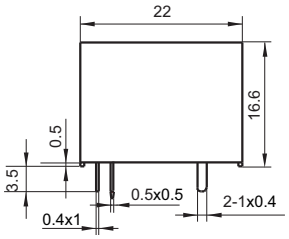
1 Form A (Single pin type)

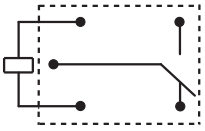


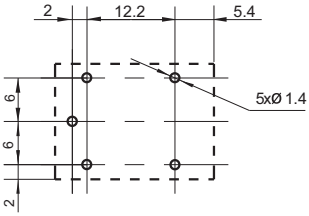




1 Form C (Single pin type)





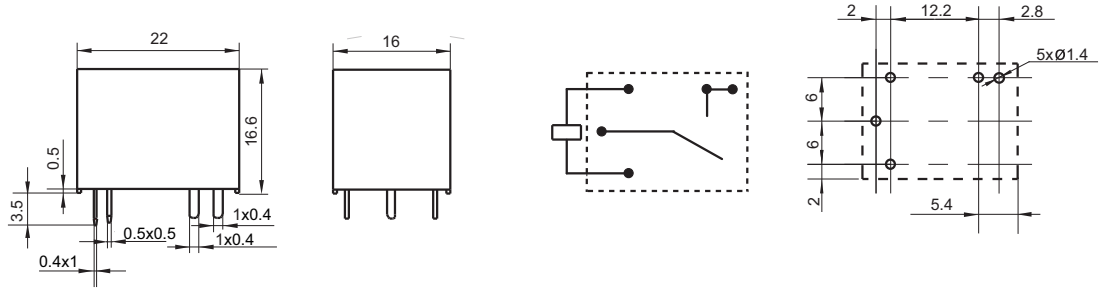


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

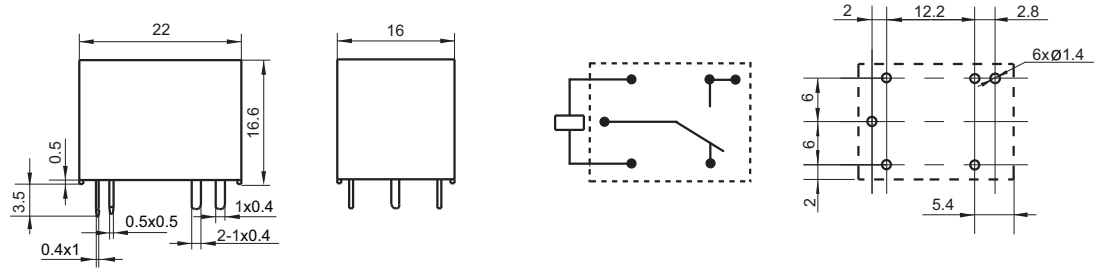
Unit: mm

Outline Dimensions | Wiring Diagram (Bottom View) | PCB Layout (Bottom view)

1 Form A (Double pins type)



1 Form C (Double pins type)



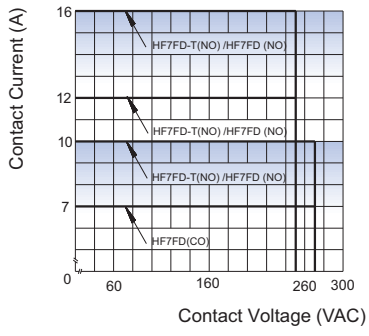
Remark:1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.

2) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

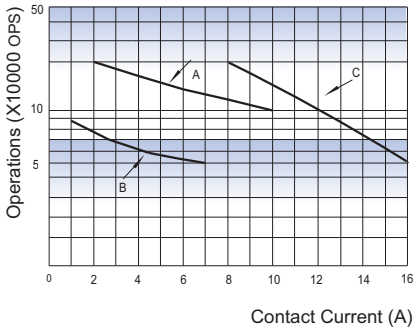
3) The tolerance without indicating for PCB layout is always ±0.1mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



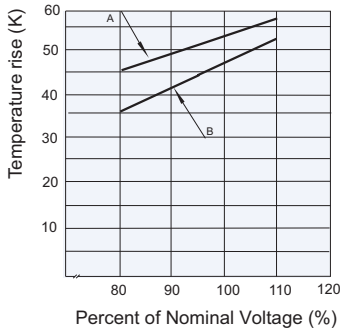
ENDURANCE CURVE



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

COIL TEMPERATURE RISE



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.