HF7FD SUBMINIATURE HIGH POWER RELAY

c UL us
File No.:E134517

VDE
File No.: 40008374

CQC
File No.:CQC09002037921

Features

- 12A switching capability
- Ambient temperature meets 105˚C
- High performance, Low profile
- Product in accordance to IEC 60335-1 available
- 2kV dielectric strength (between coil and contacts)
- UL94, V-0, CTI250 flammability class
- Double pins type available
- 1 Form A and 1 Form C configurations
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (22.0 x 16.0 x 16.4) mm

CONTACT DATA

Contact arrangement	1A		1C
Contact resistance	100mΩ max.(at 1A 24VDC)		
Contact material	$AgSnO_2$, AgCdO		
Contact rating (Res. load)	16A 250VAC 12A 250VAC 10A 250VAC		12A 125VAC NO: 10A 250VAC NC: 7A 250VAC
Max. switching voltage	250VAC / 28VDC		
Max. switching current	16A		10A
Max. switching power	4000VA / 280W		2500VA / 196W
Mechanical endurance	1×10^7OPS		
Electrical endurance (See approval reports for more details)	1A	Flux proofed: 1×10^5OPS Plastic sealed: 5×10^4OPS (10A 277VAC, Resistive load, Room temp, 1s on 9s off)	
	1C	Flux proofed: 5×10^4OPS Plastic sealed: NO: 5×10^4OPS NC: 1×10^4OPS (7A 277VAC, Resistive load, Room temp, 1s on 9s off)	

COIL

Coil power	Approx. 360mW

COIL DATA at 23˚C

Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Max. Voltage VDC *	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: *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

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		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.

SAFETY APPROVAL RATINGS

UL/CUL	1 Form A	HF7FD	12A 250VAC (at 85˚C, $AgSnO_2$, Double pin) 10A 277VAC 10A 28VDC
		HF7FD-T ($AgSnO_2$)	16A 250VAC (at 40˚C) 10A 250VAC (at 105˚C) 8A 250VAC (at 105˚C) 1/2HP 125VAC (at 40˚C) 1/2HP 250VAC (at 40˚C)
	1 Form C		12A 125VAC 7A 277VAC 7A 28VDC
VDE	1 Form A		12A 250VAC ($AgSnO_2$, Double pin) 10A 250VAC
	1 Form C		7A 250VAC

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	G	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				
Construction 1)					**S**: Plastic sealed	**Nil**: Flux proofed			
Contact material						**T**: $AgSnO_2$	**Nil**: AgCdO		
Contact plating							**G**: Gold plated	**Nil**: No gold plated	
Insutation standard								**F**: Class F	**Nil**: Class B
Customer special code									

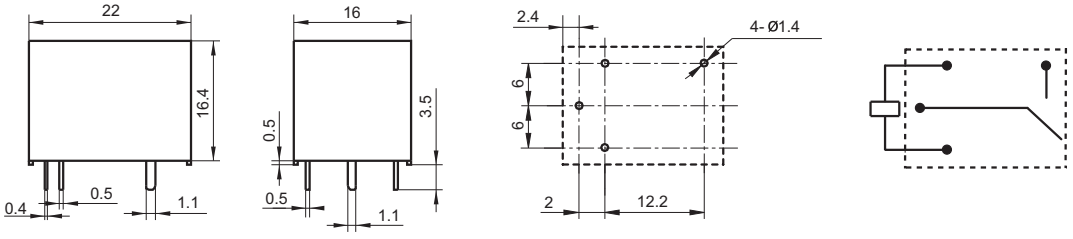
Notes: 1) Under the ambience with dangerous gas like H_2S, SO_2 or NO_2, plastic sealed type is recommended; Please test the relay in real applications. If the ambience allows, flux proofed type is preferentially recommended.
2) Contact is recommended for suitable condition and specifications if water 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

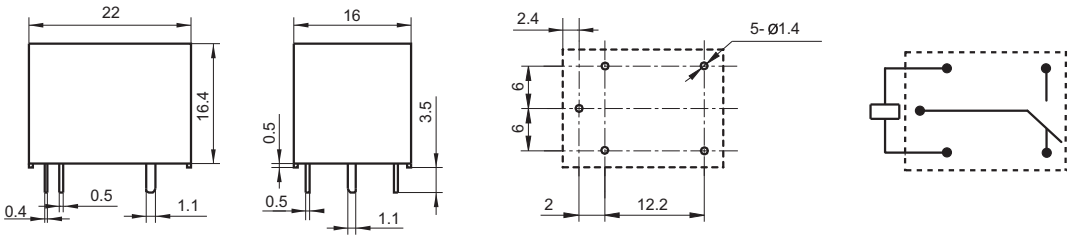
Unit: mm

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

1 Form A (Single pin type)



1 Form C (Single pin type)

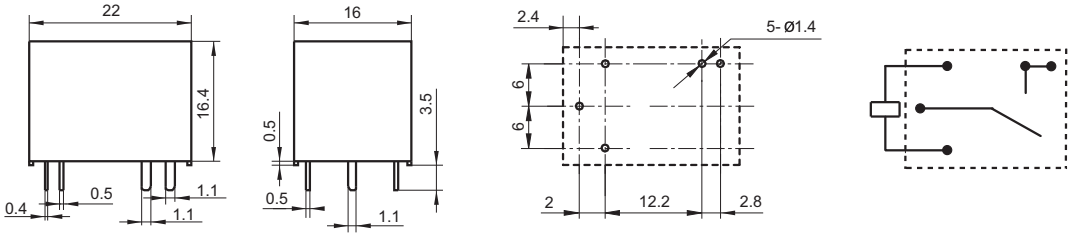


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

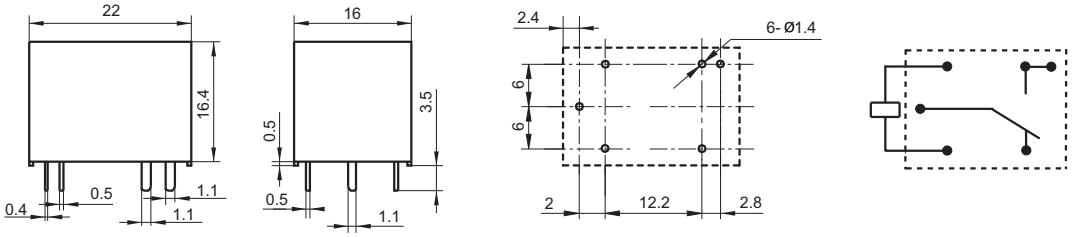
Unit: mm

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

1 Form A (Double pins type)



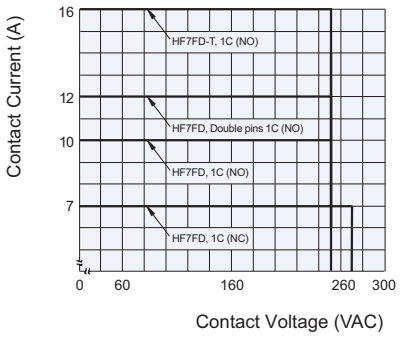
1 Form C (Double pins type)



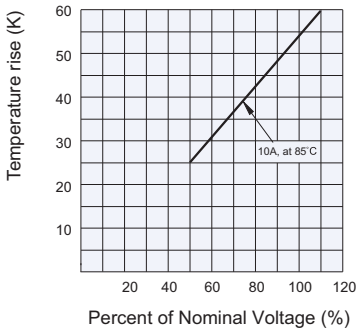
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) Tin-dipped joint is tolerable after terminal tin-dipping as long as the termial length including the joint is less than 4.0mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



COIL TEMPERATURE RISE



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.