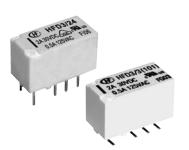
HFD3

SUBMINIATURE SIGNAL RELAY





File No.:40018867



Features

- Surge withstand voltage up to 2500VAC, meets FCC Part 68 and Telecordia
- Meets EN60950 / EN41003
- SMT and DIP types available
- Bifurcated contacts
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (15.0 x 7.5 x 9.0) mm

CONTACT DATA			
Contact arrangement	2C		
Contact resistance	50mΩ max.(at 0.1A 6VDC)		
Contact material	AgNi + Au plated		
Contact rating	2A 30VDC		
(Res. load)	0.5A 125VAC		
Max. switching current	2A		
Max. switching voltage	250VAC / 220VDC		
Max. switching power	62.5VA / 60W		
Min. applicable load 1)	10mV 10μA		
Mechanical endurance	1 x 10 ⁸ ops		
	5 x 10⁵ops (at 1A 30VDC)		
Electrical endurance	1 x 10 ⁵ ops (at 2A 30VDC)		
	1 x 10 ⁵ ops (at 0.5A 125VAC)		

Notes: 1) Min. applicable load is reference value. Please perform the confirmation test with the actual load before production since reference value may change according to switching frequencies, environmental conditions and expected contact resistance and reliability.

CHAR	ACTERISTICS			
Insulation	resistance	1000MΩ (at 500VDC		
	Between coil & contacts	2000VAC 1min ¹⁾		
Dielectric strength	Between open contacts	1000VAC 1min		
Ü	Between contact sets	1500VAC 1mir		
Surge wit	nstand voltage			
	open contacts (10/160µs) coil & contacts (2/10µs)	1500VAC (FCC part 68) 2500VAC (Telecordia)		
Operate t	me (Set time)	4ms max.		
Release t	ime (Reset time)	4ms max.		
Ambient t	emperature	-40°C to 85°C		
Humidity		5% to 85% RH		
Vibration resistance		10Hz to 55Hz 3.3mm DA		
Shock	Functional	735m/s ²		
resistance	Destructive	980m/s		
Termination	on	DIP, SMT		
Unit weight		Approx. 2g		
Construct	ion	Plastic sealed		

Notes: 1) If the Dielectric strength between coil & contacts requiring 3000VAC 1min for single side stable and 1 coil latching version, please mark Customer special code as (131), or order HFD3-V.

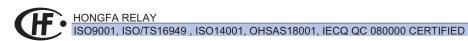
- 2) The data shown above are initial values.
- 3) UL insulation system: Class A

UL/CUL	0.3A 110VDC
	2A 30VDC
	0.5A 125VAC
VDE	2A 30VDC
	0.5A 125VAC

SAFETY APPROVAL RATINGS

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

COIL								
	Single side stable	Approx. 140mW						
Coil power	1 coil latching	Approx. 100mW						
	2 coils latching	Approx. 200mW						
Temperature rise		50K max.						



COIL DATA at 23°C

Single side stable

Coil Code	Nominal Voltage VDC	Pick-up Voltage VDC max.	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW approx.	Max. Allowable Voltage VDC
HFD3/1.5	1.5	1.13	0.15	16 x (1±10%)	140	2.2
HFD3/2.4	2.4	1.8	0.24	41 x (1±10%)	140	3.6
HFD3/3	3	2.25	0.3	64.3 x (1±10%)	140	4.5
HFD3/4.5	4.5	3.38	0.45	145 x (1±10%)	140	6.7
HFD3/5	5	3.75	0.5	178 x (1±10%)	140	7.5
HFD3/6	6	4.5	0.6	257 x (1±10%)	140	9
HFD3/9	9	6.75	0.9	579 x (1±10%)	140	13.5
HFD3/12	12	9	1.2	1028 x (1±10%)	140	18
HFD3/24	24	18	2.4	4114 x (1±10%)	140	36
HFD3/48	48	36	4.8	8533 x (1±10%)	270	57.6

1 coil latching

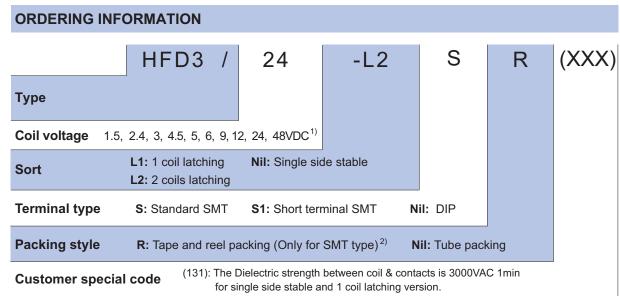
Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Allowable Voltage VDC
HFD3/1.5-L1	1.5	1.13	1.13	22.5 x (1±10%)	100	2.7
HFD3/2.4-L1	2.4	1.8	1.8	58 x (1±10%)	100	4.3
HFD3/3-L1	3	2.25	2.25	90 x (1±10%)	100	5.4
HFD3/4.5-L1	4.5	3.38	3.38	203 x (1±10%)	100	8.1
HFD3/5-L1	5	3.75	3.75	250 x (1±10%)	100	9
HFD3/6-L1	6	4.5	4.5	360 x (1±10%)	100	10.8
HFD3/9-L1	9	6.75	6.75	810 x (1±10%)	100	16.2
HFD3/12-L1	12	9	9	1440 x (1±10%)	100	21.6
HFD3/24-L1	24	18	18	5760 x (1±10%)	100	43.2

2 coils latching

Coil Code	Nominal Voltage VDC	Set Voltage VDC max.	Reset Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx.	Max. Allowable Voltage VDC
HFD3/1.5-L2	1.5	1.13	1.13	11.2 x (1±10%)	200	2.2
HFD3/2.4-L2	2.4	1.8	1.8	29 x (1±10%)	200	3.6
HFD3/3-L2	3	2.25	2.25	45 x (1±10%)	200	4.5
HFD3/4.5-L2	4.5	3.38	3.38	101 x (1±10%)	200	6.7
HFD3/5-L2	5	3.75	3.75	125 x (1±10%)	200	7.5
HFD3/6-L2	6	4.5	4.5	180 x (1±10%)	200	9.0
HFD3/9-L2	9	6.75	6.75	405 x (1±10%)	200	13.5
HFD3/12-L2	12	9	9	720 x (1±10%)	200	18
HFD3/24-L2	24	18	18	2880 x (1±10%)	200	36

Notes: 1) When user's requirements can't be found in the above table, special order allowed.

²⁾ In case 5V of transistor drive circuit, it is recommended to use 4.5V type relay, and 3V to use 2.4V type relay.



Notes: 1) 48VDC coil voltage is only for single side stable version.

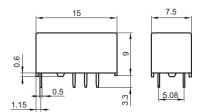
2) For the R type, the letter "R" will only be printed on packing tag and will not appear on relay cover.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

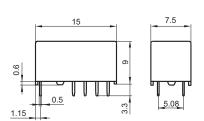
Unit: mm

Single side stable & 1 coil latching

Outline Dimensions (DIP type)

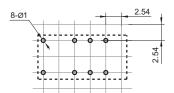


2 coils latching

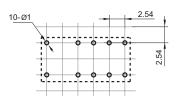


Single side stable & 1 coil latching

PCB Layout (DIP type) (Bottom view)



2 coils latching

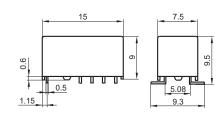


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Single side stable & 1 coil latching

2 coils latching



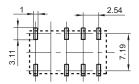
Outline Dimensions (S type: Standard SMT)

5.08

Single side stable & 1 coil latching

2 coils latching

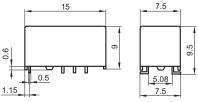
PCB Layout (S type: Standard SMT) (Bottom view)

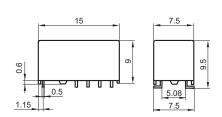


Single side stable & 1 coil latching

2 coils latching





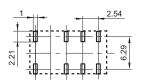


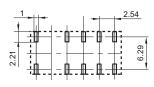
Single side stable & 1 coil latching

2 coils latching

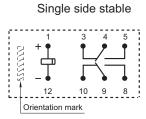
PCB Layout

(S1 type: Short terminal SMT) (Bottom view)

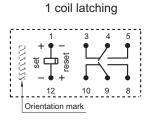




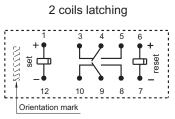
Wiring Diagram (Bottom view)



No energized condition



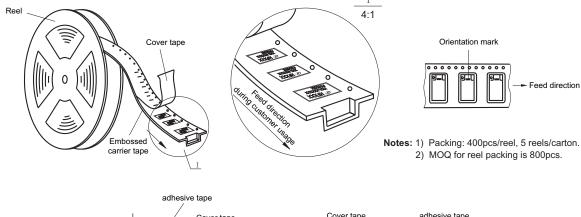
Reset condition

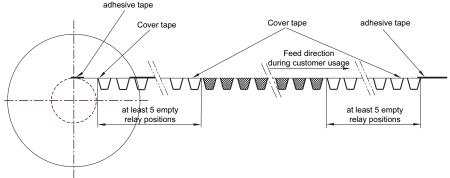


Reset condition

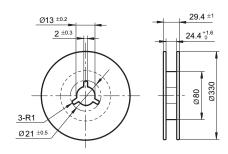
TAPE PACKING Unit: mm

Direction of Relay Insertion

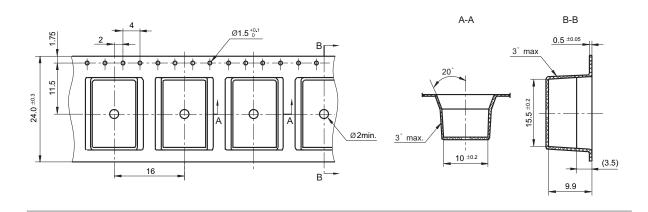




Reel Dimensions

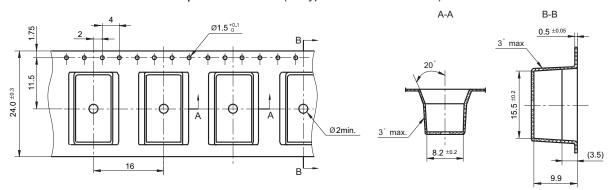


Tape Dimensions (S type: Standard SMT)



TAPE PACKING Unit: mm

Tape Dimensions (S1 type: Short terminal SMT)



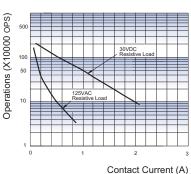
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

- 2) The tolerance without indicating for PCB layout is always ±0.1mm.
- 3) The width of the gridding is 2.54mm.

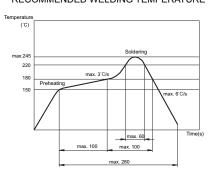
CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER

ENDURANCE CURVE



REFLOW WELDING, TEMPERATURE ON PCB BOARD RECOMMENDED WELDING TEMPERATURE



Notice

- 1) This relay is highly sensitive polarized relay, if correct polarity is not applied to the coil terminals, the relay does not operate properly.
- 2) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- 3) Relay is on the "reset" status when being released from stock, with the consideration of shock risen from transit and relay mounting, it should be changed to the "set" status when application(connecting to the power supply). Please reset the relay to "set" or "reset" status on request.
- 4) Energizing coil with rated voltage is basic for normal operation of a relay, please make sure the energized voltage to relay coil have reached the rated voltage. Regarding latching relay, in order to maintain the "set" or "reset" status, impulse width of the rated voltage applied to coil should be more than 5 times of "set" or "reset" time.
- 5) For 2 coil latching relay, do not energize voltage to "set" coil and "reset" coil simultaneously.
- 6) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
- 7) For SMT products, validation with real application should be done before your series production, if the reflow-soldering temperature curve is out of our recommendation. Generally, two-time reflow-soldering is not recommended for the relay. However, if two-time reflow-soldering is required, a 60-min. interval should be guaranteed and a validation should be done before production.
- 8) Regarding the plastic sealed relay, we should leave it cooling naturally untill below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- 9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay".

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.

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