HFD23-H SUPER SENSITIVE SIGNAL RELAY



File No.：E133481

File No.：R50555069

Features

- Low coil power at 100mW. It is about 1/3 lower compared with HFD23 standard version
- Higher dielectric strength between coil and contact at 1100VAC
- 2A switching capability
- Plastic sealed

RoHS compliant

CONTACT DATA

Contact arrangement	1C、1A	
Contact resistance[1)]	≤100mΩ(10mA 30mVDC)	
Contact material	AgNi+Au plated	Ag+Au plated
Contact rating (Res. load)	1A 30VDC 0.5A 125VAC 1A 125VAC	2A 30VDC 1A 125VAC
Max. switching voltage	125VAC/60VDC	
Max. switching current	2A	
Max. switching power	125VA/60W	
Min. applicable load[2)]	5V 1mA	
Mechanical endurance	1×10^7 OPS	
Electrical endurance (Resistive)	AgNi+Au: 1×10^5 OPS (1A 30VDC, 85℃, 1s on /9s off) 1×10^5 OPS (0.5A 125VAC, 85℃, 1s on /9s off) 5×10^4 OPS (1A 125VAC, 85℃, 1s on /9s off) Ag+Au plated: 1×10^5 OPS (2A 30VDC, 70℃, 1s on /9s off) 1×10^5 OPS (1A 125VAC, 70℃, 1s on /9s off)	

Notes: 1) The data shown above are initial values.
2) 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.

COIL

Coil power	100mW
Temperature rise	≤30K (1A Load,at 85℃) ≤45K (2A Load,at 70℃)

CHARACTERISTICS

Insulation resistance		1000MΩ (500VDC)
Dielectric strength	Between open contacts	500VAC 1min
	Between coil & contacts	1100VAC 1min
Surge withstand voltage	Between open contacts	1500V (10/160μs)
	Between coil & contacts	1500V (10/160μs)
Operate time (at rated. volt.)		5ms max.
Release time (at rated. volt.)		5ms max.
Shock resistance	Functional	10Hz to 55Hz, 1.5mm DA
	Destructive	10Hz to 55Hz, 3.3mm DA
Vibration resistance	Functional	98m/s²
	Destructive	980m/s²
Ambient temperature		-40℃ to 85℃
Humidity		5% to 98% RH
Termination		THT
Unit weight		Approx. 2.2g
Construction		Plastic sealed

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

SAFETY APPROVAL RATINGS

UL/CUL	AgNi+Au plated	1A 30VDC 85℃ 0.5A 125VAC 85℃ 1A 125VAC 85℃
	Ag+Au plated	2A 30VDC 70℃ 1A 125VAC 70℃
TÜV	AgNi+Au plated	1A 30VDC 85℃ 0.5A 125VAC 85℃

Notes: 1) The above is the typical certification load of the product. Other load specificationscan be available upon request.

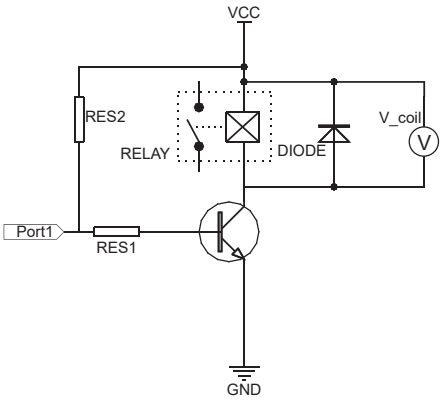
COIL DATA

23˚C

Coil Code	Nominal Voltage VDC	Initial Pick-up Voltage VDC max.	Initial Drop-out Voltage VDC max.	Coil Resistance Ω	Nominal Power mW approx	Max. Voltage VDC[5)]
HFD23-H/1.5	1.5	1.2	0.15	22.5×(1±10%)	100	3
HFD23-H/2.4	2.4	1.92	0.24	57.6×(1±10%)	100	4.8
HFD23-H/003[3)]	3	2.4	0.30	90×(1±10%)	100	6
HFD23-H/4.5	4.5	3.6	0.45	202.5×(1±10%)	100	9
HFD23-H/005[3)]	5	4.0	0.5	250×(1±10%)	100	10
HFD23-H/006	6	4.8	0.6	360×(1±10%)	100	12
HFD23-H/009	9	7.2	0.9	810×(1±10%)	100	18
HFD23-H/012	12	9.6	1.2	1440×(1±10%)	100	24
HFD23-H/024	24	19.2	2.4	5760×(1±10%)	100	48

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

2) To supply rated step voltage to coil is the foundation of relay proper operation. Please make sure the applied voltage to the coil reach at rated values.
Please refer to the typical diagram below for single side stable relay. The “V_coil” is the rated voltage.:



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

4) For monostable relays，if you need to drop down voltage and hold mode after reliably operating,make sure that the effective value of holding voltage is not less than 60% of the rated voltage.

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

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

7) During the relay pick-up or drop-out processes, there are stages of contact pressure change, contact vibration and unstable contact etc. When the voltage applied to coil is gradually changed, it will lengthen the unstable stage and affect relay endurance. To reduce this influence, please apply step voltage(switching circuit) to relay coil.

ORDERING INFORMATION

HFD23-H/	012	-1Z	D	（XXX）

Type

Coil voltage 1.5，2.4，3，4.5，5，6，9，12，24VDC

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

Contact material **D:** Ag+Au plated **Nil:** AgNi+Au plated

Special code **XXX:** Customer special requirement；**Nil:** Standard

Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.

2) The customer special requirement express as special code after evaluating by Hongfa.

3) This product is suitable for wave soldering or manual soldering.

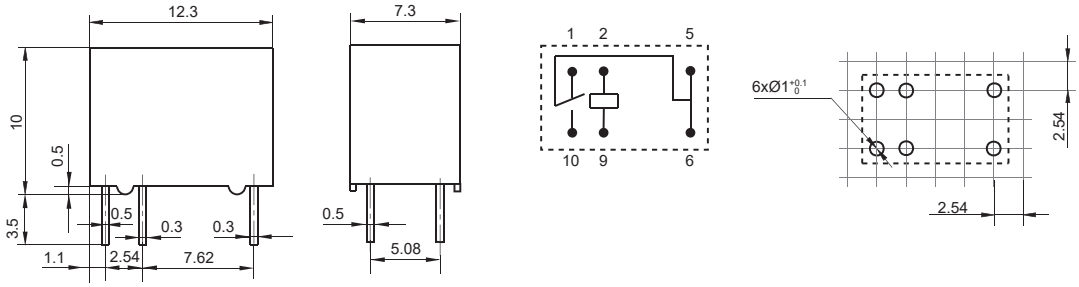
4) Please make sure that there are no silicon-based substances (such as silicon rubber, silicone oil, silicon-based coating agents, silicon fillers, etc.) around the relay, because it will generate silicon-containing volatile gas, which may cause poor contact in case of silicon-containing volatile gas sticking on contact.Flux proofed and dust cover type relays are prohibited in environments with water vapor and harmful gases (P, Cl, H_2S, SO_2, NO_2). Plastic sealed relays shall be used with practical test verification.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

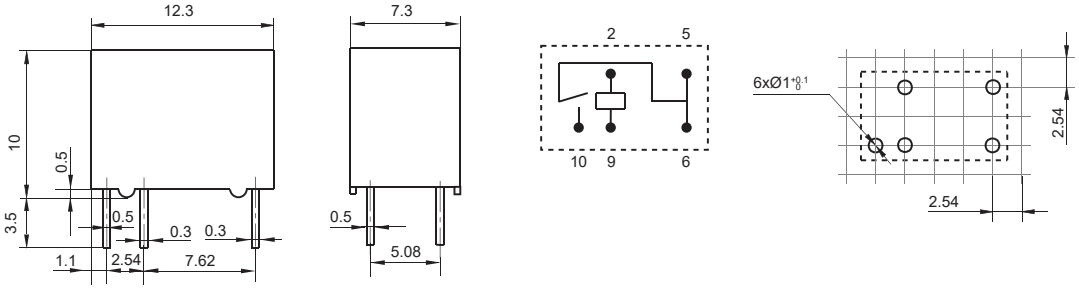
Unit: mm

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

1C Style:1 Form C



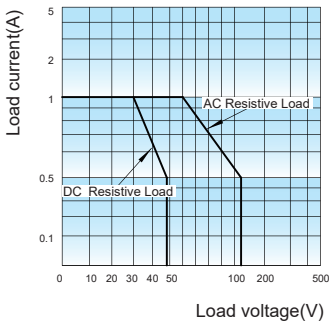
1A Style:1 Form A



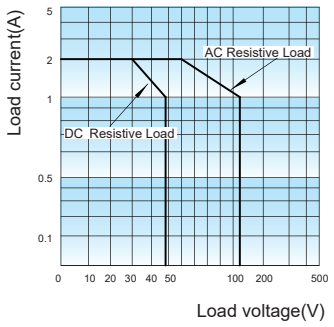
Remark: 1) The pin dimension of the product outline drawing is the size before tinning (it will become larger after tinning), and the mounting hole size is the recommended design size of the PCB board hole. The specific PCB board hole design size can be mapped and adjusted according to the actual product.
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.
4) 1C type has six Terminals,1A type has five Terminals.

CHARACTERISTIC CURVES

LOAD CAPACITY(AgNi Contact)



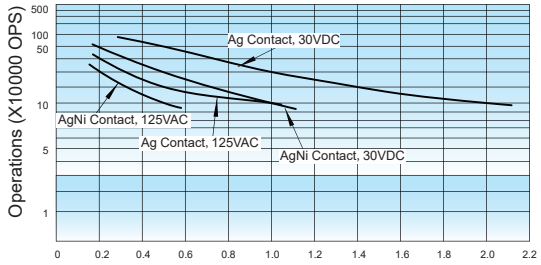
LOAD CAPACITY(Ag Contact)



CHARACTERISTIC CURVES

ENDURANCE CURVE

1Z 1H



Test conditions:
Resistive load, 1s on 9s off.

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) The relay pick-up and drop-out voltages are initial values tested under standard conditions(23℃). Considering the influence of ambient temperature, coil temperature rise(such as hot start) & voltage etc and to have safety allowance, please make sure the applied voltage to the relay coil reach at rated values which is the foundation of relay proper operation;
3) During the relay pick-up or drop-out processes, there are stages of contact pressure change, contact vibration and unstable contact etc. When the voltage applied to coil is gradually changed, it will lengthen the unstable stage and affect relay endurance. To reduce this influence, please apply step voltage(switching circuit) to relay coil
4) For a monosteady state relay, after the relay is reliably operated, if it needs to be kept under pressure, make sure that the effective value of the voltage is not less than 60 % of the rated voltage;
5) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
6) Please use wave soldering or manual soldering for straight-in relay. If you need reflow welding, please confirm the feasibility with us.
7) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
8) Regarding the plastic sealed relay, we should leave it cooling naturally untill below 40℃ after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40℃.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) When applied with continuous current, the heat from relay coil will age its isolation. Thus, please do not ground connected the coil to reduce electrical errosion if possible. And please provide protection circuit to avoid broken wire and losses.
10) Please make sure that there are no silicon-based substances (such as silicon rubber, silicone oil, silicon-based coating agents, silicon fillers, etc.) around the relay, because it will generate silicon-containing volatile gas, which may cause poor contact in case of silicon-containing volatile gas sticking on contact.Flux proofed and dust cover type relays are prohibited in environments with water vapor and harmful gases (P, Cl, H_2S, SO_2, NO_2). Plastic sealed relays shall be used with practical test verification.
11) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay.
12) During the relay pick-up or drop-out processes, there are stages of contact pressure change, contact vibration and unstable contact etc. When the voltage applied to coil is gradually changed, it will lengthen the unstable stage and affect relay endurance. To reduce this influence, please apply step voltage(switching circuit) to relay coil.

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.

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