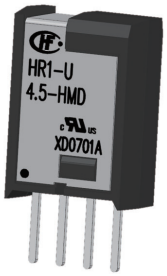
HR1-U MINIATURE REED RELAY



c UL us
File No.：E133481

Features

- Miniature Reed Relay：
  6.8mmx 3.55mmx9.5mm（Length × width × height）
- Small footprint,high density assembly
- Magnetic shielding reduces interaction
- High speed switching,Operate time ≤0.2ms
- Optional internal Fly-wheel diode

RoHS compliant

CONTACT DATA

Contact arrangement	1A
Contact resistance	200mΩ max.(10mA 30mVDC)
Contact material	Rhodium alloy
Contact rating(Res. load)	100mA 10VDC 10mA 110VDC
Max. switching voltage	120VAC/170VDC
Max. switching current	0.5A
Maximum making current	1A(40℃)
Max. switching power	10W
Min. applicable load[2)]	10mV 10μA
Mechanical endurance	5×108OPS
Electrical endurance (Res. load)	100mA 10VDC 10mA 110VDC (1×10⁵OPS,85℃,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.

CHARACTERISTICS

Insulation resistance	Between open contacts	≥10000MΩ(100VDC) Typical:10¹²Ω(100VDC)
	Between coil & contacts	≥10000MΩ(500VDC) Typical:10¹²Ω(500VDC)
Dielectric strength	Between open contacts	210VDC 1min
	Between coil & contacts	1500VDC 1min
Impulse voltage	Between coil & contacts	1500V(1.2/50μs)
Operate time (Rated voltage, including bounce)		0.2ms max.
Release time (W/O freewheeling diode)		≤0.05ms（Without Fly-wheel diode） ≤0.1ms（With Fly-wheel diode）
Vibration resistance		10Hz to 2000Hz,20g
Shock resistance	Functional	490m/s²
	Destructive	735m/s²
Ambient temperature		-40℃ to 85℃
Humidity		5% to 85%RH
Termination		SIP
Unit weight		Approx. 0.6g
Construction		Plastic sealed

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

COIL

Coil power	Approx. 62.5mW
Temperature rise	45K max.(1.0A) 30K max.(0.5A)

SAFETY APPROVAL RATINGS

UL/CUL	100mA 10VDC(at 85℃) 10mA 110VDC(at 85℃)

Notes: 1) Only typical loads are listed above. Other load specifications can be available upon request.

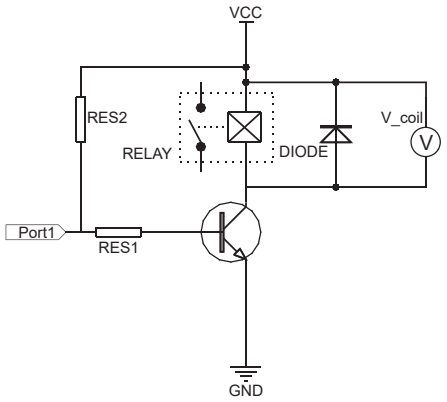
COIL DATA

23˚C

Coil Code	Nominal Coil Voltage VDC	Pick-up Voltage VDC max.[2)]	Drop-out Voltage VDC min.	Coil Resistance Ω	Nominal Power mW approx.	Max. Voltage VDC[5)]
HR1-U/3	3	2.25	0.3	144 × (1±10%)	62.5	4.5
HR1-U/4.5	4.5	3.38	0.45	324 × (1±10%)	62.5	6.7
HR1-U/5[3)]	5	3.75	0.5	400 × (1±10%)	62.5	7.5

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

2)The initial Pick-up Voltage and Reset Voltage refer to the factory-set values of the relay. To supply rated step voltage to the coil is the foundation of proper relay operation. Please make sure the voltage applied across the coil reaches the rated value before use. Please refer to the typical diagram below for single-stable relay. "V_coil" is the rated voltage of the coil:



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

4) The “DIODE” device in the above figure stands for coil freewheeling diode, if the selected relay specification has a built-in freewheeling diode, then there is no need to set up an additional freewheeling diode in the relay driving circuit.

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

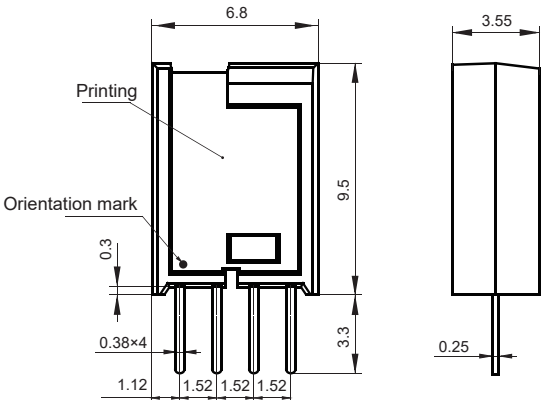
	HR1-U/	5	-H	M	D	（XXX）
Type						
Coil voltage		3，4.5，5				
Contact arrangement		**H:** 1 Form A				
Magnetic Shield				**M:** Magnetic Shield		
Coil freewheeling function					**D:** With diode	**Nil:** No diode
Special code						**XXX:** Customer special requirement **Nil:** Standard

Notes: 1) The customer special requirement express as special code after evaluating by Hongfa.

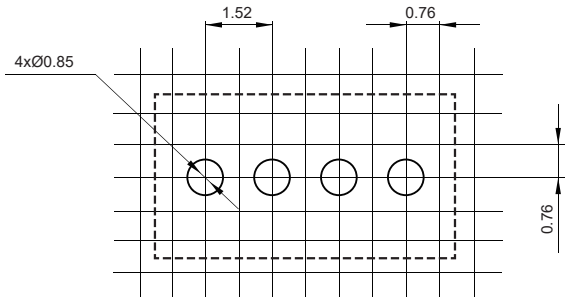
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

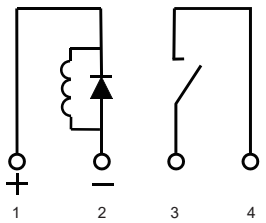


PCB Layout(Top view)

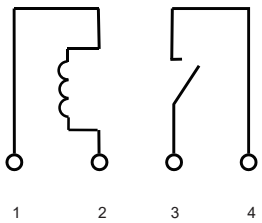


Wiring Diagram(Top view)

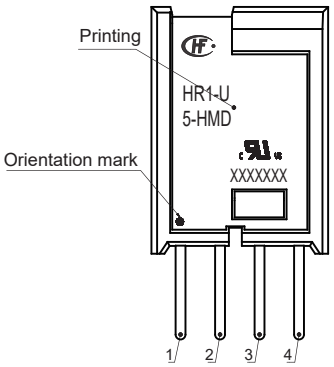
With diode



No diode



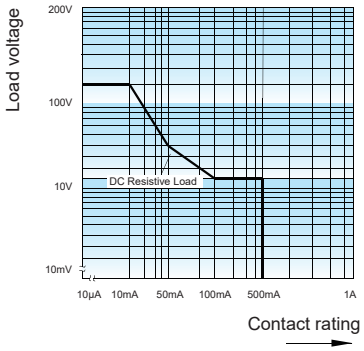
Pin Layout



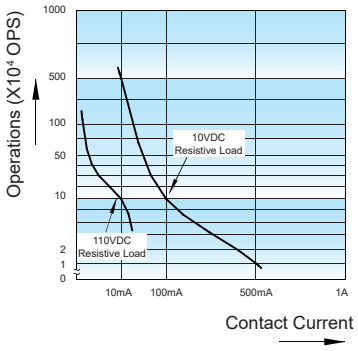
Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.

CHARACTERISTIC CURVES

MAX.SWITCHING POWER



ENDURANCE CURVE



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

Notice:1) To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
2) The relay action voltage and release voltage are the initial values tested under standard conditions (23℃). Applying rated voltage to both ends of the relay coil is the basis for normal operation of the relay. Considering the influence of environment temperature, coil temperature rise (such as hot start), voltage fluctuation, etc., in order to ensure the safety margin, make sure that the voltage applied to both ends of the relay coil reaches the rated voltage before use.
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) The relay may be damaged because of falling or when shocking conditions exceed the requirement.
5) Please use wave soldering or manual soldering for straight-in relay. If you need reflow welding, please confirm the feasibility with us.
6) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
7) 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.
8) 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.
9) About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidetines of relay.

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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