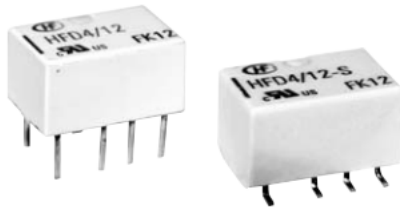# HFD4

SUBMINIATURE SIGNAL RELAY

c ®U US

File No.:E133481

Features

- Offers excellent board space savings
- Surge withstand voltage up to 2500V, meets FCC Part 68 and Telecordia
- Meets EN60950/EN41003
- SMT and DIP types available
- High contact capacity 2A 30VDC
- Low power consumption
- Single side stable and latching type available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: (10.0 x 6.5 x 5.4) mm

CONTACT DATA

Contact arrangement	2C
Contact resistance	70mΩ max. (at 0.1A 6VDC)
Contact material	Silver alloy+ Au plated
Contact rating (Res. load)	2A 30VDC
	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	1×10^8 OPS
Electrical endurance	1×10^5 OPS (at 2A 30VDC)
	1×10^5 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.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	1600VAC 1min
	Between open contacts	1000VAC 1min
	Between contact sets	1800VAC 1min
Surge withstand voltage		
Between open contacts (10/160μs)		1500VAC (FCC part 68)
Between coil & contacts (2/10μs)		2500VAC (Telecordia)
Operate time (Set time)		3ms max.
Release time (Reset time)		3ms max.
Ambient temperature		-40°C to 85°C
Humidity		5% to 85% RH
Vibration resistance		10Hz to 55Hz 3.3mm DA
Shock resistance	Functional	735m/s^2
	Destructive	980m/s^2
Termination		DIP, SMT
Unit weight		Approx. 0.8g
Construction		Plastic sealed

Notes: 1) The data shown above are initial values.
2) UL insulation system: Class A

COIL

Coil power	Single side stable	See "COIL DATA"
	1 coil latching	See "COIL DATA"

SAFETY APPROVAL RATINGS

	1A 30VDC at 85°C

COIL DATA

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
HFD4/1.5	1.5	1.13	0.15	16 x (1±10%)	140	2.2
HFD4/2.4	2.4	1.8	0.24	41 x (1±10%)	140	3.6
HFD4/3	3	2.25	0.3	64.3 x (1±10%)	140	4.5
HFD4/4.5	4.5	3.38	0.45	145 x (1±10%)	140	6.7
HFD4/5	5	3.75	0.5	178 x (1±10%)	140	7.5
HFD4/6	6	4.5	0.6	257 x (1±10%)	140	9.0
HFD4/9	9	6.75	0.9	579 x (1±10%)	140	13.5
HFD4/12	12	9	1.2	1028 x (1±10%)	140	18.0
HFD4/24	24	18	2.4	2880 x (1±10%)	200	36.0

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
HFD4/1.5-L	1.5	1.13	1.13	22.5 x (1±10%)	100	3.0
HFD4/2.4-L	2.4	1.8	1.8	58 x (1±10%)	100	4.8
HFD4/3-L	3	2.25	2.25	90 x (1±10%)	100	6.0
HFD4/4.5-L	4.5	3.38	3.38	203 x (1±10%)	100	9.0
HFD4/5-L	5	3.75	3.75	250 x (1±10%)	100	10.0
HFD4/6-L	6	4.5	4.5	360 x (1±10%)	100	12.0
HFD4/9-L	9	6.75	6.75	810 x (1±10%)	100	18.0
HFD4/12-L	12	9	9	1440 x (1±10%)	100	24.0
HFD4/24-L	24	18	18	2880 x (1±10%)	200	36.0

Notes: 1) For a relay to work normally,the application of rated voltage to the coil is needed.

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

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.

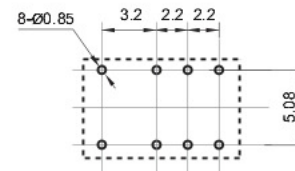## ORDERING INFORMATION

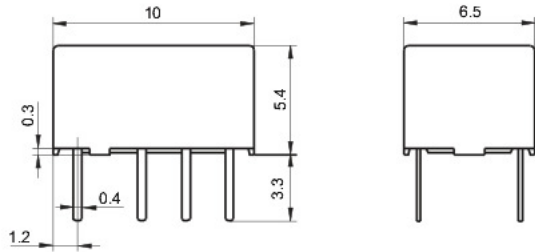| HFD4 | / | 24 | -L | S | R | (XXX) |

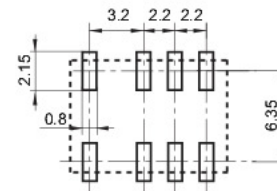**Type**
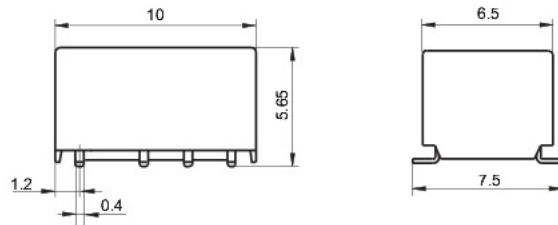
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

PCB Layout
(Bottom view)

DIP type

10

6.5

0.3

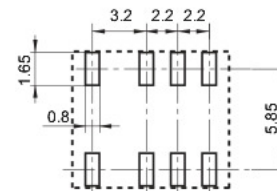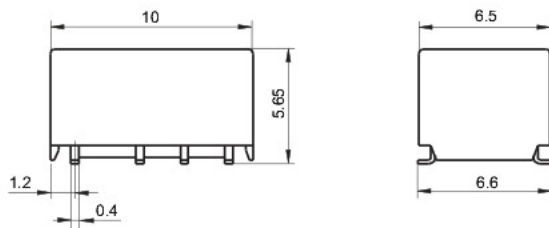5.4

5.08

3.3

8-Ø0.85

3.2 2.2 2.2

0.4

1.2

Standard SMT type

10

6.5

5.65

2.15

6.35

1.2

0.4

0.8

3.2 2.2 2.2

7.5

Short terminal SMT type

10

6.5

5.65

1.65

5.85

1.2

0.4

0.8

3.2 2.2 2.2

6.6

Wiring Diagram
(Bottom view)

Single side stable

1 coil latching

Direction of Relay Insertion

Reel

Cover tape

Embossed
carrier tape

$\frac{I}{4:1}$

Feed direction during customer usage

Orientation mark

Feed direction
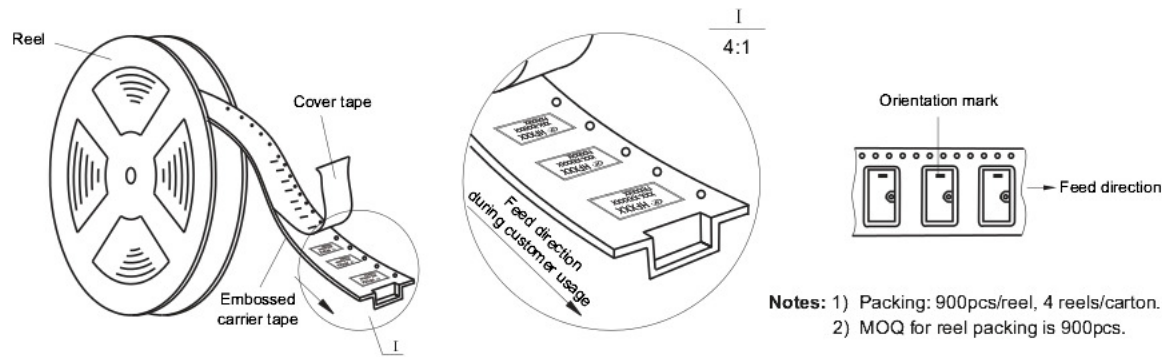
Notes: 1) Packing: 900pcs/reel, 4 reels/carton.
2) MOQ for reel packing is 900pcs.

adhesive tape

Cover tape

Cover tape

adhesive tape

Feed direction
during customer usage

at least 5 empty
relay positions

at least 5 empty
relay positions

Reel Dimensions

Ø13 ±0.2

2 ±0.3

29.4 ±1

24.4 $^{+1.6}_{0}$

Ø80

Ø330

3-R1

Ø21 ±0.5
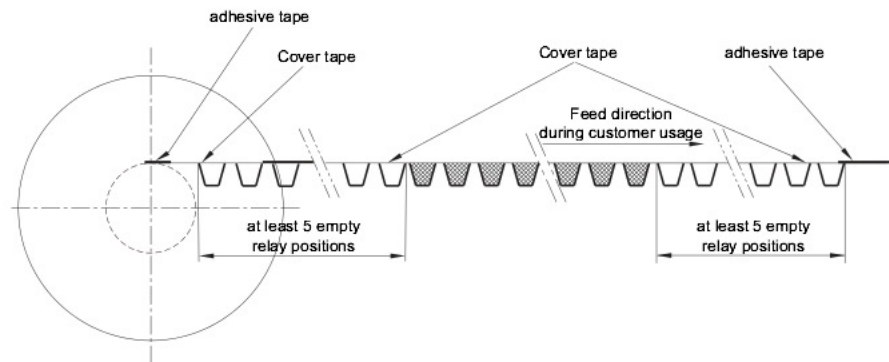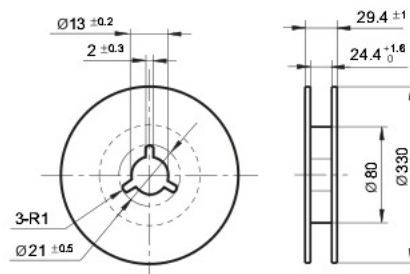
Tape Dimensions (S1 type: Short terminal SMT)
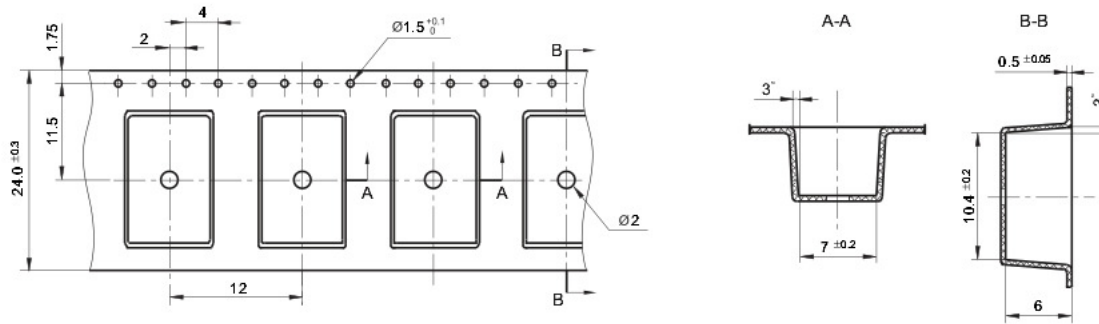

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
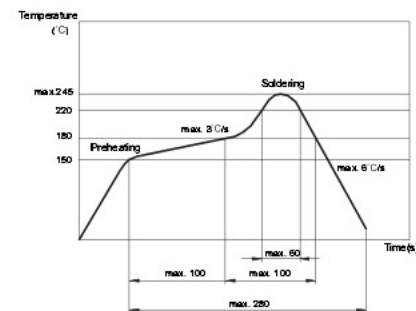3) The width of the gridding is 2.54mm.

CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER
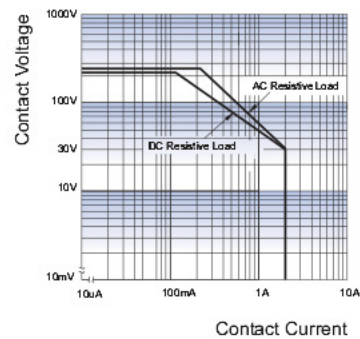
ENDURANCE CURVE
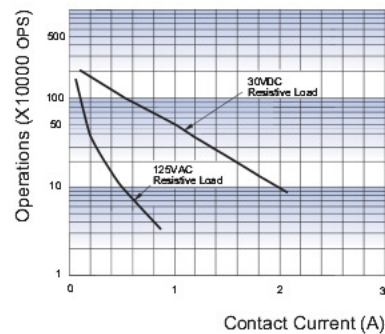
REFLOW WELDING,TEMPERATURE ON PCB BOARD
RECOMMENDED WELDING TEMPERATURE

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