



10 A MINIATURE POWER RELAY

FEATURES

- Large capacity in small size: 10 A 250 V AC (1a)
- High sensitivity: 200 mW nominal operating power
- High breakdown voltage 4,000 Vrms between contacts and coil 1,000 Vrms between open contacts Meeting FCC Part 68
- Sealed construction
- Latching types available

DK RELAYS

COMMENTS ABOUT Cd FREE

We have introduced Cadmium free type products to reduce the material which is not good for our environment.

(The suffix "F" should be added to the part number.)

(Note: The Suffix "F" is required only for 1 Form A contact type. The 2 Form A and 1 Form A 1 Form B contact type is originally Cadmium free, the suffix "F" is not required.)

If you are still using Cadmium containing parts, which don't have "F" on the suffix of the part number, please use Cadmium free parts from now on. The life of the Cadmium free products may be shorter than the Cadmium containing parts based on the load condition, so please evaluate the Cadmium free parts with your actual application before use.

RoHS Directive compatibility information http://www.nais-e.com/

SPECIFICATIONS

Contact						
Arrangemen	t 📢	1 Form A	2 Form A, 1 Form A 1 Form B			
Initial contact resistance, max. (By voltage drop 6 V DC 1A)		30 mΩ				
Contact material		AgSnO	D ₂ type			
	Nominal switching capacity	10 A 250 V AC 10 A 30 V DC	8 A 250 V AC 8 A 30 V DC			
Rating (resistive)	Max. switching power	300 W, 2,500 VA	240 W, 2,000 VA			
	Max. switching voltage	250 V AC, 30 V DC	250 V AC, 30 V DC			
	Max. switching current	10 A	8 A			
	Min. switching capacity ^{#1}	10 mA, 5 V DC				
Function	Mechanical	5×	107			
Expected life (min. operations)	Electrical (resistive)	10⁵ (10 A 250 V AC, 10 A 30 V DC)	10⁵ (8 A 250 V AC, 8 A 30 V DC)			

mm incl

Coil

Nominal operating power

#1 This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

200 mW

Remarks

- * Specifications will vary with foreign standards certification ratings.
- *1 Measurement at same location as "Initial breakdown voltage" section
- *2 Detection current: 10 mA
- \star3 Wave is standard shock voltage of $\pm1.2\times50\mu s$ according to JEC-212-1981
- *4 Excluding contact bounce time
- *5 Half-wave pulse of sine wave: 11ms; detection time: 10μs
- *6 Half-wave pulse of sine wave: 6ms *7 Detection time: 10 μs
- * Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT.

Characteristics

Max. operating speed			20 cpm (at rated load)		
Initial insu	lation resis	tance*1	Min. 1,000 mΩ (at 500 V DC)		
Initial	Betwee contact	n open s	1,000 Vrms		
voltage*2	Betwee and coi	n contacts	4,000 Vrms		
Surge voltage between coil and contact*3		en coil and	Min. 10,000 V		
Operate time*4 (at nominal voltage)		100 1.	Max. 10 ms (Approx. 5 ms)		
Release time (without diode)*4 (at nominal voltage)		t diode)*4	Max. 8 ms (Approx. 3 ms)		
Temperature rise (at nominal voltage)		W.1005	Max. 40°C with nominal coil voltage and at 10 A switching current		
Shock Functio		nal*5	Min. 98 m/s ² {10 G}		
resistance	Destruc	ctive*6	Min. 980 m/s ² {100 G}		
Vibration		nal*7	88.2 m/s ² {9 G}, 10 to 55 Hz at double amplitude of 1.5 mm		
resistance	Destruc	tive	176.4 m/s ² {18 G}, 10 to 55 Hz at double amplitude of 3.0 mm		
Conditions for operation, transport and storage* ⁸ (Not freezing and condensing at low temperature)		Ambient temp.	−40°C to +65°C −40°F to +149°F		
		Humidity	5 to 85% R.H.		
Linit	1 Form A		Approx. 5.6 g .20 oz		
weight 1 Form A 1 Form I 2 Form A		1 Form B,	Approx. 6 g .21 oz		
		勝特二	力材料 886-3-5753170 由子(上海) 86-91-54151736		
		肿胀力	日子(云明) 96-755-99900707		
胜特力电 Http			也于(深圳) 86-755-83298787 p://www.100y.com.tw		

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TYPICAL APPLICATIONS

00X.COM.T

- Switching power supply
- · Power switching for various **OA** equipment
- · Control or driving relays for industrial machines (robotics, numerical control machines, etc.)
- Output relays for programmable logic controllers, temperature controllers, timers and so on.
- Home appliances

ORDERING INFORMATION

Ex. DK 1a		12V F	WIL
Contact arrangement	Operating function	Coil voltage	Contact material
1a: 1 Form A 2a: 2 Form A 1a1b: 1 Form A 1 Form B	Nil: Single side stable L2: 2 coil latching	3, 5, 6, 9, 12, 24V	• AgSnO2 type F: 1a Nil: 2a, 1a1b

Notes: 1. Standard packing Carton: 50 pcs.; Case: 500 pcs.

UL/CSA, TÜV approved type is standard.

2. 1 coil latching type available.

3. Please inquire about the previous products (Cadmium containing parts). (1 Form A type only)

TYPES AND COIL DATA (at 20°C 68°F)

Single side stable

	Part No.	Nominal voltage, V DC	Pick-up voltage, V DC (max.)	Drop-out voltage, V DC (min.)	Nominal operating current, mA (±10%)	Coil resistance, Ω (±10%)	Nominal operating power, mW	Maximum allowable voltage, V DC (at 65°C 149°F)
	DK1a-3V-F	3	2.1	0.3	66.6	45	200	3.9
	DK1a-5V-F	5	3.5	0.5	40	125	200	6.5
	DK1a-6V-F	6	4.2	0.6	33.3	180	200	7.8
I Form A	DK1a-9V-F	9	6.3	0.9	22.2	405	200	11.7
	DK1a-12V-F	12	8.4	1.2	16.6	720	200	15.6
	DK1a-24V-F	24	16.8	2.4	8.3	2,880	200	31.2
	DK1a1b-3V	3	2.1	0.3	66.6	45	200	3.9
	DK1a1b-5V	5	3.5	0.5	40	125	200	6.5
1 Form A	DK1a1b-6V	6	4.2	0.6	33.3	180	200	7.8
1 Form B	DK1a1b-9V	9	6.3	0.9	22.2	405	200	11.7
	DK1a1b-12V	12	8.4	1.2	16.6	720	200	15.6
	DK1a1b-24V	24	16.8	2.4	8.3	2,880	200	31.2
	DK2a-3V	3	2.1	0.3	66.6	45	200	3.9
	DK2a-5V	5	3.5	0.5	40	125	200	6.5
0.5	DK2a-6V	6	4.2	0.6	33.3	180	200	7.8
2 Form A	DK2a-9V	9	6.3	0.9	22.2	405	200	11.7
	DK2a-12V	12	8.4	1.2	16.6	720	200	15.6
	DK2a-24V	24	16.8	2.4	8.3	2,880	200	31.2
coil late	hing	1	1005	.CUM.TN	N	100%	OM.TW	V

2 coil latching

	Part No.	Nominal voltage, V DC	Set voltage, V DC (max.)	Reset voltage, V DC (max.)	Nominal operating current, mA (±10%)		Coil resistance, Ω (±10%)		Nominal operating power, mW		Maximum allowable voltage, V DC (at 65°C
			NN III	M01.	Set	Reset	Set	Reset	Set	Reset	149°F)
	DK1a-L2-3V-F	3	2.1	2.1	66.6	66.6	45	45	200	200	3.9
	DK1a-L2-5V-F	5	3.5	3.5	40	40	125	125	200	200	6.5
1 [arm]	DK1a-L2-6V-F	6	4.2	4.2	33.3	33.3	180	180	200	200	7.8
I FORM A	DK1a-L2-9V-F	9	6.3	6.3	22.2	22.2	405	405	200	200	11.7
	DK1a-L2-12V-F	12	8.4	8.4	16.6	16.6	720	720	200	200	15.6
	DK1a-L2-24V-F	24	16.8	16.8	8.3	8.3	2,880	2,880	200	200	31.2
	DK1a1b-L2-3V	3	2.1	2.1	66.6	66.6	45	45	200	200	3.9
	DK1a1b-L2-5V	5	3.5	3.5	40	40	125	125	200	200	6.5
1 Form A	DK1a1b-L2-6V	6	4.2	4.2	33.3	33.3	180	180	200	200	7.8
1 Form B	DK1a1b-L2-9V	9	6.3	6.3	22.2	22.2	405	405	200	200	11.7
	DK1a1b-L2-12V	12	8.4	8.4	16.6	16.6	720	720	200	200	15.6
	DK1a1b-L2-24V	24	16.8	16.8	8.3	8.3	2,880	2,880	200	200	31.2
	DK2a-L2-3V	3	2.1	2.1	66.6	66.6	45	45	200	200	3.9
	DK2a-L2-5V	5	3.5	3.5	40	40	125	125	200	200	6.5
0 50000	DK2a-L2-6V	6	4.2	4.2	33.3	33.3	180	180	200	200	7.8
2 FOITH A	DK2a-L2-9V	9	6.3	6.3	22.2	22.2	405	405	200	200	11.7
	DK2a-L2-12V	12	8.4	8.4	16.6	16.6	720	720	200	200	15.6
	DK2a-L2-24V	24	16.8	16.8	8.3	8.3	2,880	2,880	200	200	31.2

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REFERENCE DATA

1.1 Form A type

DOX.COM.

1. Maximum operating power



4. Coil temperature rise (at 30°C 68°F) Sample: DK1a-12V, 5 pcs.



7. Contact resistance (at 20°C 68°F) Sample: DK1a-24V (50 pcs.)



Life, ×10⁴ 4

2. Life curve

1,000

100



250 V AC resistive load

5. Ambient temperature characteristics Sample: DK1a-24V, 6 pcs Ambient temperature: -40°C to +80°C -40°F to +176°F

> . . 130 Drop-ou voltage 120 Ariation 110 Pick-up 100 0 40 60 ➡Ambient 0 40 80 -90 temperature.°C 80

3. Operate/Release time Sample: DK1a-24V, 5 pcs.



6. Operate/Release time (at 20°C 68°F) Sample: DK1a-24V (50 pcs.)



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2.1 Form A 1 Form B type, 2 Form A type1.1 Form A type 1. Maximum operating power 2. Life curve



3. Operate/Release time (at 20°C 68°F) Sample: DK1a1b-12V, 5 pcs.



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2 3 4 5

250 V AC resistive load

30

V DC resistive load

8 9 10

Contact current, A





DK

General tolerance: ±0.3 ±.012

2.1 Form A 1 Form B type, 2 Form A type





10.16

Tolerance: ±0.1 ±.004

2 coil latching (Reset condition)



Since this is a polarized relay, the connection to the coil should be done according to the above schematic.



General tolerance: ±0.3 ±.012

Tolerance: ±0.1 ±.004

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DK relay socket



TYPES AND RELAY COMPATIBILITY

V 100 V	Socket	1 Fo	orm A	1 Form A 1 Form B, 2 Form A		
Relay	COMPUNITY	Single side stable type	2 coil latching type	Single side stable type	2 coil latching type	
1 Earm A	Single side stable type	DK1a-PS	DK1a-PSL2	- NH	_	
TFOILTA	2 coil latching type	- 17	DK1a-PSL2	WT T	_	
1 Form A 1 Form B	Single side stable type		NNTO.	DK2a-PS	DK2a-PSL2	
2 Form A	2 coil latching type		100 ³	. Atom	DK2a-PSL2	

SPECIFICATIONS

Breakdown voltage*1	4,000 Vrms (Except the portion between coil terminals)		
Insulation resistance	Min. 1,000 mΩ (at 500 V DC)		
Heat resistance	150°C (for 1 hour)		
Max. continuous current	10 A (DK1a-PS, DK1a-PSL2), 8 A (DK2a-PS, DK2a-PSL2)		

*1 Detection current: 10 mA

DIMENSIONS

mm inch

DK



General tolerance: +0.3 + 012

FIXING AND REMOVAL METHOD

1. Match the direction of relav and socket.



2. Both ends of the relay are to be secured firmly so that the socket hooks on the top surface of the relay.



3. Remove the relay, applying force in the direction shown below.

4. In case there is not enough space to grasp relay with fingers, use screwdrivers in the way shown below.

Tolerance: ±0.1 ±.004



2. Soldering should be done under the following conditions: 250°C 482°F within 10s 300°C 572°F within 5s 350°C 662°F within 3s

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NOTES

1. Phase synchronization of AC-load switching

In case of switching the contact synchronized with phase of load voltage, the life of contact might be shorter or contact failure might be caused. Please confirm this matter in the actual system in this case. If necessary, the phase control would be recommended.



For Cautions for Use, see Relay Technical Information .

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