Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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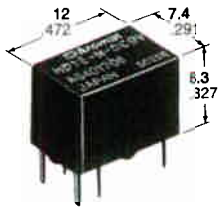
NAiS ULTRA-MINIATURE SINGLE POLE RELAY HD-RELAYS



mm inch

UL File No.: E57521
CSA File No.: LR26550

- **Ideal for portable devices! Only 1.7 g.**
- **Dimensions:**
  8.3 mm height × 12 mm length × 7.4 mm width
  .327 inch height × .472 inch length × .291 inch width
- **High sensitivity: 280 mW nominal operating power**
- **Gold-clad bifurcated contact for high reliability**
- **Sealed construction**

SPECIFICATIONS

Contact

Arrangement			1 Form C
Initial contact resistance, max. (By voltage drop 6 V DC 1 A)			100 mΩ
Contact material			Gold-clad silver
Rating (resistive)	Max. switching power		30 W, 50 VA
	Max. switching voltage		60 V DC, 125 V AC
	Max. switching current		1 A DC, AC
	Max. carrying current		2 A DC, AC
UL/CSA rating			1 A 30 V DC
Expected life (min. operations)	Mechanical (at 180 cpm)		5×10^6
	Electrical (at 20 cpm)	1 A 30 V DC	10^5
		0.5 A 100 V AC	10^5

Coil (at 25°C 77°F)

Minimum operating power	179 to 192 mW
Nominal operating power	280 to 330 mW

Characteristics (at 25°C 77°F, 50% Relative humidity)

Max. operating speed		20 cpm (at nominal voltage)
Initial insulation resistance*1		Min. 100 MΩ at 500 V DC
Initial breakdown voltage*2	Between open contacts	500 Vrms
	Between contact and coil	500 Vrms
Operate time (without diode)*3 (at nominal voltage)		Max. 10 ms (Approx. 3 ms)
Release time (without diode)*3 (at nominal voltage)		Max. 5 ms (Approx. 3 ms)
Temperature rise (at nominal voltage)		Max. 50°C with nominal coil voltage and at maximum switching current
Shock resistance	Functional*4	Min. 98 m/s² {10 G}
	Destructive*5	Min. 980 m/s² {100 G}
Vibration resistance	Functional*6	58.8 m/s² {6 G}, 10 to 55 Hz at double amplitude of 1 mm
	Destructive	117.6 m/s² {12 G}, 10 to 55 Hz at double amplitude of 2 mm
Conditions for operation, transport and storage*7 (Not freezing and condensing at low temperature)	Ambient temp.	–25°C to +60°C –13°F to +140°F
	Humidity	5 to 85% R.H.
Unit weight		1.7 g .06 oz

Remarks
*1 Measurement at same location as "Intial breakdown voltage" section
*2 Detection current: 10mA
*3 Excluding contact bounce time
*4 Half-wave pulse of sine wave: 11ms; detection time: 10μs
*5 Half-wave pulse of sine wave: 6ms
*6 Detection time: 10μs
*7 Refer to 5. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT (Page 45)

TYPICAL APPLICATION

1. Low voltage signal change-over in portable VCR, camera, audio, and other small household devices.
2. Use in lap top computers and other small computer and peripheral devices (printers, plotters, etc.).

ORDERING INFORMATION

HD [1] E — M — [DC12V]

Contact arrangement	Coil voltage
1: 1 Form C	DC 1.5, 3, 5, 6, 9, 12, 24 V

Note: Standard packing; Carton: 100 pcs. Case: 500 pcs.

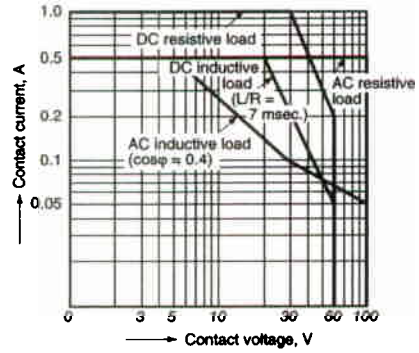
TYPES AND COIL DATA (at 20°C 68°F)

Part No.	Nominal voltage V DC	Pick-up voltage, VDC (max.)	Drop-out voltage, V DC (min.)	Coil resistance Ω (±10%)	Nominal operating current, mA	Nominal operating power, mW	Max. allowable voltage, V DC (at 60°C 140°C)
HD1E-M-DC1.5V	1.5	1.2	0.15	8	187.5	280	1.65
HD1E-M-DC3V	3	2.4	0.3	32	93.7	280	3.3
HD1E-M-DC5V	5	4.0	0.5	89	56.1	280	5.5
HD1E-M-DC6V	6	4.8	0.6	128	46.8	280	6.6
HD1E-M-DC9V	9	7.2	0.9	270	33.3	280	9.9
HD1E-M-DC12V	12	9.6	1.2	515	23.5	280	13.2
HD1E-M-DC24V	24	19.2	2.4	2,060	11.6	280	26.4

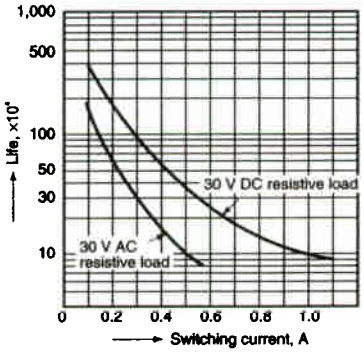
3

REFERENCE DATA

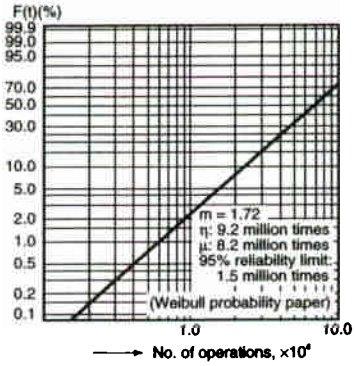
1. Maximum switching power



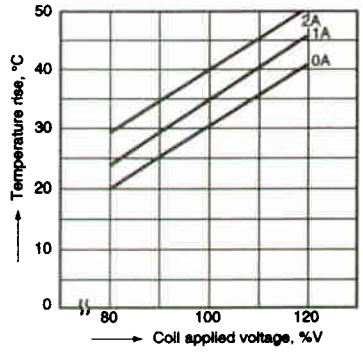
2. Life curve



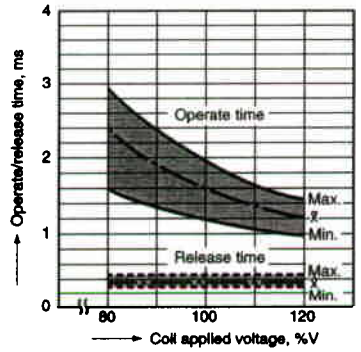
3. Contact reliability test
Condition: 1 V, 1 mA, 1 kHz AC
Detection level (5 Ω)
Sample: HD1E-M-9VDC, 10 pcs.



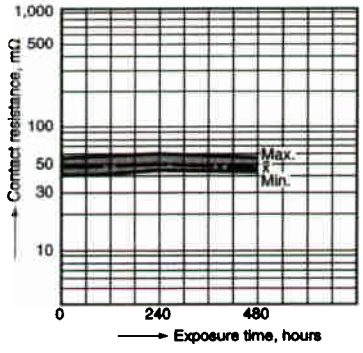
4. Coil temperature rise



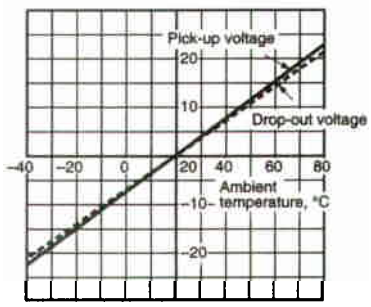
5. Operate/release time



6. H_2S gas test
Gas density: 2 to 5 ppm
Ambient temperature 35 to 37°C 95 to 99°F
Humidity: 35 to 85% RH

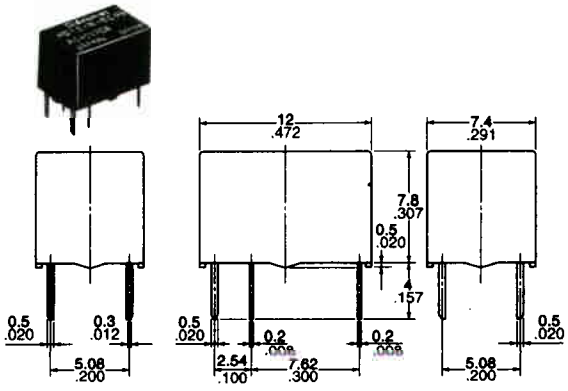


7. Ambient temperature characteristics



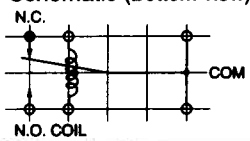
DIMENSIONS

mm inch

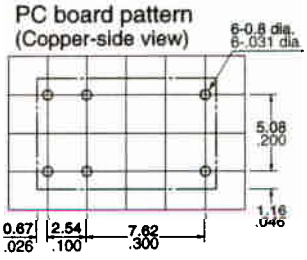


General tolerance: ±0.3 ±.012

Schematic (Bottom view)



PC board pattern
(Copper-side view)



Tolerance: ±0.1 ±.004

For Cautions for Use, see Relay Technical Information (Page 32 to 60).