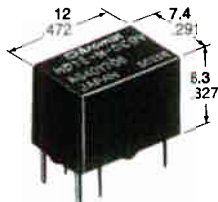


NAIS**ULTRA-MINIATURE SINGLE
POLE RELAY****HD-RELAYS****3**

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 break-down 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/s ² {10 G}
	Destructive* ⁵	Min. 980 m/s ² {100 G}
Vibration resistance	Functional* ⁶	58.8 m/s ² {6 G}, 10 to 55 Hz at double amplitude of 1 mm
	Destructive	117.6 m/s ² {12 G}, 10 to 55 Hz at double amplitude of 2 mm
Conditions for operation, transport and storage* ⁷ (Not freezing and condens- ing 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 "Initial 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.

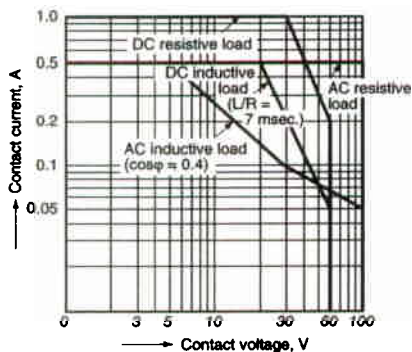
TYPES AND COIL DATA (at 20°C 68°F)

Part No.	Nominal voltage V DC	Pick-up voltage, VDC (max.)	Drop-out voltage, V DC (min.)	Coil resistance Ω ($\pm 10\%$)	Nominal operating current, mA	Nominal operating power, mW	Max. allowable voltage, V DC (at 60°C 140°F)
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

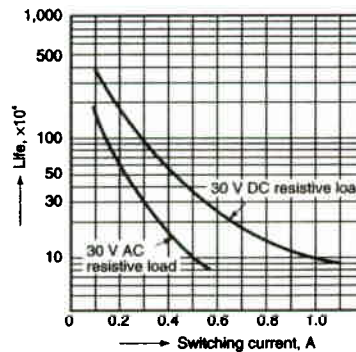
3

REFERENCE DATA

1. Maximum switching power



2. Life curve

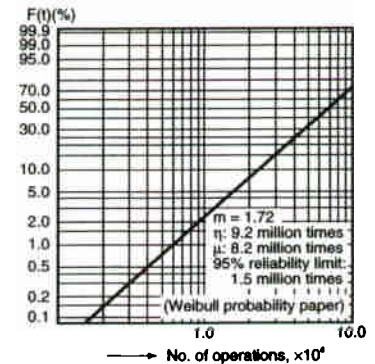


3. Contact reliability test

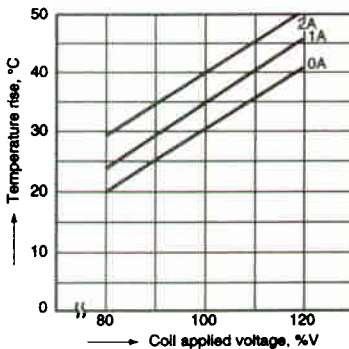
Condition: 1 V, 1 mA, 1 kHz AC

Detection level (5 Ω)

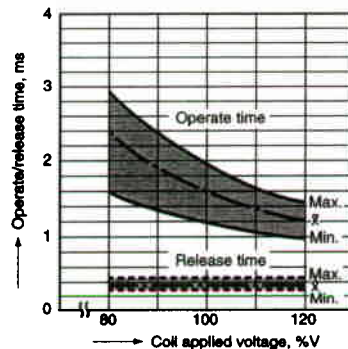
Sample: HD1E-M-9VDC, 10 pcs.



4. Coil temperature rise



5. Operate/release time

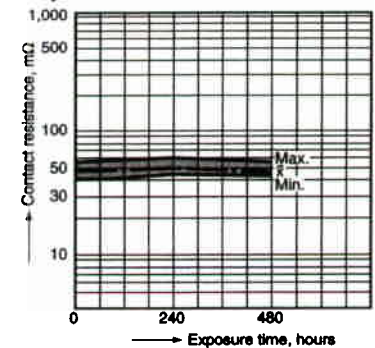


6. H₂S gas test

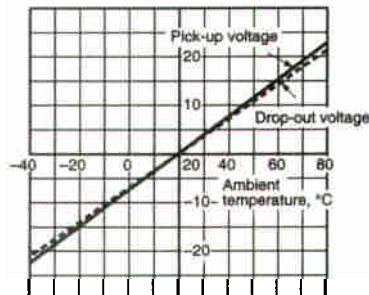
Gas density: 2 to 5 ppm

Ambient temperature 35 to 37°C 95 to 99°F

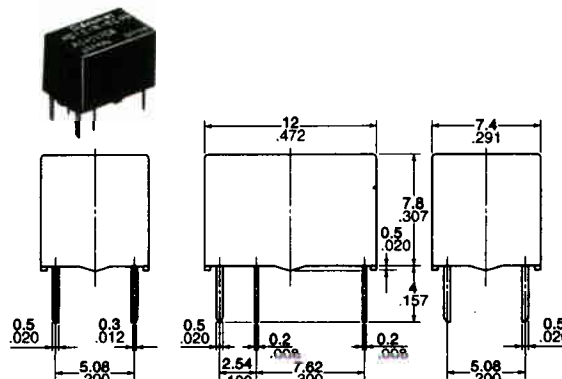
Humidity: 35 to 85% RH



7. Ambient temperature characteristics

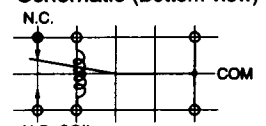
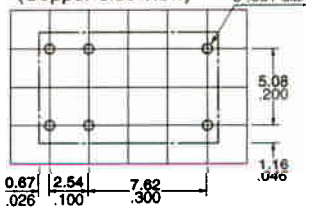


DIMENSIONS

General tolerance: $\pm 0.3 \pm .012$ Tolerance: $\pm 0.1 \pm .004$

mm inch

Schematic (Bottom view)

PC board pattern
(Copper-side view)

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