## 4. Screw terminal type (Single side stable)

| Type | Coil voltage | 1 Form A | 2 Form A | Packing quantity |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | Part No. | Part No. | Carton | Case |
| DC type | 6 V DC | HE1aN-S-DC6V | HE2aN-S-DC6V | 10 pcs. | 50 pcs. |
|  | 12V DC | HE1aN-S-DC12V | HE2aN-S-DC12V |  |  |
|  | 24V DC | HE1aN-S-DC24V | HE2aN-S-DC24V |  |  |
|  | 48 V DC | HE1aN-S-DC48V | HE2aN-S-DC48V |  |  |
|  | 100 V DC | HE1aN-S-DC100V | HE2aN-S-DC100V |  |  |
|  | 110 V DC | HE1aN-S-DC110V | HE2aN-S-DC110V |  |  |
| AC type | 12 V AC | HE1aN-S-AC12V | HE2aN-S-AC12V | 10 pcs . | 50 pcs. |
|  | 24 V AC | HE1aN-S-AC24V | HE2aN-S-AC24V |  |  |
|  | 48 V AC | HE1aN-S-AC48V | HE2aN-S-AC48V |  |  |
|  | 100/120V AC | HE1aN-S-AC100V | HE2aN-S-AC100V |  |  |
|  | 200/240V AC | HE1aN-S-AC200V | HE2aN-S-AC200V |  |  |

Note: The TM type of the screw terminals are also available.

## RATING

## 1. Coil data

1) AC coils

| Coil voltage | Pick-up voltage (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | Drop-out voltage (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | Nominal operating current [ $\pm 10 \%$ ] (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | Nominal operating power | Max. allowable voltage (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 12 V AC | $70 \% \mathrm{~V}$ or less of nominal voltage (Initial) | $15 \% \mathrm{~V}$ or more of nominal voltage (Initial) | 138 mA | 1.7VA | $110 \% \mathrm{~V}$ of nominal voltage |
| 24 V AC |  |  | 74 mA | 1.8VA |  |
| 48 V AC |  |  | 39 mA | 1.9 VA |  |
| 100/120V AC |  |  | 18.7 to 2.1 mA | 1.9 to 2.7 VA |  |
| 200/240V AC |  |  | 9.1 to 10.8 mA | 1.8 to 2.6 VA |  |

2) $D C$ coils

| Coil voltage | Pick-up voltage (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | Drop-out voltage (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | Nominal operating current $[ \pm 10 \%]$ (at $20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}$ ) | $\begin{gathered} \text { Coil resistance } \\ {[ \pm 10 \%]\left(\text { at } 20^{\circ} \mathrm{C} 68^{\circ} \mathrm{F}\right. \text { ) }} \end{gathered}$ | Nominal operating power | Max. allowable voltage (at $55^{\circ} \mathrm{C} 131^{\circ} \mathrm{F}$ ) |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 6V DC | $70 \% \mathrm{~V}$ or less of nominal voltage (Initial) | $10 \% \mathrm{~V}$ or more of nominal voltage (Initial) | 320 mA | $18.8 \Omega$ | 1.92W | $110 \% \mathrm{~V}$ of nominal voltage |
| 12 V DC |  |  | 160 mA | $75 \Omega$ | 1.92W |  |
| 24 V DC |  |  | 80 mA | $300 \Omega$ | 1.92W |  |
| 48 V DC |  |  | 40 mA | 1,200 ${ }^{\text {a }}$ | 1.92W |  |
| 100 V DC |  |  | 19 mA | 5,200 | 1.92W |  |
| 110 V DC |  |  | 18 mA | 6,300 | 1.92W |  |

HE

## 2. Specifications

| Characteristics | Item |  | Specifications |  |
| :---: | :---: | :---: | :---: | :---: |
| Contact | Arrangement |  | 1 Form A | 2 Form A |
|  | Initial contact resistance, max |  | Max. $100 \mathrm{~m} \Omega$ (By voltage drop 6 V DC 1A) |  |
|  | Contact material |  | $\mathrm{AgSnO}_{2}$ type |  |
| Rating | Nominal switching capacity (resistive load) |  | 30A 277V AC | 25A 277V AC |
|  | Max. switching power |  | 8,310VA | 6,925VA |
|  | Max. switching voltage |  | 277V AC, 30V DC |  |
|  | Max. switching current |  | 30A | 25A |
|  | Nominal operating power |  | DC: $1.92 \mathrm{~W}, \mathrm{AC}: 1.7$ to 2.7VA |  |
|  | Min. switching capacity (Reference value)* ${ }^{*}$ |  | 100mA 5V DC |  |
| Electrical characteristics | Insulation resistance (Initial) |  | Min. $1,000 \mathrm{M} \Omega$ (at 500 V DC) <br> Measurement at same location as "Initial breakdown voltage" section. |  |
|  | Breakdown voltage (Initial) | Between open contacts | 2,000 Vrms for 1 min (Detection current: 10mA.) |  |
|  |  | Between contact sets | - | 4,000 Vrms for 1min (Detection current: 10mA.) |
|  |  | Between contact and coil | $5,000 \mathrm{Vrms}$ for 1min (Detection current: 10mA.) |  |
|  | Surge breakdown voltage*2 (between contact and coil) |  | Min. 10,000V (initial) |  |
|  | Temperature rise |  | DC: Max. $60^{\circ} \mathrm{C}$ (at $\left.55^{\circ} \mathrm{C}\right)$ (By resistive method), AC: Max. $65^{\circ} \mathrm{C}$ (at $55^{\circ} \mathrm{C}$ ) (By resistive method) |  |
|  | Operate time (at nominal voltage) |  | Max. 30ms (excluding contact bounce time) |  |
|  | Release time (at nominal voltage) |  | DC: Max. 10 ms (excluding contact bounce time, without diode), AC: Max. 30ms (excluding contact bounce time) |  |
| Mechanical characteristics | Shock resistance | Functional | Min. $98 \mathrm{~m} / \mathrm{s}^{2}$ (Half-wave pulse of sine wave: 11 ms ; detection time: $10 \mu \mathrm{~s}$.) |  |
|  |  | Destructive | Min. $980 \mathrm{~m} / \mathrm{s}^{2}$ (Half-wave p | ms.) |
|  | Vibration resistance | Functional | 10 to 55 Hz at double amplitude of 1 mm (Detection time: $10 \mu \mathrm{~s}$.) |  |
|  |  | Destructive | 10 to 55 Hz at double amplitude of 1.5 mm |  |
| Expected life | Mechanical |  | DC: Min. $10^{7}$ (at 180 times/min.), AC: Min. $5 \times 10^{6}$ (at 180 times/min.) |  |
|  | Electrical (resistive load) (at 20 times/min.) |  | Min. $10^{5}$ (30A 277V AC) <br> Min. $2 \times 10^{5}$ (30A 250 V AC) | Min. $10^{5}$ (25A 277V AC) <br> Min. $2 \times 10^{5}$ (20A 250 V AC) |
| Conditions | Conditions for operation, transport and storage ${ }^{* 3}$ |  | Ambient temperature: $-50^{\circ} \mathrm{C}$ to $+55^{\circ} \mathrm{C}-58^{\circ} \mathrm{F}$ to $+131^{\circ} \mathrm{F}$ Humidity: 5 to $85 \%$ R.H. (Not freezing and condensing at low temperature), Air pressure: 86 to 106 kPa |  |
|  | Conditions for operation, transport and storage*3 |  | 20 times/min. (at max. rating) |  |
| Unit weight |  |  | PC board type: approx. 80 Screw terminal type: approx | /TM type: approx. 90g 3.17oz, |

*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.
*2 Wave is standard shock voltage of $\pm 1.2 \times 50 \mu$ s according to JEC-212-1981
*3 The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to " 6 . Usage, Storage and Transport Conditions" in AMBIENT ENVIRONMENT section in Relay Technical Information.

## REFERENCE DATA

## 1 Form A Type

1. Maximum switching power

$\longrightarrow$ Contact voltage, V
2. Life curve

3. Coil temperature rise (DC type)

Measured portion: Inside the coil
Contact current: 30 A


