

## RATING

### 1. Coil data

#### 1) AC coils

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 20°C 68°F)
12V AC	70%V or less of nominal voltage (Initial)	15%V or more of nominal voltage (Initial)	138mA	1.7VA	110%V of nominal voltage
24V AC			74mA	1.8VA	
48V AC			39mA	1.9VA	
100/120V AC			18.7 to 2.1mA	1.9 to 2.7VA	
200/240V AC			9.1 to 10.8mA	1.8 to 2.6VA	

#### 2) DC coils

Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F)	Coil resistance [±10%] (at 20°C 68°F)	Nominal operating power	Max. applied voltage (at 55°C 131°F)
6V DC	70%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	320mA	18.8Ω	1.92W	110%V of nominal voltage
12V DC			160mA	75Ω	1.92W	
24V DC			80mA	300Ω	1.92W	
48V DC			40mA	1,200Ω	1.92W	
100V DC			19mA	5,200Ω	1.92W	
110V DC			18mA	6,300Ω	1.92W	

## 2. Specifications

Characteristics	Item	Specifications	
Contact	Contact material	AgSnO <sub>2</sub> type	
	Arrangement	1 Form A   2 Form A	
	Contact resistance (Initial)	Max. 100 mΩ (By voltage drop 6 V DC 1A)	
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: 1.92W, AC: 1.7 to 2.7VA	
	Min. switching capacity (Reference value)*1	100mA 5V DC	
Electrical characteristics	Insulation resistance (Initial)	Min. 1,000MΩ (at 500V DC) Measurement at same location as "Breakdown voltage" section.	
	Breakdown voltage (Initial)	Between open contacts	2,000 Vrms for 1min (Detection current: 10mA.)
		Between contact sets	—   4,000 Vrms for 1min (Detection current: 10mA.)
		Between contact and coil	5,000 Vrms for 1min (Detection current: 10mA.)
	Surge breakdown voltage*2 (between contact and coil) (Initial)	Min. 10,000V	
	Operate time (at nominal voltage) (Initial)	Max. 30ms (excluding contact bounce time)	
Release time (at nominal voltage) (Initial)	DC: Max. 10ms (excluding contact bounce time, without diode), AC: Max. 30ms (excluding contact bounce time)		
Mechanical characteristics	Shock resistance	Functional	Min. 98 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)
		Destructive	Min. 980 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)
	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1 mm (Detection time: 10μs.)
		Destructive	10 to 55 Hz at double amplitude of 1.5 mm
Expected life	Mechanical	DC: Min. 10 <sup>7</sup> (at 180 times/min.), AC: Min. 5×10 <sup>6</sup> (at 180 times/min.)	
	Electrical (resistive load) (at 20 times/min.)	Min. 2×10 <sup>5</sup> (30A 250V AC)   Min. 10 <sup>5</sup> (25A 277V AC) Min. 2×10 <sup>5</sup> (20A 250V AC)	
Conditions	Conditions for operation, transport and storage*3	Ambient temperature: -50°C to +55°C -58°F to +131°F Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature), Air pressure: 86 to 106kPa	
	Max. operating speed	20 times/min. (at max. rating)	
Unit weight		PC board type: approx. 80g 2.82oz, Plug-in type/TM type: approx. 90g 3.17oz, Screw terminal type: approx. 120g 4.23oz	

Notes: \*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.

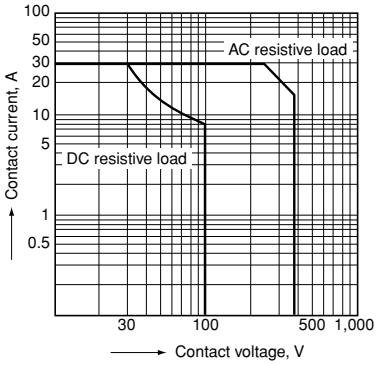
\*2. Wave is standard shock voltage of ±1.2×50μs according to JEC-212-1981

\*3. The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

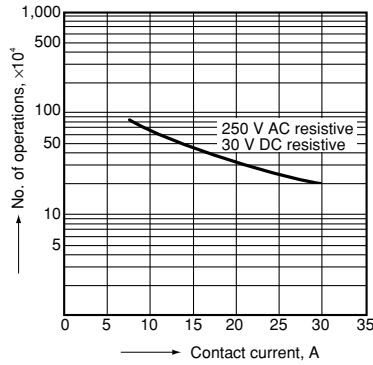
# REFERENCE DATA

## 1 Form A Type

### 1. Maximum switching power

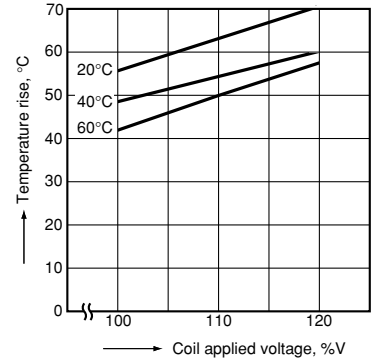


### 2. Life curve



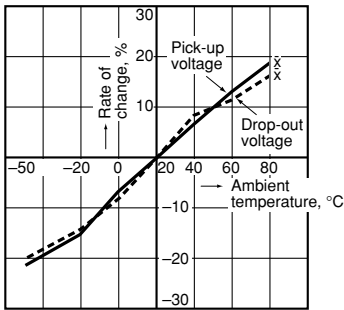
### 3. Coil temperature rise (DC type)

Measured portion: Inside the coil  
Contact current: 30 A



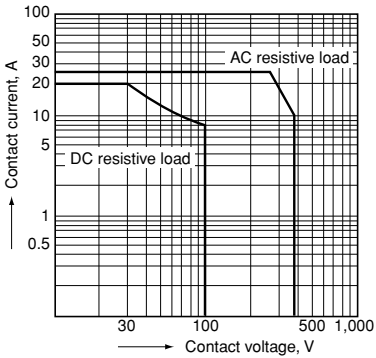
### 4. Ambient temperature characteristics

Tested sample: HE1aN-AC120V, 6 pcs.

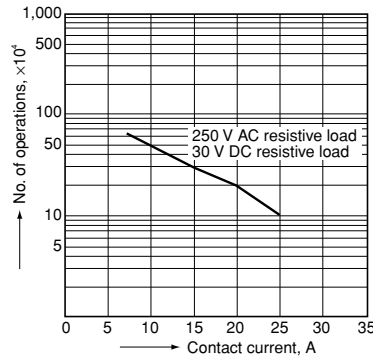


## 2 Form A Type

### 1. Maximum switching power

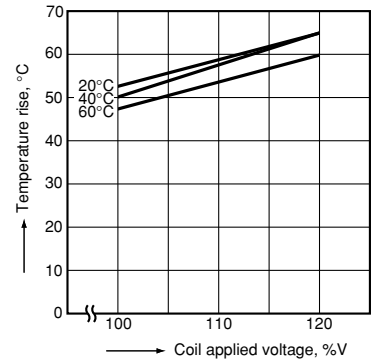


### 2. Life curve



### 3. Coil temperature rise (DC type)

Measured portion: Inside the coil  
Contact current: 25 A



### 4. Ambient temperature characteristics

Tested sample: HE2aN-AC120V, 6 pcs.

