

mm inch

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

FEATURES

- High switching capacity: 10 A 277V AC**
- High insulation resistance between contact and coil**
 - Creepage distance and clearances between contact and coil: Min. 6 mm .236 inch (In compliance with IEC65)
 - Surge withstand voltage between contact and coil: 10,000 V or more
- High noise immunity realized by the card separation structure between contact and coil**

- Popular terminal pitch in AV equipment field**

- Space-saving slim type**

Base area: Width 11 × Length 24 mm
 Width .433 × Length .945 inch

- Conforms to the various safety standards**

UL/CSA, VDE, TÜV and SEMKO, SEV approved

SPECIFICATIONS

Contact

| | | |
|---|---|---------------------------|
| Arrangement | 1 Form A | |
| Initial contact resistance, max. (By voltage drop 6 V DC 1 A) | Max. 100 mΩ | |
| Contact material | AgSnO ₂ type | |
| Rating (resistive load) | Nominal switching capacity | 10 A 277 V AC, 5 A 30V DC |
| | Max. switching power | 2,770 V A, 150W |
| | Max. switching voltage | 277 V AC, 30 V DC |
| | Max. switching current | 10 A (AC), 5A (DC) |
| Expected life (min. operations) | Min. switching capacity* ¹ (Reference value) | 100 mA, 5 V DC |
| | Mechanical (at 180 cpm) | 2 × 10 ⁶ |
| | Electrical (at 20 cpm) (at rated load) | 10 ⁵ |

Coil

| | |
|-------------------------|--------|
| Nominal operating power | 530 mW |
|-------------------------|--------|

#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.

Remarks

- * Specifications will vary with foreign standards certification ratings.
- ¹ Measurement at same location as "Initial breakdown voltage" section.
- ² Detection current: 10mA
- ³ Wave is standard shock voltage of ±1.2 × 50μs according to JEC-212-1981
- ⁴ Excluding contact bounce time.
- ⁵ Half-wave pulse of sine wave: 11 ms; detection time: 10 μs
- ⁶ Half-wave pulse of sine wave: 6 ms
- ⁷ Detection time: 10 μs
- ⁸ Refer to 6. Conditions for operation, transport and storage mentioned in AMBIENT ENVIRONMENT

Characteristics

| | | |
|--|--|---|
| Max. operating speed | 20 cpm (at rated load) | |
| Initial insulation resistance* ¹ | Min. 1,000 MΩ (at 500 V DC) | |
| Initial * ² breakdown voltage | Between open contacts | 1,000 Vrms for 1 min. |
| | Between contact and coil | 4,000 Vrms for 1 min. |
| Initial surge voltage between contact and coil* ³ | 10,000 V | |
| Operate time* ⁴ (at nominal voltage) | Max. 15 ms (at 20°C 68°F) | |
| Release time (without diode)* ⁴ (at nominal voltage) | Max. 5 ms (at 20°C 68°F) | |
| Temperature rise (at 70°C) | Max. 45°C with nominal coil voltage and at 10 A contact carrying current (resistance method) | |
| Shock resistance | Functional* ⁵ | 200 m/s ² {approx. 20 G} |
| | Destructive* ⁶ | 1,000 m/s ² {approx. 100 G} |
| Vibration resistance | Functional* ⁷ | 10 to 55Hz at double amplitude of 1.5mm |
| | Destructive | 10 to 55Hz at double amplitude of 1.5mm |
| Conditions for operation, transport and storage* ⁸ (Not freezing and condensing at low temperature) | Ambient temp. | -40°C to +70°C -40°F to +158°F |
| | Humidity | 5 to 85% R.H. |
| | Air pressure | 86 to 106 kPa |
| Unit weight | Approx. 12 g .42 oz | |

TYPICAL APPLICATIONS

- Audio visual equipment
TVs, VTRs
- Office equipment
LBP, CRT
- Home appliances
Refrigerator, Air conditioner

ORDERING INFORMATION

Ex. LKP 1a F - 12V

| | | |
|---------------------|-------------------------|----------------------|
| Contact arrangement | Protective construction | Coil voltage(DC) |
| 1a: 1 Form A | F: Flux-resistant type | 5, 6, 9, 12, 18, 24V |

- UL/CSA, TÜV, SEMKO, TV-5 approved type is standard.
 Notes 1. Standard packing Carton: 100 pcs. Case: 500 pcs.
 2. 5 V, 9 V, 18 V DC types are also available. Please consult us for details.

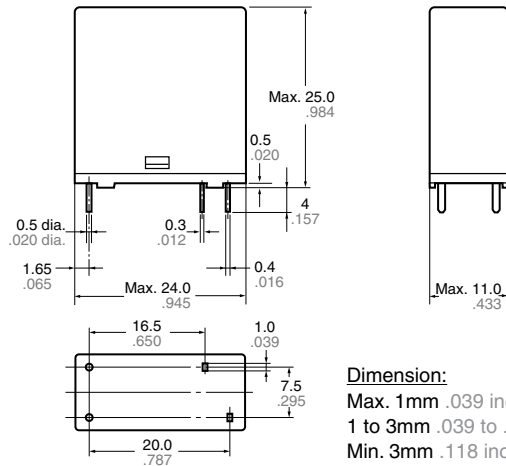
LK-P

TYPES AND COIL DATA (at 20°C 68°F)

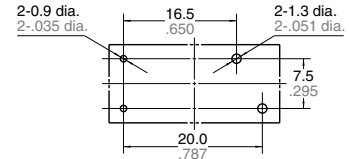
| Part No. | Nominal voltage, V DC | Pick-up voltage V DC (max.) (Initial) | Drop-out voltage V DC (min.) (Initial) | Coil resistance, Ω ($\pm 10\%$) | Nominal operating current, mA ($\pm 10\%$) | Nominal operating power, mW | Max. allowable voltage, V DC (at 20°C 68°F) |
|------------|-----------------------|---------------------------------------|--|--|--|-----------------------------|---|
| LKP1aF-5V | 5 | 3.5 | 0.5 | 47 | 106.4 | 530 | 6.5 |
| LKP1aF-6V | 6 | 4.2 | 0.6 | 68 | 88.3 | 530 | 7.8 |
| LKP1aF-9V | 9 | 6.3 | 0.9 | 153 | 58.8 | 530 | 11.7 |
| LKP1aF-12V | 12 | 8.4 | 1.2 | 272 | 44.2 | 530 | 15.6 |
| LKP1aF-18V | 18 | 12.6 | 1.8 | 611 | 29.5 | 530 | 23.4 |
| LKP1aF-24V | 24 | 16.8 | 2.4 | 1,087 | 22.1 | 530 | 31.2 |

DIMENSIONS

mm inch



PC board pattern (Bottom view)



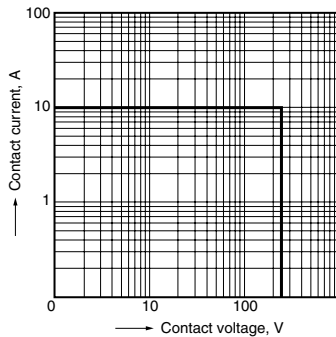
Tolerance: $\pm 0.1 \pm 0.004$

Schematic (Bottom view)



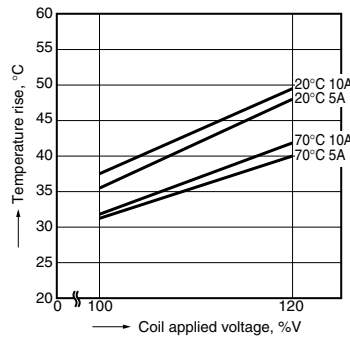
REFERENCE DATA

1. Max. switching power



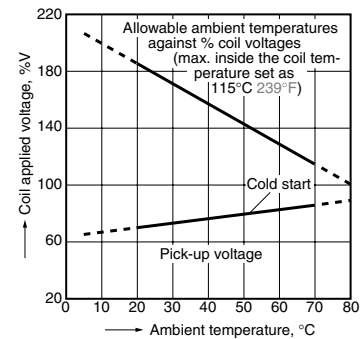
2. Coil temperature rise

Sample: LKP1aF-12V, 6 pcs.
Point measured: coil inside
Contact current: 5 A, 10 A



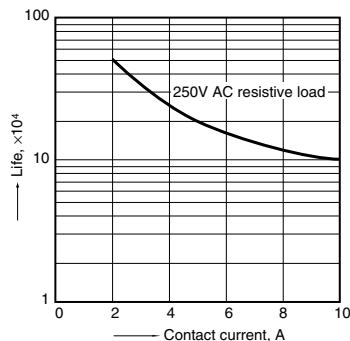
3. Ambient temperature characteristics and coil applied voltage

Contact current: 10 A



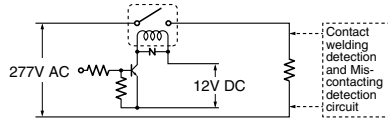
4. Life curve

Operation frequency: 20 times/min.
(ON/OFF = 1.5s: 1.5s)
Ambient temperature: room temperature

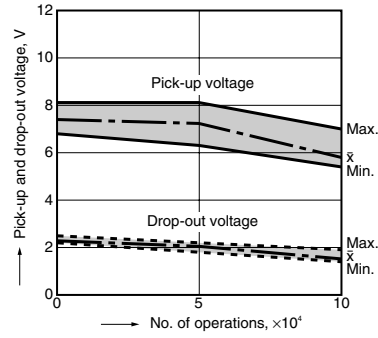


5. Electrical life test
 (10 A 277 V AC, resistive load)
 Sample: LKP1aF-12V, 6 pcs.
 Operation frequency: 20 times/min.
 (ON/OFF = 1.5s: 1.5s)
 Ambient temperature: 20°C 68°F

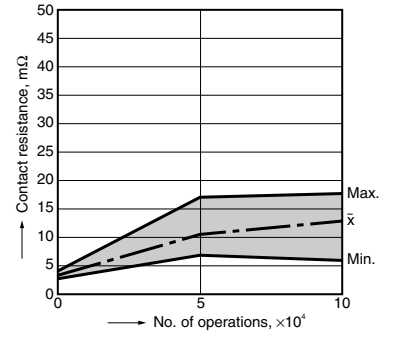
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



For Cautions for Use, see Relay Technical Information