



**TV-8 rated.  
1 Form A 5A power relays**

# LK-T RELAYS



**RoHS compliant**

Protective construction: Flux-resistant type

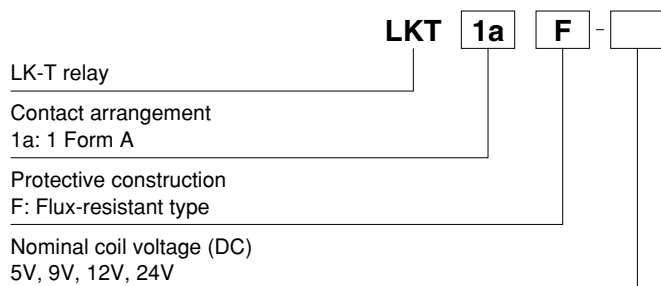
### FEATURES

- 1. High inrush current capability**
  - 1) Operating load capability: inrush 118 A, steady 8 A
  - 2) UL/C-UL TV-8 approved
- 2. Long insulation distance**
  - 1) Creepage distance and clearances between contact and coil: Min. 6 mm .236 inch (In compliance with IEC60065)
  - 2) Surge withstand voltage between contact and coil: 10,000 V or more
- 3. Conforms to the various safety standards**  
UL/C-UL, TÜV, and SEMKO approved

### TYPICAL APPLICATIONS

- Audio visual equipment
- Flat TVs and audio equipment, etc.
- Office equipment
- Home appliances

### ORDERING INFORMATION



Notes: Certified by UL/C-UL, TÜV and SEMKO

### TYPES

| Contact arrangement | Nominal coil voltage | Part No.   |
|---------------------|----------------------|------------|
| 1 Form A            | 5V DC                | LKT1aF-5V  |
|                     | 9V DC                | LKT1aF-9V  |
|                     | 12V DC               | LKT1aF-12V |
|                     | 24V DC               | LKT1aF-24V |

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

Note: 3 V, 6 V and 18 V DC types are also available. Please consult us for details.

### RATING

#### 1. Coil data

| 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 20°C 68°F) |
|----------------------|---|---|---|---------------------------------------|-------------------------|-------------------------------------|
| 5V DC                | 70%V or less of nominal voltage (Initial) | 10%V or more of nominal voltage (Initial) | 50.0mA  | 100Ω                                  | 250mW                   | 6.5V DC                             |
| 9V DC                |   |   | 27.8mA  | 324Ω                                  |                         | 11.7V DC                            |
| 12V DC               |   |   | 20.8mA  | 576Ω                                  |                         | 15.6V DC                            |
| 24V DC               |   |   | 10.4mA  | 2,304Ω                                |                         | 31.2V DC                            |

2. Specifications

| Characteristics  | Item   | Specifications  |   |
|--|--|---|---|
| Contact  | Arrangement  | 1 Form A  |   |
|  | Contact resistance (Initial)                                   | Max. 100 mΩ (By voltage drop 6 V DC 1A)   |   |
|  | Contact material   | AgSnO <sub>2</sub> type   |   |
| Rating   | Nominal switching capacity (resistive load)                    | 5A 277V AC  |   |
|  | Max. switching power (resistive load)                          | 1,385VA   |   |
|  | Max. switching voltage   | 277V AC   |   |
|  | Max. switching current   | 8A (AC)   |   |
|  | 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   | 1,000 Vrms for 1 min. (Detection current: 10 mA)                                  |
|  |  | Between contact and coil  | 4,000 Vrms for 1 min. (Detection current: 10 mA)                                  |
|  | Surge breakdown voltage*2 (Between contact and coil) (Initial) | 10,000 V  |   |
|  | Operate time (at nominal voltage) (at 20°C 68°F) (Initial)     | Max. 15 ms (excluding contact bounce time.)   |   |
| Release time (at nominal voltage) (at 20°C 68°F) (Initial) | Max. 5 ms (excluding contact bounce time) (Without diode)      |   |   |
| Mechanical characteristics                                 | Shock resistance   | Functional  | 200 m/s <sup>2</sup> (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.) |
|  |  | Destructive   | 1,000 m/s <sup>2</sup> (Half-wave pulse of sine wave: 6 ms.)                      |
|  | Vibration resistance   | Functional  | 10 to 55 Hz at double amplitude of 1.5 mm (Detection time: 10μs.)                 |
|  |  | Destructive   | 10 to 55 Hz at double amplitude of 1.5 mm   |
| Expected life  | Mechanical (at 180 times/min.)                                 | Min. 10 <sup>6</sup>  |   |
|  | Electrical (at 20 times/min.)                                  | Min. 10 <sup>5</sup> (ON: 1.5s, OFF: 1.5s, at nominal switching capacity)   |   |
| Conditions   | Conditions for operation, transport and storage*3              | Ambient temperature: -40°C to +70°C -40°F to +158°F,<br>Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature),<br>Air pressure: 86 to 106kPa |   |
|  | Max. operating speed   | 20 times/min. (at nominal switching capacity)   |   |
| Unit weight  |  | Approx. 12 g .42 oz   |   |

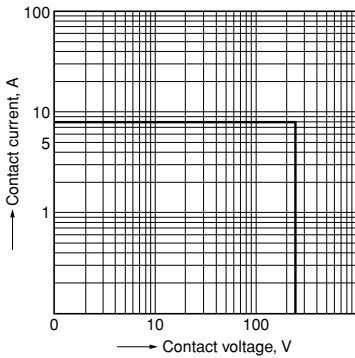
Notes: \*1. This value can change due to the switching frequency, environmental conditions, and desired reliability level, therefore it is recommended to check this with the actual load.

\*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.

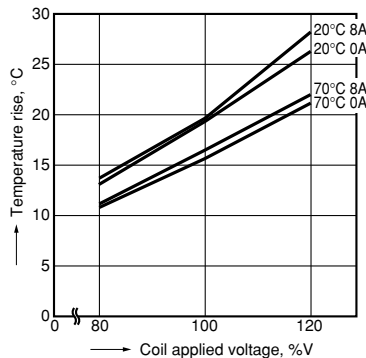
REFERENCE DATA

1. Max. switching power (AC resistive load)

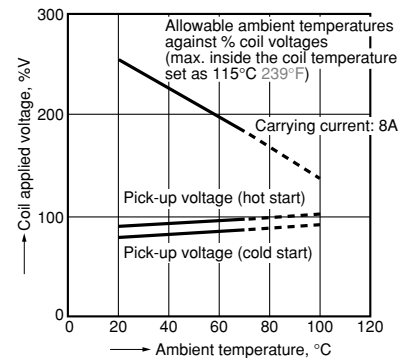


2. Coil temperature rise

Sample: LKT1aF-12V, 6 pcs.  
Point measured: coil inside  
Contact current: 0 A, 8A



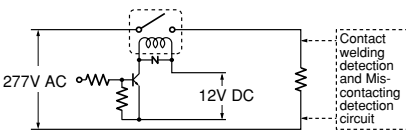
3. Ambient temperature characteristics and coil applied voltage



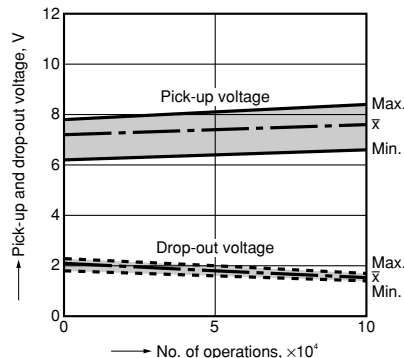
4-(1). Electrical life test (5 A 277 V AC, resistive load)

Sample: LKT1aF-12V, 6 pcs.  
Operation frequency: 20 times/min.  
(ON/OFF = 1.5s: 1.5s)  
Ambient temperature: 20°C 68°F

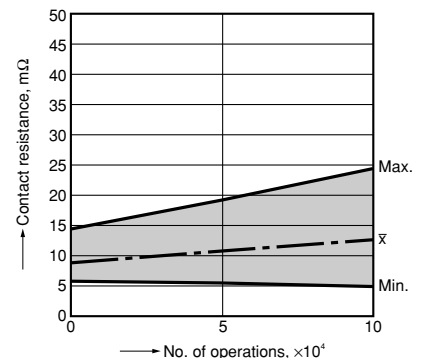
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



4-(2). Electrical life test  
(UL508 TV-8 rating test)

Sample: LKT1aF-12V, 6 pcs.

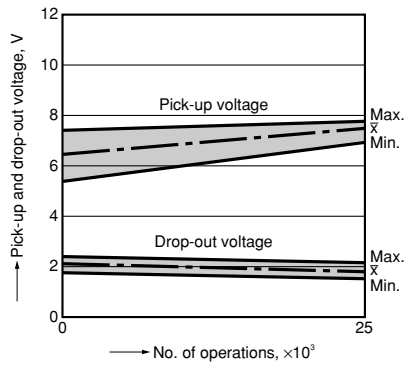
• Overload test

Load: 12 A 120 V AC (60 Hz),  
Inductive load (cos φ = 0.75)  
Operation frequency: 6 times/min  
(ON : OFF = 1 s : 9 s)  
No. of operations: 50 ope.

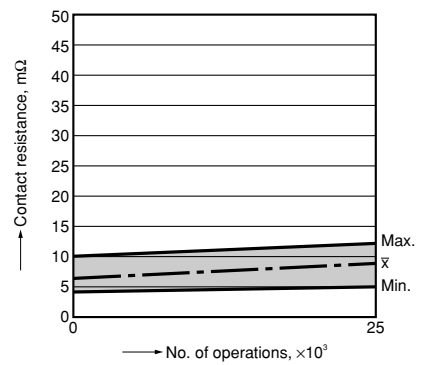
• Endurance test

Load: 8A 120 V AC (960 W lamp load),  
(Inrush: 118 A)  
Operation frequency: 1 times/min  
(ON : OFF = 1 s : 59 s)  
No. of operations: 25,000 ope.

Change of pick-up and drop-out voltage



Change of contact resistance



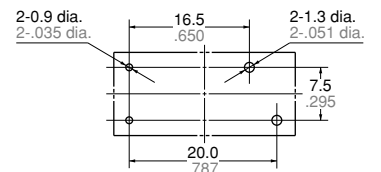
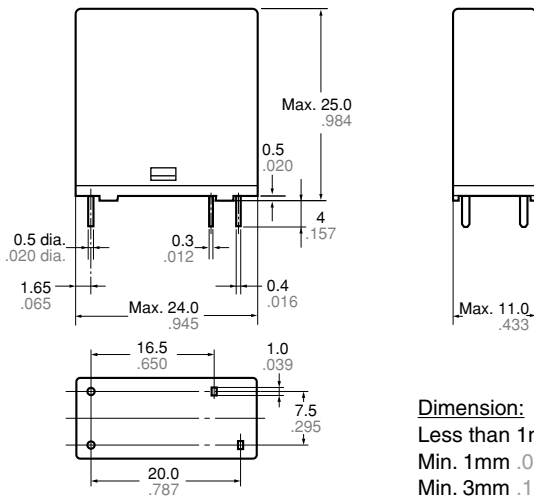
**DIMENSIONS** (mm inch)

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

**CAD Data**

External dimensions

PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)



Dimension:

Less than 1mm .039inch:  
Min. 1mm .039inch less than 3mm .118 inch: ±0.2 ±.008  
Min. 3mm .118 inch: ±0.3 ±.012

General tolerance

±0.1 ±.004  
±0.2 ±.008  
±0.3 ±.012

**SAFETY STANDARDS**

| UL/C-UL (Recognized) |                        |                     | VDE (Certified)     |                       |                     | TÜV (Certified)   |                       |                     |
|----------------------|------------------------|---------------------|---------------------|-----------------------|---------------------|-------------------|-----------------------|---------------------|
| File No.             | Contact rating         | Cycles              | File No.            | Contact rating        | Cycles              | File No.          | Contact rating        | Cycles              |
| E43149               | 8A 277V AC General use | 5 × 10 <sup>4</sup> | 40014390            | 8A 250V AC (cosφ=1.0) | 2 × 10 <sup>4</sup> | B 12 09 13461 333 | 8A 250V AC (cosφ=1.0) | 2 × 10 <sup>4</sup> |
|                      | 5A 277V AC General use | 10 <sup>5</sup>     |                     | —                     | —                   |                   | —                     | —                   |
|                      | 5A 30V DC Resistive    | 10 <sup>5</sup>     |                     | —                     | —                   |                   | —                     | —                   |
| SEMKO (Certified)    |                        |                     | TV Rating (UL/C-UL) |                       |                     |                   |                       |                     |
| File No.             | Contact rating         |                     | File No.            | Contact rating        |                     |                   |                       |                     |
| 1408509              | 3/100A 250V AC         |                     | E43149              | TV-8                  |                     |                   |                       |                     |
|                      | 5/40A 250V AC          |                     |                     | —                     |                     |                   |                       |                     |

\* CSA standard: Certified by C-UL

**EN/IEC VDE Certified  
INSULATION CHARACTERISTIC(IEC61810-1)**

| Item  | Characteristic        |
|---|-----------------------|
| Clearance/Creepage distance (IEC61810-1)      | Min. 5.5mm/5.5mm      |
| Category of protection (IEC61810-1)           | RT II                 |
| Tracking resistance (IEC60112)                | PTI 175               |
| Insulation material group                     | III a                 |
| Over voltage category                         | III                   |
| Rated voltage                                 | 250V                  |
| Pollution degree                              | 2                     |
| Type of insulation (Between contact and coil) | Reinforced insulation |
| Type of insulation (Between open contacts)    | Micro disconnection   |

## NOTES

1. For cautions for use, please read  
“GENERAL APPLICATION  
GUIDELINES”.

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Please contact .....

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