



1a 10A TV-5 rated power relays

RU (E DE LAYS



FEATURES

- 1. High switching capacity: 10 A 277V AC
- 2. High insulation resistance between contact and coil
- 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
- 3. Popular terminal pitch in AV equipment field
- 4. Space-saving slim type Base area: Width 11 × Length 24 mm

Width .433 × Length .945 inch

5. Conforms to the various safety standards

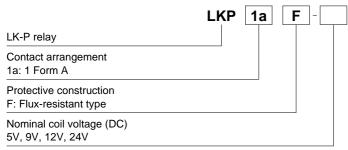
UL, CSA, VDE, TÜV and SEMKO approved

TYPICAL APPLICATIONS

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

RoHS compliant

ORDERING INFORMATION



Notes: Certified by UL, CSA, TÜV and SEMKO

VDE approved type is available. Please consult us for details.

TYPES

Contact arrangement	Nominal coil voltage	Part No.				
	5V DC	LKP1aF-5V				
1 Form A	9V DC	LKP1aF-9V				
1 Form A	12V DC	LKP1aF-12V				
	24V DC	LKP1aF-24V				

Notes: 1. Standard packing Carton: 100 pcs. Case: 500 pcs.

2. 18 V DC types are also available. Please consult us for details.

RATING

1. Coil data

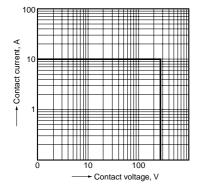
Nominal coil voltage	Pick-up voltage (at 20°C 68°F)	Drop-out voltage (at 20°C 68°F)	Nominal operating current [±10%] (at 20°C 68°F) Coil resistance [±10%] (at 20°C 68°F)		Nominal operating power	Max. applied voltage (at 20°C 68°F)	
5V DC			106.4mA	47Ω		6.5V DC	
9V DC	70%V or less of nominal voltage (Initial)	10%V or more of nominal voltage (Initial)	58.8mA	153Ω	530mW	11.7V DC	
12V DC			44.2mA	272Ω	55011100	15.6V DC	
24V DC	()		22.1mA	1,087Ω		31.2V DC	

2. Specifications

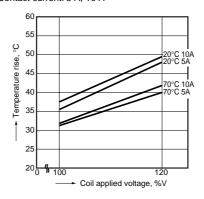
Characteristics		Item	Specifications					
Contact	Arrangement		1 Form A					
	Contact resistance (I	nitial)	Max. 100 mΩ (By voltage drop 6 V DC 1A)					
	Contact material		AgSnO₂ type					
	Nominal switching ca	apacity (resistive load)	10A 277V AC, 5A 30V DC					
	Max. switching powe	r (resistive load)	2,770VA, 150W					
Rating	Max. switching voltage	je	277V AC, 30V DC					
	Max. switching curre	nt	10A (AC), 5A (DC)					
	Min. switching capac	ity (reference value)*1	100mA, 5V DC					
	Insulation resistance	(Initial)	Min. 1,000M Ω (at 500V DC) Measurement at same location as "Breakdown voltage" section.					
	Breakdown voltage	Between open contacts	1,000 Vrms for 1 min. (Detection current: 10 mA)					
Electrical characteristics	(Initial)	Between contact and coil	4,000 Vrms for 1 min. (Detection current: 10 mA)					
	Temperature rise (co	il)	Max. 45°C 113°F (By resistive method, nominal coil voltage applied to the coil; contact carrying current: 10A, at 70°C 158°F)					
	Surge breakdown vo (Between contact an		10,000 V					
	Operate time (at non (Initial)	ninal voltage) (at 20°C 68°F)	Max. 15 ms (excluding contact bounce time.)					
	Release time (at non (Initial)	ninal voltage) (at 20°C 68°F)	Max. 5 ms (excluding contact bounce time) (Without diode)					
Mechanical	Shock resistance	Functional	200 m/s² (Half-wave pulse of sine wave: 11 ms; detection time: 10μs.)					
	SHOCK resistance	Destructive	1,000 m/s² (Half-wave pulse of sine wave: 6 ms.)					
characteristics	Vibration resistance	Functional	10 to 55 Hz at double amplitude of 1.5 mm (Detection time: 10μs.)					
	VIDIALION TESISLANCE	Destructive	10 to 55 Hz at double amplitude of 1.5 mm					
Expected life	Mechanical (at 180 ti	mes/min.)	Min. 2×10 ⁶					
	Electrical		Min. 10 ⁵ (ON/OFF = 1.5s : 1.5s at rated load)					
Conditions	Conditions for operat	ion, transport and storage*3	Ambient temperature: -40°C to +70°C -40°F to +158°F, Humidity: 5 to 85% R.H. (Not freezing and condensing at low temperature), Air pressure: 86 to 106kPa					
	Max. operating speed	b	20 times/min. (at nominal switching capacity)					
Unit weight			Approx. 12 g .42 oz					

REFERENCE DATA

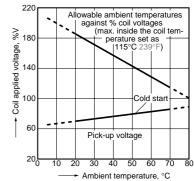
1. Max. switching power



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



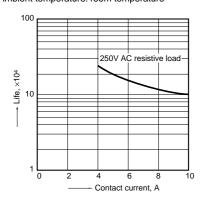
^{*} Specifications will vary with foreign standards certification ratings.

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 $\pm 1.2 \times 50 \mu s$ according to JEC-212-1981

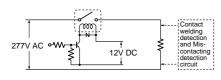
^{*3.} The upper limit of the ambient temperature is the maximum temperature that can satisfy the coil temperature rise value. Refer to Usage, transport and storage conditions in NOTES.

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

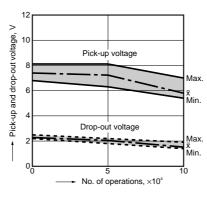


5. Electrical life test (10 A 277 V AC, resistive load) Sample: LKP1aF-12V, 6 pcs. Operation frequency: 20 times/min. (ON/OFF = 1.5s: 1.5s) Ambient temperature: 20°C 68°F

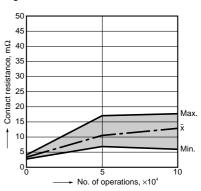
Circuit:



Change of pick-up and drop-out voltage



Change of contact resistance



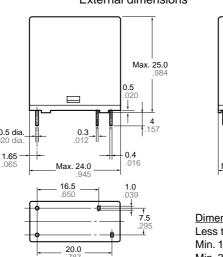
DIMENSIONS (mm inch)

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

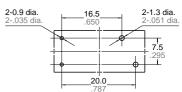
CAD Data



External dimensions



PC board pattern (Bottom view)



Tolerance: ±0.1 ±.004

Schematic (Bottom view)

9

Dimension:

Less than 1mm .039inch:

Min. 1mm .039inch less than 3mm .118 inch: $\pm 0.2 \pm .008$ Min. 3mm .118 inch:

General tolerance

+0.1 + .004**±0.3** ±.012

SAFETY STANDARDS

UL/C-UL (Recognized)		CSA (Certified)		VDE (Certified)		TV rating (UL/CSA)		TÜV (Certified)		SEMKO (Certified)	
File No.	Contact rating	File No.	Contact rating	File No.	Contact rating	File No.	Rating	File No.	Rating	File No.	Contact rating
E43149	10A 277V AC 5A 30V DC		10A 277V AC 5A 30V DC	40014390	10A 250V AC (cosφ=1.0)	UL E43149 CSA LR26550			10A 250V AC (cosφ=1.0) 5A 30V DC (0ms)		3/100A 250V AC 5/40A 250V AC 10A 250V DC

For Cautions for Use.