

HFK8-T

AUTOMOTIVE RELAY



Typical Applications

Lamp control, Heater control,
Motor control such as fans and pumps

Features

- Max.continuous current 40A
- Max.making current 120A
- Extended temp. range up to 125°C
- With highly established reliability
- Strong resistance ability to shock & vibration
- Reflow soldering version available
- RoHS & ELV compliant

CHARACTERISTICS

Contact arrangement	1U
Voltage drop (initial) ¹⁾	Typ.: 40mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current ²⁾	23°C: 54A 30min/40A continuous 85°C: 50A 30min/30A continuous 125°C: 47A 30min/20A continuous
Max. switching current	Make: 120A ³⁾ Break: 60A ⁴⁾
Max. switching voltage	16VDC
Min. contact load	1A 12VDC
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	5 x 10 ⁶ OPS
Initial insulation resistance	100MQ (at 500VDC)
Dielectric strength ⁵⁾	500VAC
Operate time	Typ.: 4ms, Max.: 10ms
Release time ⁶⁾	Typ.: 1ms Max.: 10ms
Ambient temperature	-40°C to 125°C

Vibration resistance ⁷⁾ (Functional)	10Hz to 300Hz, 44.1 m/s ²
Vibration resistance (Destructive)	10Hz to 500Hz, 44.1 m/s ²
Shock resistance ⁷⁾ (Functional)	100 m/s ²
Shock resistance (Destructive)	1000 m/s ²
Termination	PCB ⁸⁾
Construction	Plastic sealed, Flux proofed
Unit weight	Approx. 6.5g

- 1) Initial value, Equivalent to the max. initial contact resistance is 100mΩ (at 1A 6VDC).
- 2) Test under the following conditions:
a. The relay is mounted on the PCB, the coil is applied with 100% rated voltage;
b. The PCB board is a double layer board. The thickness of the copper foil is 4 oz (140μm), the width of each copper foil is 7.52×(1×5%)mm, the length of the copper foil is 50 mm±1 mm, and the Tg value of the PCB board is 150 °C.
c. The installation spacing between relay samples is 100mm.
- 3) Inrush peak current under lamp load, at 14VDC.
- 4) At 23°C, 14VDC (100 cycles, resistive load).
- 5) 1min, leakage current less than 1mA.
- 6) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
- 7) When non-energized, close time of NO contacts shall not exceed 10μs, When energized, opening time of closed NO contacts shall not exceed 10μs.
- 8) Since it is an environmental friendly product, please select lead-free solder when welding. The recommended soldering temperature and time is (260±3)°C, (5±0.3)s.

CONTACT DATA ¹⁾

Load voltage	Load type		Load current	On/Off ratio		Electrical endurance ¹⁾ OPS	Contact material	Ambient temp.
			1U	On s	Off s			
			NO					
14VDC	Resistive	Make	40	2	2	1×10 ⁵	AgSnO ₂	23°C
		Break	40					
	Lamp	Make	120	2	2	1×10 ⁵	AgSnO ₂	23°C
		Break	14					
	Capacitive	Make	90	0.4	4.6	1×10 ⁵	AgSnO ₂	23°C
		Break	20					
	Inductive	Make	45	2	2	3.5×10 ⁵	AgSnO ₂	-40°C to 125°C
		Break	11.5					



HONGFA RELAY

ISO9001, IATF16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2025 Rev. 1.00

CONTACT DATA

- 1) Loads mentioned in this chart is for relays with no parallel diode or Zener Diode. For those with parallel diode, Zener Diode or other components, please contact Hongfa for more technical supports.
Please also contact Hongfa if the actual application load is different from what mentioned above.
- 2) When the load voltage is 24VDC or higher, or the application conditions are different from the table above, please submit the detailed conditions to Hongfa to get more support.

COIL DATA

Nominal voltage VDC	Pick-up voltage VDC max.			Drop-out voltage VDC min.			Coil resistance $\times(1\pm10\%) \Omega$			Power consumption W 23°C
	23°C	85°C	125°C	23°C	85°C	125°C	23°C	85°C	125°C	
12	6.5	8.1	9.1	1.0	1.2	1.4	225	279	314	0.64

ORDERING INFORMATION

	HFK8-T /	12	-SH	S	P	T	(XXX)
Type	HFK8-T: Reflow soldering version or high heat-resistant version						
Coil voltage	12: 12VDC						
Contact arrangement	SH: 1 Form U						
Construction	S: Plastic sealed ¹⁾ Nil: Flux proofed						
Coil power	P: 0.64W						
Contact Material	T: AgSnO ₂						
Special code ²⁾	XXX: Customer special requirement Nil: Standard						

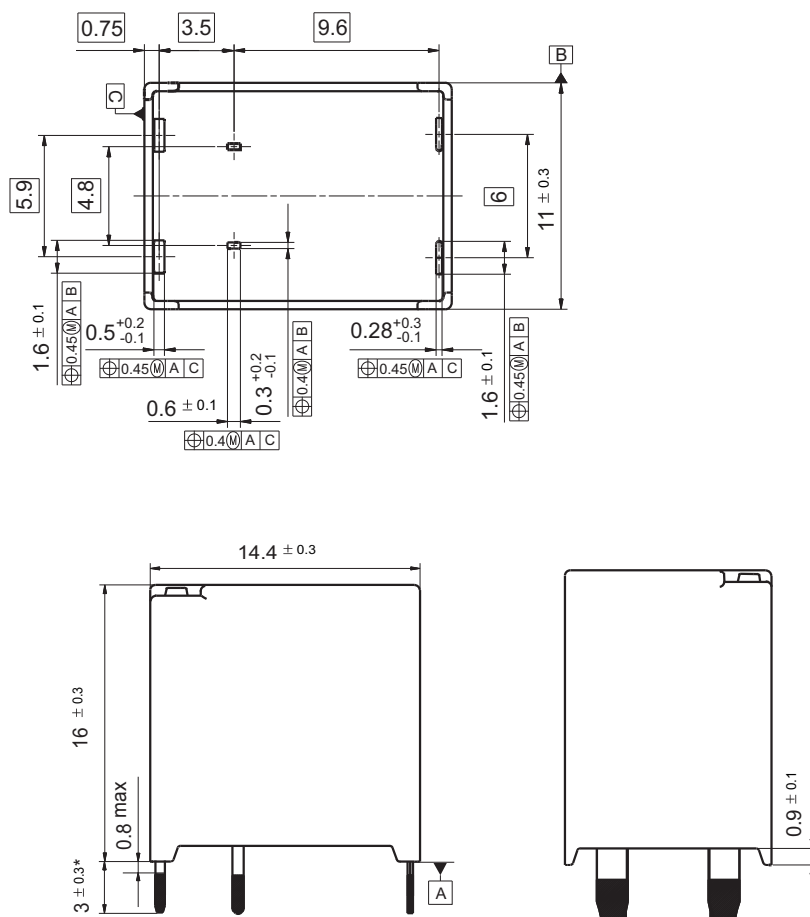
- Notes:** 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
2) The performance parameters of products with characteristic numbers shall be subject to the specific specifications provided by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

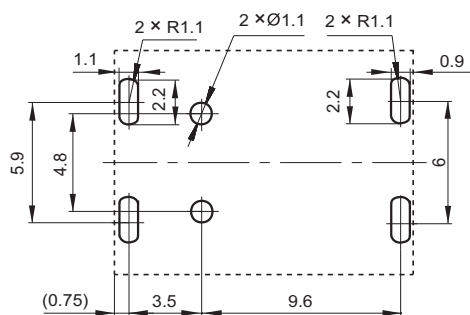
Outline Dimensions

HFK8-T:

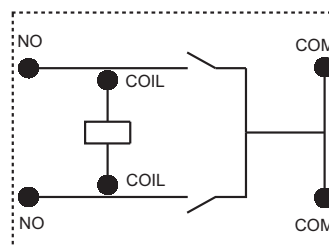


Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)



Wiring Diagram (Bottom view)



Remark: PC board dimensions hadn't specified tolerance: ±0.1

CHARACTERISTIC CURVES

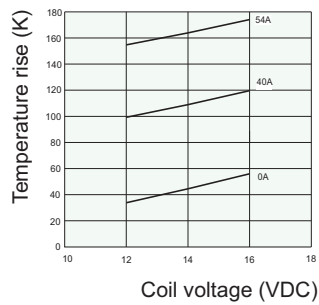
(1) Coil temperature rise (23°C)

Experiment: HFK8-T/12-SHSPT

Amount: three

Carrying current: 0A, 40A, 54A

Ambient temp.: 23°C



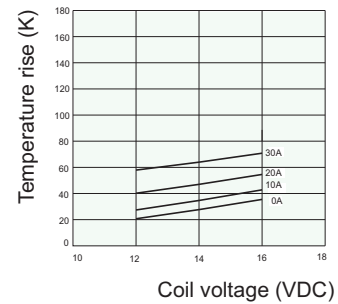
(2) Coil temperature rise (125°C)

Experiment: HFK8-T/12-SHSPT

Amount: three

Carrying current: 0A, 10A, 20A, 30A

Ambient temp: 125°C



Remark: The coil temperature rise test requires the relay to be installed on the PCB. The PCB is double-layered. The thickness of the copper foil is 4 oz (140 μm), the width of each copper foil is $7.52 \times (1 \pm 5\%)$ mm, the length of the copper foil is $50\text{mm} \pm 1\text{mm}$, and the Tg value of the PCB board is 150°C. The installation spacing between relay samples is 100mm.

Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications subject to change without notice. In case there is specific criterion (such as mission profile, technical specification, PPAP etc.) checked and agreed by and between customer and Hongfa, this specific criterion should be taken as standard regarding any requirement on Hongfa product.

We could not evaluate all the performance and all the parameters for every possible application. Thus the user should be in a right position to choose the suitable product for their own application. If there is any query, please contact Hongfa for the technical service. However, it is the user's responsibility to determine which product should be used only.