HFK10-T AUTOMOTIVE RELAY

c UL us
File No.:E133481

File No.:R50523646



Features

- Max.continous current 70A
- Max.making current 200A
- Extended temp. range up to 125˚C
- With highly established reliability
- Strong resistance ability to shock & vibration
- Reflow soldering version available
- RoHS & ELV compliant

Typical Applications

Cooling fan control,Glow plug

CHARACTERISTICS

Contact arrangement	1U
Voltage drop (initial) 1)	Typ.: 30mV (at 10A) Max.: 250mV (at 10A)
Max. continuous current 2)	23˚C：81A 30min/70A continuous 85˚C：75A 30min/50A continuous 125˚C：70A 30min/35A continuous
Max. switching current	Make: 200A3) Break: 60A (Resistive, 13.5VDC)
Max. switching voltage	16VDC (2 contacts parallel) 27VDC (2 contacts series)
Min. contact load	1A 12VDC4)
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10^7 OPS
Initial insulation resistance	100MΩ (at 500VDC)
Withstand voltage5)	500VAC
Operate time	Typ.: 4ms, Max.: 10ms
Release time 6)	Typ.: 3ms Max.: 10ms
Ambient temperature	HFK10-T:-40˚C to 125˚C

Vibration resistance 7)	10Hz to 55Hz, double ampitude, 1.5mm
Shock resistance 7)	100m/s^2,
Termination	PCB 8)
Construction	Flux proofed
Unit weight	Approx. 15g

1) Initial value
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 copper foil per layer is 4oz (140μm),The copper foil width corresponding to each load pin is 13.15×(1±5%mm,the length of the copper foil is 50mm±1mm, and the Tg value of the PCB board is 150°C or above.
   c.The installation spacing between relay samples is 100mm.
3) Inrush peak current under lamp load, at 13.5VDC.
4) This value can chang due to the switching frequency,environmental conditions and desired reliability level,therefore it is recommended to check this with the actual 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 100μs,When energized, opening time of closed NO contacts shall not exceed 100μs.
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

Load voltage	Load type		Load current A 1U NO	On/Off ratio On s	 Off s	Electrical endurance 1) OPS	Contact material	Ambient temp.
13.5VDC	Resistive	Make1)	60	2	2	1×10^5	$AgSnO_2$	-40˚C to 125˚C
		Break	60					
	Inductive	Make1)	160	2	2	1×10^5	$AgSnO_2$	-40˚C to 125˚C
		Break	42					
	Lamp	Make1)	200	2	2	1×10^5	$AgSnO_2$	-40˚C to 85˚C
		Break	40					
13.5VDC	Resistive	Make1)	30	2	2	1×10^5	$AgSnO_2$	23˚C
		Break	30					

Notes: 1) Corresponds to the peak inrush current on initial actuation.
2) 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 diffrent from what mentioned aboved.
3) When the load voltage is at 24VDC or higher ,or the applications conditions are different from the table above ,please submit the detailed application conditions to Hongfa to get more support.
4) For electrical durability test, connect two contact sets in series at 27V load voltage.

COIL DATA

at 23°C

Nominal voltage VDC	Pick-up voltage VDC max.	Drop-out voltage VDC min.	Coil resistance x(1±10%)Ω	Power consumption W
12	7.3	1.0	320	0.45
24	14.6	2.0	1280	0.45

ORDERING INFORMATION

HFK10 -T / 12 -SH S T (XXX)

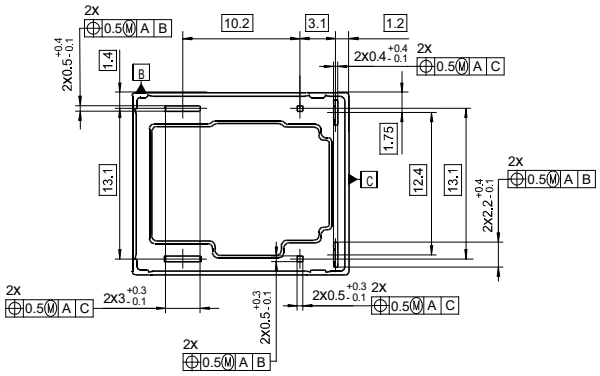
Type	**HFK10-T**: Reflow soldering version or high heat-resistant version
Coil voltage	**12**: 12VDC **24**: 24VDC
Contact arrangement	**SH**: 1 Form U
Construction	**S**: Plastic sealed[1] **Nil:** Flux proofed
Contact Material	**T**: $AgSnO_2$
Special code[2]	**XXX:** Customer special requirement **Nil:** Standard

Notes: 1) Contact us for suitable soldering conditions and product specifications if post-soldering cleaning or surface treatment is required after the relays are soldered onto the PCB.
2) The customer special requirement express as special code after evaluating by Hongfa. e.g. (847) stands for two contact sets connected in series.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

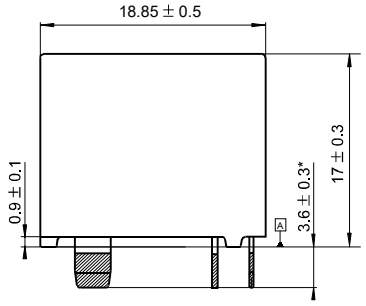
Outline Dimensions

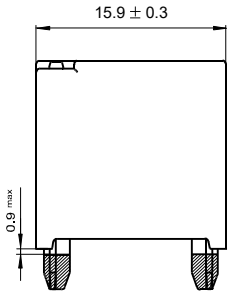


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

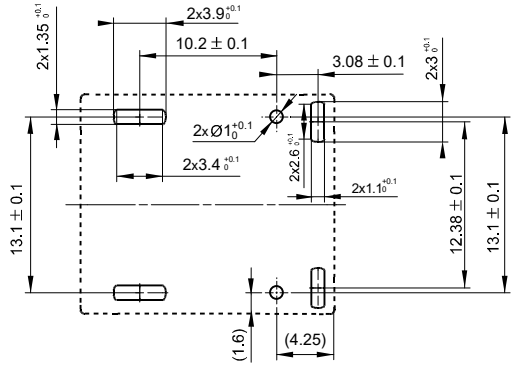
Outline Dimensions



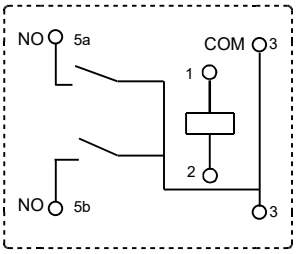


Remark: * The additional tin top is max. 1mm.

PCB Layout (Bottom view)



Wiring Diagram(Bottom view)



CHARACTERISTIC CURVES

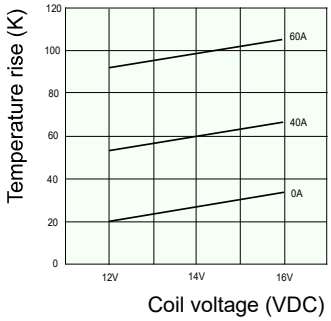
(1) Coil temperature rise (23°C)

Experiment: HFK10-T/12-SHST

Amount: three

Carrying current: 0A,40A,60A

Ambient temp: 23°C



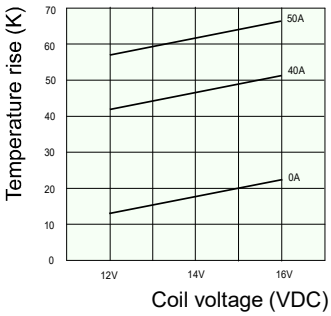
(2) Coil temperature rise (85°C)

Experiment: HFK10-T/12-SHST

Amount: three

Carrying current: 0A,40A,50A

Ambient temp: 85°C



Remark: The coil temperature rise test requires the relay to be installed on the PCB. The PCB is double-layered. The thickness of copper foil per layer is 4oz (140 μm), the width of each copper foil is 13.15×(1±5%) mm, the length of the copper foil is 50mm±1mm, and the Tg value of the PCB board is 150°C.The installation spacing between relay samples is 100mm.

CHARACTERISTIC CURVES

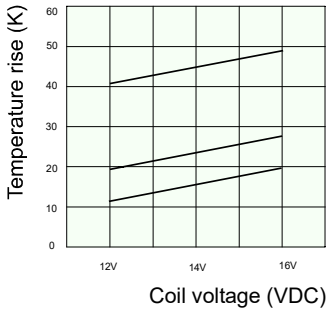
(3) Coil temperature rise (105℃)

Experiment：HFK10-T/12-SHST

Amount：three

Carrying current：0A,20A,40A

Ambient temp：105℃



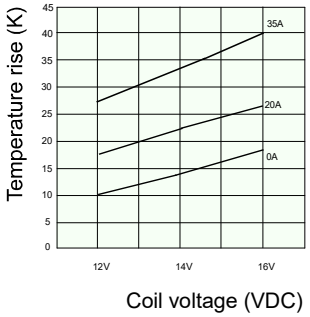
(4) Coil temperature rise (125℃)

Experiment：HFK10-T/12-SHST

Amount：three

Carrying current：0A,20A,35A

Ambient temp：125℃



Remark: The coil temperature rise test requires the relay to be installed on the PCB. The PCB is double-layered. The thickness of copper foil per layer is 4oz (140 μm), the width of each copper foil is 13.15×(1±5%) mm, the length of the copper foil is 50mm±1mm, and the Tg value of the PCB board is 150℃.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.

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