HFK10/HFK10-T AUTOMOTIVE RELAY

Typical Applications

Cooling fan control,Glow plug

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

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: 200A 3) Break: 60A (Resistive, 13.5VDC)
Max. switching voltage	16VDC
Min. contact load	1A 6VDC 4)
Electrical endurance	See "CONTACT DATA"
Mechanical endurance	1 x 10^7 OPS
Initial insulation resistance	100MΩ (at 500VDC)
Dielectric strength 5)	500VAC
Operate time	Typ.: 4ms, Max.: 10ms
Release time 6)	Typ.: 3ms Max.: 10ms

Ambient temperature	HFK10:-40˚C to 85˚C 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	Plastic sealed, 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 the copper foil is 4 oz (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.
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 1U NO	On/Off ratio On s	On/Off ratio Off s	Electrical endurance 1) OPS	Contact material	Ambient temp.
13.5VDC	Resistive	Make 1)	60	2	2	1×10^5	$AgSnO_2$	-40˚C to 125˚C
		Break	60					
	Inductive L=0.3mH	Make 1)	160	2	2	1×10^5	$AgSnO_2$	HFK10:-40˚C to 85˚C HFK10-T:-40˚C to 125˚C
		Break	42					
	Lamp	Make 1)	200	2	2	1×10^5	$AgSnO_2$	-40˚C to 85˚C
		Break	40					

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.

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

ORDERING INFORMATION

HFK10 / 12 -SH S T (XXX)

Type **HFK10**: Standard
HFK10-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

Contact Material **T**: $AgSnO_2$

Special code[2] **XXX:** Customer special requirement **Nil:** Standard

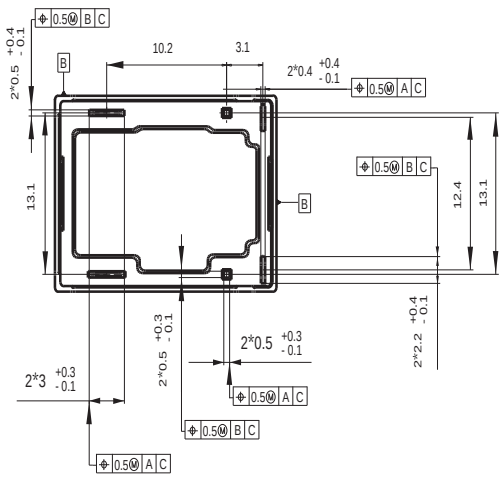
Notes: 1) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
2) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

HFK10:

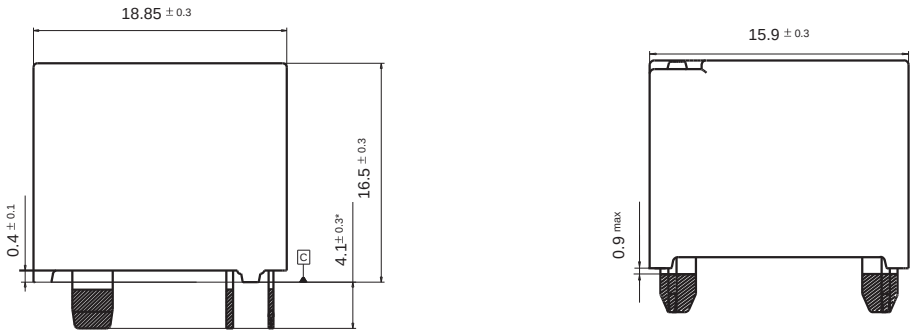


OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

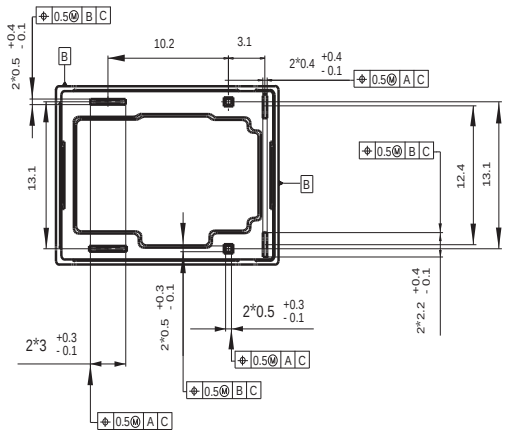
Outline Dimensions

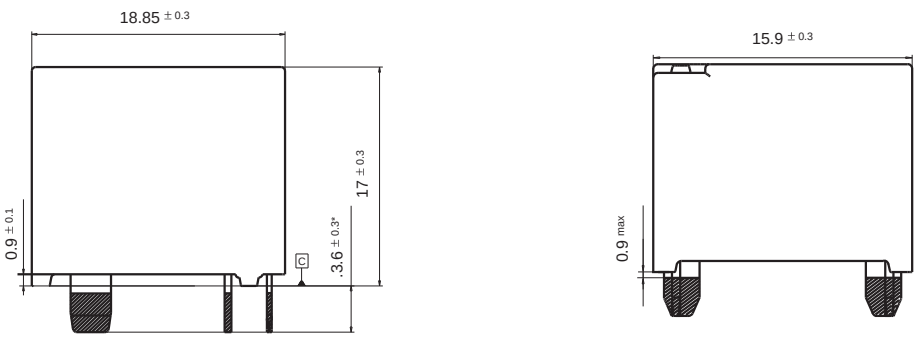
HFK10:



HFK10-T:

Outline Dimensions



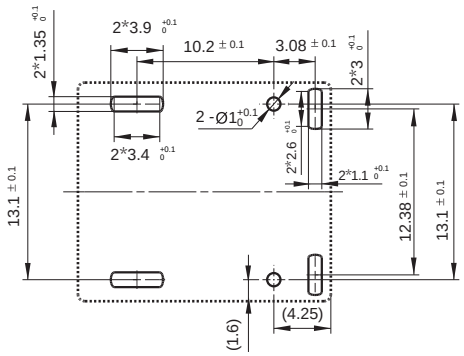


Remark: ***** The additional tin top is max. 1mm.

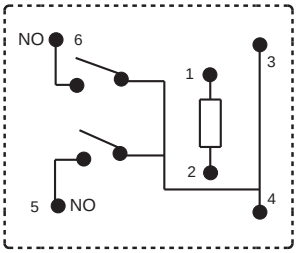
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

PCB Layout (Bottom view)



Wiring Diagram(Bottom view)



CHARACTERISTIC CURVES

1. Coil temperature rise

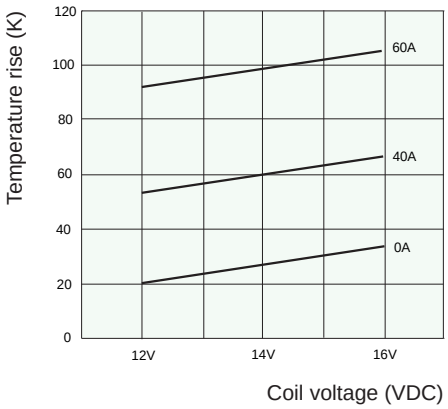
(1) Coil temperature rise*23**

Experiment：HFK10-T/12-SHST

Amount*three

Carrying current*0A,40A,60A

Ambient temp*23*



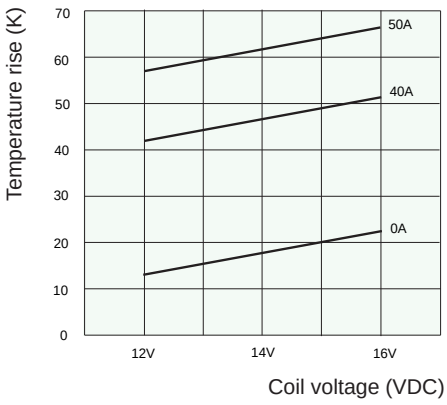
(2) Coil temperature rise*85**

Experiment：HFK10-T/12-SHST

Amount*three

Carrying current*0A,40A,50A

Ambient temp*85*

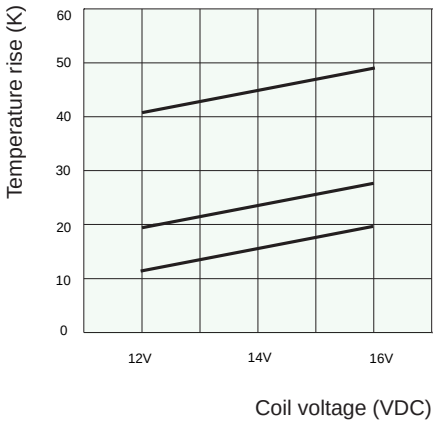


Remark: The relay is mounted on the PCB. The PCB is double-layered. The thickness of the copper foil is 4oz (140μm), the width of each copper foil is 13.15×(1±5%)mm, and the length of the copper foil is 50mm ± 1mm. and the Tg value of the PCB board is 150 °C.

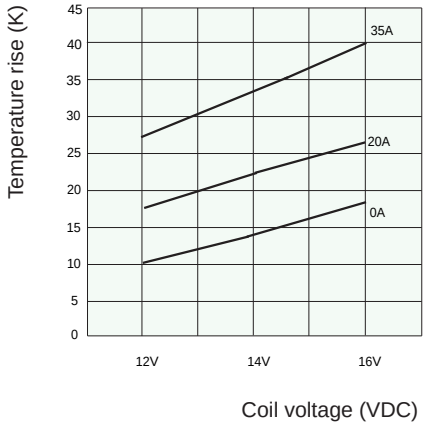
CHARACTERISTIC CURVES

1. Coil temperature rise

(1) Coil temperature rise*105**
Experiment：HFK10-T/12-SHST
Amount*three
Carrying current*0A,20A,40A
Ambient temp*105*



(2) Coil temperature rise*125**
Experiment：HFK10-T/12-SHST
Amount*three
Carrying current*0A,20A,35A
Ambient temp*125*



Remark: The relay is mounted on the PCB. The PCB is double-layered. The thickness of the copper foil is 4oz (140μm), the width of each copper foil is 13.15×(1±5%)mm, and the length of the copper foil is 50mm ± 1mm. and the Tg value of the PCB board is 150 °C.