HFK9-T AUTOMOTIVE RELAY

Features

* Max.continous current 50A
* Max.making current 200A
* Extended temp. range up to 125 ˚C
* With highly established reliability
* Strong resistance ability to shock & vibration
* RoHS & ELV compliant

Typical Applications

Rear window defogger, Lamp control,Trumpet control, Seat heater,Wiper control,Cooling fan, EPS, Start/Stop control,etc.

CHARACTERISTICS

Contact arrangement	1A, 1C, 1U	
Voltage drop (initial) 1)	Typ.: 40mV (at 10A) Max.: 250mV (at 10A)	
Max. continuous current 2)	1A, 1C	1U
	47.5A 30min/35A continuous (at 23˚C) 44A 30min/25A continuous (at 85˚C) 41A 30min/15A continuous (at 125˚C)	67.5A 30min/50A continuous (at 23˚C) 62.5A 30min/35A continuous (at 85˚C) 58.5A 30min/25A continuous (at 125˚C)
Max. switching current	Make: 84A 3) Break: 30A	Make: 200A 3) Break: 50A
Max. switching voltage	16VDC	
Min. contact load	1A 6VDC	
Electrical endurance	See "CONTACT DATA"	
Mechanical endurance	1 x 10^7 OPS	
Initial insulation resistance	100MΩ (at 500VDC)	
Dielectric strength 4)	500VAC	
Operate time	Typ.: 4ms, Max.: 10ms	

Release time 5)	Typ.: 1.5ms Max.: 10ms
Ambient temperature	HFK9-T: -40˚C to 125˚C
Vibration resistance 6)	10Hz to 100Hz, 44.1 m/s^2
Shock resistance 6)	100 m/s^2,
Termination	PCB 7)
Construction	Flux proofed
Unit weight	Approx. 10g

Notes:1) Initial value,Equivalent to the max. initial contact resistance is 100mΩ(at 1A 6VDC).
2) Measured when applying 100% rated votage on coil;Test Printed Circuit Board dimensions:
1H and 1Z version: double board, copper foil thickness of 4 oz (140 μm);NO, NC and Com side copper foil width of 7.52x(1+5%) mm,copper foil length (50±1)mm;
SH version: double board, copper foil thickness of 4 oz (140 μm);NO, NC and Com side copper foil width of 10.64x(1+5%) mm,copper foil length (50±1)mm;Tg value of Printed Circuit Board: 150˚C;
3) Inrush peak current under lamp load, at 14VDC.
4) 1min, leakage current less than 1mA.
5) The value is measured when voltage drops suddenly from nominal voltage to 0 VDC and coil is not paralleled with suppression circuit.
6) When non-energized,close time of NO contacts shall not exceed 100μs,When energized, opening time of closed NO contacts shall not exceed 100μs.
7) 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)

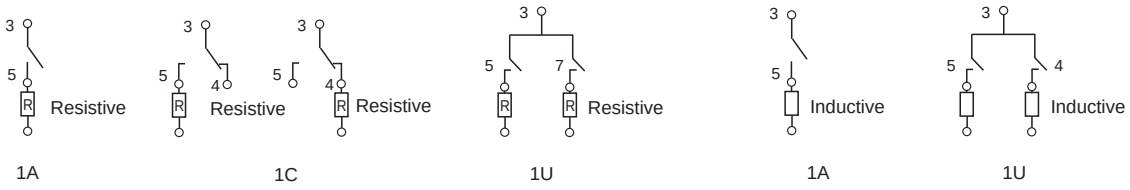
at -40˚C to 125˚C

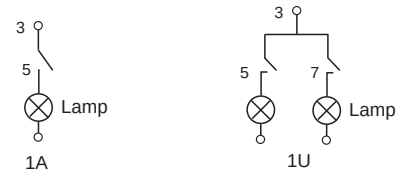
Load voltage	Load type		Load current 1A, 1C NO	Load current 1A, 1C NC	Load current 1U NO	On/Off ratio On s	On/Off ratio Off s	Electrical endurance 1) OPS	Contact material	Load wiring diagram
14VDC	Resistive	Make	30	15	50	2	2	1×10^5	$AgSnO_2$	See diagram 1
		Break	30	15	50					
	Inductive L=0.5mH	Make	30	--	80	2	2	1×10^5	$AgSnO_2$	See diagram 2
		Break	30	--	33					
	Lamp	Make	84	--	--	2	2	2×10^5	$AgSnO_2$	See diagram 3
		Break	12	--	--					
		Make	--	--	200	2	2	1×10^5	$AgSnO_2$	See diagram 4
		Break	--	--	20					

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 diffrent from what mentioned aboved.

CONTACT DATA[1)]

at -40˚C to 125˚C





COIL DATA

Nominal voltage VDC	Pick-up voltage VDC max.			Drop-out voltage VDC min.			Coil resistance x(1±10%)Ω			Power consumption W
	23˚C	85˚C	125˚C	23˚C	85˚C	125˚C	23˚C	85˚C	125˚C	at 23˚C
12	7	8.8	9.9	1.0	1.3	1.5	160	200	225	0.9
12	7.5	9.4	10.6	1.0	1.3	1.5	225	281	317	0.64

ORDERING INFORMATION

HFK9-T / 12 -SH S L T (XXX)

Type **HFK9-T**: Reflow soldering version[1)] or high heat-resistant version

Coil voltage **12**: 12VDC

Contact arrangement **SH**: 1 Form U **1H**: 1 Form A **1Z**: 1 Form C

Construction **S**: Plastic sealed [2)] **Nil:** Flux proofed

Coil power **L**: 0.64W **Nil:** 0.9W

Contact Material **T**: $AgSnO_2$

Special code [3)] **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) For the 1U of contact form products, there is no power consumption of 0.64W specifications.

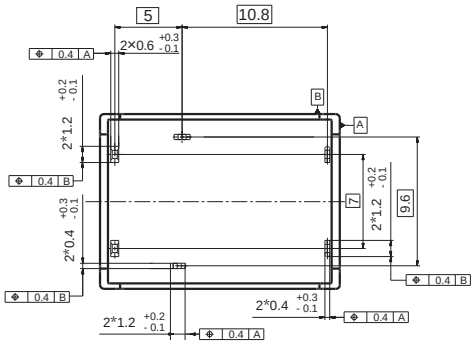
3)The customer special requirement express as special code after evaluating by Hongfa.

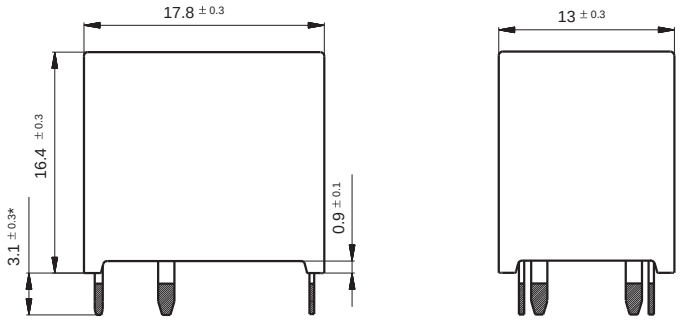
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

Outline Dimensions

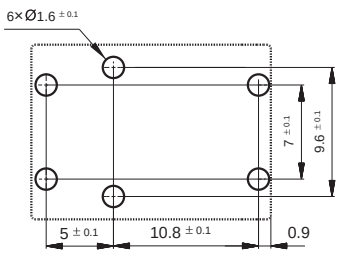
HFK9-T:



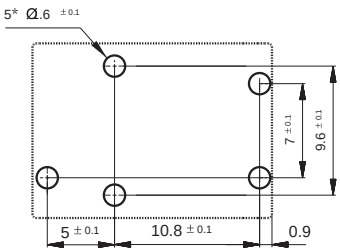


Remark: ***** The additional tin top is max. 1mm.

PCB Layout (Bottom view)



SH and 1Z



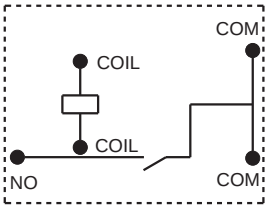
1H

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

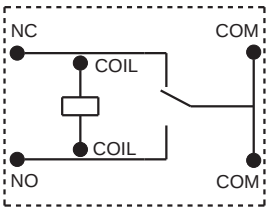
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

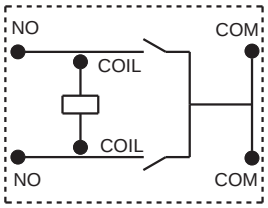
Wiring Diagram(Bottom view)



1H



1Z

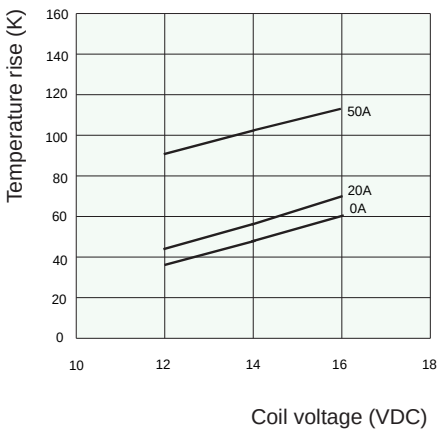


SH

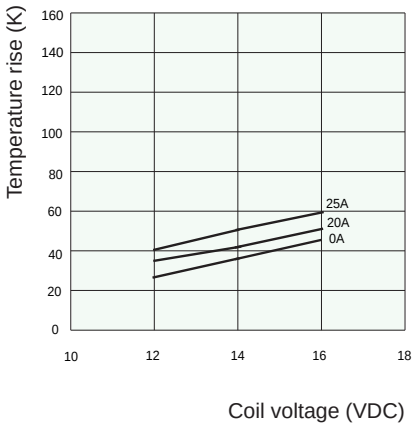
CHARACTERISTIC CURVES

1. Coil temperature rise

(1) Coil temperature rise*23**
Experiment：HFK9-T/12-SHT
Amount*three
Carrying current*0A,20A,50A
Ambient temp.*23*



(2) Coil temperature rise*125**
Experiment：HFK9-T/12-SHT
Amount*three
Carrying current*0A,20A,25A
Ambient temp.*125*

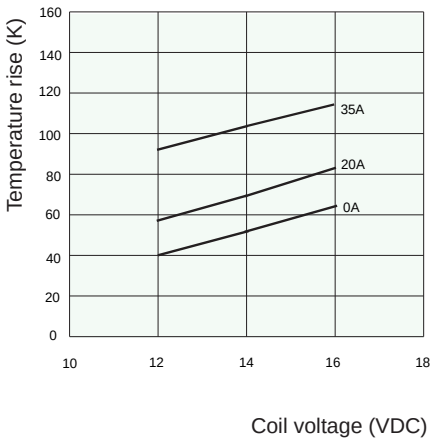


Remark: mounted on PC_board: thickness: double board, copper foil thickness of 4 oz (140 μm);NO, NC and Com side copper foil width of 10.64x(1+5%)mm,copper foil length (50±1)mm;Tg value of Printed Circuit Board: 150℃.

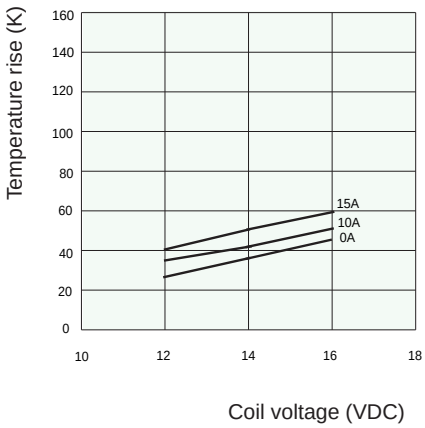
CHARACTERISTIC CURVES

1. Coil temperature rise

(1) Coil temperature rise*23**
Experiment：HFK9-T/12-1HT
Amount*three
Carrying current*0A,20A,35A
Ambient temp.*23*



(2) Coil temperature rise*125**
Experiment：HFK9-T/12-1HT
Amount*three
Carrying current*0A,10A,15A
Ambient temp*125*



Remark: mounted on PC_board: thickness: double board, copper foil thickness of 4 oz (140 μm);NO, NC and Com side copper foil width of 10.64x(1+5%)mm,copper foil length (50±1)mm;Tg value of Printed Circuit Board: 150℃.