HFK10-T(C16) AUTOMOTIVE RELAY

File No.：E133481

File No.：R50523646

Typical Applications

EV & mobile on-board chargers
(single-phase 6.6kW / three-phase 22kW),
AC power switching, etc.

Features

- Max.continuous current 32A(105℃)
- Ambient temperature Range up to 105℃
- With highly established reliability
- Strong resistance ability to shock & vibration
- Reflow soldering version available
- RoHS, ELV compliant

CHARACTERISTICS

Contact arrangement	1A/1C
Voltage drop (initial)[1]	Typ.:30mV(at 10A) Max.:250mV(at 10A)
Max. continuous current[2]	NO：50A (at 55℃,12V) NO：40A (at 70℃,12V) NO：32A (at 105℃,12V) NC：32A (at 85℃,12V)
Max. switching current	NO:16A(Resistive,277VAC)
Max. switching voltage	277VAC
Min.contact load	1A 12VDC
Electrical load	See “CONTACT DATA”
Mechanical endurance	3×10^5OPS
Insulation resistance(initial)[1]	100MΩ(at 500VDC)
Withstand voltage (initial)[3]	1000VAC 1min(between contacts) 2500VAC 1min(coil & contacts)
Operate time (initial)	Typ.:4ms Max.:10ms
Release time[4]	Typ.:3ms Max.:10ms

Ambient temperature	HFK10-T:-40℃ to 105℃
Vibration resistance(initial)[5]	10Hz to 1000Hz,The root mean square value of acceleration is 27.8 m/s^2
Shock resistance(initial)[5]	500 m/s^2
Termination	PCB[6]
Construction	Plastic sealed,Flux proofed
Unit weight	Approx.15g

1) Initial value
2) The test under the follow conditions
   a.the relay is mounted on the PCB,the coil is applied with120% rated voltage After 200ms,the coil excitation voltage is reduced to12V(For Max. continuous current at the NO terminal).
   b.The PCB is a double layer board,the thickness of the copper foil is 4 oz(140μm),The copper foil width corresponding to each load pin is 10.64×1±5% mm the length of the copper foil is 50 mm±1 mm,and the Tg value of the PCB is 150℃ or above.
3) 1 min , leakage current less than 1mA.
4) The value is measured when voltage drops suddenly from nominal voltage to 0VDC 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 contact shall not exceed 100μs.
6) Since it is an environmental friendly product,please select lead-free solder when welding.The recommended soldering temperature and time is (260±3)℃,(5±0.3)s.

CONTACT DATA[1]

Load voltage	Load type	Contact arrangement	Load current Making[2]	Load current Carrying[2]	Load current Breaking[2]	On/Off ratio		Electrical endurance OPS	Ambient temperature
			A	A	A	On s	Off s		
277VAC	Resistive	NO	2	32	2	1	9	1×10^5	105℃
277VAC	Resistive	NO	2	40	2	1	9	1×10^4	70℃
277VAC	Resistive	NO	2	50	2	1	9	1×10^4	55℃

Notes:1) Load 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. All the rating are tested with opend vent hole.
2) Making 100ms,loading 800ms,breaking 100ms.

COIL DATA

23℃

Nominal voltage VDC	Pick-up voltage VDC Max.	Drop-out voltage VDC Min.	Coil voltage VDC max.	Coil resistance ×(1±10%) Ω	Power consumption W
12	9.6	1.0	14	185	0.77
24	19.2	2.0	28	748	0.77

Notes:1) When the ambient temperature exceeds 85℃, apply 120% of the rated voltage to the coil for 200ms. After the relay is turned on and stabilized, the coil excitation voltage is reduced to 12V for holding.

ORDERING INFORMATION

HFK10-T / 12 -Z S T (C32)

Type	**HFK10-T**：Reflow soldering version
Coil voltage	**12**：12VDC **24**：24VDC
Contact arrangement	**Z**：1 Form C **H**：1 Form A
Construction	**S**：Plastic sealed[1] **Nil:** Flux proofed
Contact material	**T**：$AgSnO_2$
Special code	**C32**：32A 277VAC Load **862**：32A 277VAC load UL-certified products

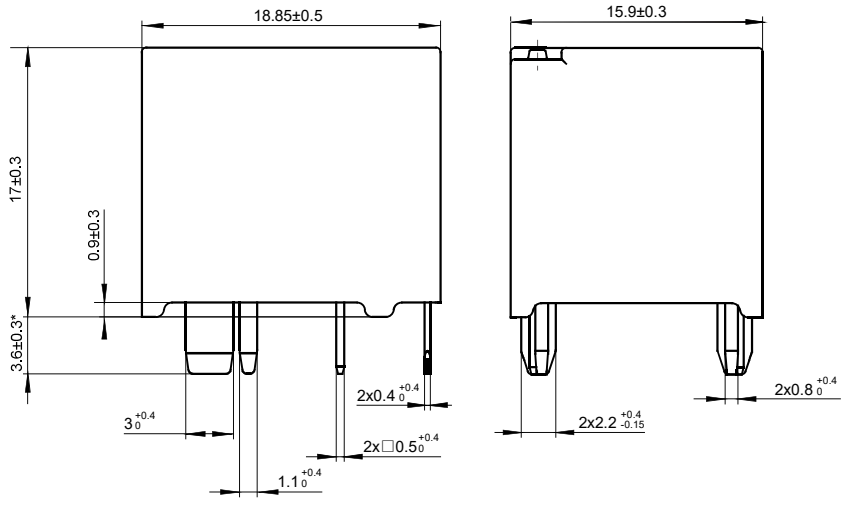
Notes:1) Contact us for suitable soldering conditions and product specifications if post-soldering cleaning or surface treatment is required after the relays are soldered onto the PCB.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND TERMINAL FUNCTION DEFINITION

Unit: mm

Outline Dimensions

HFK10-T-Z

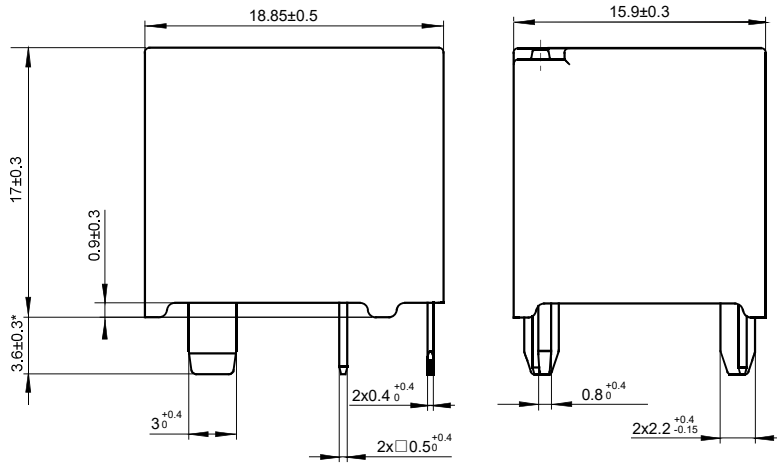


OUTLINE DIMENSIONS, WIRING DIAGRAM AND TERMINAL FUNCTION DEFINITION

Unit: mm

Outline Dimensions

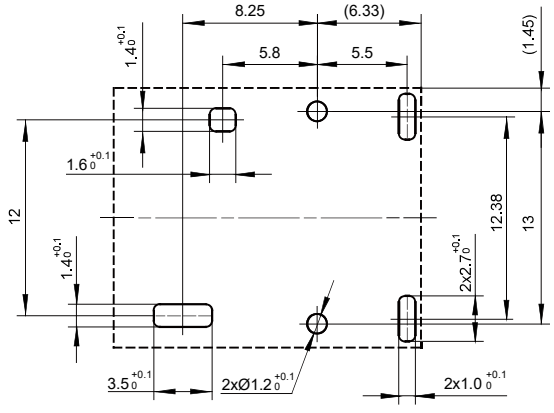
HFK10-T-H



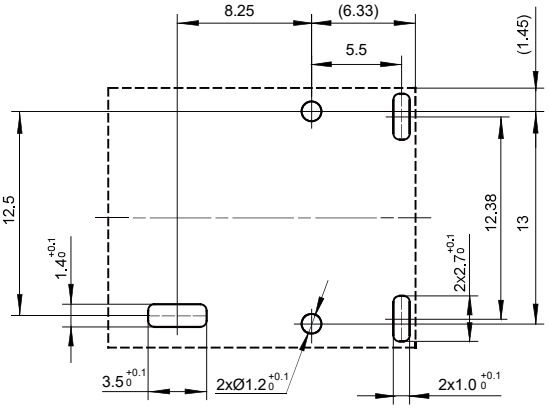
Notes:∗ The additional tin top is max. 1mm.

PCB Layout(Bottom view)

HFK10-T-Z



HFK10-T-H



Notes:1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension＞1mm and ≤5mm,tolerance should be ±0.3mm; outline dimension＞5mm and ≤30mm, tolerance should be ±0.4mm;outline dimension＞30 mm, tolerance should be ±0.6mm;

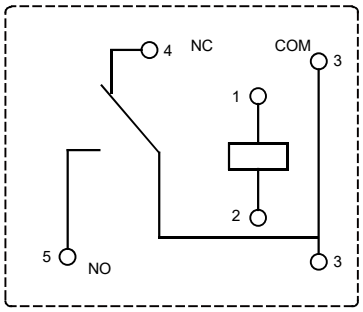
2) The tolerance without indicating for PCB layout is always ±0.1mm.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND TERMINAL FUNCTION DEFINITION

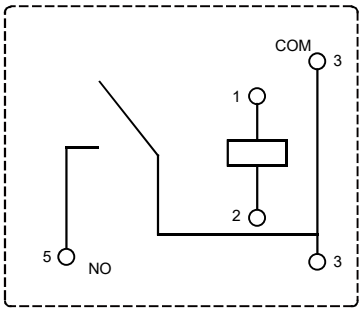
Unit: mm

Wiring Diagram(Bottom view)

HFK10-T-Z



HFK10-T-H



Notes:1) Coil terminals 1# and 2# are close to load terminals 3#, 4# and 5#, to meet withstand voltage requirement of PCB, it is suggested to use PCB bonding pad 0.2mm for coil terminals 1# and 2#, and use bonding pad 0.3mm for load terminals 3# and 4#.
2) Please consider to add shield between terminal 1# and 3#, 1# and 4# 2# and 3# in PCB, so as to raise the withstand voltage requirement.