

# HFS4

# SOLID STATE RELAY

**cUL US**  
File No.: E133481



File No.: CQC02001001946



## Features

- DC input-AC output for 2A load at 25°C
- Photo isolation
- Built-in snubber
- Zero cross or random turn-on
- Printed circuit board mount
- Environmental friendly product (RoHS compliant)

## INPUT (Ta = 25°C)

Control voltage range	05D	4VDC to 6VDC
	12D	9.6VDC to 14.4VDC
	24D	19.2VDC to 28.8VDC
Must operate voltage	05D	4VDC
	12D	9.6VDC
	24D	19.2VDC
Must release voltage		1.0VDC
Max. input current		15mA
Input Resistance	05D	330Ω
	12D	1kΩ
	24D	2kΩ

## OUTPUT (Ta = 25°C)

Load voltage range	48VAC to 280VAC	
Load current range	0.1A to 2A	
Max. surge current (10ms)	25A <sub>pk</sub>	
Max. leakage current	1.5mA	
Max. on-state voltage drop	1.5V <sub>r.m.s.</sub>	
Max. turn-on time	Zero cross turn-on	1/2 cycle + 1ms
	Random turn-on	1ms
Max. turn-off time	1/2 cycle + 1ms	
Max. transient overvoltage	600V <sub>pk</sub>	
off-state dv/dt	100V/μs	
Max. zero-cross overvoltage	±15V	
Min. power factor	0.5	
Max. I <sup>2</sup> t for fusing (10ms)	3.1A <sup>2</sup> s	

## GENERAL (Ta = 25°C)

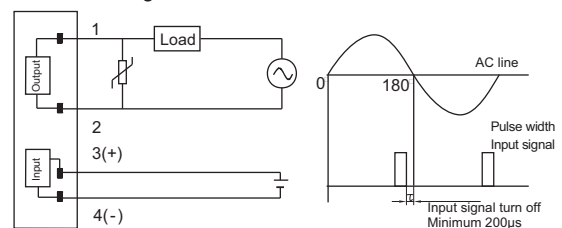
Dielectric strength ( input to output )	2000VAC, 50Hz/60Hz, 1min	
Insulation resistance	1000MΩ (at 500VDC)	
Max. capacitance ( input to output )	5pF	
Vibration resistance	10Hz to 55Hz 1.5mm DA	
Shock resistance	980m/s <sup>2</sup>	
Ambient temperature	Operating	-30°C to 80°C
	Storage	-30°C to 100°C
Ambient humidity	45% to 85% RH	
Unit weight	Approx. 6g	

## DESCRIPTION

This SPST-NO printed circuit board mount SIP SSR provides AC output switching in a high density package. The HFS4's DC input is compatible with 5V, 12V and 24V logic systems. All models include an internal snubber. The relays provide 2000VAC opto-isolation, between input and output. Encapsulation, thermally conductive epoxy.

## PRECAUTIONS

1. Soldering must be completed within 10s at 260 °C or less or within 5s at 350 °C or less.
2. The SSR case serves to dissipate heat. Install the relays so that they are adequately ventilated. If poor ventilation is unavoidable, the load current must be reduced. Please refer to the curve of Max. Load current Vs. Ambient Temperature.
3. The input circuitry does not incorporate a circuit protecting the SSR from being damaged due to a reversed connection. Make sure that the polarity is correct when connecting the input lines. And make sure that the input and output are correct when connecting.
4. When using the HFS4 series for an AC load with a peak voltage of more than 450V, connect the load terminals of the relay to an inrush absorber (varistor). The recommended varistor voltage, 440V to 470V.
5. When using the HFS4 series in phase control applications, at a phase control angle close to 180 degrees the relay's input signal turn off at the trailing edge of the AC sine wave must be limited to end 200μs before AC zero cross. This assures that the relay has time to switch off. Shorter times may cause loss of control at the following half cycle.
6. Please do not use the relay beyond the descriptions in the data sheet. If it is a must to use it beyond descriptions, please contact Hongfa for more technical support.
7. Terminal arrangement.



HONGFA RELAY

ISO9001, ISO/TS16949, ISO14001, OHSAS18001, IECQ QC 080000 CERTIFIED

2010 Rev. 1.00

## ORDERING INFORMATION

Type	HFS4 /		12	D-	1	T	(XXX)
Input voltage	05: 4V to 6V 12: 9.6V to 14.4V 24: 19.2V to 28.8V						
Input voltage form	D: DC						
Zero cross function	0: Zero cross turn-on		1: Random turn-on				
Termination	T: T type (See the following)			M: M type (See the following)			
Customer special code							

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

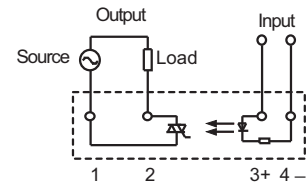
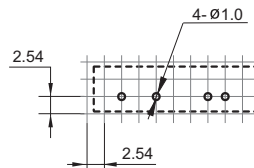
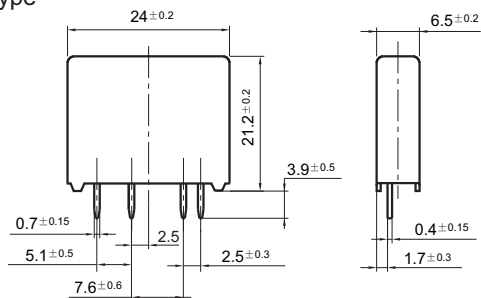
Unit: mm

Outline Dimensions

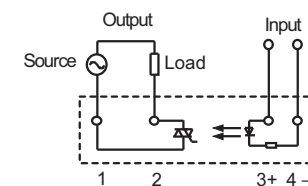
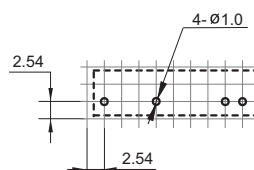
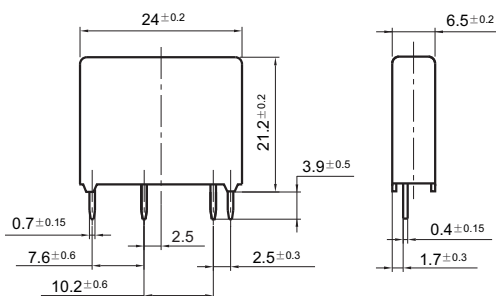
PCB Layout  
(Bottom view)

Wiring Diagram

T type

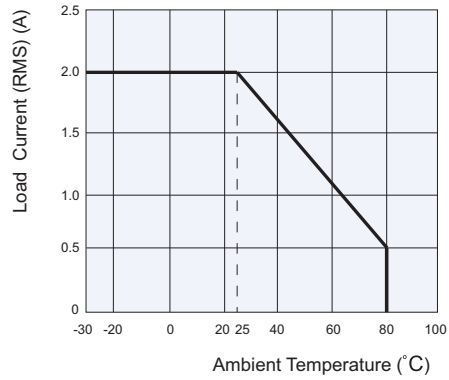


M type

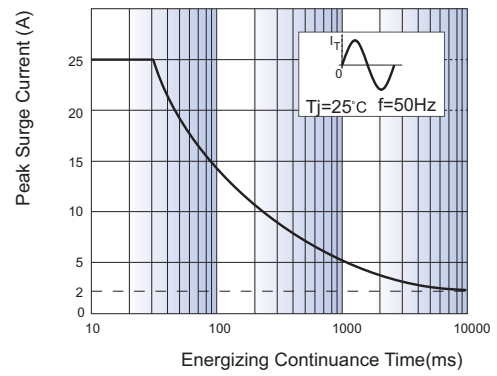


## CHARACTERISTIC CURVES

Max. Load Current  
vs. Ambient Temperature



Max. Permissible Non-repetitive  
Peak Surge Current vs. Continuance Time



### Disclaimer

This datasheet is for the customers' reference. All the specifications are subject to change without notice.

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.