

# HFS41

# SOLID STATE RELAY



File No.: E133481



File No.: J50061405



File No.: CQC03001006581



## Features

- Input: DC control
- Double SCR AC output or TRIAC AC output
- Dielectric strength 4000V
- Printed circuit board mount
- Environmental friendly product (RoHS compliant)

## INPUT (Ta = 25°C)

Input voltage	D	3VDC to 32VDC
	1D	3VDC to 15VDC
	2D	15VDC to 32VDC
Must operate voltage	D	3VDC
	1D	3VDC
	2D	15VDC
Must release voltage		1.0VDC
Max. Input current	D	25mA
	1D	40mA
	2D	20mA
Input Resistance	D	Constant circuit
	1D	400Ω
	2D	2.4kΩ

## GENERAL (Ta = 25°C)

Dielectric strength (input-output)	4000VAC, 50Hz/60Hz 1min
Insulation resistance	1000MΩ (at 500VDC)
Vibration resistance	10Hz to 55Hz 1.5mm DA
Shock resistance	980m/s <sup>2</sup>
Ambient operating temperature range	-30°C to 80°C
Ambient storage temperature range	-30°C to 100°C
Ambient humidity	45% to 85% RH
Unit weight	Approx. 15g

## OUTPUT (Ta = 25°C)

Load voltage range		48VAC to 280VAC (240VAC rated voltage)
		48VAC to 440VAC (380VAC rated voltage)
		48VAC to 530VAC (480VAC rated voltage)
Load current range		0.1A to 5A
Max.surge current (10ms)		Triac output: 120A <sub>pk</sub> SCR output: 250A <sub>pk</sub>
Max.off-state leakage current		1.5mA
Max.on-state voltage drop		1.5Vr.m.s.
Max. turn-on time	Zero-cross	1/2 cycle + 1ms
	Random	1ms
Max. turn-off time		1/2 cycle + 1ms
Max. transient overvoltage		600V <sub>pk</sub> (at 240VAC rated voltage)
		800V <sub>pk</sub> (at 380VAC rated voltage)
		1200V <sub>pk</sub> (at 480VAC rated voltage)
Min. off-state dv/dt		200V/μs
Min. power factor		0.5
Max. I <sup>2</sup> t (10ms)		Triac output: 78A <sup>2</sup> s SCR output: 310A <sup>2</sup> s

## DESCRIPTION

HFS41 pin-out is compatible with standard OAC type I/O modules, and all models are available with random turn-on as an alternative to zero-cross turn-on. The HFS41 SSR range offers a choice of 240VAC, 380VAC, 480VAC versions. Input Voltage specifications have 3VDC to 15VDC, 15VDC to 32VDC and 3VDC to 32VDC.

## 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, reduce the load current by half.
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.
4. When using the HFS41 series for an AC load with a peak voltage of more than the rated, connect the load terminals of the relay to an inrush absorber (varistor). For 220VAC the recommended varistor voltage is 470V; For 380VAC, the recommended varistor voltage is 750V; For 480VAC, the recommended varistor voltage is 1100V.
5. 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.



HONGFA RELAY

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

2010 Rev. 1.00

## ORDERING INFORMATION

Type	HFS41 / 2D- 240 A 5 Z S- N G (XXX)							
Input voltage	D: 3VDC to 32VDC <sup>1)</sup> 1D: 3VDC to 15VDC 2D: 15VDC to 32VDC							
Load voltage	240: 240V 380: 380V 480: 480V <sup>2)</sup>							
Load voltage form	A: AC							
Load current	3: 3A 4: 4A 5: 5A							
Zero cross function	Z: Zero cross turn-on P: Random cross turn-on <sup>3)</sup>							
Output component	S: SCR Nil: TRIAC							
RC snubber	N: Without RC snubber Nil: With RC snubber							
Seal form	G: Epoxy resin dipped version Nil: plastic case version <sup>4)</sup>							
Customer special code								

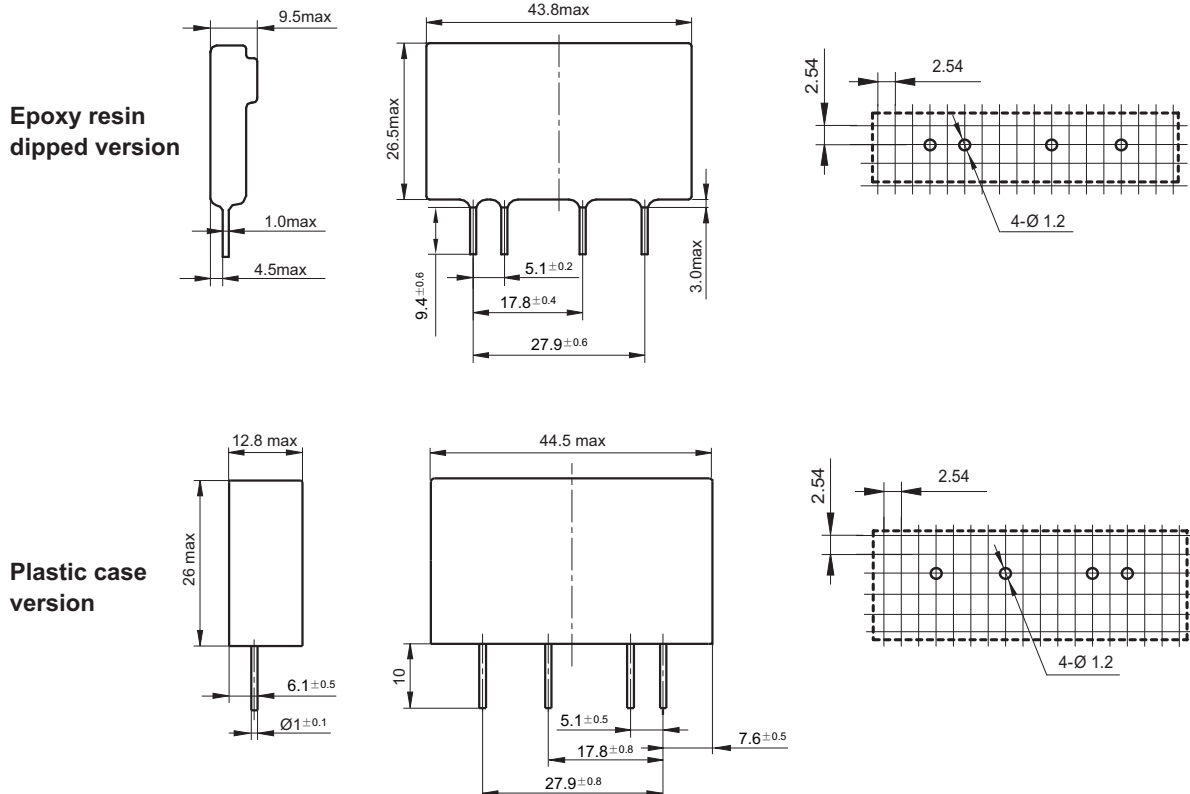
- Notes: 1) If the input voltage is D type (3VDC-32VDC), the load voltage would be only available in 240V or 380V, and the output component is Triac only.  
2) The output voltage is 480V only for SCR type.  
3) The P type is only for the load voltage 240V or 380V.  
4) The plastic case version type is only for 3VDC~32VDC input type.

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

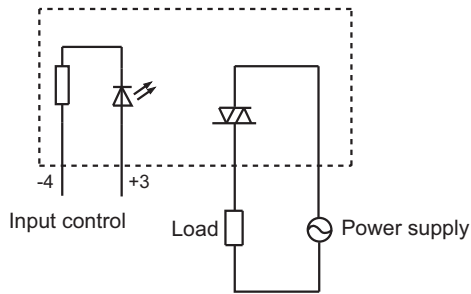
Unit: mm

### Outline Dimensions

### PCB Layout (Bottom view)

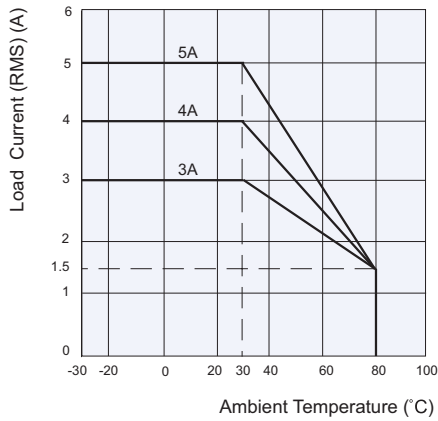


Wiring Diagram

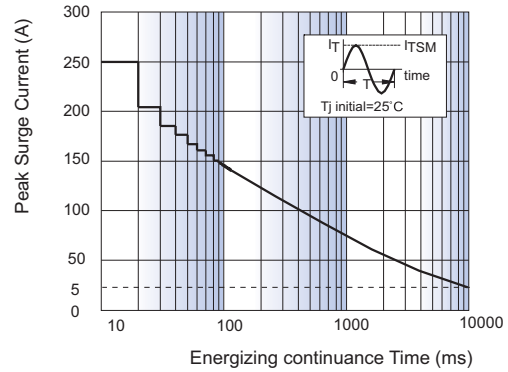


CHARACTERISTIC CURVES

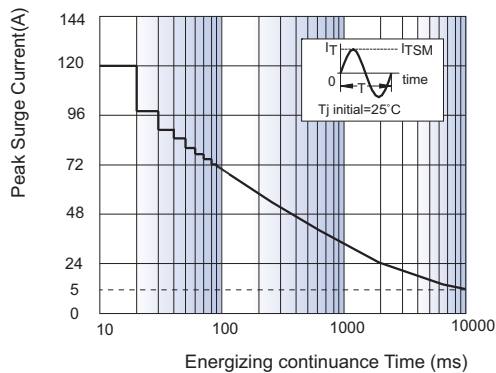
Max. Load Current vs. Ambient Temp.



Max. Permissible Non-repetitive Peak Surge Current vs. Continuance time (SCR AC switch output)



Max. Permissible Non-repetitive Peak Surge Current vs. Continuance time (TRIAC AC switch output)



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.