

# 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
- 4000V dielectric strength
- Printed circuit board mount
- RoHS compliant

### INPUT (TA = 25°C)

|                      |    |             |
|----------------------|----|-------------|
| Input voltage        | 1D | 3 to 15VDC  |
|                      | 2D | 15 to 32VDC |
| Must operate voltage | 1D | 3VDC        |
|                      | 2D | 15VDC       |
| Must release voltage |    | 1.0VDC      |
| Max. Input current   | 1D | 40mA        |
|                      | 2D | 20mA        |

### GENERAL (TA = 25°C)

|                                     |                       |
|-------------------------------------|-----------------------|
| Dielectric strength (input-output)  | 4000VAC, 50/60Hz 1min |
| Insulation resistance               | 1000MΩ (at 500VDC)    |
| Vibration resistance                | 10 to 55Hz 1.5mm DA   |
| 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            | 48 to 280VAC (240VAC rated voltage)                                       |                 |
|                               | 48 to 440VAC (380VAC rated voltage)                                       |                 |
|                               | 48 to 530VAC (480VAC rated voltage)                                       |                 |
| Load current range            | 0.1 to 5A   |                 |
| Max.surge current (10ms)      | Triac output: 10 times of rated current<br>SCR output: 250A <sub>pk</sub> |                 |
| Max.off-state leakage current | 1.5mA   |                 |
| Max.on-state voltage drop     | 1.5V <sub>rms</sub>   |                 |
| 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><br>(at 240VAC rated voltage)                           |                 |
|                               | 800V <sub>pk</sub><br>(at 380VAC rated voltage)                           |                 |
|                               | 1200V <sub>pk</sub><br>(at 480VAC rated voltage)                          |                 |
| Min. off-state dv/dt          | 200V/μs   |                 |
| Min. power factor             | 0.5   |                 |

### 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 3 to 15VDC and 15 to 32VDC. All models except the 480VAC type include an internal snubber.

### PRECAUTIONS

1. Soldering must be completed within 10 seconds at 260°C or less or within 5 seconds 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.



HONGFA RELAY

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

2008 Rev. 1.00

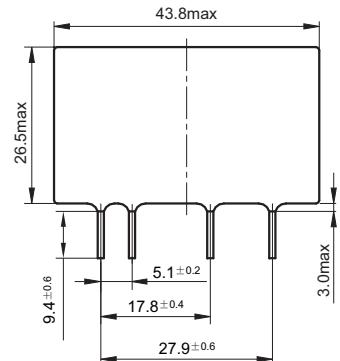
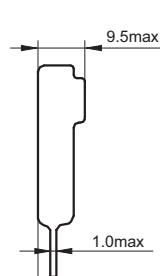
## ORDERING INFORMATION

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

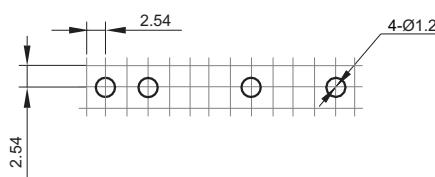
## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

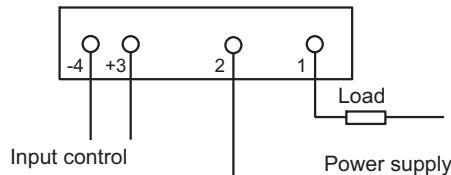
Outline Dimensions



PCB Layout  
(Bottom view)

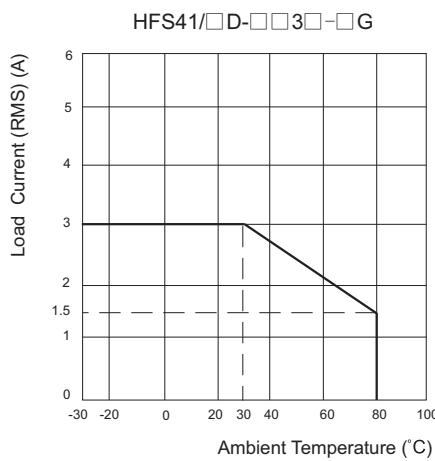


Wiring Diagram

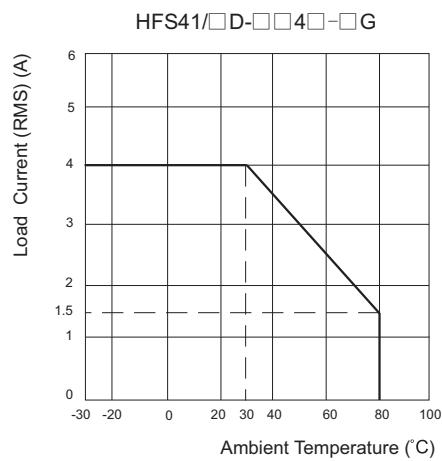


## CHARACTERISTIC CURVES

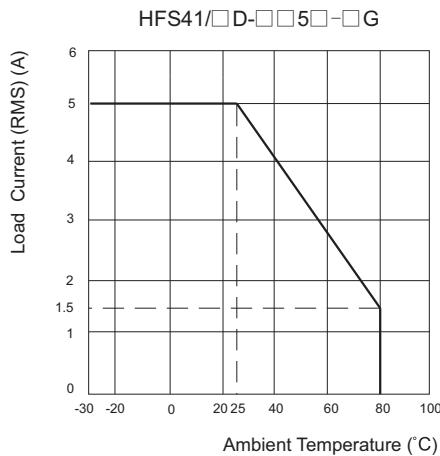
Max. Load Current vs. Ambient Temp. (3A)



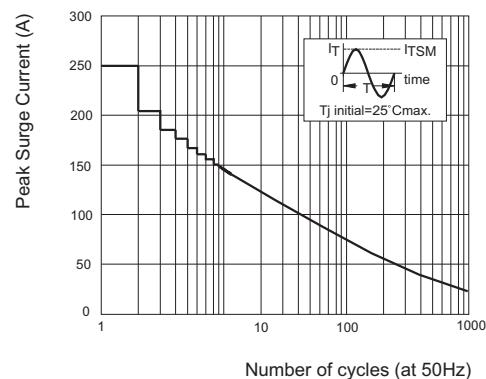
Max. Load Current vs. Ambient Temp. (4A)



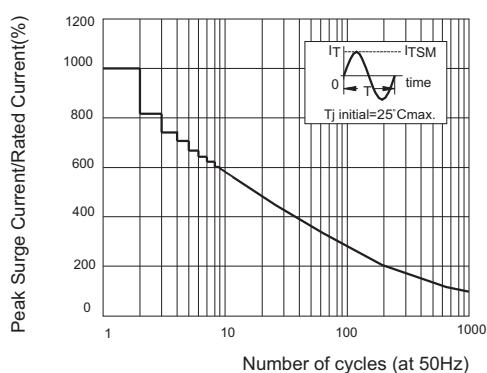
Max. Load Current vs. Ambient Temp. (5A)



Max. Permissible Non-repetitive Peak Surge Current vs. Number of Cycles (SCR AC switch output)



Max. Permissible Non-repetitive Peak Surge Current vs. Number of Cycles (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.