# HF115F-Q MINIATURE HIGH POWER RELAY

c UL us
File No.: E134517

VDE
File No.:116934

CQC
File No.: CQC17002168381



## Features

- Ambient temperature up to 125 ˚C
- 5kV dielectric strength (between coil and contacts)
- Low height: 15.7mm
- Creepage distance >8mm
- Meeting VDE 0700, 0631 reinforce insulation
- UL94, V-0 flammability class
- Product in accordance to IEC 60335-1 available
- UL insulation system: Class F
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: Vertical: 41.0mm x 12.7mm x 15.7mm
  Horizontal:45.0mm x 12.7mm x 15.7mm

## CONTACT DATA

| | |
|---|---|
| Contact arrangement | 1A, 1B |
| Contact resistance 1) | 100mΩ max.(at 1A 6VDC) |
| Contact material | $AgSnO_2$, AgNi |
| Contact rating | 20A 250VAC |
| Max. switching voltage | 440VAC / 300VDC |
| Max. switching current | 20A |
| Max. switching power | 5000VA |
| Mechanical endurance | 1 x $10^7$OPS |
| Electrical endurance | 1H type: 3 x $10^4$OPS (20A 277VAC, Resistive load, Room temp., 1s on 9s off) |

**Notes:** 1) The data shown above are initial values.

## CHARACTERISTICS

| | | |
|---|---|---|
| Insulation resistance | | 1000MΩ (at 500VDC) |
| Dielectric strength | Between coil & contacts | 5000VAC 1min |
| | Between open contacts | 1000VAC 1min |
| Surge voltage (between coil & contacts) | | 10kV (1.2 / 50μs) |
| Operate time (at nomi. volt.) | | 15ms max. |
| Release time (at nomi. volt.) | | 8ms max. |
| Temperature rise (at nomi. volt.) | | 55K max. |
| Shock resistance * | Functional | 98m/s² |
| | Destructive | 980m/s² |
| Vibration resistance * | | 1A: 10Hz to150Hz 10g<br>1B: 10Hz to150Hz 5g |
| Humidity | | 5% to 85% RH |
| Ambient temperature | | -40˚C to 125˚C |
| Termination | | PCB & QC |
| Unit weight | | Approx. 16g |
| Construction | | Flux proofed |

**Notes:** 1) The data shown above are initial values.
2) * Index is not that of relay length direction.

## COIL

| | |
|---|---|
| Coil power | Approx. 400mW |

## COIL DATA at 23˚C

| Nominal Voltage VDC | Pick-up Voltage VDC max.1) | Drop-out Voltage VDC min. 1) | Max. Voltage VDC 2) | Coil Resistance Ω |
|---|---|---|---|---|
| 5 | 3.50 | 0.5 | 7.5 | 62 x (1±10%) |
| 6 | 4.20 | 0.6 | 9.0 | 90 x (1±10%) |
| 9 | 6.30 | 0.9 | 13.5 | 202 x (1±10%) |
| 12 | 8.40 | 1.2 | 18.0 | 360 x (1±10%) |
| 18 | 12.6 | 1.8 | 27.0 | 810 x (1±10%) |
| 24 | 16.8 | 2.4 | 36.0 | 1440 x (1±10%) |
| 48 3) | 33.6 | 4.8 | 72.0 | 5760 x (1±15%) |
| 60 3) | 42.0 | 6.0 | 90.0 | 7500 x (1±15%) |

**Notes:** 1) The data shown above are initial values.
2) Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.
3) For products with rated voltage ⩾ 48V, measures should be taken to prevent coil overvoltage in order to protect coil in test and application (eg. Connect diodes in parallel).

## SAFETY APPROVAL RATINGS

| | | | |
|---|---|---|---|
| **VDE** | AgNi | 1 Form A | 18A 250VAC at 105˚C<br>16A 250VAC at 125˚C<br>12A 400VAC at 105˚C |
| | | 1 Form B | 16A 250VAC at 125˚C<br>12A 400VAC at 105˚C |
| **UL/CUL** | AgNi | 1 Form A<br>1 Form B | 20A 277VAC |

**Notes:** 1) All values unspecified are at room temperature.
2) Only typical loads are listed above. Other load specifications can be available upon request.

## ORDERING INFORMATION

| | HF115F-Q / | 012 | -1H | 3 | T | (XXX) |
|---|---|---|---|---|---|---|
| **Type** | | | | | | |
| **Coil voltage** | 5, 6, 9, 12, 18, 24, 48, 60VDC | | | | | |
| **Contact arrangement** | **1H:** 1 Form A **1D:** 1 Form B | | | | | |
| **Terminals** | **3:** Quick connect terminals horizontal **Nil:** Quick connect terminals vertical | | | | | |
| **Contact material** | **T:** $AgSnO_2$ **Nil:** AgNi | | | | | |
| **Special code**[3] | **XXX:** Customer special requirement **Nil:** Standard | | | | | |

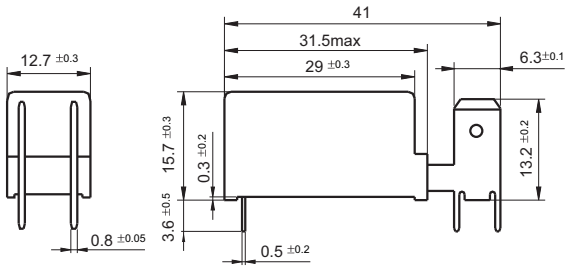
**Notes:** 1) Flux-proofed relays can not be used in the environment with pollutants like $H_2S$, $SO_2$, $NO_2$, dust, etc.
2) Water cleaning or surface process is not suggested after the flux-proofed relays are assembled on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa. e.g.(335) stands for product in accordance to IEC 60335-1 (GWT).

## OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

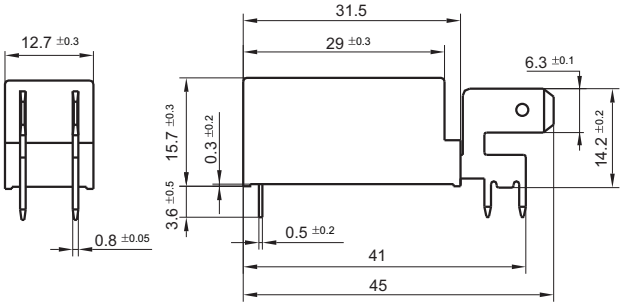
Unit: mm

### Outline Dimensions

Quick connect terminals vertical



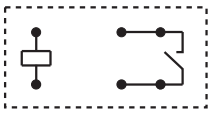

Quick connect terminals horizontal



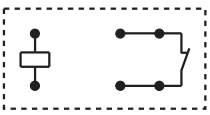

### Wiring Diagram

(Bottom view)

1 Form A

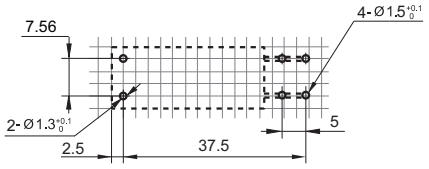


1 Form B



### PCB Layout

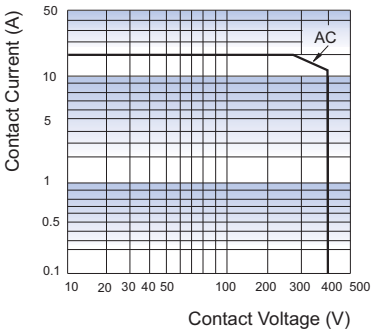
(Bottom view)



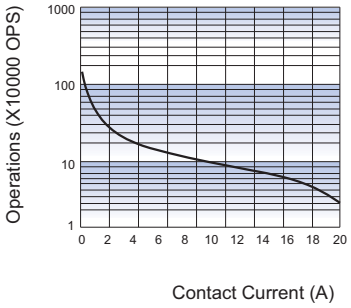

Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.
2) The tolerance without indicating for PCB layout is always ±0.1mm.
3) The width of the gridding is 2.52mm.

## CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



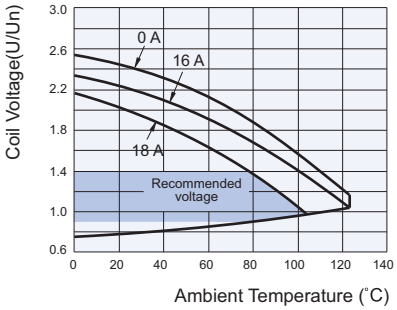

ENDURANCE CURVE




**Notes:**

1) Curve: 1H type
2) Test conditions:
   NO, 250VAC, Resistive load, Flux proofed,
   Room temp., 1s on 9s off.

COIL OPERATING RANGE (DC) *




**Notes:** * The use of a relay with an energising voltage other than the rated coil voltage may lead to reduced electrical life. An energising voltage over the abver range may damage the insulation of relay coil.


Disclaimer

The specification is for reference only. See to "Terminology and Guidelines" for more information. Specifications 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.

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