

HF105F-1

MINIATURE HIGH POWER RELAY



File No.:E134517



File No.:40025518



File No.:CQC09002031229(DC type)



Features

- 40A switching capability
- 4kV dielectric strength (between coil and contacts)
- Heavy load up to 7,200VA
- PCB coil terminals, ideal for heavy duty load
- Unenclosed, Plastic sealed and dust protected types available
- Class F insulation available
- Environmental friendly product (RoHS compliant)

CONTACT DATA

| | | | | |
|-------------------------|--|-------------------------|-------------------------|-------------------------|
| Contact arrangement | 1A | 1B | 1C(NO) | 1C (NC) |
| Contact resistance | 50mΩ (at 1A 24VDC) | | | |
| Contact material | AgSnO ₂ , AgCdO | | | |
| Max. switching capacity | 7200VA/560W | 3600VA/280W | 4800VA/560W | 2400VA/280W |
| Max. switching voltage | 277VAC / 28VDC | | | |
| Max. switching current | 40A | 15A | 20A | 10A |
| HF105F-1 rating | 30A 240VAC 20A 28VDC | 15A 240VAC 10A 28VDC | 20A 240VAC 20A 28VDC | 10A 240VAC 10A 28VDC |
| HF105F-1L rating | 25A 240VAC 20A 28VDC | 15A 240VAC 10A 28VDC | 20A 240VAC 20A 28VDC | 10A 240VAC 10A 28VDC |
| Mechanical endurance | 1 x 10 ⁷ OPS | | | |
| Electrical endurance | 1 x 10 ⁵ OPS ¹⁾ (See approval reports for more details) | | | |

CHARACTERISTICS

| | | |
|-------------------------------|---|----------------------|
| Insulation resistance | 1000MΩ (at 500VDC) | |
| Dielectric strength | Between coil & contacts | 2500VAC/4000VAC 1min |
| | Between open contacts | 1500VAC 1min |
| Operate time (at nomi. volt.) | 15ms max. | |
| Release time (at nomi. volt.) | 10ms max. | |
| Ambient temperature | DC: -55°C to 85°C AC: -55°C to 60°C | |
| Shock resistance | Functional | 98m/s ² |
| | Destructive | 980m/s ² |
| Vibration resistance | 10Hz to 55Hz 1.5mm DA | |
| Humidity | 98% RH, 40°C | |
| Termination | PCB | |
| Unit weight | Approx.36g | |
| Construction | Unenclosed (Only for DC coil), Plastic sealed, Dust protected | |

- Notes:** 1) Typical electrical load & endurance: at 30A 240VAC, Resistive, at room temperature, 100,000 OPS, for NO contact, remove vent nib after soldering and cleaning.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.

COIL

| | |
|------------|---|
| Coil power | DC type: Approx. 900mW; AC type: Approx. 2VA |
|------------|---|

SAFETY APPROVAL RATINGS

| | | | |
|------------|----------|--------------------|---|
| UL/ CUL | 1 Form A | AgSnO ₂ | 30A 277VAC 2HP 250VAC 1HP 125VAC |
| | | AgCdO | 30A 28VDC 277VAC(FLA=20)(LRA=60) |
| | 1 Form B | AgCdO | 15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33) |
| | | NO | 30A 277VAC 2HP 250VAC 1HP 125VAC |
| | 1 Form C | AgCdO | 20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60) |
| | | NC | 20A 277VAC 1/2HP 250VAC 1/4HP 125VAC |
| | | AgCdO | 10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33) |

Notes: Only some typical ratings are listed above. If more details are required, please contact us.



HONGFA RELAY

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

2010 Rev. 1.00

COIL DATA

at 23°C

| Nominal Voltage VDC | Pick-up Voltage VDC | Drop-out Voltage VDC | Max. Allowable Voltage VDC | Coil Resistance Ω |
|---------------------|---------------------|----------------------|----------------------------|-------------------|
| 5 | 3.75 | 0.5 | 6.5 | 27 x (1±10%) |
| 6 | 4.50 | 0.6 | 7.8 | 40 x (1±10%) |
| 9 | 6.75 | 0.9 | 11.7 | 97 x (1±10%) |
| 12 | 9.00 | 1.2 | 15.6 | 155 x (1±10%) |
| 15 | 11.25 | 1.5 | 19.5 | 256 x (1±10%) |
| 18 | 13.50 | 1.8 | 23.4 | 380 x (1±10%) |
| 24 | 18.00 | 2.4 | 31.2 | 660 x (1±10%) |
| 48 | 36.00 | 4.8 | 62.4 | 2560 x (1±10%) |
| 70 | 52.50 | 7.0 | 91 | 5500 x (1±10%) |
| 110 | 82.50 | 11 | 143 | 13450 x (1±10%) |

| Nominal Voltage VAC | Pick-up Voltage VAC | Drop-out Voltage VAC | Max. Allowable Voltage VDC | Coil Resistance Ω |
|---------------------|---------------------|----------------------|----------------------------|-------------------|
| 12 | 9.6 | 2.4 | 15.6 | 25 x (1±10%) |
| 24 | 19.2 | 4.8 | 31.2 | 100 x (1±10%) |
| 120 | 96.0 | 24.0 | 156 | 2500 x (1±10%) |
| 208 | 166.4 | 41 | 270.4 | 11000 x (1±10%) |
| 220 | 176 | 44 | 286 | 13490 x (1±10%) |
| 240 | 192 | 48 | 286 | 13490 x (1±10%) |
| 277 | 220 | 54 | 360.1 | 15000 x (1±10%) |

Notes: 1) When requiring pick-up voltage < 80% of nominal voltage, special order allowed.
2) The data shown above are initial values at 50Hz. When requiring 60Hz, special order allowed.

ORDERING INFORMATION

| | |
|---|--|
| HF105F-1 / 018 D T -1H S T F (XXX) | |
| Type | HF105-1: 30A (Unenclosed, only for DC coil) HF105-1L: 25A (Unenclosed, only for DC coil) HF105F-1: 30A HF105F-1L: 25A |
| Coil voltage | DC: 5VDC to 110VDC AC: 12VAC to 277VAC |
| Coil voltage form | D: DC A: AC |
| Termination | 6: With Pin NO.6, Dielectric Strength Between Coil and Contact: 2500VAC T: Without Pin NO.6, Dielectric Strength Between Coil and Contact: 4000VAC Nil: Without Pin NO.6, Dielectric Strength Between Coil and Contact: 2500VAC |
| Contact arrangement | 1H: 1 Form A 1D: 1 Form B 1Z: 1 Form C |
| Construction ¹⁾ | S: Plastic sealed Nil: Dust protected (For HF105F-1, HF105F-1L) Unenclosed (For HF105-1, HF105-1L) |
| Contact material | T: AgSnO ₂ Nil: AgCdO |
| Insulation standard | F: Class F Nil: Class B |
| Customer special code | |

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H₂S, SO₂, NO₂, dust, etc.).

We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H₂S, SO₂, NO₂, dust, etc.).

If water cleaning is required after the relay is assembled on PCB, please contact us for suggestion about suitable parts.

- To avoid using relays under strong magnetic field which will change the parameters of relays such as pick-up voltage and drop-out voltage.
- Relays may be damaged because of falling or when shocking conditions exceed the requirement.
- Regarding the plastic sealed relay, we should leave it cooling naturally until below 40°C after welding, then clean it and deal with coating, remarkably the temperature of solvents should also be controlled below 40°C. Please avoid cleaning the relay by ultrasonic, avoid using the solvents like gasoline, Freon, and so on, which would affect the configuration of relay or influence the environment.
- About preferable condition of operation, storage and transportation, please refer to "Explanation to terminology and guidelines of relay".

HF105F-1

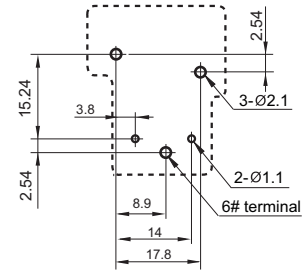
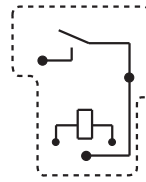
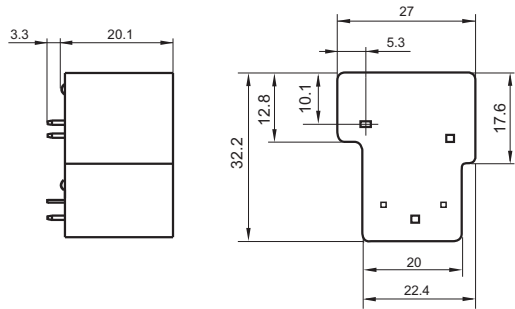
1 Form A

Outline Dimensions

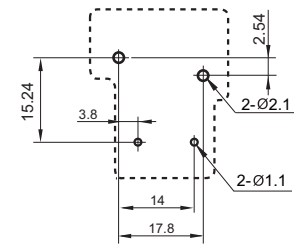
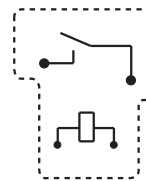
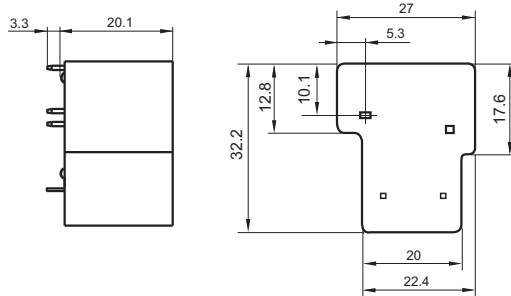
Wiring Diagram
(Bottom view)

PCB Layout
(Bottom view)

With 6# terminal

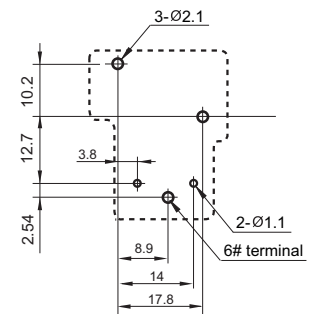
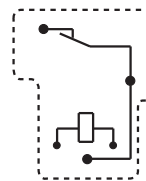
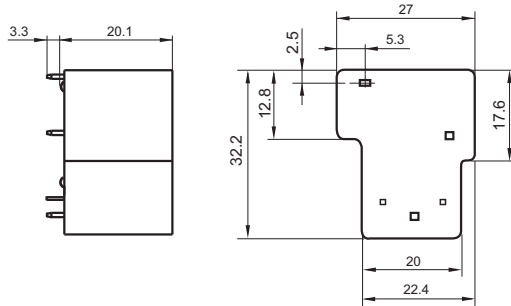


Without 6# terminal

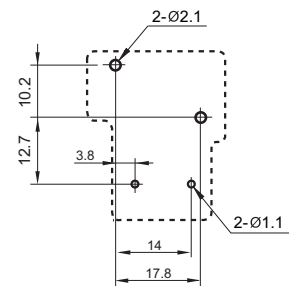
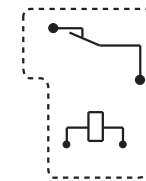
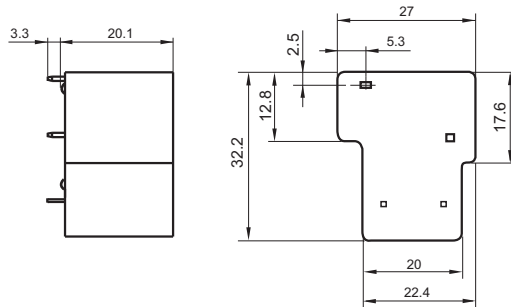


1 Form B

With 6# terminal



Without 6# terminal



OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

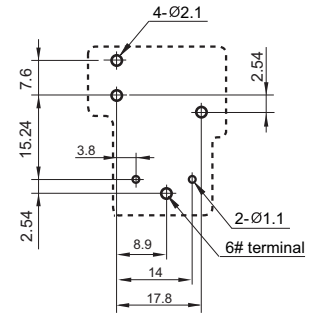
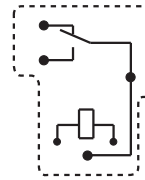
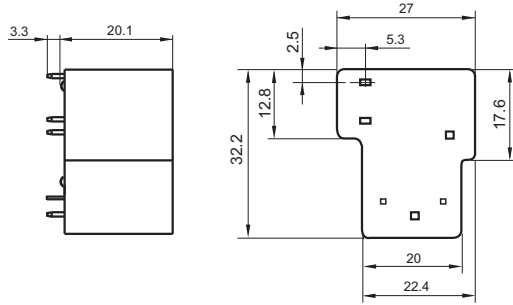
1 Form C

Outline Dimensions

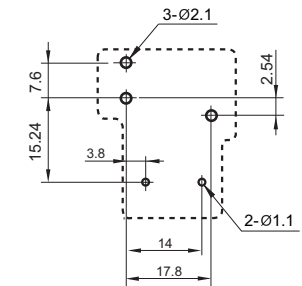
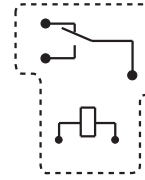
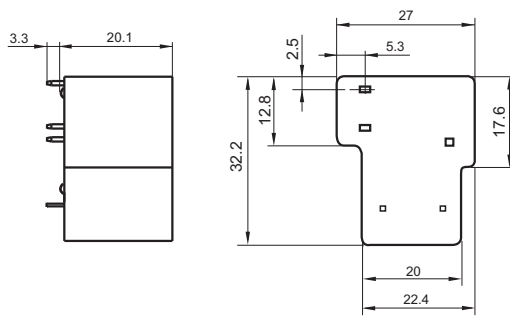
Wiring Diagram (Bottom view)

PCB Layout (Bottom view)

With 6# terminal



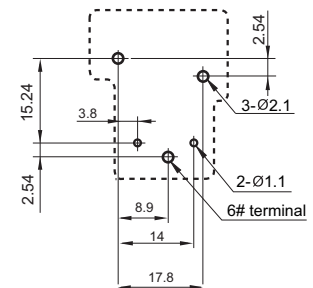
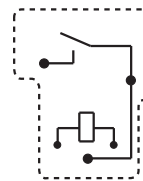
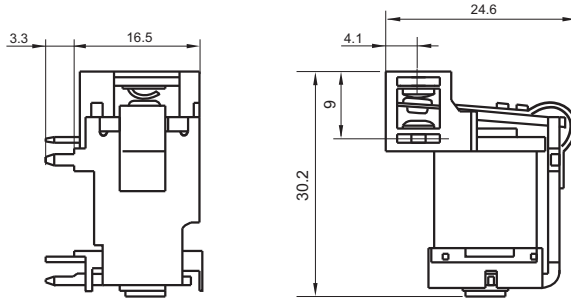
Without 6# terminal



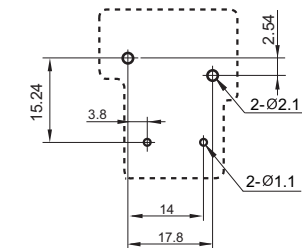
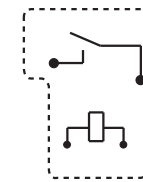
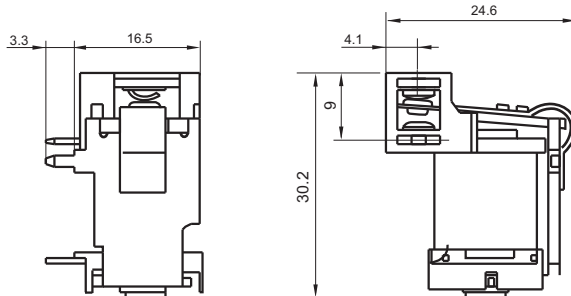
HF105-1

1 Form A

With 6# terminal



Without 6# terminal



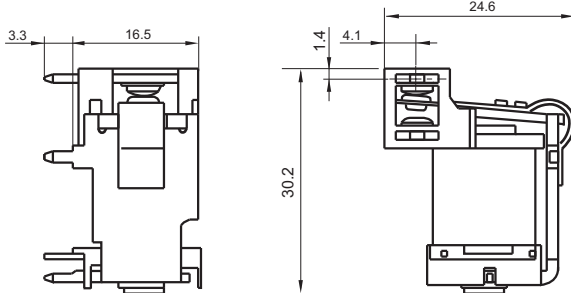
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

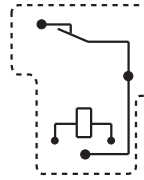
1 Form B

Outline Dimensions

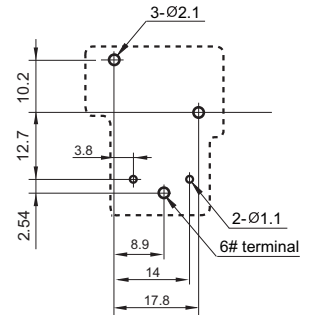
With 6# terminal



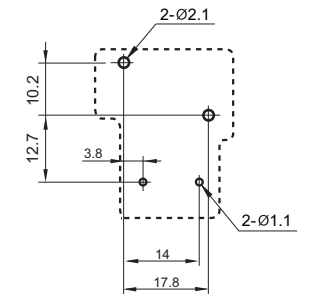
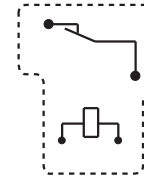
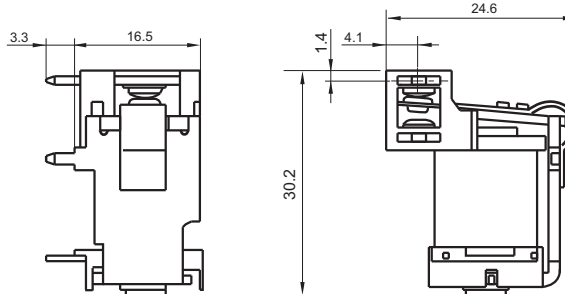
Wiring Diagram (Bottom view)



PCB Layout (Bottom view)

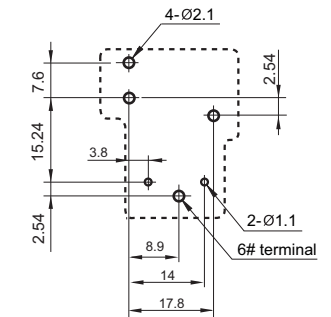
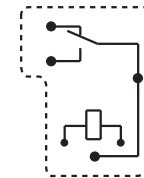
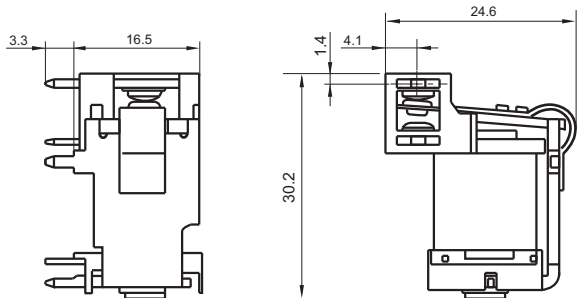


Without 6# terminal

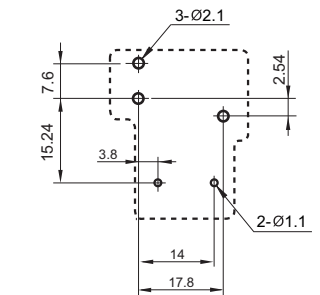
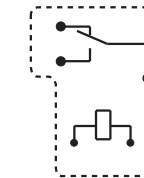
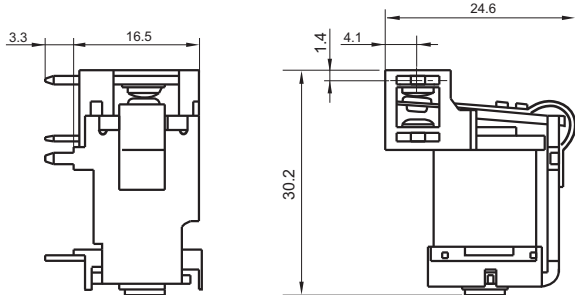


1 Form C

With 6# terminal



Without 6# terminal

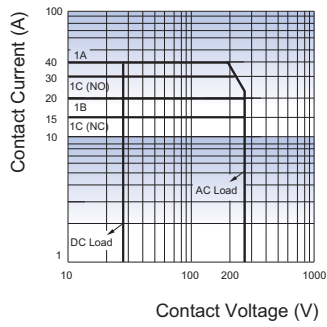


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension $\leq 1\text{mm}$, tolerance should be $\pm 0.2\text{mm}$; outline dimension $> 1\text{mm}$ and $\leq 5\text{mm}$, tolerance should be $\pm 0.3\text{mm}$; outline dimension $> 5\text{mm}$, tolerance should be $\pm 0.4\text{mm}$.

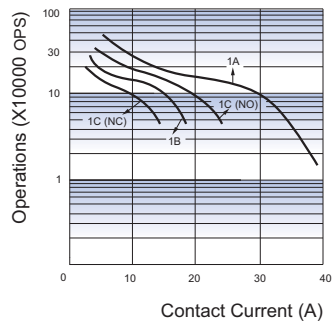
2) The tolerance without indicating for PCB layout is always $\pm 0.1\text{mm}$.

CHARACTERISTIC CURVES

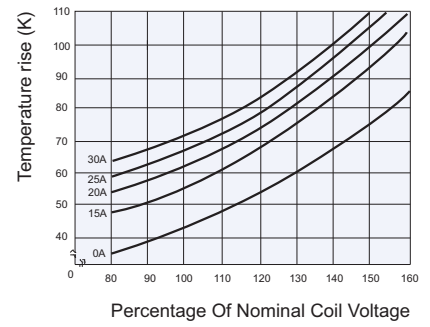
MAXIMUM SWITCHING POWER



ENDURANCE CURVE



COIL TEMPERATURE RISE



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.

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