HF105F-1 MINIATURE HIGH POWER RELAY

c UL us
File No.:E134517

File No.:40025518 (DC Type)

File No.:CQC12002071130(DC Type)
CQC10002049165(DC Type)
CQC16002140270(DC Type)

Features

- 40A switching capability
- 4kV dielectric strength (between coil and contacts)
- Heavy load up to 7200VA
- PCB coil terminals, ideal for heavy duty load
- Unenclosed, Plastic sealed and dust protected types available
- UL insulation system: Class F available
- Environmental friendly product (RoHS compliant)
- Outline Dimensions: 32.3mm x 27.1mmx 20.0mm

CONTACT DATA

Contact arrangement	1A	1B	1C (NO)	1C (NC)
Contact resistance[1)]	50mΩ max. (at 1A 24VDC)			
Contact material	$AgSnO_2$, AgCdO			
Max. switching capacity	11080VA 1200W	4155VA 450W	5540VA 600W	2770VA 300W
Max. switching voltage	277VAC / 28VDC			
Max. switching current	40A[2)]	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	1×10^7OPS			
Electrical endurance	1H type(Non-plastic sealed): 1×10^5OPS (28A 277VAC, Resistive load, AgCdO, Room temp., 1s on 9s off)			

Notes: 1) The data shown above are initial values.
2) Long time current-carrying under 40A condition is prohibited.

CHARACTERISTICS

Insulation resistance		1000MΩ (at 500VDC)
Dielectric strength	Between coil & contacts	2500VAC/4000VAC 1min
	Between open contacts	1500VAC 1min
Operate time (at nomi. volt.)		DC type: 15ms max.
Release time (at nomi. volt.)		DC type: 10ms max.
Ambient temperature		DC: -55°C to 85°C AC: -55°C to 60°C
Shock resistance	Functional	98m/s²
	Destructive	980m/s²
Vibration resistance		10Hz to 55Hz 1.5mm DA
Humidity		5% to 85% RH
Termination		PCB
Unit weight		Approx.36g
Construction		Unenclosed (Only for DC coil), Plastic sealed, Dust protected

Notes: 1) For plastic sealed type, the venting-hole should be opened in test.
2) The data shown above are initial values.
3) Please find coil temperature curve in the characteristic curves below.
4) UL insulation system: Class F, Class B.

COIL

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

SAFETY APPROVAL RATINGS

UL/ CUL	1 Form A		$AgSnO_2$ AgCdO	30A 277VAC 40A 277VAC 2HP 250VAC 1HP 125VAC
			AgCdO	30A 28VDC 28A 277VAC 277VAC(FLA=20)(LRA=60)
	1 Form B		AgCdO	15A 277VAC 10A 28VDC 1/2HP 250VAC 1/4HP 125VAC 277VAC(FLA=10)(LRA=33)
	1 Form C	NO	$AgSnO_2$ AgCdO	30A 277VAC 2HP 250VAC 1HP 125VAC
			AgCdO	20A 277VAC 20A 28VDC 277VAC(FLA=20)(LRA=60)
		NC	$AgSnO_2$ AgCdO	20A 277VAC 1/2HP 250VAC 1/4HP 125VAC
			AgCdO	10A 277VAC 10A 28VDC 277VAC(FLA=10)(LRA=33)

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

COIL DATA

at 23°C

DC type

Nominal Voltage VDC	Pick-up Voltage VDC max.[3)]	Drop-out Voltage VDC min.[3)]	Max. Voltage VDC *[4)]	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%)

AC type

Nominal Voltage VAC	Pick-up Voltage VAC max.[3)]	Drop-out Voltage VAC min.[3)]	Max. Voltage VDC *[4)]	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.
3) The data shown above are initial values.
4) *Maximum voltage refers to the maximum voltage which relay coil could endure in a short period of time.

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)2)]
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

Special code[3)] **XXX:** Customer special requirement **Nil:** Standard

Notes: 1) We recommend dust protected types for a clean environment (free from contaminations like H_2S, SO_2, NO_2, dust, etc.).
We suggest to choose plastic sealed types and validate it in real application for an unclean environment (with contaminations like H_2S, SO_2, NO_2, dust, etc.).
2) Contact is recommended for suitable condition and specifications if water cleaning or surface process is involved in assembling relays on PCB.
3) The customer special requirement express as special code after evaluating by Hongfa.

OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

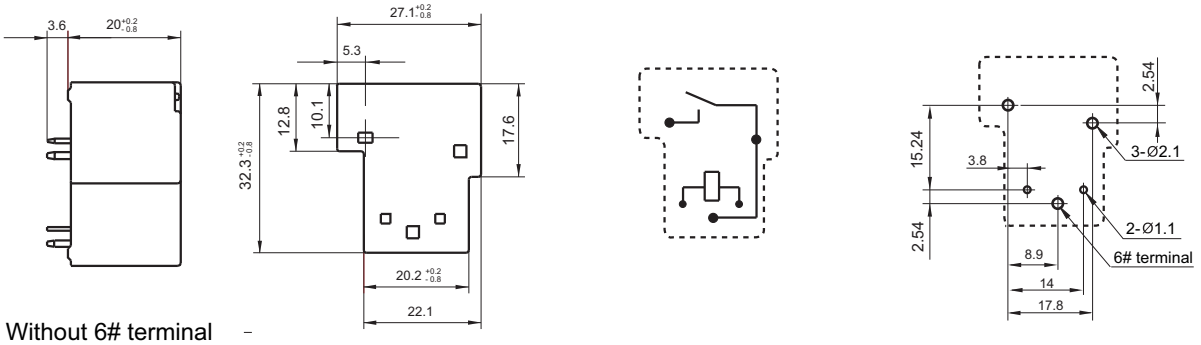
Unit: mm

HF105F-1

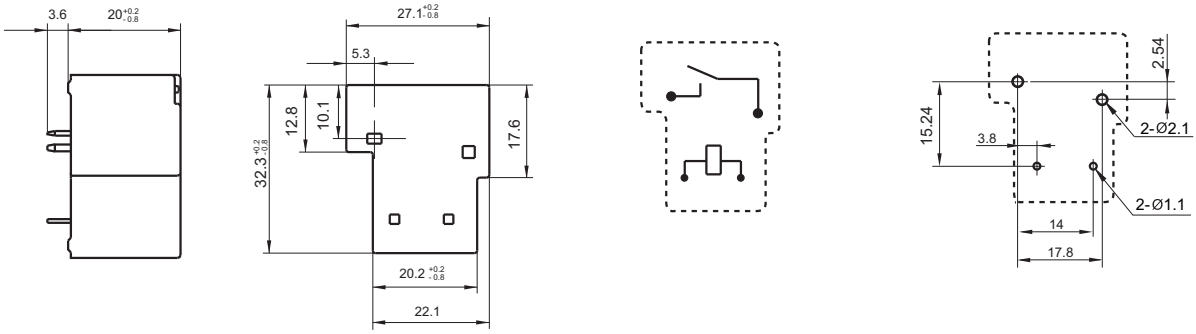
1 Form A

Outline Dimensions | Wiring Diagram (Bottom view) | PCB Layout (Bottom view)

With 6# terminal

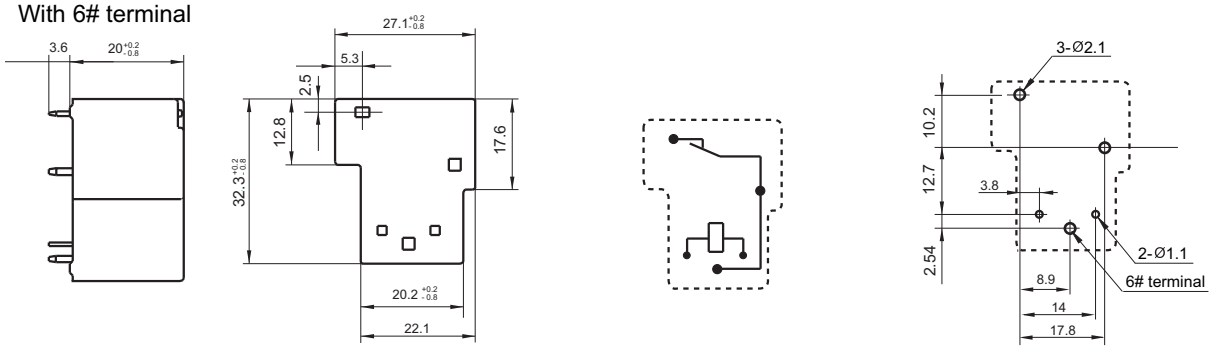


Without 6# terminal

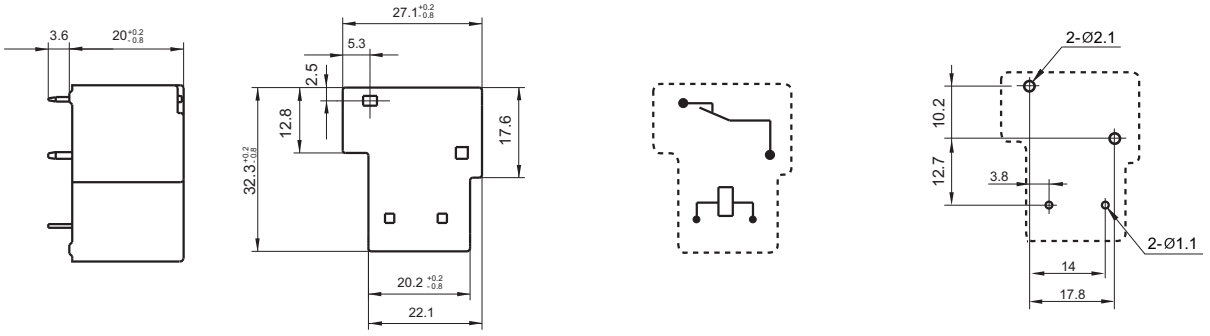


1 Form B

With 6# terminal



Without 6# terminal



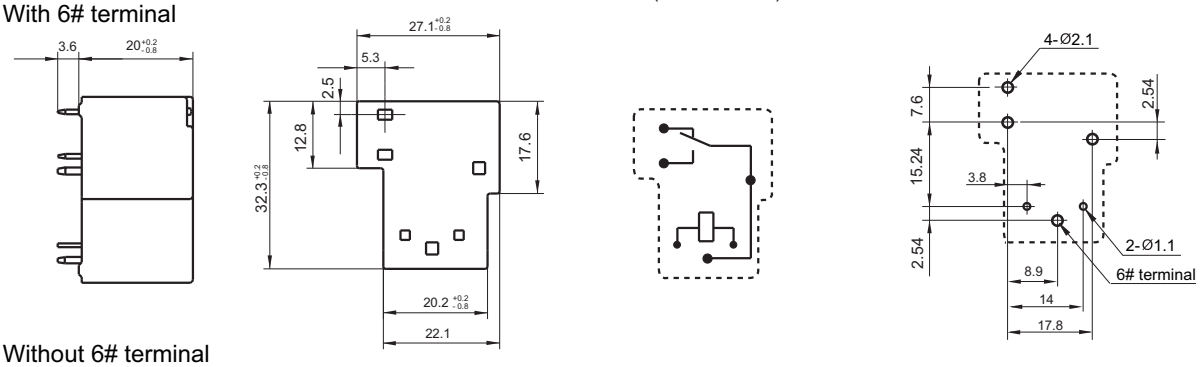
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

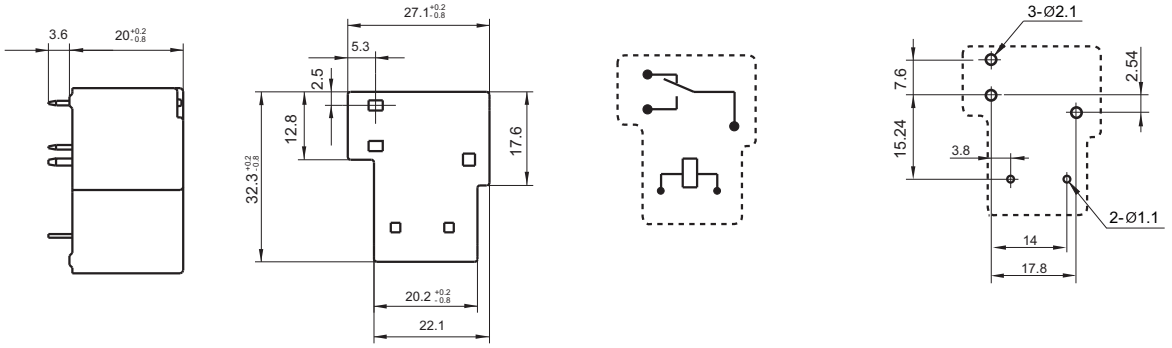
1 Form C

Outline Dimensions | Wiring Diagram (Bottom view) | PCB Layout (Bottom view)

With 6# terminal



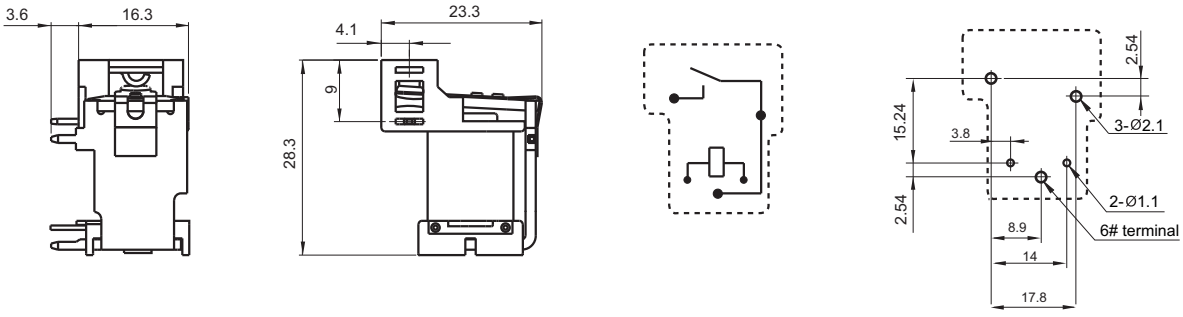
Without 6# terminal



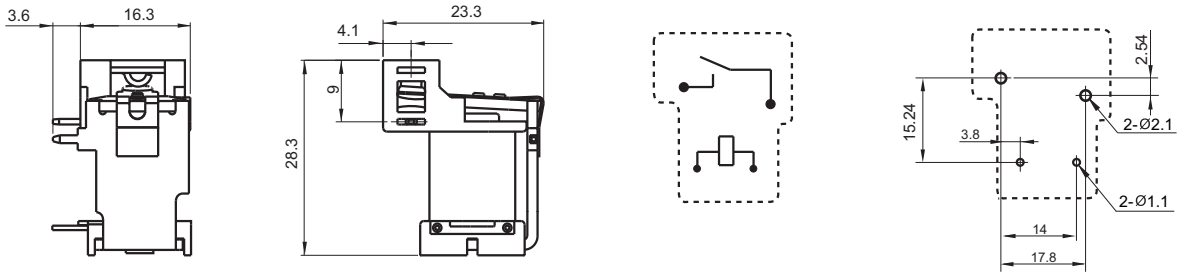
HF105-1

1 Form A

With 6# terminal



Without 6# terminal



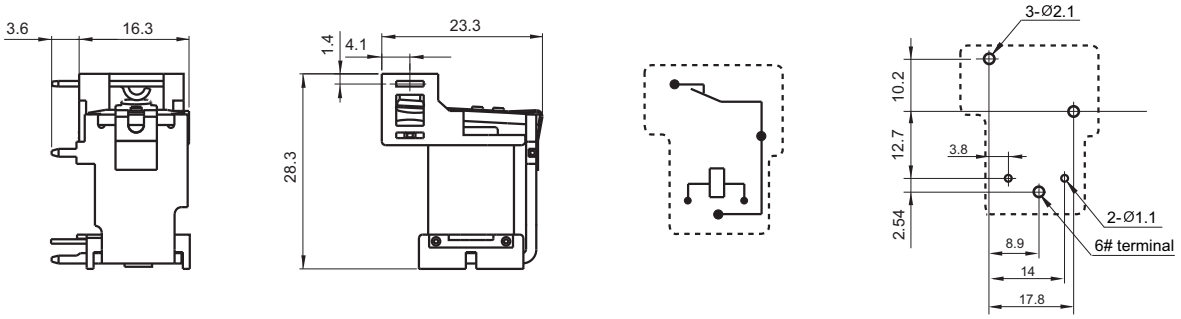
OUTLINE DIMENSIONS, WIRING DIAGRAM AND PC BOARD LAYOUT

Unit: mm

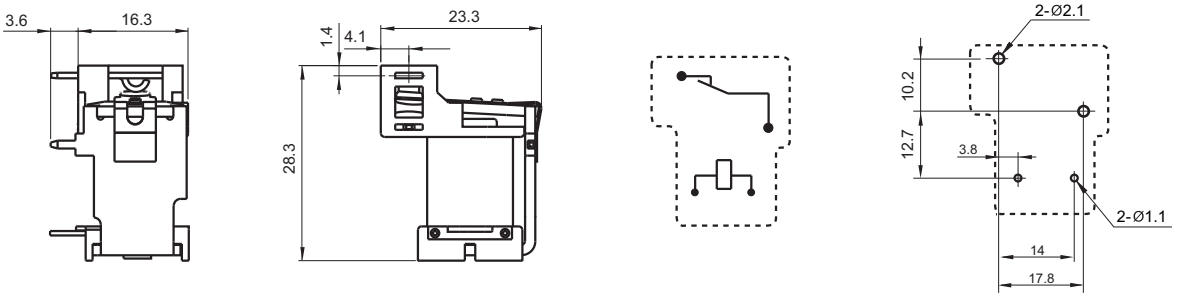
1 Form B

Outline Dimensions | Wiring Diagram (Bottom view) | PCB Layout (Bottom view)

With 6# terminal

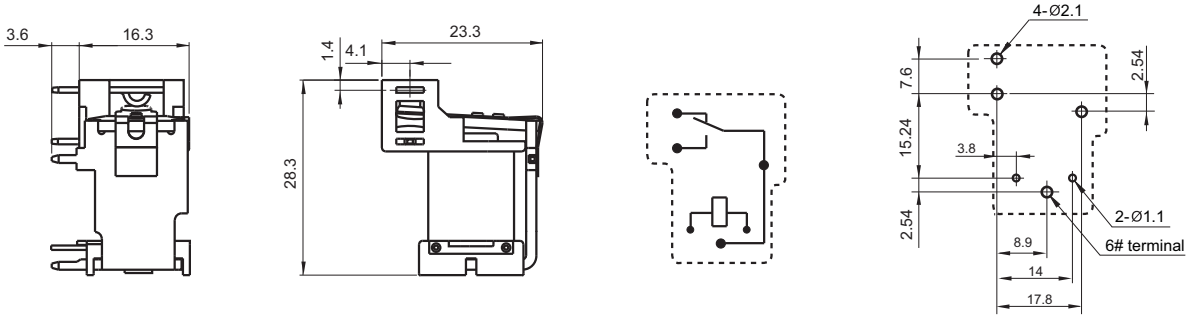


Without 6# terminal

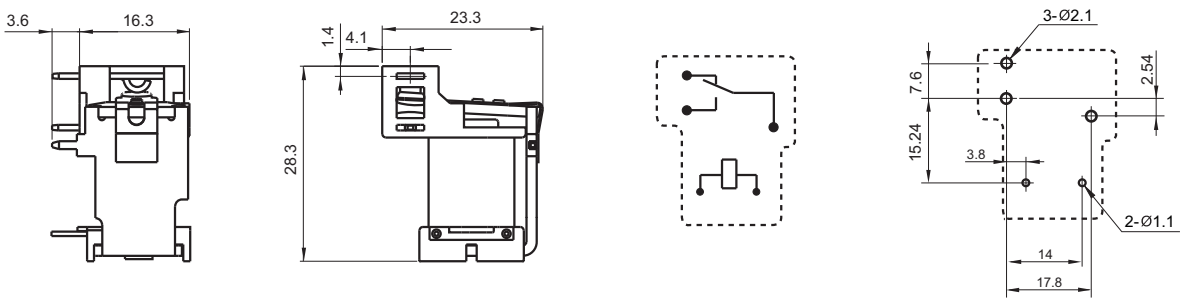


1 Form C

With 6# terminal



Without 6# terminal

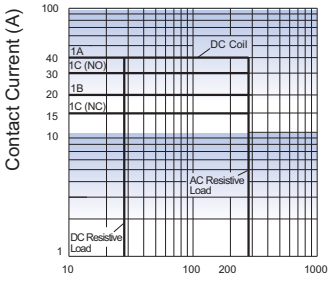


Remark: 1) In case of no tolerance shown in outline dimension: outline dimension ≤1mm, tolerance should be ±0.2mm; outline dimension >1mm and ≤5mm, tolerance should be ±0.3mm; outline dimension >5mm, tolerance should be ±0.4mm.

2) The tolerance without indicating for PCB layout is always ±0.1mm.

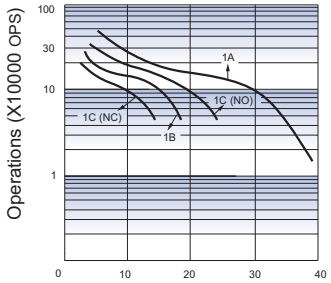
CHARACTERISTIC CURVES

MAXIMUM SWITCHING POWER



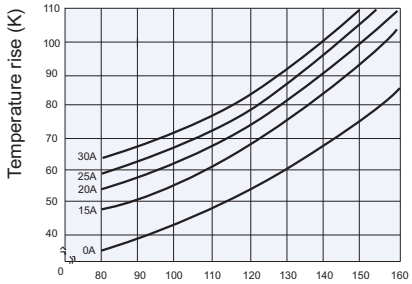
Contact Voltage (V)

ENDURANCE CURVE



Contact Current (A)

COIL TEMPERATURE RISE



Percentage Of Nominal Coil Voltage

Test conditions:
Resistive load, Dust protected,
AgCdO, Room temp., 1s on 9s off.

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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