

CHUROD ELECTRONICS



Relays and contactors for pre-charge circuits 2023

Features

- Outline dimension: PCB: 38mm×29.8mm×33.6mm
TAB: 61.1mm×29.8mm×32mm
- 1A (SPDM) , GAP>3.0mm
- IEC61810, IEC60664, RoHS, REACH SvHC compliance
- Epoxy resin seal , Environmental protection category RTII
- 20A 85°C carrying capacity
- PCB mounting type or TAB mounting type



Application

EV
Precharge circuit control of inverter
Industrial DC control unit
AGV

Coil parameters@ 23℃

Rated voltage (VDC)	Rated power (W)	Rated current (mA)	Coil resistance (Ω±10%)	Operate voltage (VDC)	Release voltage (VDC)
9	2	220	42.5	≤6.75	≥0.45
12	2	160	76	≤9	≥0.6
18	2	110	170	≤13.5	≥0.9
24	2	80	303	≤18	≥1.2
36	2	55	682	≤27	≥1.8
48	2	40	1212	≤36	≥2.4
60	2	33	1894	≤45	≥3.0
110	2	18	6368	≤82.5	≥5.5

Notes: The above values are the initial at 23℃.

Contact parameters

Contact form	1A(SPDM)
Contact material	AnSnO2
Initial voltage drop	≤60 mV at 20 A
Rated current (Resistive Load)	20 A (@2.5mm ² PCB or #250 TAB)
Rated switching voltage	600 Vd.c.
Minimum applicable load	48Vd.c., 100mA
Max switching voltage	600 Vd.c.
Rated switching current	20A (600 Vd.c.)
Electrical life (Resistive Load)	DV: 1000 次 (600 Vd.c. 20 A) 3000 次 (500 Vd.c. 20 A) DH: 6000 次 (72 Vd.c. 20 A)
Current tolerance	20A, continuous; 30A, 1.0 h; 40A, 20 min; 80A, 30 s; 120A, 10 s; 200A, 0.6 s;
Mechanical life	200000次, ON:OFF: 0.2s: 0.2s

Notes: Electrical life at 23℃, ON: OFF=1s: 9s. During the test, the coil was not connected to the surge suppression device. If the coil parallel diode is used, the release time of the relay will be lengthened and the life will be reduced.

Other parameters

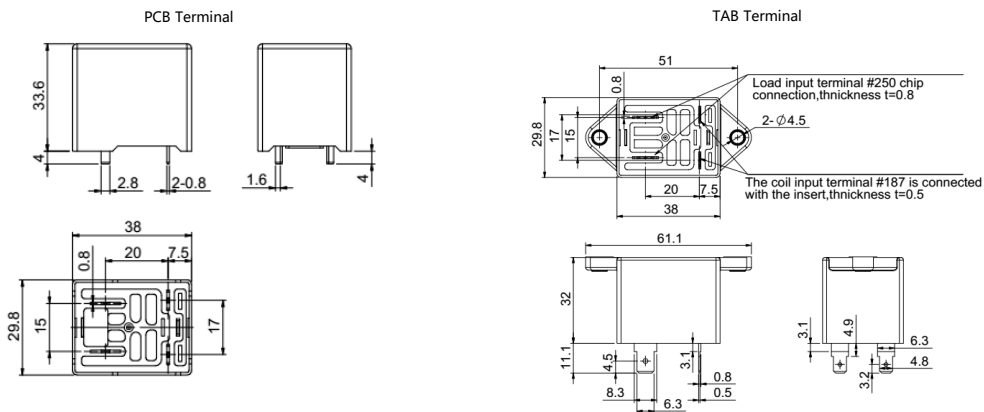
Dielectric strength	between open contacts	2500 Va.c. 50/60 Hz 1 min
	between coil to contacts	3500 Va.c. 50/60 Hz 1 min
Insulation resistance		1000 MΩ at 1000 Vd.c.
Operate time (at rated voltage)		≤25ms
Release time (at rated voltage)		≤10ms
Vibration resistance	Destruction	10Hz~ 500Hz., 49m/S ²
	Functional	10Hz~ 500Hz., 49m/S ²
Shock resistance	Destruction	490m/s ²
	Functional	ON: 196m/s ² OFF: 98m/s ²
Ambient temperature		-40℃~85℃(No dew, No ice)
Relative humidity		5% RH ~85% RH
Terminal style		PCB terminal, TAB terminal
Installation		PCB terminal, M4 screw
Environmental protection category		RTII
Weight		PCB: 65g, TAB: 67g
Overall dimensions		PCB: 38mm×29.8mm×33.6mm TAB: 61.1mm×29.8mm×32mm

Notes: The above values are conservative at 23℃.

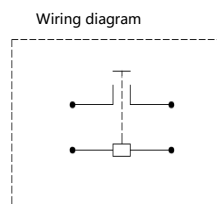
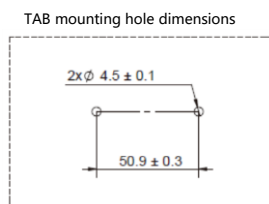
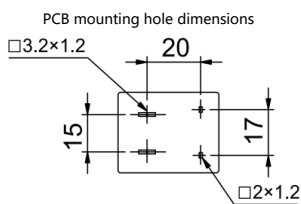
Selection of reference

	CHDR1	-1	12	DV	20	T	,XXX
1.Product code	CHDR1 series						
2.Contact form	1=1 Form A(SPDM)						
3.Coil rated voltage	09,12,18,24,36,48,60,110VDC						
4.Rated switching voltage	DV = 600VDC DH = 72VDC						
5.Rated switching current	20 =20A						
6.Terminal style	blank=PCB terminal T=Tab terminal						
7.Additional numbers and /or letters	000-999 , aaa-zzz or blank , which does not represent electrical changes, only for specific customer requirements						

Outline dimension



Mounting hole dimensions and wiring diagram



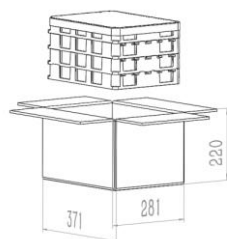
Notes: No dimensional tolerance:
 size ≤10mm; tolerance : ±0.2mm;
 size 10~50mm; tolerance : ± 0.3mm;
 size > 50mm; tolerance : ±0.4mm .

Notes:

- Please avoid sticking grease and other foreign bodies on the lead end, PCB terminal use above 2.5mm² connecting wires.TAB terminal use #250
 Otherwise, it may cause abnormal fever at the end of the derivation.
- PCB Terminal welding temperature and time are recommended not to exceed 260°C/10S, In the case of overrange, damage may result.
- TAB mounting hole use screw M4,Please control the torque within 2~3N*m.In the case of overrange, damage may result.

Notes: The load and and the coil is non-polar.

Packaging figure



Each plastic box 25PCS , Per carton 100PCS.

Disclaimer:

The specification is for reference only,if you need more detail information,please contact Churod . We could not evaluate all the performance and all parameters for every possible application.And the user should be in a right position to choose the suitable product for their own application.If there is any new need,please contact Churod for the technical service.

Features

- Outline dimension: 38mm×29.8mm×33.6mm
- 1A (SPDM) , GAP>3.0mm
- IEC61810, IEC60664, RoHS, REACH SvHC compliance
- Epoxy resin seal , Environmental protection category RTII
- 50A 85°C carrying capacity
- PCB mounting type



Application

EV
Precharge circuit control of inverter
Industrial DC control unit
AGV

Release voltage @ 23℃

Rated voltage (VDC)	Rated power (W)	Rated current (mA)	Coil resistance ($\Omega \pm 10\%$)	Operate voltage (VDC)	Release voltage (VDC)
9	2	220	42.5	≤ 6.75	≥ 0.45
12	2	160	76	≤ 9	≥ 0.6
18	2	110	170	≤ 13.5	≥ 0.9
24	2	80	303	≤ 18	≥ 1.2
36	2	55	682	≤ 27	≥ 1.8
48	2	40	1212	≤ 36	≥ 2.4
60	2	33	1894	≤ 45	≥ 3.0
110	2	18	6368	≤ 82.5	≥ 5.5

Notes: The above values are the initial at 23°C.

Contact parameters

Contact form	1A(SPDM)
Contact material	AnSnO ₂
Initial voltage drop	≤ 60 mV at 50 A
Rated current (Resistive Load)	50 A (@10mm ²)
Rated switching voltage	500 Vd.c.
Minimum applicable load	48Vd.c., 100mA
Max switching voltage	500 Vd.c.
Rated switching current	25kW (500 Vd.c.)

Durability

Electrical life (Resistive Load)	300次 (500 Vd.c. 50 A) 3000次 (500 Vd.c. 40 A)
Current tolerance	50A, continuous
	60A, 1.0 h
	80A, 20 min
	100A, 30 s
	150A, 10 s
	300A, 0.6 s
Mechanical life	200000次, ON:OFF: 0.2s: 0.2s

Notes: Electrical life at 23°C, ON: OFF=1s: 9s. During the test, the coil was not connected to the surge suppression device. If the coil parallel diode is used, the release time of the relay will be lengthened and the life will be reduced.

Other parameters

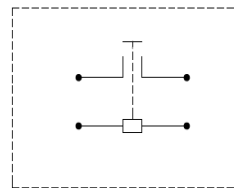
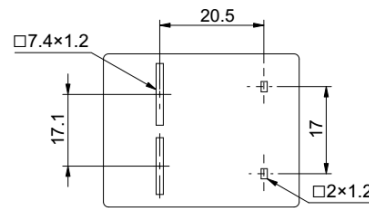
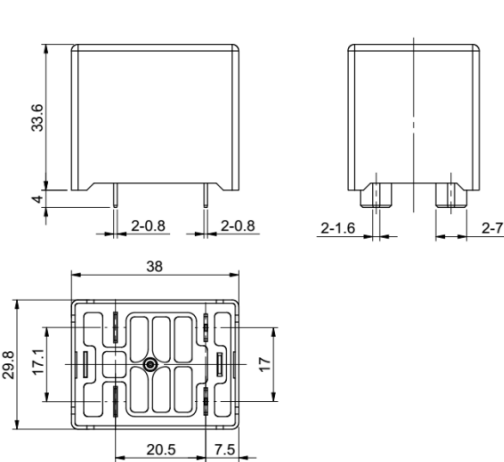
Dielectric strength	between open contacts	2500 Va.c. 50/60 Hz 1 min
	between coil to contacts	3500 Va.c. 50/60 Hz 1 min
Insulation resistance		1000 M Ω at 1000 Vd.c.
Operate time (at rated voltage)		≤ 25 ms
Release time (at rated voltage)		≤ 10 ms
Vibration resistance	Destruction	10Hz~ 500Hz., 49m/S ²
	Functional	10Hz~ 500Hz., 49m/S ²
Shock resistance	Destruction	490m/s ²
	Functional	ON: 196m/s ² OFF: 98m/s ²
Ambient temperature		-40°C~85°C(No dew, No ice)
Relative humidity		5% RH ~85% RH
Terminal style		PCB terminal
Installation		PCB terminal
Environmental protection category		RTII
Weight		70g
Overall dimensions		38mm×29.8mm×33.6mm

Notes: The above values are conservative at 23°C.

Selection of reference

	CHDR1	-1	12	DO	50	,XXX
1.Product code	CHDR1 series					
2.Contact form	1=1 Form A(SPDM)					
3.Coil rated voltage	09,12,18,24,36,48,60,110VDC					
4.Rated switching voltage	DO = 500VDC					
5.Rated switching current	50 =50A					
6.Additional numbers and /or letters	000-999, aaa-zzz or blank, which does not represent electrical changes, only for specific customer requirements					

Outline dimension



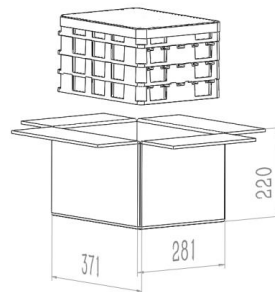
Notes: No dimensional tolerance:
 size $\leq 10\text{mm}$; tolerance : $\pm 0.2\text{mm}$;
 size $10\sim 50\text{mm}$; tolerance : $\pm 0.3\text{mm}$;
 size $> 50\text{mm}$; tolerance : $\pm 0.4\text{mm}$.

Notes: The load and and the coil is non-polar.

Notes:

- 1、 Please avoid sticking grease and other foreign bodies on the lead end, PCB terminal use above 10mm^2 connecting wires. Otherwise, it may cause abnormal fever at the end of the derivation.
- 2、 PCB Terminal welding temperature and time are recommended not to exceed $260^\circ\text{C}/10\text{S}$, In the case of overrange, damage may result.

Packaging figure



Each plastic box 25PCS , Per carton 100PCS.

Disclaimer:

The specification is for reference only,if you need more detail information,please contact Churod. We could not evaluate all the performance and all parameters for every possible application.And the user should be in a right position to choose the suitable product for their own application.If there is any new need,please contact Churod for the technical service.

FEATURES

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion
- Filled with gas (mostly hydrogen) to minimize contact oxidation and damage from arcing; the contact resistance is low and stable
- Contact part can meet IP67 protection level
- Current rated load continuously at 85°C
- Insulation resistance is 1000MΩ(1000Vd.c.),and dielectric strength between the coil and contacts is 4.0kV ,which meets the requirements of IEC 60664-1.

APPLICATION

Energy storage system
Construction machinery
Charging pile
Solar inverter



CONTACT DATA

Main Contact Arrangement	1 Form A
Initial Contact Voltage Drop	≤90 mV at 20 A
Rated Current (resistive load)	20A
Rated Switching Voltage	1500VDC
Max. Switching Power (1500VDC)	30kW
Max. Breaking Current	200A (1000VDC)
Min.Applicable Load	6VDC, 1A

COIL DATA @ 23°C

Nominal Voltage (VDC)	Coil Power (W)	Nominal Current (A)	Coil Resistance (Ω±10%)	Pick-up Voltage (VDC)	Drop-out Voltage (VDC)
12	2.6	0.22	55.4	9.0 Max.	1 Min.
24	2.6	0.11	221.6	18.0 Max.	2 Min.

ENDURANCE

Electrical Life (resistive Load)	Switching: 7.5×10 ⁴ 次 (450 Vd.c.,20A)
	Switching: 5×10 ⁴ 次 (750 Vd.c.,20A)
	Switching: 1×10 ⁴ 次 (1000 Vd.c.,15A)
	Switching: 6000次 (1500 Vd.c.,15A)
	Making: 1.5×10 ⁴ 次 (1500 Vd.c.,40A)
Current Endurance	20A, Cont.
	30A, 1.0 h
	40A, 20 min
	80A, 30 s
	120A, 10 s
	200A, 0.6 s
Mechanical endurance	2×10 ⁵ times, on-off ratio: 0.5s: 0.5s

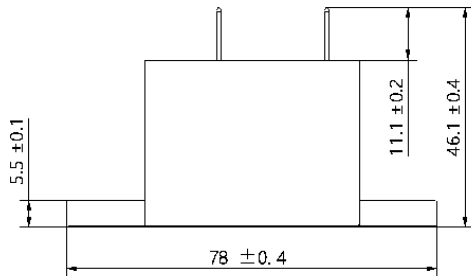
CHARACTERISTICS

Operate Time(at nominal voltage)	≤15ms	
Release Time(at nominal voltage)	≤5ms	
Insulation Resistance	> 1000 MΩ (at 1000 VDC)	
Dielectric Strength	Between Coil and Contacts	4,000 VAC, 50/60 Hz (1min)
	Between Open Contacts	3,000 VAC, 50/60 Hz (1min)
Vibration	10Hz ~ 500Hz, 49 m/s ²	
Shock Resistance	Functional	196 m/s ²
	Destructive	490 m/s ²
Ambient temperature	-40°C ~ 85°C	
Humidity	5%RH to 85%RH	
Weight	140g	

ORDERING

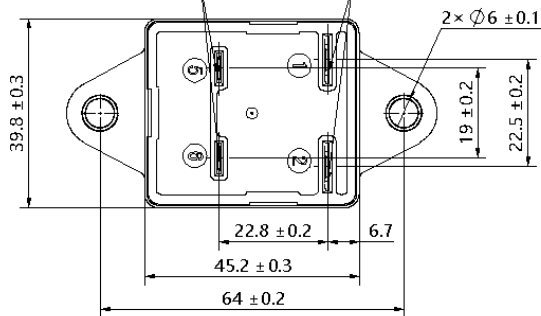
	CH	PV	-S	20	/ F -	12	Q	A	4	, XXX
Company Code	CH: Churod									
Application Area	PV: Photovoltaic Energy Storage									
Series Code	S: S Series									
Load Current	20: 20A									
Load Voltage	F 1500VDC									
Coil Specification	12: 12VDC; 24: 24VDC									
Coil Termination	Q: QC terminal									
Contact Type	A: Form A									
Load Termination	4: QC terminal									
Characteristic Code	Blank or Other Customer Requirements									

OUTLINE DIMENSION

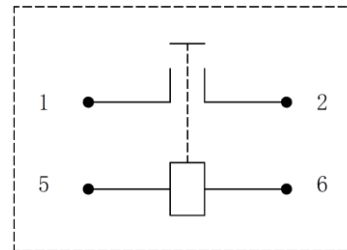


Coil input terminal(Non-polarity)
#250 insert terminal, Thickness=0.8

Load input terminal(Non-polarity)
#250 insert terminal, Thickness=0.8



WIRING DIAGRAM

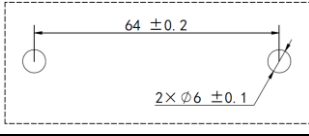


Note: No polarity on the load and coil

Note: All unspecified tolerance according to following table.

Outline dimensions hadn't specified tolerance	
Outline Dimensions	Tolerance
≤10	±0.3
10~50	±0.6
>50	±1

INSTALLATION INFORMATION

Relay Installation		
Mounting Type	Horizontal or vertical direction	Mounting Hole Size
Installation Mode	M5 Screw	
Torque	3 N•m ~ 4 N•m	

ENGINEERING NOTES

1. Unless otherwise explicitly stated, the standard environment conditions for measurement or testing are listed as follows:

Ambient temperature is $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

Atmospheric pressure is $96 \times (1 \pm 10\%) \text{ kPa}$.

Relative humidity is 25% RH ~ 75% RH.

2. In order to curb the reverse electromotive force of coil, a nonlinear resistor is recommended to use (ZNR is recommended, the max energy tolerance: $\geq 1\text{J}$. Voltage: 1.5 ~ 2 times the rated voltage). Please be noted that a diode will make the release time of relay increase, which should lead to the degradation of cutting-off capability. Relay products with circuit board do not need to add a device to curb the reverse electromotive force of the coil.

3. The rating load of contact is resistive load. Please assure a surge absorption device together with inductive load when using the $L/R \geq 1\text{ms}$ inductive load (L Load), otherwise it may lead to the decrease of electrical endurance and defective switch.

4. In order to prevent loosening, please use the washer when installing the relay. Please use the M5 screws to install relay, screw locking torque within 3 N•m ~ 4 N•m; Allowable pulling or pushing force for the terminal: (1) Main terminal: 49N; (2) Coil terminal: 49N. Damage may occur when it is beyond the range.

CHPV -S40 40A High Voltage Direct Current Relay

FEATURES

- Ceramic brazing sealed technology guarantees no risk of arc leaking and ensures no fire or explosion
- Filled with gas (mostly hydrogen) to minimize contact oxidation and damage from arcing; the contact resistance is low and stable
- Contact part can meet IP67 protection level
- Current rated load continuously at 85°C
- Insulation resistance is 1000MΩ(1000Vd.c.),and dielectric strength between the coil and contacts is 4.0kV ,which meets the requirements of IEC 60664-1.

APPLICATION

Energy storage system
Construction machinery
Charging pile
Solar inverter



CONTACT DATA

Main Contact Arrangement	1 Form A
Initial Contact Voltage Drop	≤120mV at 40 A
Rated Current (resistive load)	40 A (@10mm ²)
Rated Switching Voltage	1500VDC
Max. Switching Power (1500VDC)	6VDC, 1 A
Max. Breaking Current	60kW
Min.Applicable Load	400A (300VDC)

COIL DATA @

Nominal Voltage (VDC)	Coil Power (W)	Nominal Current (A)	Coil Resistance (Ω±10%)	Pick-up Voltage (VDC)	Drop-out Voltage (VDC)
12	2.6	0.22	55.4	9.0 Max.	1 Min.
24	2.6	0.11	221.6	18.0 Max.	2 Min.

ENDURANCE

Electrical Life (resistive Load)	Switching: 2×10 ⁴ 次 (450 Vd.c.,40A)
	Switching: 1000次 (750 Vd.c.,40A)
	Making: 7.5×10 ⁴ 次 (750 Vd.c.,40A)
	Switching: 6000次 (1500 Vd.c.,15A)
	Making: 1.5×10 ⁴ 次 (1500 Vd.c.,40A)
Current Enduranc	40A, Cont.
	60A, 1.0 h
	80A, 20 min
	160A, 30 s
	320A, 10 s
Mechanical endurance	400A, 0.6 s
	2×10 ⁵ times, on-off ratio: 0.5s: 0.5s

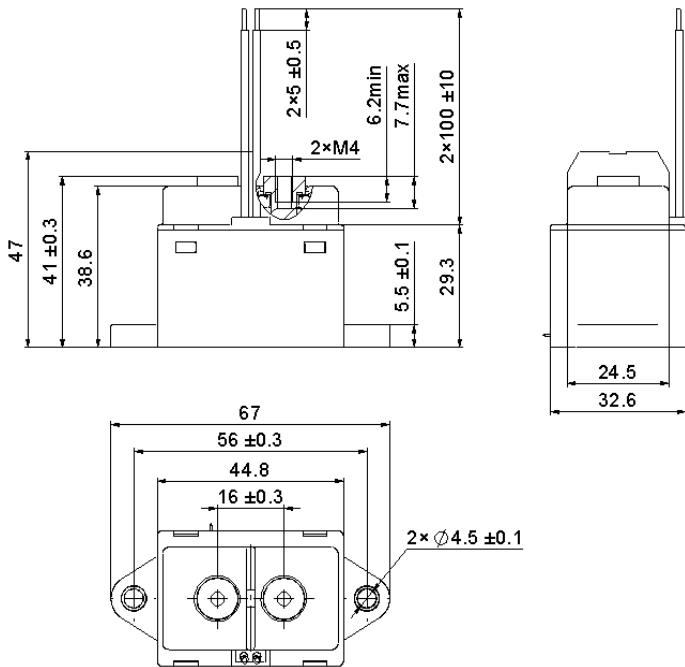
CHARACTERISTICS

Operate Time(at nominal voltage)	≤15ms	
Release Time(at nominal voltage)	≤5ms	
Insulation Resistance	> 1000 MΩ (at 1000 VDC)	
Dielectric Strength	Between Coil and Contacts	4,000 VAC, 50/60 Hz (1min)
	Between Open Contacts	3,000 VAC, 50/60 Hz (1min)
Vibration	10Hz ~ 500Hz, 49 m/s ²	
Shock Resistance	Functional	196 m/s ²
	Destructive	490 m/s ²
Ambient temperature	-40°C ~ 85°C	
Humidity	5%RH to 85%RH	
Weight	140g	

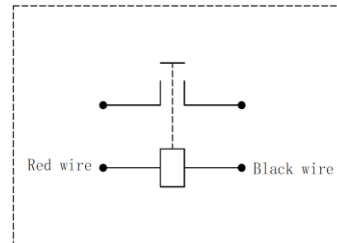
ENDURANCE

Company Code	CH	PV	-S	40	/	F-	12	L	A	1	, XXX
CH: Churod											
Application Area	PV: Photovoltaic Energy Storage										
Series Code	S: S Series										
Load Current	40: 40A										
Load Voltage	F 1500VDC										
Coil Specification	12: 12VDC; 24: 24VDC										
Coil Termination	L: Wire										
Contact Type	A: Form A										
Load Termination	1:Screw Terminal Female										
Characteristic Code	Blank or Other Customer Requirements										

OUTLINE



WIRING DIAGRAM



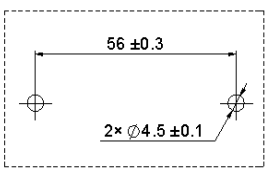
Note: No polarity on the load and coil

Note: All unspecified tolerance according to following table.

Outline dimensions hadn't specified tolerance	
Outline Dimensions	Tolerance
≤10	±0.3
10~50	±0.6
>50	±1

INSTALLATION INFORMANTION

Load Terminal Installation				
Installation Mode	Selection Screw	Torque	Copper Busbar Diameter	Copper Busbar Thickness
M4 Screw	M4x8 Combined Bolt	2 N·m ~3N·m	Ø 4.0 mm~Ø 4.5 mm	1.0mm~1.5 mm

Relay Installation		
Mounting Type	Horizontal or vertical direction	Mounting Hole Size
Installation Mode	M4 Screw	
Torque	2 N·m ~3N·m	

ENGINEERING NOTES

1. Unless otherwise explicitly stated, the standard environment conditions for measurement or testing are listed as followings:

Ambient temperature is 23°C±5°C.

Atmospheric pressure is 96× (1±10%) kPa.

Relative humidity is 25% RH ~ 75% RH.

2. In order to curb the reverse electromotive force of coil, a nonlinear resistor is recommended to use (ZNR is recommended, the max energy tolerance:≥1J.

Voltage: 1.5 ~ 2 times the rated voltage) . Please be noted that a diode will make the release time of relay increase, which should lead to the degradation of cutting-off capability. Relay products with circuit board do not need to add a device to curb the reverse electromotive force of the coil.

3. The rating load of contact is resistive load. Please assure a surge absorption device together with inductive load when using the L/R≥1ms inductive load (L Load), otherwise it may lead to the decrease of electrical endurance and defective switch.

CHUROD ELECTRONICS

Everything we do is for our customers' advantage



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