

# EV CHARGER RELAYS

## AUTOMOTIVE & NEW ENERGY RELAY PRODUCT BROCHURE

Electric Vehicle • Charging • Solar Photovoltaic • Network Power



# CHAR-C Series 90A Photovoltaic Relay



## Product FEATURES

- Outline Dimension: 38 mm×33 mm×39.5 mm
- Contact Arrangement: 1 Form X, GAP > 4.0 mm
- Designed to meet GB21711.1, IEC61810, UL60947-1, RoHS, REACH SVHC requirements
- Environmental protection category RTII
- Contact switching capability with 90A
- Applied to the inverter in solar photovoltaic field
- To reduce power loss, a small coil holding-voltage has been used for working coil
- Insulation class: F class



File NO. E341422



File NO. R50499133



File NO. CQC21002285874

## APPLICATION

- Circuit Control of Inverter

## COIL PARAMETERS

Rated voltage (VDC)	Rated power (W)	Rated current (mA)	Coil resistance ( $\Omega \pm 10\%$ )	Operate voltage (VDC)	Release voltage (VDC)
6	1.92	320	18.75	$\leq 4.5$	$\geq 0.6$
9	1.92	213	42.2	$\leq 6.75$	$\geq 0.9$
12	1.92	160	75	$\leq 9$	$\geq 1.2$
24	1.92	80	300	$\leq 18$	$\geq 2.4$
48	1.92	40	1200	$\leq 36$	$\geq 4.8$

Notes:

- The above values are the initial at 23°C.

## HOLD VOLTAGE

Rated voltage (VDC)	Hold voltage of coil (VDC)
6	3.3~6
9	4.95~9
12	6.6~12
24	13.2~24
48	26.4~48

Notes:

- The above values are only the reference values at 23°C. Please contact the company for details.

## CONTACT PARAMETERS

Contact configuration	1 Form X
Contact material	Ag Alloy
Initial contact resistance	$\leq 5 \text{ m}\Omega$ (6 VDC 20 A)
Rated current	90 A
Contact rating	Making 30 A; Carry 90 A; Break 30 A
Rated switching voltage	1000 VAC
Max. breaking current	100 A
Max. switching power	100000 VA
Electrical endurance	$\geq 3 \times 10^4$ cycles (at 85 °C, 1 s ON/9 s OFF)
Mechanical endurance	1 Million cycles, Coil: 0.2 s ON / 0.2 s OFF

Notes:

- The life expectancy will be lower when a diode is used in parallel with the coil.

## OTHER PARAMETERS

Dielectric strength	between open contacts	2500 VAC. 50/60 Hz 1 min
	between coil to contacts	5000 VAC. 50/60 Hz 1 min
Insulation resistance		100 M $\Omega$ (1000 VDC)
Operate time (Rated voltage)		$\leq 35 \text{ ms}$ (at 85 °C)
Release time (Rated voltage)		$\leq 10 \text{ ms}$
Vibration resistance	Between coil and contacts	10 Hz~ 55 Hz, 1.5 mm
	Malfunction	10 Hz~ 500 Hz, 49 m/s <sup>2</sup>
Shock resistance	Between coil and contacts	981 m/s <sup>2</sup>
	Malfunction	98.1 m/s <sup>2</sup>
Operating temperature		-40 °C~85 °C (Without condensation and freezing)
Operating humidity		20% RH ~85% RH
Terminal style		PCB terminal
Category of protection		RT II (Flux proof)
Weight		About 89.5 g

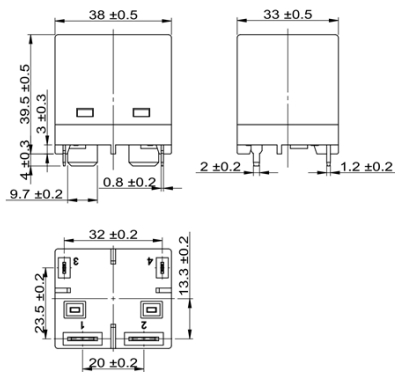
Notes:

- Unless otherwise specified, the above values are the initial at 23°C.

## ORDERING INFORMATON

	CHAR	-1	12	A90	C	,XXX
1.Product Family	CHAR series					
2.Contact form	1=1 Form A (SPDM)					
3.Coil rated voltage	06 =06 VDC 09 =09 VDC 12 =12 VDC 24 =24 VDC 48 =48 VDC					
4.Rated switching current	A90=90 A					
5.Product code	C series					
6.Additional numbers and letters	000-999, AAA-ZZZ, aaa-zzz or blank, which does not represent electrical changes, only for specific customer requirements					

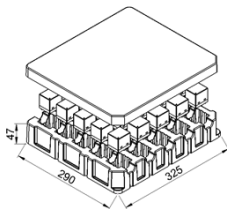
## OUTLINE DIMENSION



Notes:

- 1) Unmarked geometric tolerance are as follows:  
outline dimension  $\leq 1\text{mm}$ , reference tolerance is  $\pm 0.2\text{mm}$ ;  
outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , reference tolerance is  $\pm 0.3\text{mm}$ ;  
outline dimension  $> 10\text{mm}$ , reference tolerance is  $\pm 0.5\text{mm}$ ;

## PACKAGING FIGURE



25 pcs inside a box  
100 pcs inside a carton

Disclaimer:

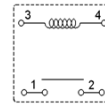
This specification is for reference only. For more details, please contact Churod. We are not able to evaluate all the performance and parameters of every possible application.

If you have any new needs, please contact us in time, we will be happy to serve you.

[Http://www.churod.com](http://www.churod.com)

2021 Rev.00 Churod Electronics Co., Ltd.

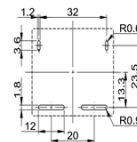
## WIRING DIAGRAMS



Notes:

- 1) The schematic of wiring diagrams is the bottom view in the above.

## PCB BOARD LAYOUTS



Notes:

- 1) The schematic of assembling with PCB is the bottom view in the above.

## FEATURES

- CHS01: Outline dimension (32.1mm×27.05mm×20.2mm)
- CHS02: Outline dimension (32.5mm×27.3mm×19.9mm)
- 1 Form A or 1 Form B and 1 Form C contact arrangement
- Designed to meet cULus,TUV,CQC requirements
- Flux-tight and Wash-tight version available
- RoHS REACH SvHC compliance
- Halogen-Free type available
- Glow wire type available



File NO. E341422



File NO. R50271657



File NO. CQC13002102346

## APPLICATION

Appliances, Power Supplier, Industrial Control

## COIL PARAMETER

Coil voltage	5-110VDC	
Coil power	Standard ver.	900mW

## COIL DATA @23°C

CHS-L				
Nominal coil voltage (VDC)	Nominal Current (mA)	Coil Resistance ( $\Omega \pm 10\%$ )	Operate Voltage (VDC Max.)	Release Voltage (VDC Min.)
5	180	27.8	3.75	0.25
6	150	40	4.5	0.3
9	100	90	6.75	0.45
12	75	160	9	0.6
15	60	250	11.25	0.75
18	50	360	13.5	0.9
22	40.9	537.8	16.5	1.1
24	37.5	640	18	1.2
36	25	1440	27	1.8
48	18.8	2560	36	2.4
60	15	4000	45	3
110	8.2	13444	82.5	5.5

Note:

1) The data shown above are initial values.

## CONTACT DATA

Contact arrangement	1 Form A (SPST) / 1 Form B (SPST) / 1 Form C (SPDT)		
Contact material	Ag Alloy		
Initial contact resistance	100m $\Omega$ max.(at 6VDC,1A)		
Max. switching voltage	277VAC/30VDC		
Max. current	Switching	40A(NO) / 30A(NC)	
	Carrying	60A(NO) / 30A(NC)	
Max. power	Switching	NO : 11,080VA / NC : 8310VA	
	Carrying	NO : 16,620VA / NC : 8310VA	
Contact rating	Form A	LA/LA2	30A @ 277VAC
			40A @ 277VAC
		2HP @ 250VAC	
	LA2	15A-50A-15A @ 250VAC, Make-Carry-Break	
		15A-60A-15A @ 250VAC, Make-Carry-Break	
	Form C	LC	20A(N.O)/10A(N.C) @ 277VAC
LC2		40A(N.O)/25A(N.C) @ 277VAC 40A(N.O)/30A(N.C) @ 277VAC	
Form B	30A @ 277VAC		
Mechanical endurance	1,000,000 ops Min.(no load)		
Electrical endurance (Resistive Load)	NO: 15A-60A/50A-15A @ 250VAC, Make-Carry-Break ,30,000 ops T85		
	NO: 40A 250VAC,30,000 ops T85		
	NO: 30A 250VAC,100,000 ops T85		
	NC: 30A 250VAC,10,000 ops T85		
Minimum load (reference value)	100mA @5VDC		

## CHARACTERISTICS

Operate voltage	75% of nominal voltage or less	
Release voltage	5% of nominal voltage or more	
Operate time (At nominal voltage)	15ms max.	
Release time (At nominal voltage)	15ms max.	
Insulation resistance	1,000 M $\Omega$ min. (at 500 VDC)	
Dielectric strength	Between coil and contacts	2,500 VAC, 50/60 Hz for 1 min
	Between open contacts	1,500 VAC, 50/60 Hz for 1 min
Surge voltage between coil and contacts	6,000V(1.2/50 $\mu$ s)	
Vibration resistance	Destruction	10 to 55 Hz.,1.5mm double amplitude
	Malfunction	10 to 55 Hz.,1.5mm double amplitude
Shock resistance	Destruction	1,000m/S <sup>2</sup> (100G approximately)
	Malfunction	1,00m/S <sup>2</sup> (10G approximately)
Ambient temperature	-40~ +85°C (without icing or condensation)	
Ambient humidity	20%~85% RH	
Termination	PCB terminals	
Enclosure (94V-0 Flammability Ratings)	V: Vented(Flux-tight, RTII)	
	S: Sealed(Wash-tight, RTIII)	
Unit Weight	Approx. 26g(CHS01), Approx. 32g(CHS02)	

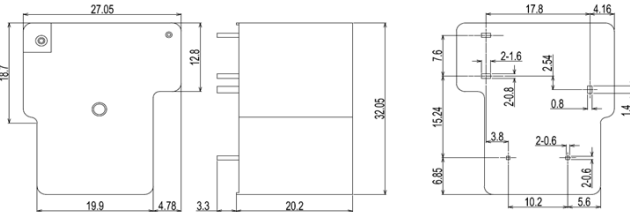
# ORDERING INFORMATION

	CHS01	-V	-1	12	L	A	2	(60A)	,000
<b>1. Product Family</b> CHS01:PCB terminal CHS02:PCB & 250QC terminal									
<b>2. Enclosure</b> V = Vented (Flux-tight, RTII) S = Sealed (Wash-tight, RTIII) (only 40A and blow)									
<b>3. Number of Poles</b> 1=1 pole									
<b>4. Rated Coil Voltage</b> 05,06,09,12,18,22,24,48,60,110VDC									
<b>5.Coil Power</b> L = Standard (900mW)									
<b>6. Contact Arrangement</b> A = Form A(SPST) B = Form B(SPST) C = Form C(SPDT)									
<b>7.Contact material</b> Blank = AgCdO(40A and down) 2 = AgSnO <sub>2</sub>									
<b>8. Rated Current</b> (40A)=40A (50A)=50A (60A)=60A									
<b>9. Additional numbers and /or letters</b> 000-999 , AAA-ZZZ , aaa-zzz or blank , only for specific customer requirements,ex:(30A)=30A,(50A)=50A,(60A)=60A ...									

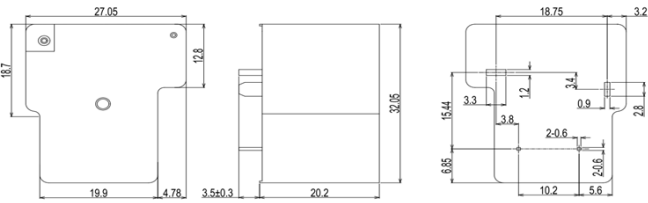
## OUTLINE DIMENSION

Unit: mm

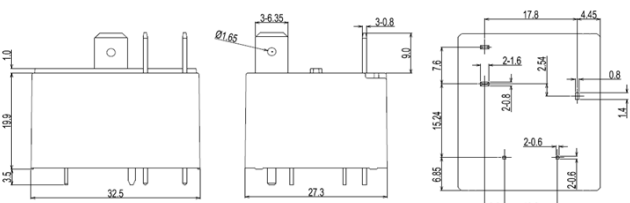
CHS01 ( Rated Current ≤ 40A )



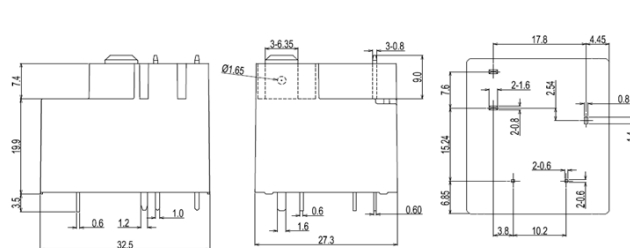
CHS01 ( Rated Current > 40A )



CHS02

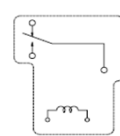


CHS02 (G Series)

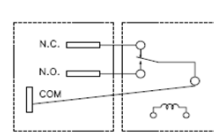


## WIRING DIAGRAMS (BOTTOM VIEWS)

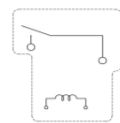
CHS01 Form C



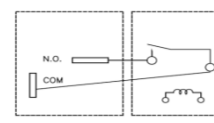
CHS02/CHS02(G Series) Form C



CHS01 Form A

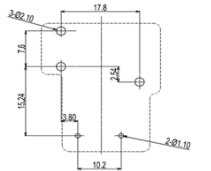


CHS02/CHS02(G Series) Form A

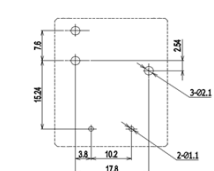


## PC BOARD LAYOUTS (BOTTOM VIEWS)

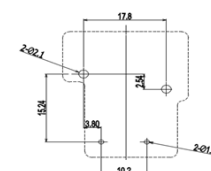
CHS01 ( ≤40A ) Form C



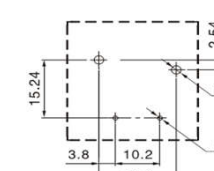
CHS02/CHS02(G Series) Form C



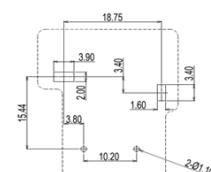
CHS01 ( ≤40A ) Form A



CHS02/CHS02(G Series) Form A



CHS01 ( >40A ) Form A

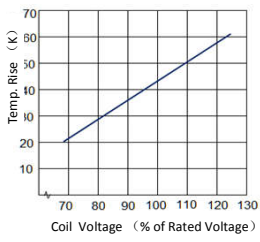


**Remark:**

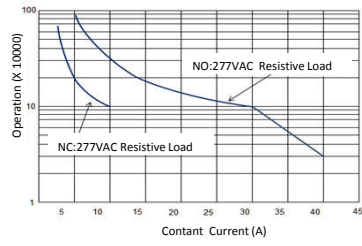
- 1)The reference tolerance in outline dimension:  
 outline dimension ≤ 1mm, reference tolerance is ±0.2mm;  
 reference tolerance is ±0.2mm;  
 outline dimension > 1mm and ≤ 5mm,  
 reference tolerance is ±0.3mm;  
 outline dimension > 5mm,  
 reference tolerance is ±0.5mm.
- 2)The reference tolerance for PC Board layout is ±0.1mm.

## REFERENCE DATA

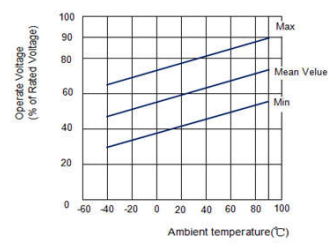
Coil Temperature Rise



Electrical Life

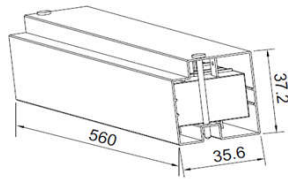
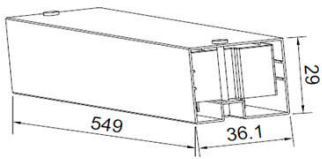


Coil Operate/Release Voltage & Temperature Cure



## PACKAGING FIGURE

Tube



20 pcs inside a tube

500 pcs inside a carton

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.

[Http://www.churod.com](http://www.churod.com)

2022 Rev.01 Churod Electronics Co., Ltd.

# CHS-H Series 30-60A Miniature Solar Relay

## FEATURES

- Outline dimension (32.1mm×27.05mm×20.2mm)
- 1 Form A ( SPST ) contact arrangement
- Designed to meet cULus,TUV,CQC requirements
- PCB terminal layout
- RoHS compliance
- REACH SvHC compliance
- Halogen-Free type available
- Glow wire type available



 File NO. E341422

 File NO. R50271657

 File NO. CQC13002102346

## APPLICATION

Solar inverter , Power Supplier,Industrial Control

## COIL PARAMETER

Coil voltage	9-48VDC	
Coil power	High capacity ver.	2250mW
Hold power *	0.35W min	
Holding voltage 2) 3)	40%~120%Un ( at 23°C )	
	45%~80%Un ( at 85°C )	

## COIL DATA @23°C

CHS-HA Standard				
Nominal coil voltage ( VDC )	Nominal Current ( mA )	Coil Resistance ( Ω±10% )	Operate Voltage ( VDC Max. )	Release Voltage ( VDC Min. )
9	250	36	6.75	0.45
12	187.5	64	9	0.6
18	125	144	13.5	0.9
24	93.8	256	18	1.2
48	46.9	1024	36	2.4

Note:

- The data shown above are initial values.
- The coil holding voltage is that voltage of relay coil after being applied rated voltage for 100ms.
- The relay does not allow for a long time to maintain the upper limit of the holding voltage. It is suggested that when the relay coil applied to the rated voltage 100ms, then decreases to the lower limit value of the voltage specification, prevent overheating of relay.

## CONTACT DATA

Contact arrangement	1 Form A (SPST)
Contact material	Ag Alloy
Initial contact resistance	100mΩ max.(at 6VDC,1A)
Max. switching voltage	277VAC
Max. Current	Switching 35A
	Carrying 60A
Max. power	Switching 9,695VA
	Carrying 16,620VA
Contact rating	35A @ 277VAC
	15A-43A-15A @ 250VAC, Make-Carry-Break
	15A-50A-15A @ 250VAC, Make-Carry-Break
	15A-60A-15A @ 250VAC, Make-Carry-Break
Mechanical endurance	300,000 ops Min.(no load)
Electrical endurance (Resistive Load)	35A @ 250VAC,30,000 ops T85
	15A-60A/50A/43A-15A @ 250VAC, Make-Carry-Break ,30,000 ops T85
Minimum load (reference value)	100mA @5VDC

## CHARACTERISTICS

Operate voltage	75% of nominal voltage or less
Release voltage	5% of nominal voltage or more
Operate time (At nominal voltage)	15ms max.
Release time(At nominal voltage)	15ms max.
Insulation resistance	1,000 MΩ min. (at 500 VDC)
Dielectric strength	Between coil and contacts 4,000 VAC, 50/60 Hz for 1 min
	Between open contacts 2,500 VAC, 50/60 Hz for 1 min
Surge voltage between coil and contacts	6,000V(1.2/50us)
Vibration resistance	Destruction 10 to 55 Hz,1.5mm double amplitude
	Malfunction 10 to 55 Hz,1.5mm double amplitude
Shock resistance	Destruction 1,000m/S <sup>2</sup> (100G approximately)
	Malfunction 1,00m/S <sup>2</sup> (10G approximately)
Ambient temperature	-40~+85°C (without icing or condensation)
Ambient humidity	20%~85% RH
Termination	PCB terminals
Enclosure (94V-0 Flammability Ratings)	V: Vented(Flux-tight, RTII)
Unit Weight	Approx.26g

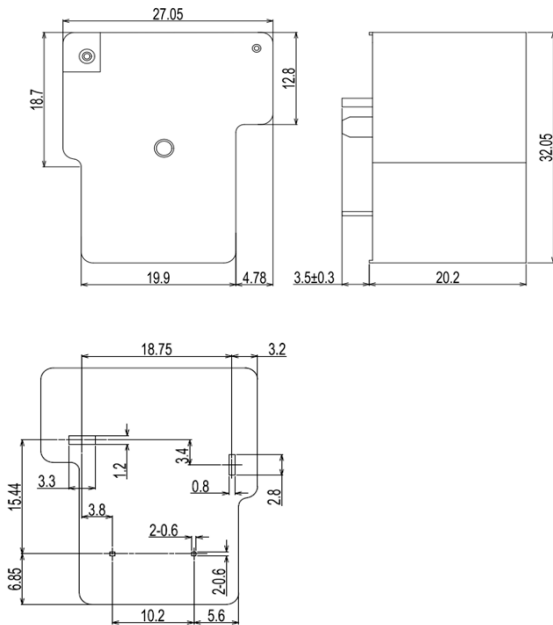


## ORDERING INFORMATION

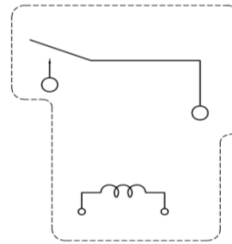
CHS01	-V	-1	12	H	A	2	,000
<b>1. Product Family</b> CHS01: PCB terminal							
<b>2. Enclosure</b> V = Vented (Flux-tight, RTII) S = Sealed (Wash-tight, RTIII) (only 40A and blow)							
<b>3. Number of Poles</b> 1=1 pole							
<b>4. Rated Coil Voltage</b> 09,12,18,24,48VDC							
<b>5. Coil Power</b> H = High capacity (2250mW)							
<b>6. Contact Arrangement</b> A = Form A(SPST)							
<b>7. Contact material</b> Blank = AgCdO( 43A and down) 2 = AgSnO <sub>2</sub>							
<b>8. Additional numbers and /or letters</b> 000-999 , AAA-ZZZ , aaa-zzz or blank , only for specific customer requirements,ex:(43G)=43A,(50G)=50A,(60G)=60A ...							

## OUTLINE DIMENSION

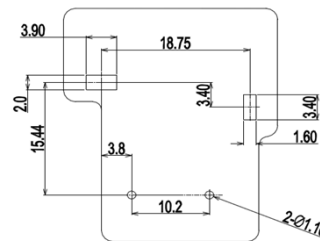
Unit: mm



## WIRING DIAGRAMS (BOTTOM VIEWS)



## PC BOARD LAYOUTS (BOTTOM VIEWS)

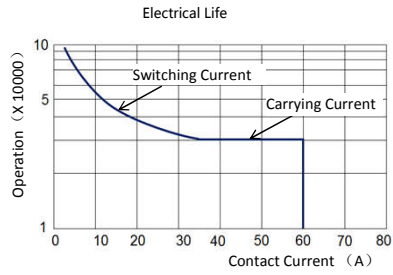
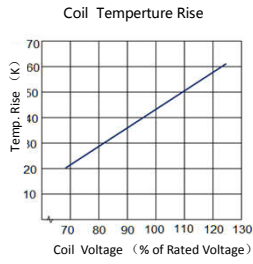


### Remark:

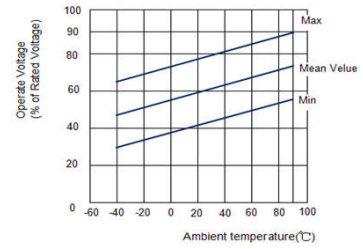
- The reference tolerance in outline dimension:  
 outline dimension  $\leq 1$ mm, reference tolerance is  $\pm 0.2$ mm;  
 outline dimension  $> 1$ mm and  $\leq 5$ mm, reference tolerance is  $\pm 0.3$ mm;  
 outline dimension  $> 5$ mm, reference tolerance is  $\pm 0.5$ mm.
- The reference tolerance for PC Board layout is  $\pm 0.1$ mm.



## REFERENCE DATA

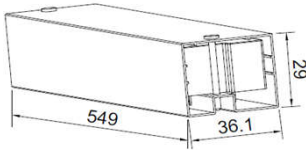


Coil Operate/Release Voltage & Temperature Cure



## PACKAGING FIGURE

Tube



20 pcs inside a tube

500 pcs inside a carton

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.

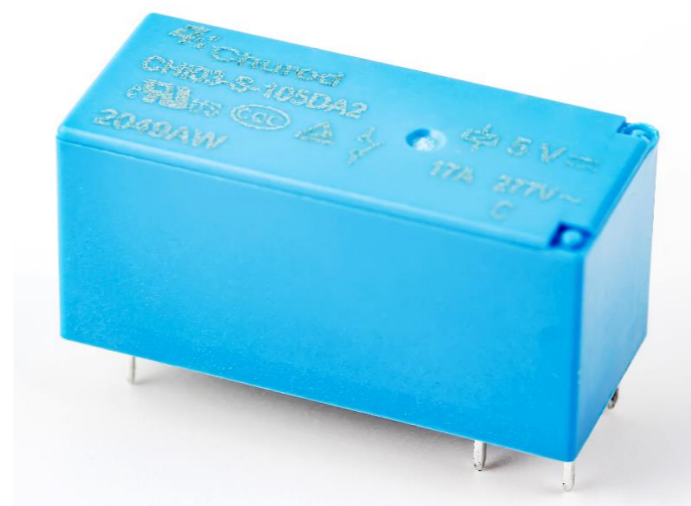
[Http://www.churod.com](http://www.churod.com)

2022 Rev.01 Churod Electronics Co., Ltd.

# CHI03 SERIES 17A MINIATURE POWER RELAY

## FEATURES

- Outline dimension(29.3×12.7×15.3)
- 1 Form A(SPST-NO) and 1 Form C(SPDT) contact arrangement
- Designed to meet UL/cUL,TUV,CQC requirements
- 5,000VAC dielectric strength between coil and contact
- F class Insulation System
- RoHS compliance
- REACH SvHC compliance
- Halogen-Free type available



File NO. E341422



File NO. R50384623



File NO. CQC17002177358

## APPLICATION

Appliances, power supply, Industrial Control...etc

## COIL PARAMETER

Coil voltage	3-110VDC
Coil power	400mW

## COIL DATA@23°C

CHI03				
Nominal coil voltage (VDC)	Nominal Current (mA)	Coil Resistance ( $\Omega \pm 10\%$ )	Operate Voltage (VDC Max.)	Release Voltage (VDC Min.)
3	133.3	22.5	2.25	0.15
5	80.0	62.5	3.75	0.25
6	66.7	90	4.5	0.3
9	44.4	202.5	6.75	0.45
12	33.3	360	9	0.6
18	22.2	810	13.5	0.9
22	18.2	1210	16.5	1.1
24	16.7	1440	18	1.2
36	11.1	3240	27	1.8
48	8.3	5760	36	2.4
60	6.7	9000	45	3
110	3.6	30250	82.5	5.5

## CONTACT DATA

Contact arrangement	1 Form A(SPST-NO), 1 Form C(SPDT), 1 Form B(SPST-NC)
Contact material	Ag Alloy
Initial contact resistance	100m $\Omega$ max.@6VDC,1A
Max. switching voltage	277VAC/30VDC
Max. switching current	20A
Max. switching power	5540VA / 600W
Contact rating	NO
	17A @277VAC/30VDC
	1HP @120/240/480VAC
	10FLA/60LRA @250VAC
	5A pilot duty @120VAC and 277VAC
	16A general purpose @120VAC and 277VAC
	20A @277VAC resistive, 30K cycles
	TV-8 @120VAC 25K cycles
	NC
	1HP @120/240/480VAC
10FLA/60LRA @250VAC	
5A pilot duty @120VAC and 277VAC , 30K cycles	
17A @277VAC/30VDC , 30K cycles	
16A general purpose @120VAC and 277VAC , 30K cycles	
Mechanical endurance	10,000,000 ops Min.(no load)
Electrical endurance	100,000 ops Min.(rated load 1s on /9s off)
Minimum load(reference value)	100mA @5VDC

## CHARACTERISTICS

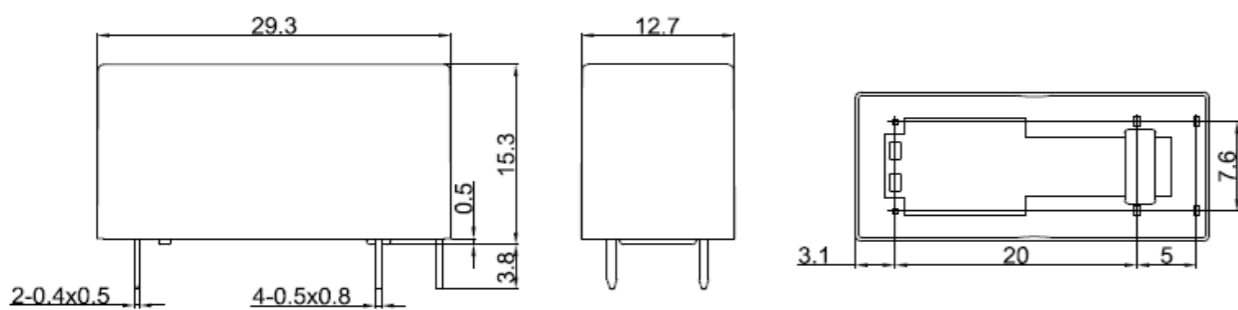
Operate voltage	75% of nominal voltage or less	
Release voltage	5% of nominal voltage or more	
Operate time (At nominal voltage)	15ms max.	
Release time(At nominal voltage)	8ms max.	
Insulation resistance	1,000 M $\Omega$ min. (at 500 VDC)	
Insulation system	155 (F)	
Dielectric strength	Between coil and contacts	5,000 VAC, 50/60 Hz for 1 min
	Between open contacts	1,000 VAC, 50/60 Hz for 1 min
Surge voltage between coil and contacts	10,000V(1.2/50us)	
Vibration resistance	Destruction	10 to 55 Hz.,1.5mm double amplitude
	Malfunction	10 to 55 Hz.,1.5mm double amplitude
Shock resistance	Destruction	1,000m/S <sup>2</sup> (100G approximately)
	Malfunction	100m/S <sup>2</sup> (10G approximately)
Ambient temperature	-40°C~+105°C (without icing or condensation)	
Ambient humidity	20%~85% RH	
Terminal	PCB terminal	
Enclosure (94V-0 Flammability Ratings)	V: Vented(Flux-tight),plastic cover.(RT II)	
	S: Sealed,plastic cover.(RT III)	
Weight	Approx. 14g	

## ORDERING INFORMATION

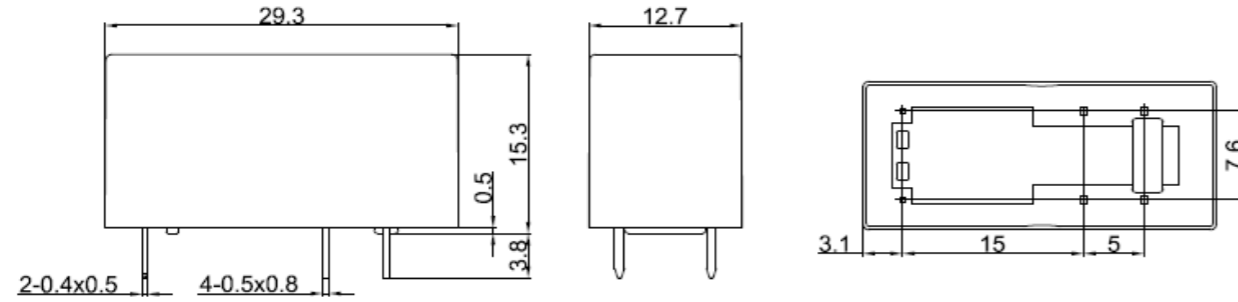
<b>CHI03</b>	<b>-V</b>	<b>-1</b>	<b>12</b>	<b>D</b>	<b>A</b>	<b>2</b>	<b>,000</b>
1. Product Family							
2. Enclosure V = Vented (Flux-tight), plastic cover. (RT II) S = Sealed, plastic cover. (RT III)							
3. Number of Poles 1 = 1 pole							
4. Rated Coil Voltage 03, 05, 06, 09, 12, 18, 22, 24, 36, 48, 60, 110VDC							
5. Coil Input D = Standard (400mW)							
6. Contact Arrangement A = Form A (SPST-NO) B = Form B (SPST-NC) C = Form C (SPDT)							
7. Contact material 2 = AgSnO <sub>2</sub>							
8. Additional numbers and /or letters 000-999, AAA-ZZZ, aaa-zzz or blank, which does not represent electrical changes, only for specific customer requirements							

## OUTLINE DIMENSION

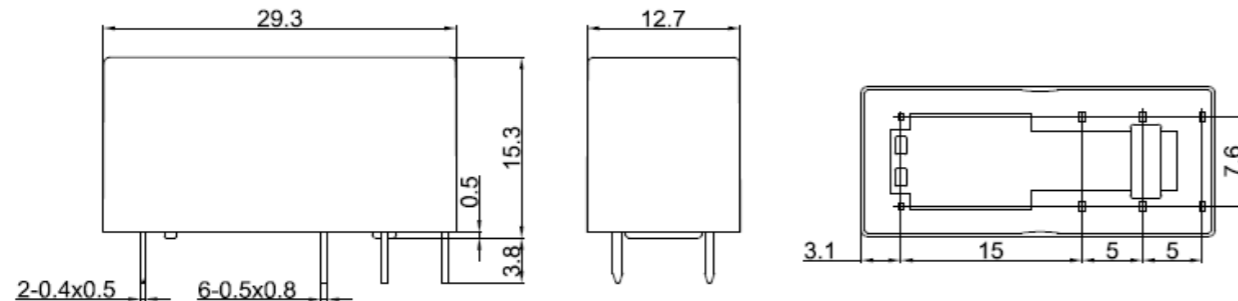
From A



From B

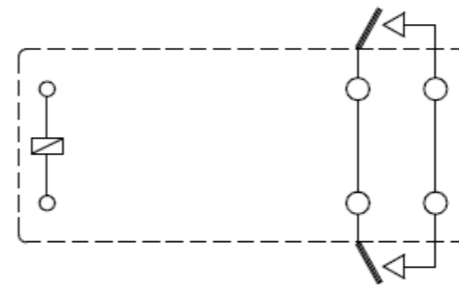


From C

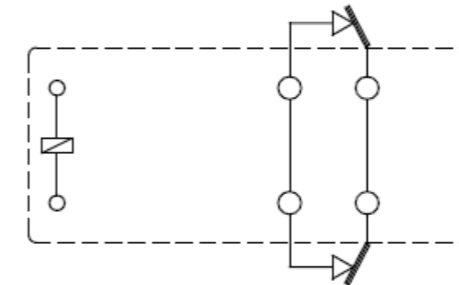


## WIRING DIAGRAMS (BOTTOM VIEWS)

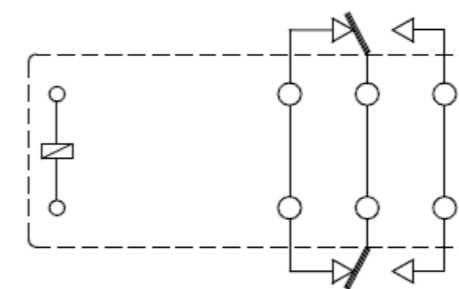
From A



From B



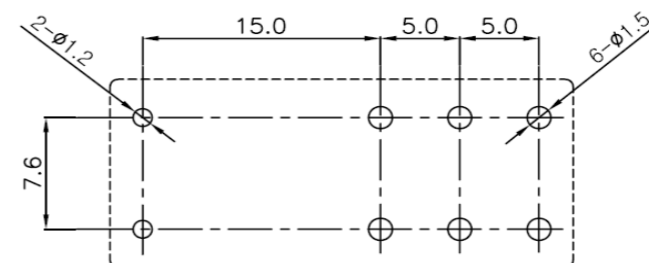
From C



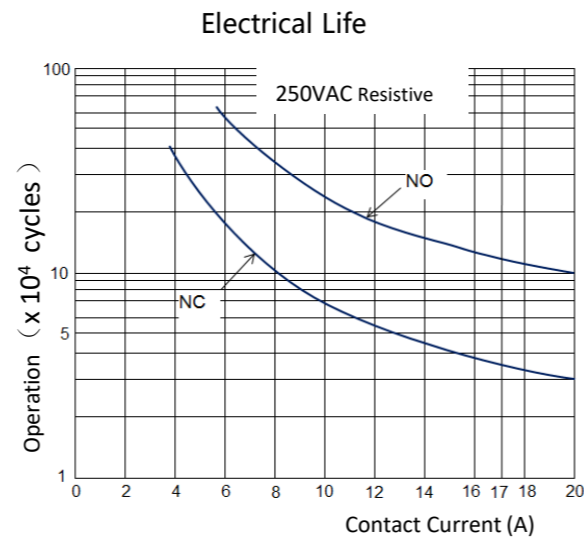
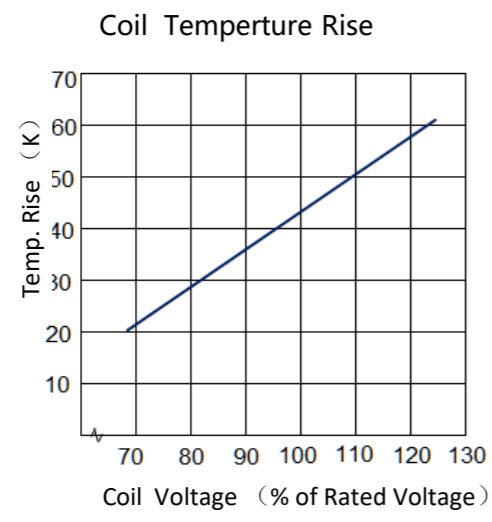
## PC BOARD LAYOUTS (BOTTOM VIEWS)

### Remark:

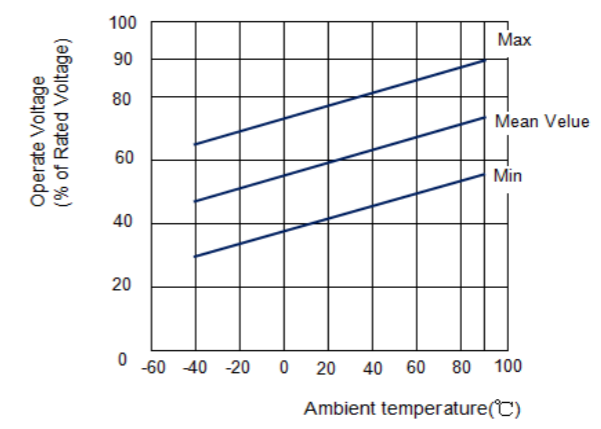
- The reference tolerance in outline dimension:  
outline dimension  $\leq 1\text{mm}$ , reference tolerance is  $\pm 0.2\text{mm}$ ;  
outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , reference tolerance is  $\pm 0.3\text{mm}$ ;  
outline dimension  $> 5\text{mm}$ , reference tolerance is  $\pm 0.5\text{mm}$ .
- The reference tolerance for PC Board layout is  $\pm 0.1\text{mm}$ .



## REFERENCE DATA

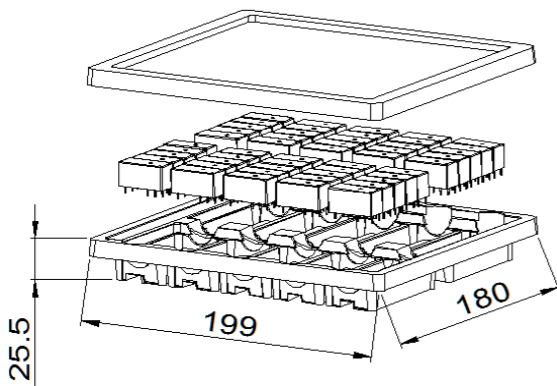


Coil Operate Voltage & Temperature Cure



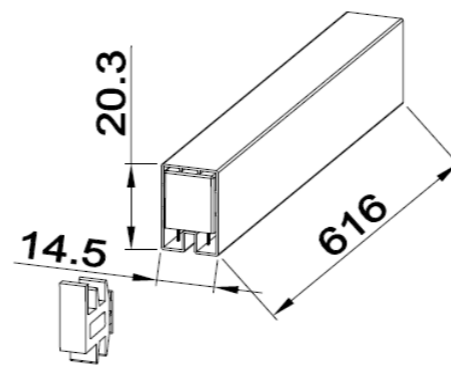
## PACKAGING FIGURE

1.Box



50 pcs inside a box  
500 pcs inside a carton

2.Tube



20 pcs inside a tube  
1000 pcs inside a carton

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.

[Http://www.churod.com](http://www.churod.com)

2020 Rev.01 Churod Electronics Co., Ltd.

# CHI04 SERIES 10A300VDC MINIATURE POWER RELAY



## FEATURES

- 10A 300VDC high-voltage switching capability
- Outline dimension(29.3×12.7×19.0)
- Designed to meet UL/cUL,TUV,CQC requirements
- 5,000VAC dielectric strength between coil and contact
- F class Insulation System
- RoHS compliance
- REACH SvHC compliance
- Halogen-Free type available



File NO. E341422



File NO. R50376810



File NO. CQC17002165837

## APPLICATION

AC/DC Power Source, Industry Control...etc

## COIL PARAMETER

Coil voltage	5-48VDC
Coil power	400mW

## COIL DATA@23°C

CHI03				
Nominal coil voltage (VDC)	Nominal Current (mA)	Coil Resistance ( $\Omega \pm 10\%$ )	Operate Voltage (VDC Max.)	Release Voltage (VDC Min.)
5	80.0	62.5	3.75	0.25
6	66.7	90	4.5	0.3
9	44.4	202.5	6.75	0.45
12	33.3	360	9	0.6
18	22.2	810	13.5	0.9
24	16.7	1440	18	1.2
48	8.3	5760	36	2.4

## CONTACT DATA

Contact arrangement	1 Form A(SPST-NO)
Contact material	Ag Alloy
Initial contact resistance	100m $\Omega$ max.@6VDC,1A
Max. switching voltage	420VDC,300VAC
Max. switching current	16A
Max. switching power	3,000W/4800VA
Contact rating	5A 420VDC, Resistive
	10A 300VDC, Resistive
	16A 180VDC, Resistive
	16A 300VAC, Resistive
Mechanical endurance	3,000,000 ops Min.(no load)
Electrical endurance	30,000 ops Min(rated load 1s on /9s off)
Minimum load(reference value)	100mA @5VDC

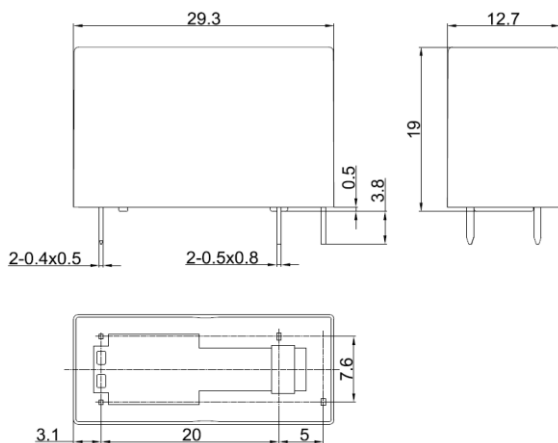
## CHARACTERISTICS

Operate voltage	75% of nominal voltage or less	
Release voltage	5% of nominal voltage or more	
Operate time (At nominal voltage)	15ms max.	
Release time (At nominal voltage)	5ms max.	
Insulation resistance	1,000 M $\Omega$ min. (at 500 VDC)	
Dielectric strength	Between coil and contacts	5,000 VAC, 50/60 Hz for 1 min
	Between open contacts	1,000 VAC, 50/60 Hz for 1 min
Surge voltage between coil and contacts	10,000V(1.2/50us)	
Vibration resistance	Destruction	10 to 55 Hz., 1.5mm double amplitude
	Malfunction	10 to 55 Hz., 1.5mm double amplitude
Shock resistance	Destruction	1,000m/S <sup>2</sup> (100G approximately)
	Malfunction	100m/S <sup>2</sup> (10G approximately)
Ambient temperature	-40°C ~ +105°C (without icing or condensation)	
Ambient humidity	20%~85% RH	
Terminal	PCB terminal	
Enclosure (94V-0 Flammability Ratings)	V: Vented(Flux-tight),plastic cover.(RT II)	
	S: Sealed,plastic cover.(RT III)	
Weight	Approx. 15g	

## ORDERING INFORMATION

	CHI04	-V	-1	12	D	A	2	,000
1. Product Family								
2. Enclosure								
V = Vented (Flux-tight), plastic cover. (RT II)								
3. Number of Poles								
1 = 1 pole								
4. Rated Coil Voltage								
05,06,09,12,18,24,48VDC								
5. Coil Input								
D = Standard (400mW)								
6. Contact Arrangement								
A = Form A (SPST-NO)								
7. Contact material								
2 = AgSnO <sub>2</sub>								
8. Additional numbers and /or letters								
000-999, AAA-ZZZ, aaa-zzz or blank, which does not represent electrical changes, only for specific customer requirements								

## OUTLINE DIMENSION



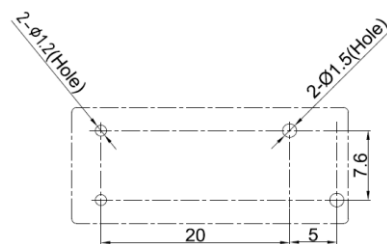
### Remark:

- The reference tolerance in outline dimension:
  - outline dimension  $\leq 1$ mm, reference tolerance is  $\pm 0.2$ mm;
  - outline dimension  $> 1$ mm and  $\leq 5$ mm, reference tolerance is  $\pm 0.3$ mm;
  - outline dimension  $> 5$ mm, reference tolerance is  $\pm 0.5$ mm.
- The reference tolerance for PC Board layout is  $\pm 0.1$ mm.

## WIRING DIAGRAMS (BOTTOM VIEWS)

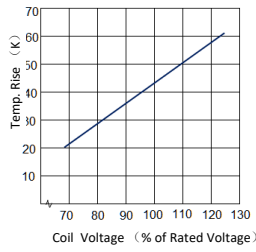


## PC BOARD LAYOUTS (BOTTOM VIEWS)

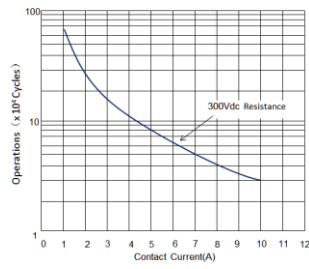


## REFERENCE DATA

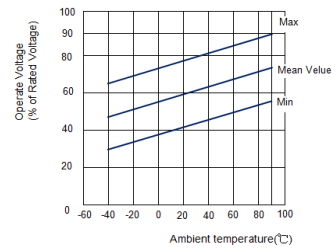
Coil Temperature Rise



Electrical Life

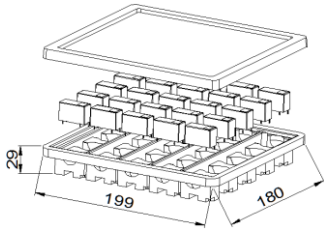


Coil Operate Voltage & Temperature Cure



## PACKAGING FIGURE

1.Box



25 pcs inside a box

250 pcs inside a carton

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.

[Http://www.churod.com](http://www.churod.com)

2020 Rev.01 Churod Electronics Co., Ltd.



## FEATURES

- PCB terminal, large current latching contactor, outline dimension (30mm×16mm×25mm)
- Double contact for arc extinguishing structure, Load is non-polarity
- Low contact voltage drop
- Maximum lightning strike surge current: 20KA
- Short-circuit resistance current 10KA, Meet Class 2 grade(With SPCD circuit breaker)
- Main contacts: normally open contacts; Auxiliary contacts: normally open contacts
- UL, CCC compliance
- RoHS compliance
- REACH SvHC compliance



## APPLICATION

- 5G communication power supply
- Charging pile
- Other DC load devices

## COIL PARAMETER

Coil voltage	12-72VDC	
Coil power	Standard	Sensitive
	18W	9W

## COIL DATA @23°C

CHC Standard(18W)				
Nominal coil voltage (VDC)	Nominal Current (A)	Coil Resistance (Ω)±10%	Operate Voltage (VDC Max.)	Release Voltage (VDC Max.)
12	1.50	8	6.0	6.0
24	0.75	32	12.0	12.0
48	0.38	128	24.0	24.0
60	0.30	200	30.0	30.0
72	0.25	288	36.0	36.0

CHC Sensitive(9W)				
Nominal coil voltage (VDC)	Nominal Current (A)	Coil Resistance (Ω)±10%	Operate Voltage (VDC Max.)	Release Voltage (VDC Max.)
12	0.75	16	8.4	8.4
24	0.38	64	16.8	16.8
48	0.19	256	33.6	33.6
60	0.15	400	42.0	42.0
72	0.13	576	50.4	50.4

## CONTACT DATA

Type	CHC-63	CHC-80
Contact arrangement	Normally Open	
Contact material	Ag Alloy	
Initial contact resistance	0.8mΩ Max.@6VDC 20A	
Max. switching voltage	80VDC	60VDC
Max. switching current	63A	80A
Max. switching power	5040W	4800W
Main contact rated load (Resistive Load)	63A@80VDC	80A@60VDC
Auxiliary contact rated load (Resistive Load)	1A@80VDC	
Mechanical endurance	100,000 ops Min.(no load)	
Electrical endurance (Resistive Load)	6,000 ops Min.	
Minimum load (reference value)	Main Contact: 100mA@ 1VDC Auxiliary Contact: 1mA@ 3VDC	

## CHARACTERISTICS

Operate voltage	Standard: 50% of nominal voltage or less Sensitive: 70% of nominal voltage or less	
Release voltage	Standard: 50% of nominal voltage or less Sensitive: 70% of nominal voltage or less	
Operate time(At nominal voltage)	≤30ms	
Release time (At nominal voltage)	≤30ms	
Operate bounce time (At nominal voltage)	≤3ms	
Insulation resistance	> 1,000 MΩ (at 500 VDC)	
Dielectric strength	Between coil and main contacts	1,000 VAC, 50/60 Hz (1 Min)
	Between coil and Auxiliary contacts	1,000 VAC, 50/60 Hz (1 Min)
	Between open main contacts	1,000 VAC, 50/60 Hz (1 Min)
	Between open Auxiliary contacts	1,000 VAC, 50/60 Hz (1 Min)
	Between main contacts and Auxiliary contacts	1,000 VAC, 50/60 Hz (1 Min)
	between live part and ground electrode	1,000 VAC, 50/60 Hz (1 Min)
Rated impulse withstand voltage	Between coil and contacts	6,000V(1.2/50μs)
Vibration resistance	Functional	10 ~ 55 Hz, 20m/s <sup>2</sup>
	Destructive	10 ~ 55 Hz, 50m/s <sup>2</sup>
Shock resistance	Functional	300m/s <sup>2</sup> (30G Min)
	Destructive	500m/s <sup>2</sup> (50G Min)
Ambient temperature	Operating: -40~+90°C (without icing or condensation)	
Ambient humidity	5% to 85%RH	
Terminal shape	PCB Terminal	
Protection grade	V: Dust Protected	
	S: Water Proof	
Weight	Approx. 49g	



## FEATURES

- PCB terminal, large current latching contactor: small size(39.2\*22\*27.5mm)
- Double contact for arc extinguishing structure, Load is non-polarity
- Low contact pressure drop
- Lightning strike surge current maximum 20KA
- Short-circuit resistance current 10KA, Ment Class 2 grade(With SPCD circuit breaker)
- Contact GAP:  $\geq 1.5\text{mm}$
- Compressive strength between coil and contact 3000VAC
- High rated insulation withstand voltage:500VAC
- Contact arrangement: Main normally open contacts; Auxiliary normally open contacts
- UL,CCC compliance
- RoHS compliance
- REACH SvHC compliance



File NO. E341422



File NO.2020000304000068

## APPLICATION

- 5G communication power supply
- Charging pile
- Other DC load devices

## COIL PARAMETER

Coil voltage	12-60VDC	
Coil power	CHDR-125LA	53W
	CHDR-110LA/80LA	7.7W

## CONTACT DATA

Type	CHDR-125LA	CHDR-110LA	CHDR-80LA
Contact arrangement	1 Form A		
Contact material	Ag Alloy		
Initial contact resistance	0.8m $\Omega$ Max.@6VDC 20A		
Max. switching voltage	80VDC	60VDC	24VDC
Max. switching current	125A	110A	80A
Max. switching power	10000W	6600W	1920W
Main contact rated load (Resistive Load)	125A@80VDC	110A@60VDC	80A@24VDC
Auxiliary contact rated load (Resistive Load)	1A@80VDC		
Mechanical endurance	100,000 ops Min.(no load)		
Electrical endurance (Resistive Load)	6,000 ops Min.		10,000 ops Min.
Minimum load (reference value)	Main Contact:100mA@ 1VDC Auxiliary Contact:1mA@ 3VDC		

## COIL DATA @23°C

CHDR-125LA(53W),Standard				
Nominal coil voltage (VDC)	Nominal Current (A)	Coil Resistance ( $\Omega$ ) $\pm 10\%$	Operate Voltage (VDC Max.)	Release Voltage (VDC Max.)
12	4.4	2.7	5.4	5.4
24	2.2	10.8	10.8	10.8
48	1.1	43.4	21.6	21.6
60	0.9	68.0	27.0	27.0

CHDR-110LA/80LA(7.7W),Sensitive				
Nominal coil voltage (VDC)	Nominal Current (A)	Coil Resistance ( $\Omega$ ) $\pm 10\%$	Operate Voltage (VDC Max.)	Release Voltage (VDC Max.)
12	0.6	18.7	8.4	8.4
24	0.3	75.0	16.8	16.8
48	0.2	299.0	33.6	33.6
60	0.1	467.0	42.0	42.0

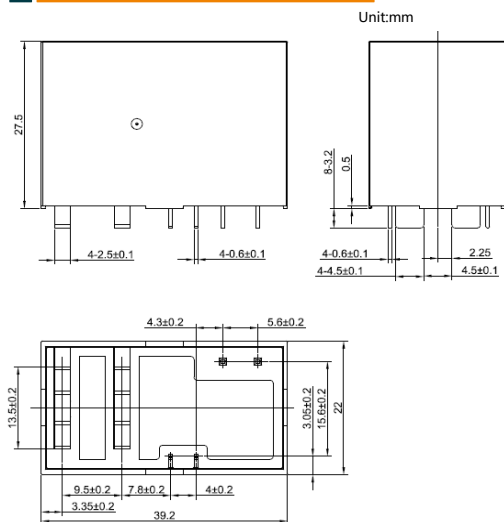
## CHARACTERISTICS

Operate voltage	70% of nominal voltage or less	
Release voltage	70% of nominal voltage or more	
Operate time(At nominal voltage)	$\leq 30\text{ms}$	
Release time (At nominal voltage)	$\leq 30\text{ms}$	
Operate bounce time (At nominal voltage)	$\leq 3\text{ms}$	
Insulation resistance	1,000 M $\Omega$ (at 500 VDC)	
Dielectric strength	Between coil and main contacts	3,000 VAC, 50/60 Hz (1 Min)
	Between coil and Auxiliary contacts	2,000 VAC, 50/60 Hz (1 Min)
	Between open main contacts	3,000 VAC, 50/60 Hz (1 Min)
	Between open Auxiliary contacts	1,000 VAC, 50/60 Hz (1 Min)
	Between main contacts and Auxiliary contacts	3,000 VAC, 50/60 Hz (1 Min)
	Between Live part and ground electrode	3,000 VAC, 50/60 Hz (1 Min)
Rated impulse withstand voltage	Between coil and contacts	6,000V(1.2/50 $\mu\text{s}$ )
Vibration resistance	Functional	10 ~ 55 Hz, Acceleration $\leq 2\text{G}$
	Destructive	10 ~ 55 Hz, Acceleration $\leq 5\text{G}$
Shock resistance	Functional	5G Min.
	Destructive	30G Min.
Ambient temperature	Operating: -40~+85°C (without icing or condensation)	
Storage ambient temperature	Operating: -40~+75°C (without icing or condensation)	
Ambient humidity	5% to 85%Rh at 20°C	
Terminal shape	PCB Terminal	
Protection grade	IP00	
Weight	Approx. 49g	

## ORDERING INFORMATION

1. Product Family	CHDR	-1	60	D125	L	A	,000
2. Number of Poles	1=1 pole						
3. Rated Coil Voltage	12,24,48,60VDC						
4. Rated load current	D125: DC125A D110: DC110A D80: DC80A						
5. Product type	L: Latching type						
6. Contactor construction	A: Auxiliary normally open contacts						
7. Additional numbers and /or letters	000-999, AAA-ZZZ, aaa-zzz or blank, which does not represent electrical changes, only for specific customer requirements						

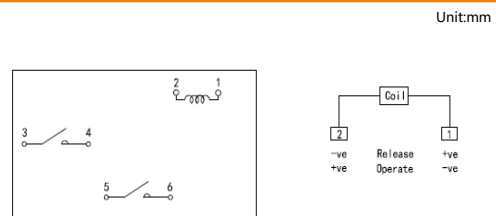
## OUTLINE DIMENSION



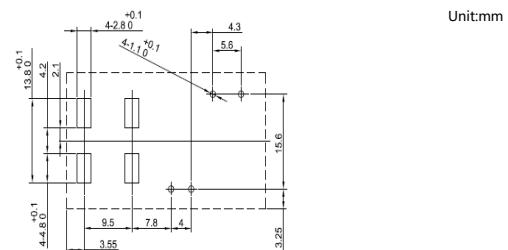
### Remark:

- The reference tolerance in outline dimension:
- outline dimension  $\leq 1\text{mm}$ , reference tolerance is  $\pm 0.2\text{mm}$ ;
- outline dimension  $> 1\text{mm}$  and  $\leq 5\text{mm}$ , reference tolerance is  $\pm 0.3\text{mm}$ ;
- outline dimension  $> 5\text{mm}$ , reference tolerance is  $\pm 0.5\text{mm}$ .
- The reference tolerance for PC Board layout is  $\pm 0.1\text{mm}$ .

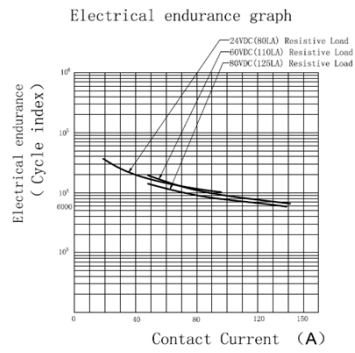
## WIRING DIAGRAMS(BOTTOM VIEWS)



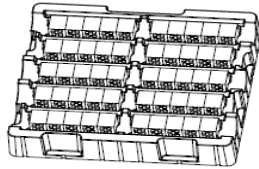
## PC BOARD LAYOUTS (BOTTOM VIEWS)



## REFERENCE DATA



## PACKAGING FIGURE



50 pcs inside a box

250 pcs inside a carton

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.

[Http://www.churod.com](http://www.churod.com)

2020 Rev.00 Churod Electronics Co., Ltd.

# CHEV Series 60~120 Ampere High voltage DC relay

## Feature

- Hermetically sealed: Intrinsically safe, operates in harsh environments without oxidation or contamination of coil or contacts.
- Excellent switching performance: Adopt the design of magnetic-driving, fast extinguishing of arc gases and anti-welded contacts.
- Space saving: Outline structure miniaturization.
- Mounting simplification: No barrier around the main terminals.
- Optional auxiliary contact: Be easy monitoring of power contact position.
- Economized coil system: Energy saving by owned PWM design control.



## Application

Battery Electric Vehicles(BEV), Fuel Cell Electric Vehicles(FCEV)  
Hybrid Electric Vehicles(HEV), EV Charging Station, UPS

## Coil

Series	Type	Coil voltage(VDC)	Coil Power(Max)
S/SA60	Standard	12, 24	6W
E/EA60	Economizes	12-24	Inrush: 42W ~ 100ms, Hold: 1.9W
S/SA120	Standard	12, 24	6W
E/EA120	Economizes	12-24	Inrush: 42W ~ 100ms, Hold: 1.9W

## Contact Data

Type	60A	120A
Contact arrangement	1 Form X	
Intital drop voltage(mV)	100mV	
Rated voltage(DC)	90VDC	
Max. break current (1 cycle)	360VDC/1000A	450VDC /1500A
Electrical endurance	See electrical endurance curve	
Mechanical endurance	200,000 ops Min.(no load)	
Aux.-contact voltage	30VDC / 125VAC	
Aux.-contact current	2A(DC) / 3A(AC)	
Minimum load(Main terminal)	48VDC 100mA	
Minimum load(Aux.contact)	9VDC 100mA	
Endurance Capacity (at 85°C)	See endurance capacity curve	

## Coil Data ( 23°C)

Series	Type	Coil voltage (VDC)	Coil resistance (Ω)±10%	Operate voltage (VDC)Max	Max. Work voltage (VDC)	Release voltage (VDC)Min
S/SA60	Standard	12	26	9.0	14.4	0.6
	Standard	24	104	18.0	28.8	1.2
E/EA60	Economizes	12-24	4.6	9.0	36.0	4.0
S/SA120	Standard	12	26	9.0	14.4	0.6
	Standard	24	104	18.0	28.8	1.2
E/EA120	Economizes	12-24	4.6	9.0	36.0	4.0

## Characteristics

Operate time	25ms max.	
Release time	25ms max.(E type); 10ms max.(S type)	
Insulation resistance	1000MΩ min.(at1000V DC)	
Dielectric strength	Coil-contact	4,000V AC, 50/60Hz (1min)
	Contact-contact	3,000V AC, 50/60Hz (1min)
Vibration resistance	Destruction	20G (10~2000Hz)
	Malfunction	20G (10~2000Hz)
Shock resistance	Destruction	50G
	Malfunction	ON: 40G(S type); 50G(E type) OFF:10G
Ambient temperature	- 40 ~ +85°C(with no icing or condensation)	
Ambient humidity	20% to 85%RH	
Mounting	M4 Screw(60~120A)	
	M5 Screw(150~350A)	
Weight	60~120A about 210g	

## Rating

Item	Voltage	S/SA60	E/EA60	S/SA120	E/EA120
Electrical endurance (Making/Breaking) (cycles)	450VDC	35,000	35,000	6,000	6,000
	750VDC	4,000	6,000	1,000	1,500
Electrical endurance (only for Breaking) (cycles)	450VDC	40,000	40,000	8,000	10,000
	750VDC	5,700	8,500	1,400	2,000

Notes: The temperature of electric endurance is 23°C and the on-off ratio is 1s/9s

## Ordering Information

	CHEV	-1	12	S	A	60	H	,000
1.Product family CHEV series								
2.Number of poles 1=1pole								
3.Rated coil voltage 12 =12VDC 24 =24VDC 12=12-24VDC(only for E-type)								
4.Coil type S = Standard, For 60/120A E = Economizes, For 60/120								
5.Aux.contact A = With aux. contact Blank = Without aux.contact								
6.Contact current 60=60A 120=120A								
7.Product type Blank = Standard H = H type P = P type W = W type								
8. Additional numbers and / or letters 000-999, AAA-ZZZ, aaa-zzz or blank,only for specific customer requirements								

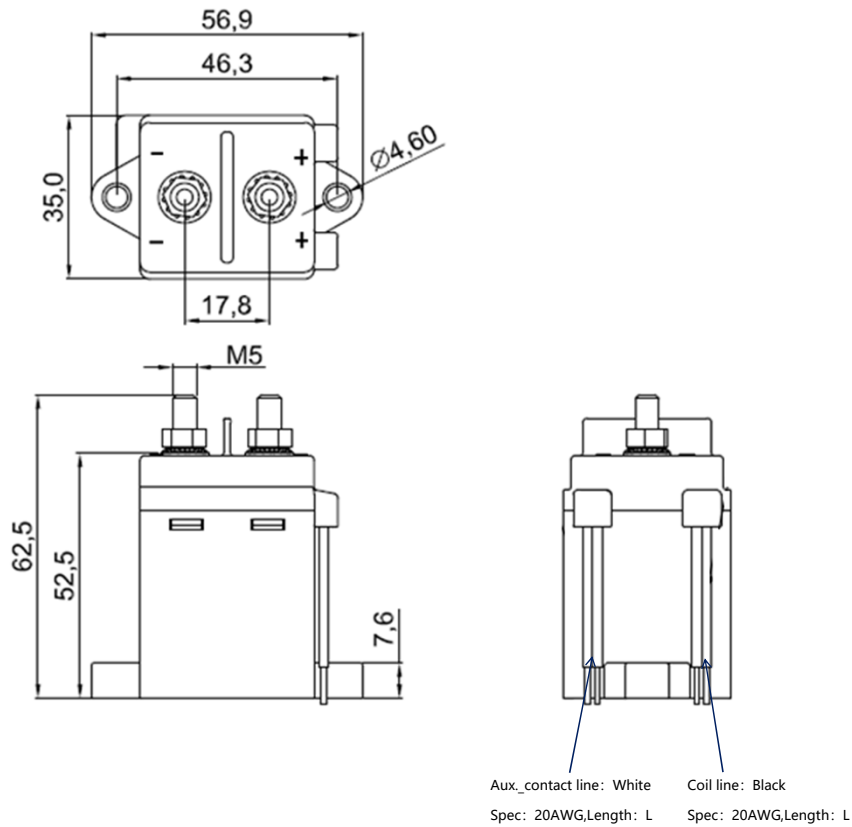
## Typical Products

Product Description		Characteristic				Notes:
Product type	Code	Coil Voltage	Contact Load	Load Terminal form	Special Feature	
CHEV-1**S*60	000	12V,24V	60A @750VDC	M5 Screw		1、 Code description: Coil line form 000--leads; 001--leads+JAE Connector; 002--leads+Molex Connector; 100/101--leads+yazaki Connector; 200/210--leads+hulian Connector; 500--leads+5557 Connector; 2、 The length of the coil outgoing wire, aux. contact outgoing wire can be optional: 100mm, 300mm, 400mm, 1300mm, The default length is 400mm.
CHEV-112E*60	000	12-24V	60A @750VDC	M5 Screw		
CHEV-112E*60	001	12-24V	60A @750VDC	M5 Screw	JAE Connector	
CHEV-1**S*120	000	12V,24V	120A @750VDC	M5 Screw		
CHEV-1**S*120	002	12V,24V	120A @750VDC	M5 Screw	Molex Connector	
CHEV-112E*120	000	12-24V	120A @750VDC	M5 Screw		
CHEV-112EA120	500	12-24V	120A @750VDC	M5 Screw	5557 Connector	

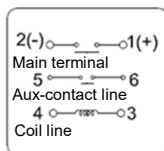


## Outside Dimension

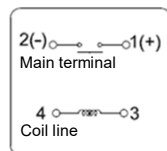
S/SA60; E/EA60; S/SA120; E/EA120



## Wiring Diagram



With Aux.contact



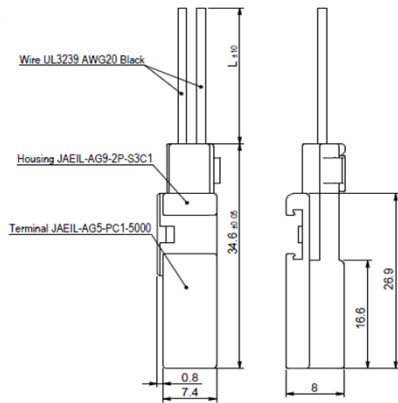
Without Aux.contact

### Remarks:

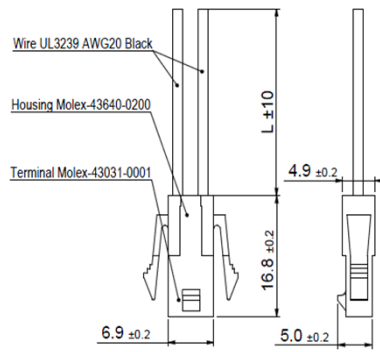
- The reference tolerance in outline dimension:
  - outline dimension  $\leq 10$ mm, reference tolerance is  $\pm 0.3$ mm;
  - outline dimension  $> 10$ mm and  $\leq 50$ mm, reference tolerance is  $\pm 0.6$ mm;
  - outline dimension  $> 50$ mm, reference tolerance is  $\pm 1.0$ mm;
- The torque requirement of Main Terminal: CHEV-60~120A: 3.0~3.5 N · m
- The torque requirement of Relay: CHEV-60~120A: 2~ 2.4N · m
- L See the Typical Products.

## Connector Form

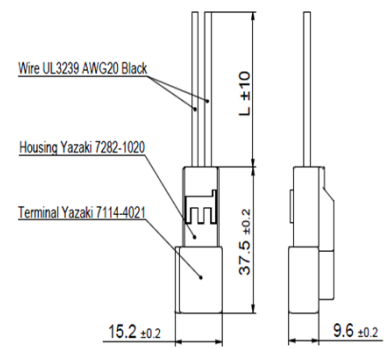
Code 001 JAE Connector



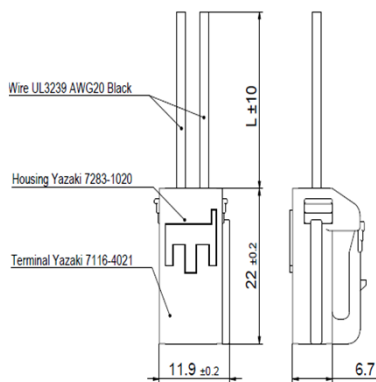
Code 002 Molex Connector



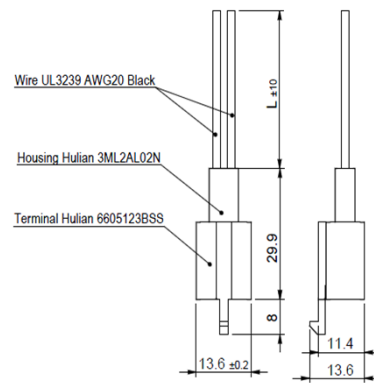
Code 100 Yazaki Connector



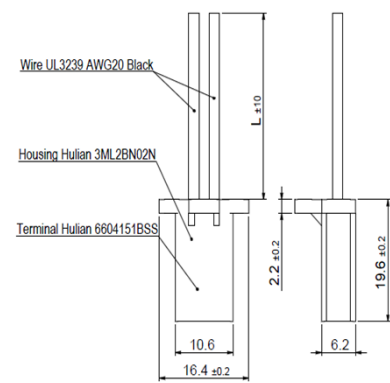
Code 101 Yazaki Connector



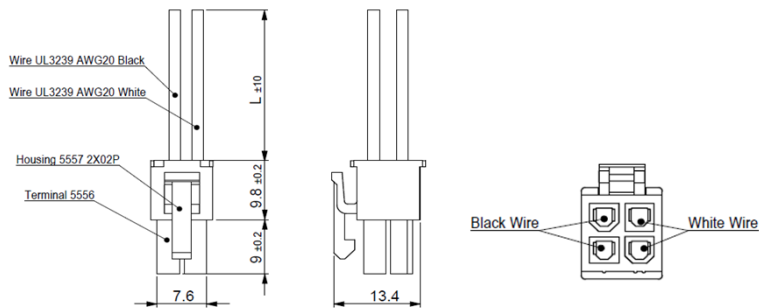
Code 200 Hulian Connector



Code 201 Hulian Connector

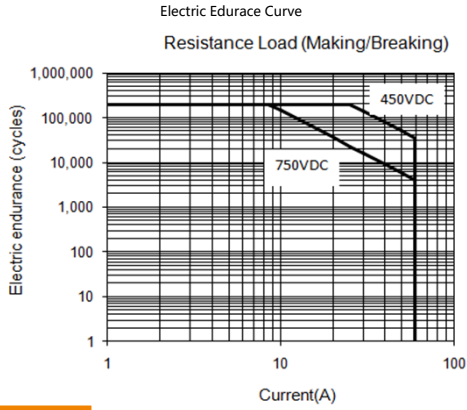


Code 500 5557 Connector

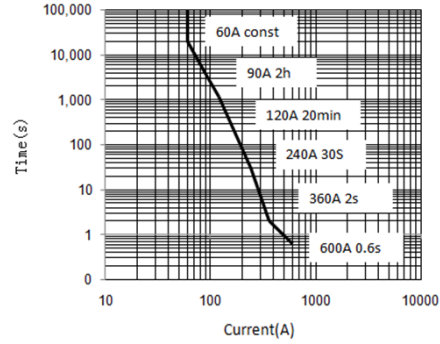


# Reference Date

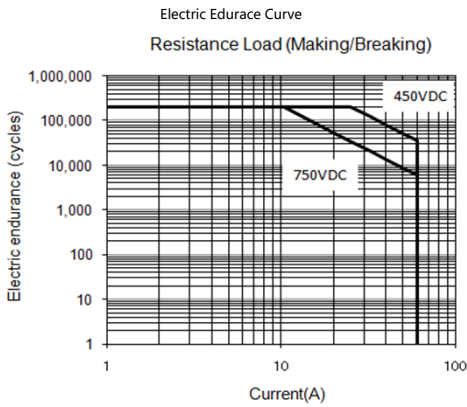
## S/SA60



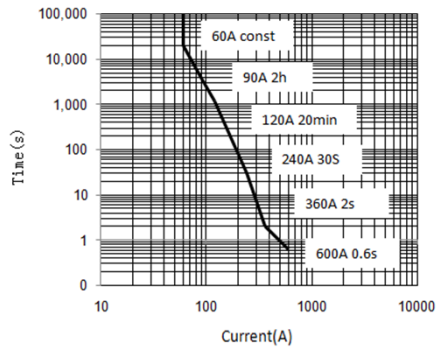
Endurance Capacity Curve  
Notes: The environment temperature of test is 85°C; Cross section area of wire  $\geq 15\text{mm}^2$



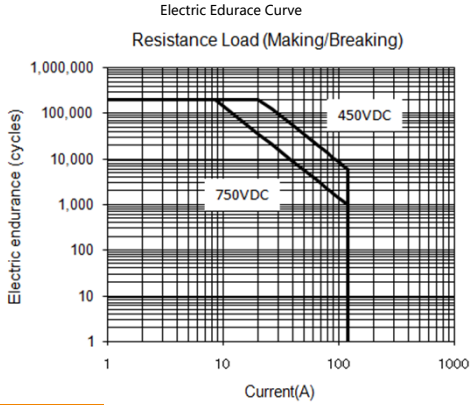
## E/EA60



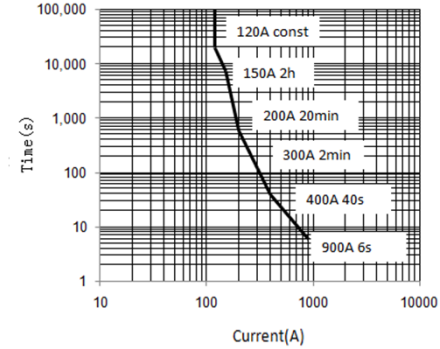
Endurance Capacity Curve  
Notes: The environment temperature of test is 85°C; Cross section area of wire  $\geq 15\text{mm}^2$



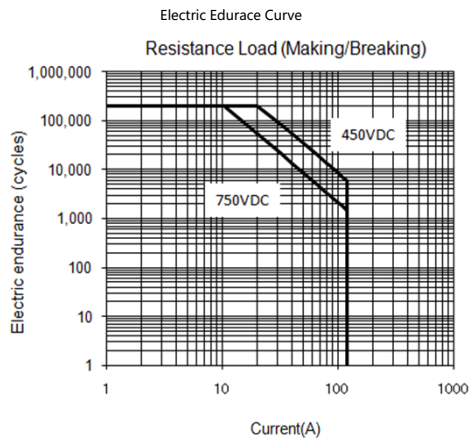
## S/SA120



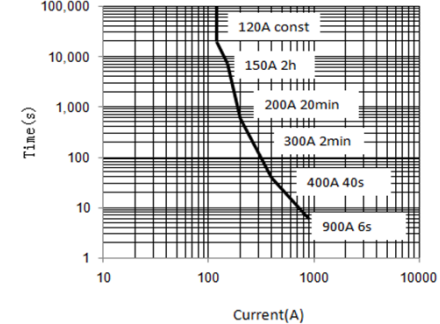
Endurance Capacity Curve  
Notes: The environment temperature of test is 85°C; Cross section area of wire  $\geq 50\text{mm}^2$



## E/EA120

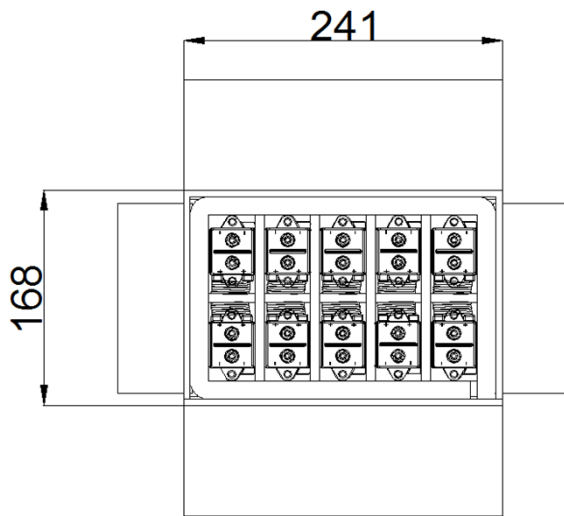


Endurance Capacity Curve  
Notes: The environment temperature of test is 85°C; Cross section area of wire  $\geq 50\text{mm}^2$



---

## Packaging figure



S/SA60; E/EA60; S/SA120; E/EA120: one box: 10PCS.

### 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.



# CHUROD

Everything we do is for our customers' advantage



## **Dongguan Churod Electronics Co., Ltd.**

Unit 20, Xin Gui Road, Lin Vilage

TangXia Town, Dongguan

GuangDong, PR China 523711

T: +86-769-3906688 F: +86-769-82996568

[www.churod.com](http://www.churod.com)

---

## **Churod Americas, Inc.**

485 Devon Park Drive

Suite 118

Wayne, PA 19087

T: +1-610-608-1547

[www.churodamericas.com](http://www.churodamericas.com)

---

## **Churod Europe**

Str. D-na Stanca #38

Sibiu, Romania

T: 00-40-744-517-452

[www.churodeurope.com](http://www.churodeurope.com)