



Automotive relay catalog





Song Chuan is one of the world's leading manufacturers of electro-mechanical components. For over 30 years, we have been developing, making and marketing product solutions for renowned companies all over the world. Quickly, individually and reliably. Our European sales headquarters is located right in the heart of Germany.

**Song Chuan is certified in accordance with:
ISO 14001, ISO 9001, TS 16949**



Index



Automotive Relay Catalog

SONG CHUAN EUROPE

Relays Selection Chart	2
Standard Packaging	6
Cross Reference Sheet	7
Technical Information	8

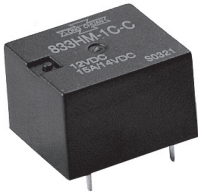
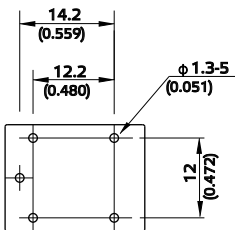
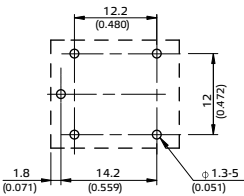
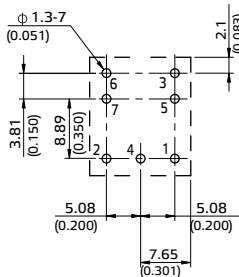
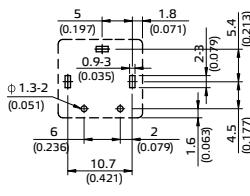
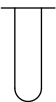


Automotive Relays

102	23
103	27
108	38
301	53
303	35
804	42
812HM	13
822	57
832AM	46
833HM	16
861	19
871	49
895	31
896	62
897	75
898	69
905	40

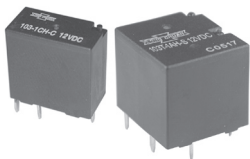
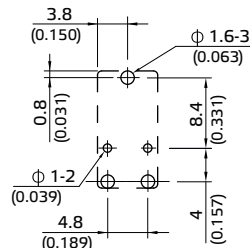
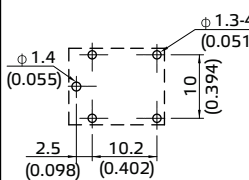
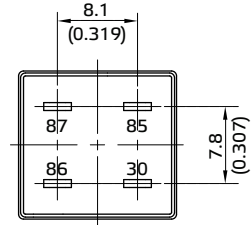
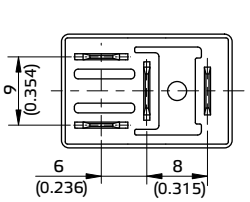
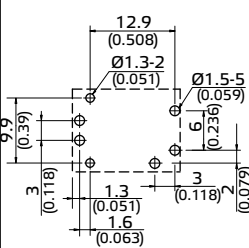
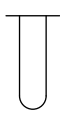
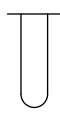
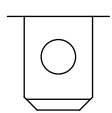
Relay Selection Chart



Type		812HM	833HM	861	102
Photo	Description				
	Outline (L×W×H) mm No including terminals	21×16×16.2	19×15.5×15	17.5×15×19.5	14.2×13.2×9.7
Contact configuration		1A · 1C	1A · 1B · 1C	SP DM-DB	1A · 1C
Max. Allowable Contact current (A)	45	15A	15A	15A	20A
	40				
	35				
	30				
	25				
	20				
	15				
	10				
	5				
	3				
Contact rating Resistive load		15A 14VDC	15A 14VDC	15A 14VDC	NO : 20A 14VDC NC : 10A 14VDC
Coil voltage	DC	9 · 12 · 24V	9 · 12 · 24V	6 · 9 · 12 · 24V	6 · 9 · 12 · 24V
	AC	-----	-----	-----	-----
Power consumption	DC	0.64W	0.45	1.1W	0.64W
	AC	-----	-----	-----	-----
Life expectancy					
Mechanical (Min.)		1×10 ⁷	1×10 ⁷	1×10 ⁷	1×10 ⁷
Electrical (Min.)		1×10 ⁵	3×10 ⁴	1×10 ⁵	1×10 ⁵
Dielectric strength					
Open contact		500VAC	500VAC	500VAC	500VAC
Contact and coil		500VAC	500VAC	500VAC	500VAC
Contact circuits		-----	-----	-----	-----
Terminal layout					
mm (inch) Bottom view (PCB layout)					
Terminal type					
Page no.		13-15	16-18	19-22	23-26

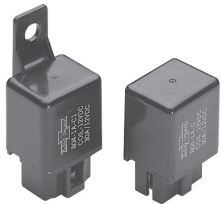
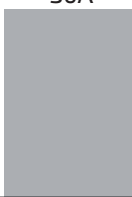
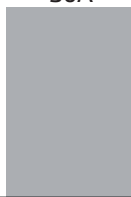
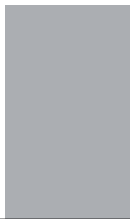
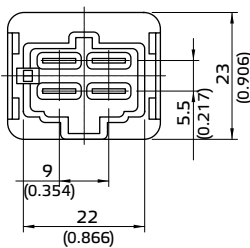
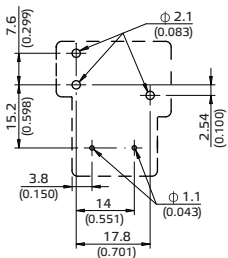
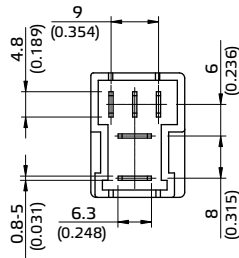
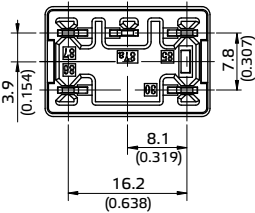
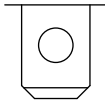
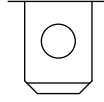
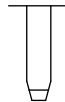


Relay Selection Chart

103	895	303	108	905
				
14.4×7.6×13.7	15.5×12×13.8	16×15×23.7	22.5×15×16	16.6×12.6×17
1A、1C	1A、1C、2A	1A	1A	1A、1C
20A	20A	20A	25A	30A
NO : 20A 14VDC NC : 10A 14VDC	NO : 20A 14VDC NC : 10A 14VDC	20A 14VDC 10A 28VDC	25A 14VDC	NO : 30A 14VDC NC : 20A 14VDC
6、9、12、24V	5、9、12、24V	12、24V	12V	12V
-----	-----	-----	-----	-----
0.64W	0.64W、1.0W、0.8W	0.96W	0.8W	0.72W
-----	-----	-----	-----	-----
1×10^7	1×10^7	1×10^7	1×10^6	1×10^7
1×10^5	1×10^5	1×10^5	1×10^5	1×10^5
500VAC	500VAC	500VAC	500VAC	500VAC
500VAC	500VAC	500VAC	500VAC	500VAC
-----	-----	-----	-----	-----
				
		ISO 280 		
27-30	31-34	35-37	38-39	40-41

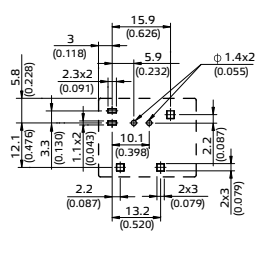
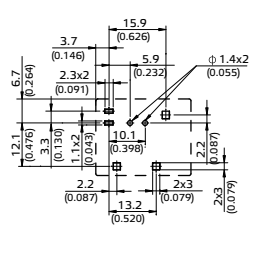
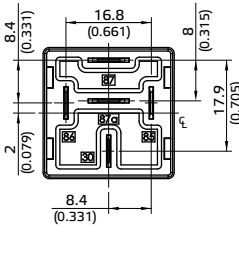
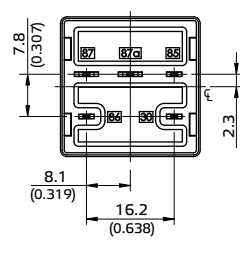
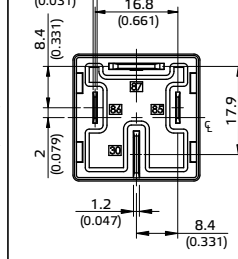
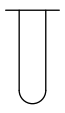
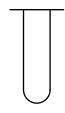
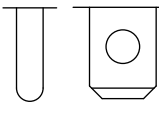
Relay Selection Chart



Type		804	832AM	871	301
Photo					
	Description				
Outline (L×W×H) mm No including terminals		27.7×23×29.3	32.2×27.5×20.4	23×15.5×25.4	22.5×15×25
Contact configuration		1A	1A · 1C	1A · 1C	1A · 1C
Max. Allowable Contact current (A)	45				
	40				
	35				
	30				
	25				
	20				
	15				
	10				
	5				
	3				
Contact rating Resistive load		30A 12VDC 15A 24VDC	1A : 30A 14VDC 1C : NO 20A/NC 10A 14VDC	NO : 35A 14VDC 15A 28VDC NC : 20A 14VDC 10A 28VDC	NO : 35A 14VDC 15A 28VDC NC : 20A 14VDC 10A 28VDC
Coil voltage	DC	12 · 24V	9 · 12 · 24V	6 · 12 · 24V	6 · 12 · 24V
	AC	-----	-----	-----	-----
Power consumption	DC	1.4W	0.93W	1.2W	1.2W
	AC	-----	-----	-----	-----
Life expectancy Mechanical (Min.)		5×10 ⁶	1×10 ⁷	1×10 ⁷	1×10 ⁷
Electrical (Min.)		1×10 ⁵	1×10 ⁵	1×10 ⁵	1×10 ⁵
Dielectric strength Open contact		500VAC	500VAC	500VAC	500VAC
Contact and coil		500VAC	500VAC	500VAC	500VAC
Contact circuits		-----	-----	-----	-----
Terminal layout mm (inch) Bottom view (PCB layout)					
Terminal type					ISO 280 
Page no.		42-45	46-48	49-52	53-56



Relay Selection Chart

822E OPEN	822E Cover	896	898	897
				
25×21×20	26.6×21.4×21.8	25.8×25.8×25	25.8×25.8×25	25.8×25.8×25
1A、1B、1C	1A、1B、1C	1A、1B、1C、2A	1A、1B、1C	1A
40A	40A	50A	50A	70A
1A : 40A 14VDC 1B : 30A 14VDC 1C : NO 40A/NC 20A 14VDC	1A : 40A 14VDC 1B : 30A 14VDC 1C : NO 40A/NC 20A 14VDC	896H : 50A 14VDC 20A 28VDC 896 : 40A 14VDC	898H: 50A 14VDC 20A 28VDC 898: 40A 14VDC	70A 14VDC 25A 28VDC
6、9、12、24V	6、9、12、24V	12、24V	12、24V	12、24V
-----	-----	-----	-----	-----
1.6W、1.2W	1.6W、1.2W	1.6W	1.6W	1.6W
-----	-----	-----	-----	-----
1×10^7	1×10^7	1×10^7	1×10^7	1×10^7
1×10^5	1×10^5	1×10^5	1×10^5	1×10^5
500VAC	500VAC	500VAC	500VAC	500VAC
500VAC	500VAC	500VAC	500VAC	500VAC
-----	-----	-----	-----	-----
				
			ISO 280 	
57-61	57-61	62-68	69-74	75-80

Standard Packaging



Relay series	Dimensions[(LxWxH) cm]	PCS / Tube, Tray	PCS / Box	G.W. kg / Box
812HM	46.4×22.3×16.3	25 / Tube	1000	11
833HM	37.2×25.0×13.0	20 / Tube	1000	10
861	36.0×23.0×15.2	20 / Tube	1000	11
861 (open)	43.4×29.4×15.4	100 / Tray	1000	10
102	40.3×18.2×12.8	25 / Tube	1000	6
103	45.3×14.9×15.2	50 / Tube	1000	5
103T	45.3×14.9×15.2	25 / Tube	500	5.5
895	35.5×18.1×16.7	25 / Tube	1000	7.2
303	34.8×29.4×29.4	25 / Tray	500	9
108	53.6×20.1×13.3	20 / Tube	500	10.5
804 (C,C1)	37.6×33.2×31.0	25 / Tray	500	21
804 (C2)	61.1×47.5×18.5	50 / Tray	500	19.1
804 (C3)	41.0×36.5×27.0	25 / Tray	500	22.5
832AM	41.2×38.7×26.9	50 / Tray	500	16
871 (DF)	49.6×35.8×20.0	50 / Tray	500	13.4
871 (C)	43.7×31.6×18.0	50 / Tray	500	13.4
301	41.4×29.6×26.6	25 / Tray	500	12
822 (open)	36.5×32.0×22.0	50 / Tray	1000	19.2
822 (C)	47.7×41.3×15.7	50 / Tray	500	13
896,897	39.8×32.2×32.8	25 / Tray	400	16
896P,897P	57.0×20.0×16.8	20 / Tube	400	16
898	40.4×32.0×25.0	25 / Tray	400	16
905	39.3×19.4×17.9	25 / Tube	1000	11.5



Cross Reference Sheet

Song Chuan	NAIS	TYCO	OMRON	F & T
812HM	JSM	T72M	G8SN	-----
102	CP1	(μ K/V23086)	-----	-----
103	CT	-----	G8N-1, G8NW-2 G8ND-2	FTR-P3
895	JJM	-----	-----	FBR51/52
303	-----	-----	G8VL	-----
108	CV	-----	G8HL	-----
871	CM	VFM/V2307	G8H	-----
301	-----	VM28	G8V	-----
822	-----	V23076/V23133 VKP	G8PE	FRL270
896H	CB	F4 VF4	G8JN	-----
898	-----	VF28	G8W	-----
897	CB	VF7	G8JR	-----

* Relay part numbers change frequently. All crosses should be verified against technical specifications for accuracy.

Technical Information



INTRODUCTION

The technical information is divided into four basic parts:

- (1) General application guidelines.
- (2) Guidelines for relay handling.
- (3) Guidelines for selecting contact protection circuits.
- (4) Guidelines for selecting a temperature tolerant relay for your application.

In addition to the technical information, all data sheets in this catalog also include notes relevant to each specific relay. Please refer to these relay-specific notes, as they contain information vital to optimum relay performance.

GENERAL APPLICATION

1. Avoid Abuse

As with any electro-mechanical device, relays are sensitive to abuse. To assure optimum performance, avoid dropping, hitting, or other unnecessary shocks to the relay.

2. Never Remove the Case

The case of a relay is an integral part of that relay. SONG CHUAN relays are not designed to have the case detached. Never remove the case, as specifications or performance cannot be guaranteed.

3. Atmosphere Considerations

SONG CHUAN recommends that you use unsealed relays in an atmosphere with only a minimum of dust and other contaminants. If a relay must withstand a harsh atmosphere, SONG CHUAN recommends that you utilize a sealed relay.

4. Warning-Silicon Based Resins

Some silicon based resins can cause contact failure in a relay. The silicon based resin does not need to come in direct contact to cause damage it just needs to be in close proximity. In cases where silicon based resins are used, it is recommended that a sealed relay be used.

5. Voltage

To assure meeting to electrical and performance characteristics, only the correct rated voltage should be applied to the coil, i.e., voltage sine waves only for AC coils, rectangular for DC coils.

6. Over Voltage

Although typically a spike will not effect a relay's performance, the voltage on the coil should not continuously exceed the maximum allowable voltage.

7. Contact Current

Currents that exceed the designated values should be avoided.

8. Check Your Load and Conditions

The specifications provided in this catalog are "typical" specifications and are given only as guidelines. The performance of contacts vary depending on both the type of load and operating conditions encountered. Please consider your specific load and operating conditions in selecting the optimum relay for your application.

9. Warning-Ambient Temperature

The ambient temperature ranges, listed in the general specifications for each relay, must be adhered to, to assure proper operation. Note: Both the storage and operating range differs for the sensitive and standard version of the same model. Refer to the data sheet of the relay for specific information.

10. Ultrasonic Cleaning

Never use any type of ultrasonic cleaning. Ultrasonic cleaning is always traumatic and is not recommended.

11. Pickup & Dropout Voltages

Both pickup and dropout voltages should be considered when selecting a relay coil voltage. For specific information, contact us.

12. Power Relays

On power relays, avoid the use of single diode coil suppression. Use a zener and diode or a capacitor and resistor instead, for longer contact life. Also, avoid storing relays in excessively humid conditions where possible, as moisture can effect performance in some cases.

RELAY HANDLING

SONG CHUAN utilizes extensive quality control measures, and takes extreme care in packaging to assure that the relays you receive are in the best possible operating condition. Once they enter your facility, some common sense care can prevent damage during handling. Some areas to closely monitor and supervise include:

1. Handling

Avoid handling relay terminals.

Oils and contaminants common to the human hand can cause contamination of the surface finish—which in turn can lead to solderability problems.



Technical Information

Always store relays at recommended temperatures.

Observe maximum storage temperatures listed in the general specifications section of the data sheet for your specific relay.

Avoid misalignment of the terminal layout and PC board hole pattern.

Even If there is just a slight misalignment, forcing a relay into the board can cause relay damage compromising such important factors as seal integrity, relay performance, and relay reliability.

Store handle relays in a clean environment.

Your relays are state-of-the-art, electromechanical components, and should be stored and handled as such. Even environmentally sealed relays have exposed contacts that are subject to contamination, and therefore are minimally sensitive to their storage and production environment.

2. Mounting

Suggested PC board layout.

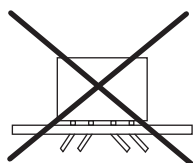
Refer to the PC board layout located on the data sheet for your specific relay.

For automatic insertion.

SONG CHUAN relays are available packaged for a variety of automatic insertion machines. Please consult with our Technical Services Department.

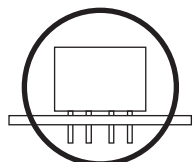
Never bend terminals.

Once relay terminals are bent, performance can no longer be guaranteed. Never bend terminals to make them self-clinching, and avoid bending them to fit misaligned holes.



Incorrect

Bending the relay leads, for any reason, can cause failure.

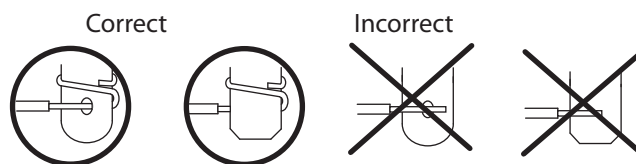


Correct

Relay terminals remain straight and penetrate completely through the PC board.

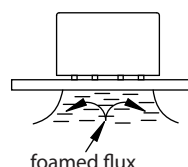
Connection and mounting.

To connect a lead wire to the terminal or to mount the relay on a PC board, securely wind the lead wire around the terminal as shown.



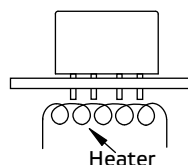
3. Soldering and washing guidelines

Flux coating



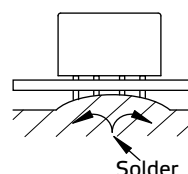
- Adjust the position of the PC board so that flux does not overflow onto the top of it.
- Use rosin-based flux, which is non-corrosive and requires no washing.
- Do not use Automatic Flux Coating Method to dust-cover type relays.
- Do not overflow onto the top of PC board, in such a case, the flux may even penetrate a flux-resistant type relay.

Preheating



- Be sure to preheat before soldering.
- Preheating acts to improve solder ability.
- Preheat according to the following conditions:
Temperature~100°C/212°F or less
time Within-approx. 1 minute

Soldering



Automatic Soldering

- Flow solder is the optimum method for soldering.
- Adjust the level of solder so that it does not overflow onto the top of the PC board.
- Unless otherwise specified, solder under the following conditions depending on the type of relay.
- Solder Temperature—approx. 250°C/482°F for SnPb soldering, 260°C/500°F for Lead-free soldering.
- Soldering Time—within approx. 5 seconds
- Solder Ratio— Sn/Pb = 60/40 or 63/37.

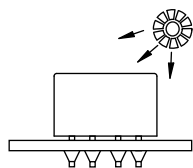
Hand Soldering

- Keep the tip of the soldering iron clean.
- Solder Iron—30W to 60W.
- Iron Tip Temperature-approx. 300°C/572°F
- Solder Time—within approx. 3 seconds

Technical Information

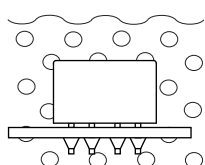


Cooling



- Immediate air cooling is recommended to prevent deterioration of the relay and surrounding parts due to soldering heat.
- Although the sealed type relay can be cleaned, avoid immersing the relay into cold liquid (such as washing solvent) immediately after soldering. Doing so may deteriorate the sealing performance.

Washing



- Do not wash flux-resistant type relays and dust cover type relays by immersion.
- Careless washing may cause washing solvent to penetrate the relay.
- Plastic sealed type relays can be washed by immersion. Use washing solvents shown in Table 1.
- Use of other washing solvents may damage the relay case and cover, and also cause washing solvent to penetrate the relay.
- Washing with the boiling methods is recommended. Avoid ultrasonic washing on relays. Use of ultra-sonic cleaning may cause breaks in the coil or slight sticking of contacts due to the ultrasonic energy.

Table 1: Washing solvent compatibility for sealed type relays

	Flourinated	Aqueous	Chlorinated	Alcoholic
Solvent trade name	Freon TF	Aqua flux	Perclean B-5	IFA
	Freon TE	#WL1000	Perclean D	Ethanol
	Freon TES	Indusco 624	CholorotheneVG	
	Freon TMC	Indusco1000	Cholorothene N	
	Alpha 1001	Lonco terge 530	Cholorosolve	
	Alpha 1003	Hollis 310	Alpha 564	
		Lonco Terg	Trichloroethan	

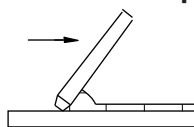
Coating



- If the PC board is to be coated to prevent the insulation of the PC board from deteriorating due to corrosive gases and high temperature, note the following.
- Do not coat dust-cover type relays and flux-resistant type relays.
- Depending on the type, some coating materials may have an adverse affect on relays, select coating materials carefully.

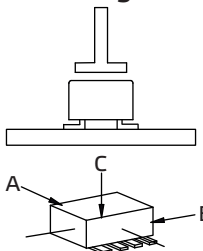
4. Surface Mounting

Cream solder printing



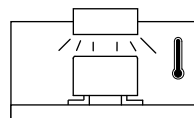
- Please use the cream solder that contains a flux without a large of chlorine, to avoid the terminal being corroded.

Mounting



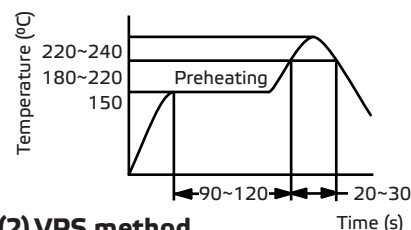
- The holding pressure on relay must be equal or less than the following reference. Or we cannot guarantee the relay performance.
Direction A: 1.96N max.
Direction B: 4.9N max.
Direction C: 1.96N max.

Reflow soldering

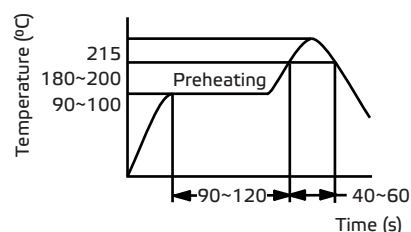


- Recommended conditions of soldering for example, as following. (The temperature profile shows the temperature on the PC board side.)
- Don't make the relay in a cold washing solvent instantly after soldering, to avoid the seal ability of relay being damaged.

(1) IRS method



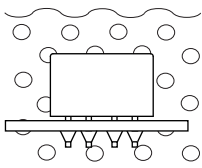
(2) VPS method





Technical Information

Washing



- Washing by boiling method and immersion is recommended.
- Use of ultra-sonic cleaning may cause break in the coil or slight sticking of contacts.
- Recommended washing solvent are aqueous solvent & alcoholic solvent. Furthermore, the solvent temperature must be within 40°C.

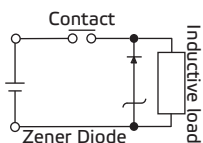
Washing solvent

	Chlorinated	Aqueous	Alcoholic
Solvent	Perochlene	Indusco	IPA
	Chlorosolder	Holys	Ethanol

Contact Protection Circuit

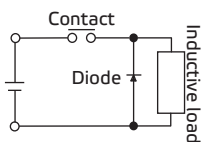
A contact protection circuit, designed to prolong the life expectancy of the relay is recommended. This protection will have the additional advantage of suppressing noise, as well as preventing the generation of carbon at the contact surface when the relay contact is opened. However, unless designed correctly, the protection circuit may produce adverse effects, such as prolonging the release time of the relay. The following table lists examples of contact protection circuits:

Diode and Zener Diode Circuit



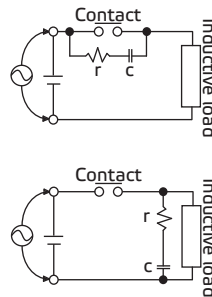
- DC applications only.
- Utilize when diode circuit causes too long release time.
- Use zener diode with zener voltage about equal to power supply voltage.

Diode Circuit



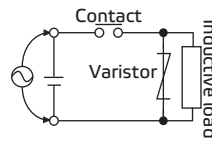
- DC applications only.
- Compared to RC type, circuit delays release time (2 to 5%X).
- For larger voltages, use diode with reverse breakdown 10 times circuit voltage and forward load circuit.
- For smaller voltages, use reverse breakdown v or 2 to 3 X power supply voltage.

RC Circuits



- This circuit is suitable for AC or DC Contact applications, but if used with AC voltage, Impedance of the load should be smaller than the RC circuit's. Do not utilize for timer loads, as leakage current can cause faulty operation.
- This circuit is suitable for AC or DC. If Circuit the load is a relay or solenoid, release times lengthen. Effective when connected to both contacts, power supply voltage across the load is 100 to 200V.

Varistor Circuit



- Effective for AC & DC applications.
- Circuit slightly delays release time. Effective when connected to both contacts, power supply voltage across the load is 100 to 200V

Inrush Current

The type of load combined with it's inrush current characteristics, together with switching frequency can cause contact welding. For loads with inrush current, measure the steady state current to determine the proper relay. Typical types of loads, the inrush current they create, included in the following chart:

Type of load	Inrush current
Resistive	steady state current.
Solenoid	10~20 times the steady state current.
Motor	5~10 times the steady state current.
Incandescent lamp	10~15 times the steady state current.
Mercury lamp	3 times the steady state current.
Sodium vapor lamp	1~3 times the steady state current.
Capacitive	20~40 times the steady state current.
Transformer	5~10 times the steady state current.

Temperature Tolerant Relay

More and more applications require relays that operate at higher temperatures. Relays run "hot" due to high ambient temperatures and/or high contact switching. These "hotter" environments can destroy a relay's insulation system and lead to product failure in the field.

Technical Information



To help prevent this type of failure, SONG CHUAN has, for several years, offered UL Class A, Class B, Class F insulating systems on its miniature power relays. Class F relays have significant "heat" advantage over Class A or Class B relays that, by contrast, only offer a rating of 105°C (Class A) or 130 °C (Class B). This Class F insulating system is designated by UL and it is rated at a full 155°C. This section is a discussion of why and when an engineer needs to select a high temperature rated for the application.

First, let's define an insulation system, as it pertains to this application note. An insulation system may be defined as simply any combination of insulating materials used in electrical equipment. In a relay it is the combination of a coil form, the magnet wire coating, and the outer wrapping of the relay coil.

A proper insulating system is essential because it separates the control side of a relay (the coil) from the switch side of the relay (the contacts). The switch side of the relay may be used to switch high voltages that are potentially lethal to humans as well as to the circuitry that is connected to the coil side of the relay.

Consequently, when a relay is evaluated for a particular project, It should be evaluated at the maximum ambient temperature it will see in that product. If the Insulating system breaks down, it allows electrical current to flow from the switch side of the relay to the control side of the relay. This in turn causes failure-and in some cases can present a safety hazard.

UL understands that time and temperature are the enemies of an insulating system. Just as paint on a house begins to peel with age and exposure to heat, an insulation system begins to break down with age and exposure to heat. Consequently, UL designed and administers a series of tests that assure that this breakdown does not occur even after aging and heating.

UL Document 1446 is concerned with systems of insulating materials. Insulating systems are classified by their ability to withstand elevated temperatures. It is from this document that we derive Class A, Class B, and Class F.

Max Hot-Spot Temperatur Insulating System

System Class	°C	°F
B	130	266
F	155	311
H	180	356
N	200	392
R	220	428
S	240	464

The Table is printed directly from the UL document. As it indicates, a Class B relay is rated for a maximum hot spot temperature of 130°C, and Class F relay is rated for a maximum hot spot temperature of 155°C. For a relay, the hot spot temperature is basically the coil temperature. The coil temperature is a result of the self-heating of the coil due to the power dissipation of the coil (coil voltage and current), heating due to the load being carried by the contacts (they get hot too and that leaks over to the coil), and by the ambient temperature of the environment.

At room temperature, most relay coils will not exceed a temperature of 130°C even with full contact load and continuous operation. However, if a particular circuit design calls for the relay to work in a high ambient temperature, or at a coil voltage higher than nominal (or both)-it is possible that the coil temperature might exceed 130°C. Sometimes the designer does not realize this until the product gets to UL-and at that point it is determined that a higher class of insulating system is required. If the Class B (rated up to 130°C) is not sufficient, Class F (rated up to 155°C) would be the next logical choice. Class F relays are proving to be ideal for applications such as:

- Appliance Controls
- Automotive Controls
- Spas and Pool Controls
- Industrial Controls

Plus, as power relays are used more and more in control application, and boards get smaller and smaller allowing less room for heat dissipation-Class B and Class F relays become increasingly attractive.



812HM



»» Features

- High performance sugar cube automotive relay.
- Heavy duty suitable for wiper motor control, flashing lamp control, adjustable driver seat motor control, etc.
- Optional for flux-free type or sealed washable type.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	812HM-1A-C	812HM-1A-S
	1C (SPDT)	812HM-1C-C	812HM-1C-S

»» Ordering Information

812 H M - 1C - C
1 2 3 4 5

- | | |
|------------------------------------|------------------------------------|
| 1. 812 -- Basic series designation | 4. 1A -- Single pole normally open |
| 2. H -- High power type | 1C -- Single pole double throw |
| 3. M -- Automotive relay | 5. C -- Flux tight |
| | S -- Sealed type washable |

»» Contact Rating

Resistive load	15A 14VDC	Motor load	5A 14VDC Inrush 25A
----------------	-----------	------------	---------------------

»» Coil Rating (DC)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
9	71.4	126	133% of rated voltage	65% of rated voltage	5% of rated voltage	approx. 0.64W
12	53.3	225				
24	26.7	900				

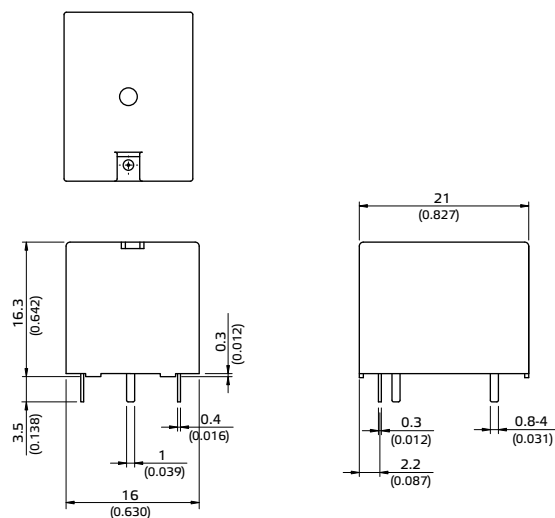
Note: (1) Continuous contact current at 10A.

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	15ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	100 MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~50Hz , amplitude 1.0 mm
	Damage limits	10~50Hz , amplitude 1.0 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Operating ambient temperature	-40~ +85° C (no freezing)	
Weight	Approx. 10 g	

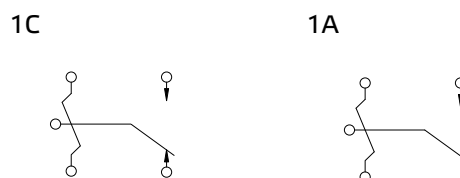
Note : (1) initial value

»» Outline Dimensions



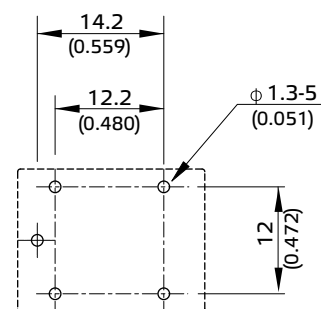
»» Wiring Diagram

BOTTOM VIEW



»» PC Board Layout

BOTTOM VIEW

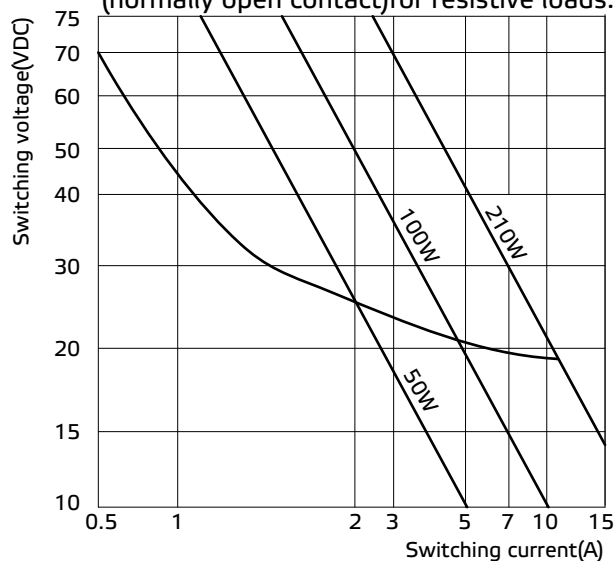




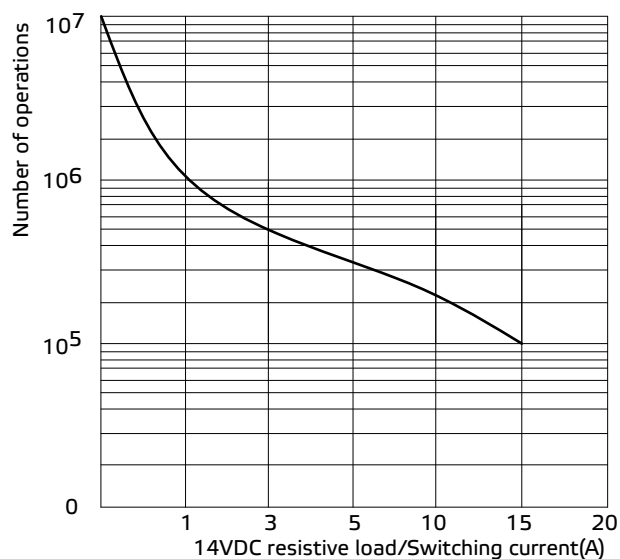
812HM

» Engineering Data

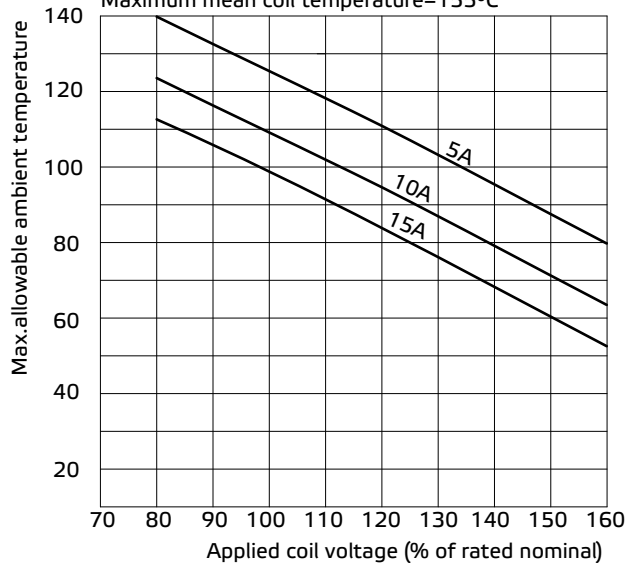
Safe breaking, arc extinguished
(normally open contact) for resistive loads.



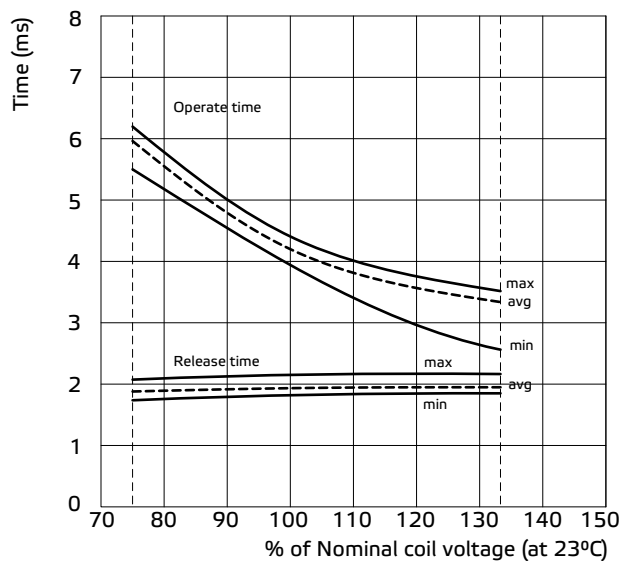
Life expectancy



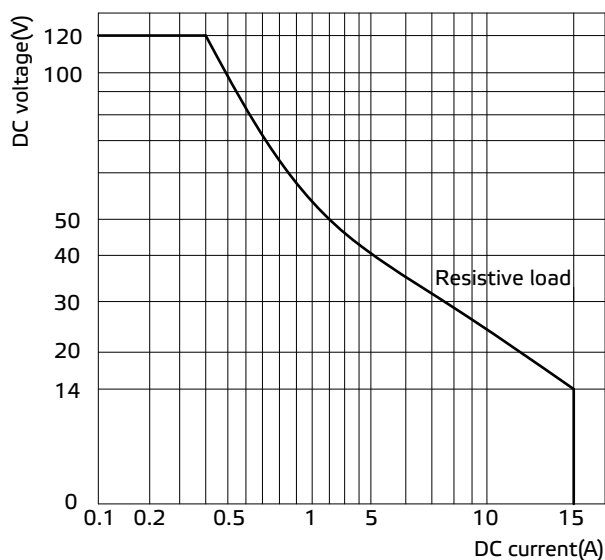
Ambient temperature vs coil voltage for continuous duty
Maximum mean coil temperature=155°C



Operate time/Release time



Max. DC load breaking capacity



833HM



»» Features

- Sugar cube automotive relay.
- General purpose applications for automotive & car alarm system.
- Optional for flux-free or sealed washable type.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC

»» Type List

Terminal style	Contact form	Designation	
		Flux tight	Sealed type washable
PCB terminal	1C (SPDT)	833HM-1C-C	833HM-1C-S
	1A (SPNO)	833HM-1A-C	833HM-1A-S
	1B (SPNC)	833HM-1B-C	833HM-1B-S

»» Ordering Information

833 H M - 1C - C
 1 2 3 4 5

- | | | | |
|--------|-----------------------------|-------|-------------------------------|
| 1. 833 | -- Basic series designation | 4. 1A | -- Single pole normally open |
| 2. H | -- High power type | 1B | -- Single pole normally close |
| 3. M | -- Automotive relay | 1C | -- Single pole double throw |
| | | 5. C | -- Flux tight |
| | | S | -- Sealed type washable |

»» Contact Rating

Resistive load	15A 14VDC
----------------	-----------

»» Coil Rating (DC)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
9	50.0	180	120 % of rated voltage	75 % of rated voltage	10 % of rated voltage	approx. : 0.45W
12	37.5	320				
24	18.8	1,280				

Note : (1) Continuous contact current at 10A.



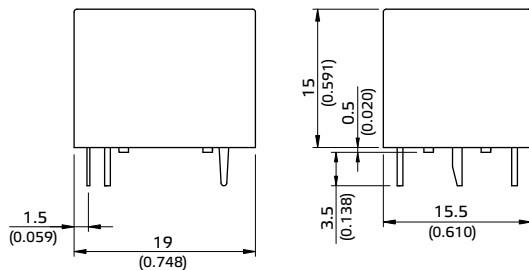
833HM

» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 100mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	5ms Max.	
Insulation resistance ⁽¹⁾	100MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact:AC 500V , 50/60Hz 1 minute.	
	Between contact and coil:AC 500V , 50/60Hz 1 minute.	
Vibration resistance	Operating extreme	10~50Hz , amplitude 1.5mm
	Damage limits	10~50Hz , amplitude 1.5mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	30,000 operations (frequency 1,200 operations/hr)
Operating ambient temperature	-40 ~ +85°C (no freezing)	
Weight	approx. 10g	

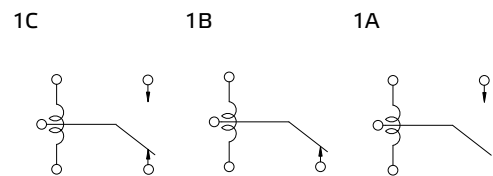
Note : (1) Initial value

» Outline Dimensions



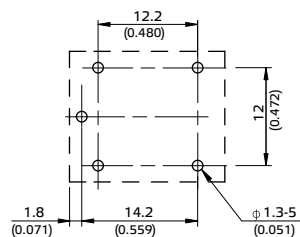
» Wiring Diagram

BOTTOM VIEW

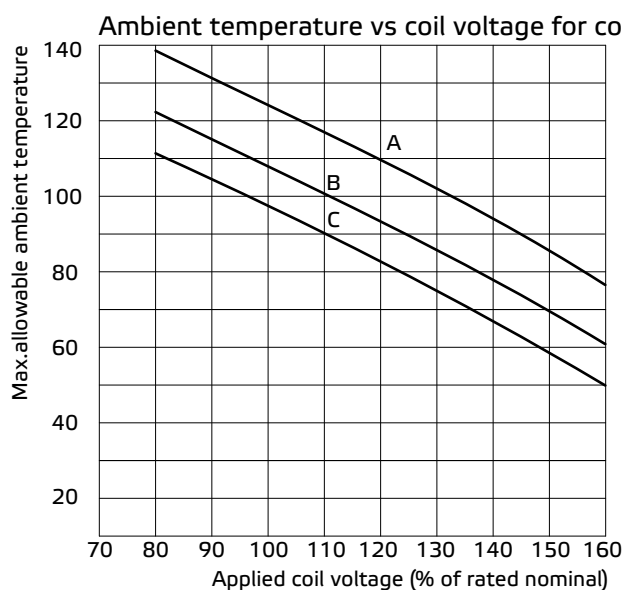
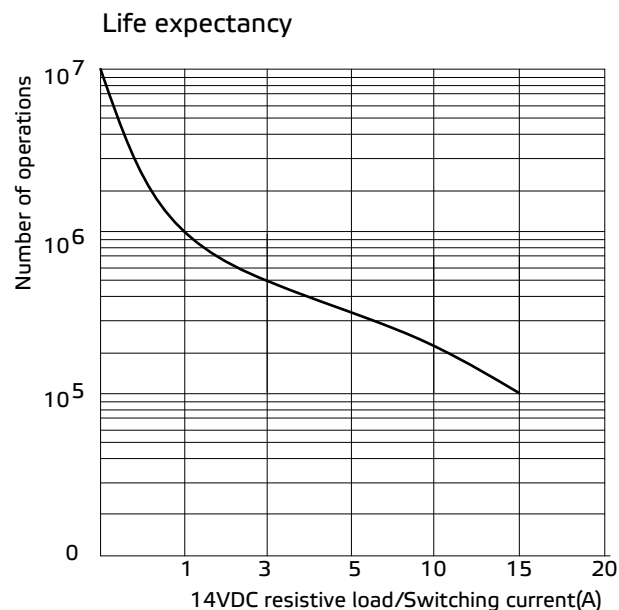
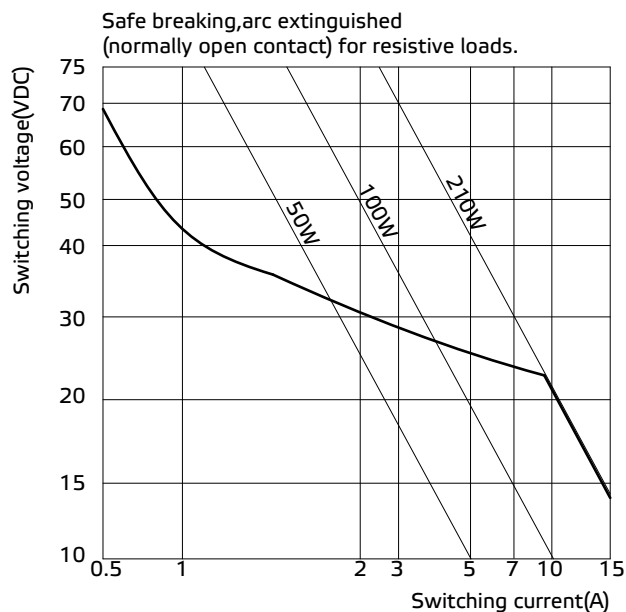


» PC Board Layout

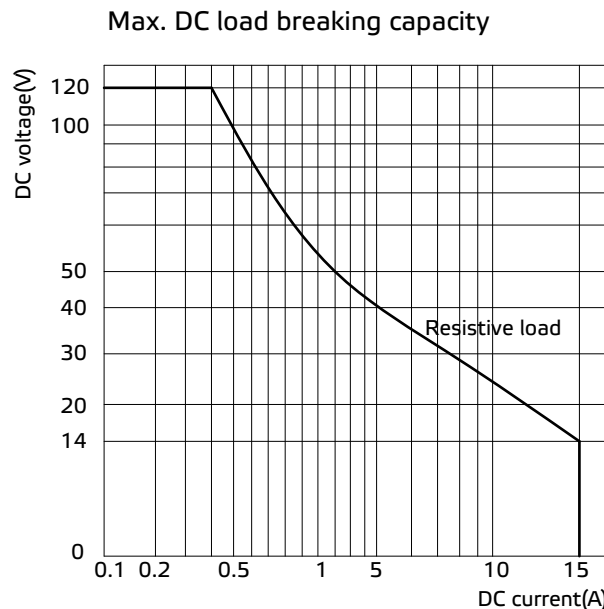
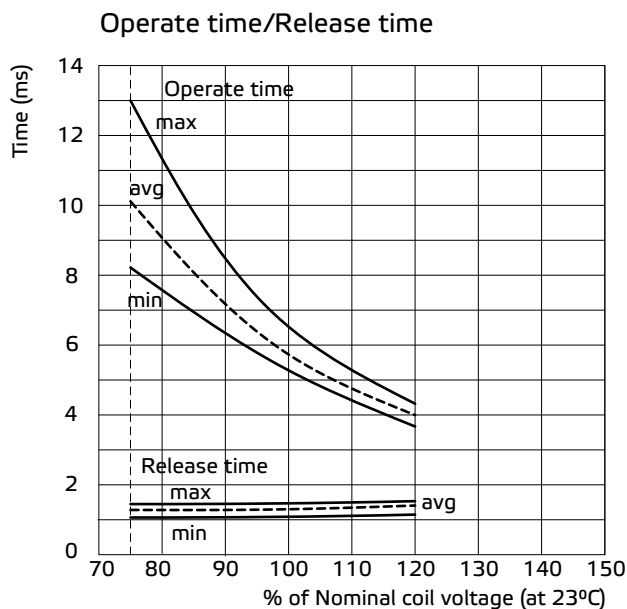
BOTTOM VIEW



» Engineering Data



A:5A B:10A C:15A Contact load(resistive)
Maximum mean coil temperature=155°C





861



»» Features

- Miniature PCB relays 15A/14VDC
- Available for open frame type or flux free or sealed type
- Contact configurations of SPNC, SPNO, SPDT, SPDM-DB are available.
- General application for car alarm control, power window control, wiper control, door lock control, etc.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Internal	Designation		
			Open type	Flux tight	Sealed type washable
PCB terminal	SPNO	Single	861-1A	861-1A-C	861-1A-S
	SPDM		861-2A	861-2A-C	861-2A-S
	SPDT		861-1C	861-1C-C	861-1C-S
	SPDM-DB		861-2C	861-2C-C	861-2C-S

»» Ordering information

861 - 1A - C
 1 2 3

- | | | | |
|--------|---|----------|-------------------------|
| 1. 861 | -- Basic Series designation | 3. Blank | -- Open type |
| | | C | -- Flux tight |
| 2 1A | -- Single pole normally open | S | -- Sealed type washable |
| 1B | -- Single pole normally close | | |
| 1C | -- Single pole double throw | | |
| 2A | -- Single pole double make | | |
| 2B | -- Single pole double break | | |
| 2C | -- Single pole double make-double break | | |

»» Contact Rating

Resistive load	SPNO	SPNC	SPDT
	15A/14VDC	10A/14VDC	NC: 10A/14VDC, NO: 15A/14VDC
	SPDM	SPDB	SPDM-DB
	10AX2/14VDC	7AX2/14VDC	DM: 10AX2/14VDC, DB: 7AX2/14VDC

»» Coil Rating(DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumptionat rated voltage
6	187.5	32	125 % of rated voltage	60 % of rated voltage 67% (for 2C contact configuration only)	10 % of rated voltage	approx. 1.1W
9	123.2	73				
12	92.3	130				
24	46.1	520				

Note:(1)Continuous contact current at 10A.

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Insulation resistance ⁽¹⁾	50MΩ Min. (DC 500V)	
Operate time ⁽¹⁾	4ms Max.	
Release time ⁽¹⁾	2ms Max.	
Dielectric strength ⁽¹⁾	Between open contact : AC 500V , 50/60Hz 1 min.	
	Between contact and coil : AC 500V , 50/60Hz 1 min.	
Vibration resistance	10~ 55Hz , amplitude 1.5 mm	
Shock resistance	10G , 11ms , half sine wave pulse	
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,800 operations/hr)
Operating ambient temperature	-40~+85°C (no freezing)	
Weight	Approx. 17.5g	

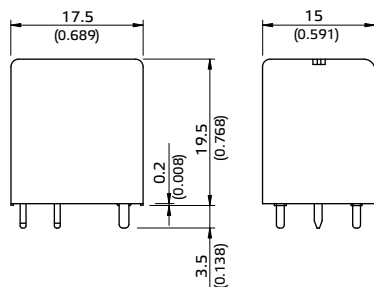
Note: (1) initial value



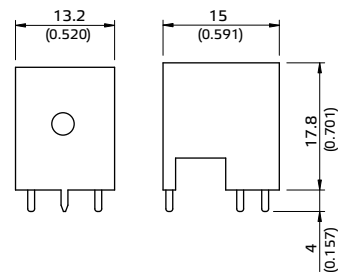
861

»» Outline Dimensions

◆861



◆861 OPEN TYPE

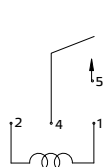


»» Wiring Diagram

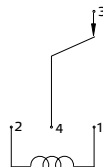
BOTTOM VIEW

◆861

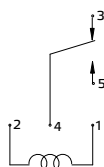
1A



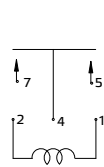
1B



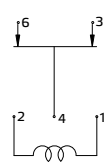
1C



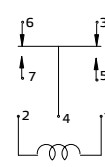
2A



2B



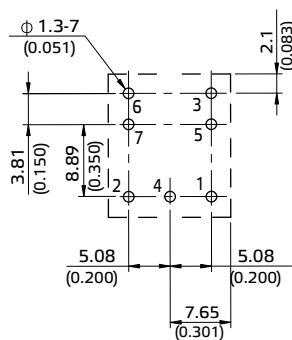
2C



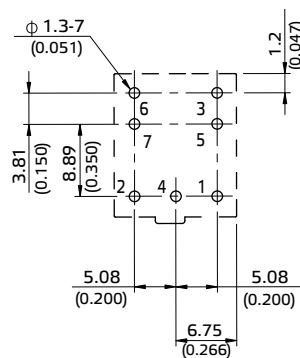
»» PC Board Layout

BOTTOM VIEW

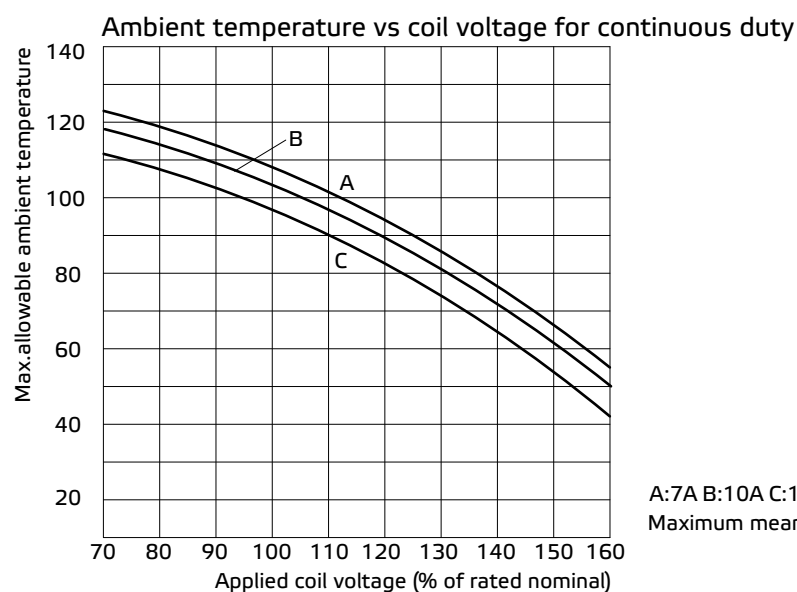
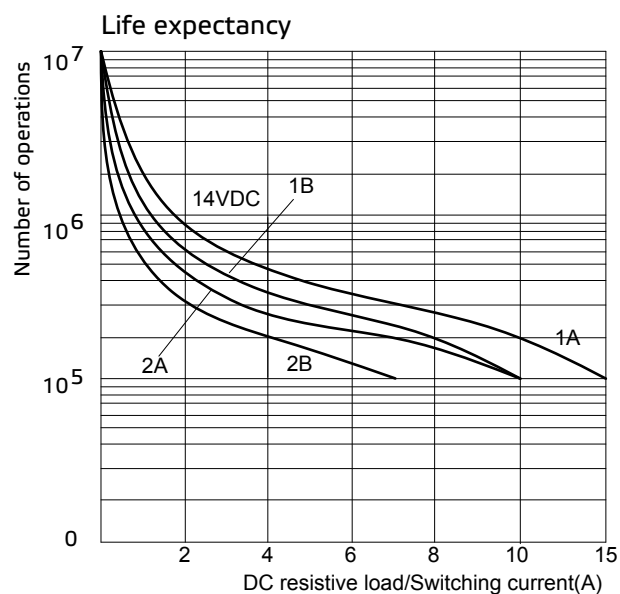
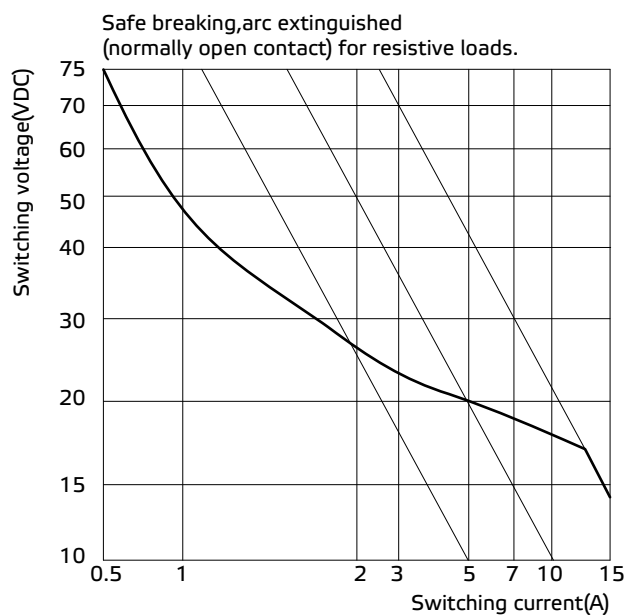
◆861



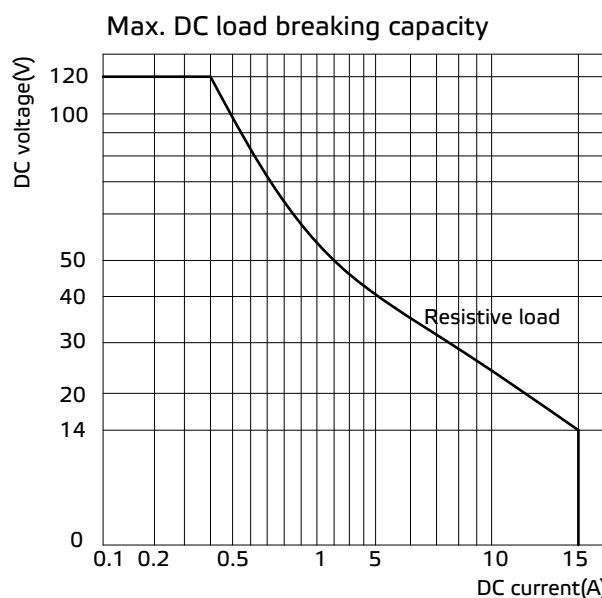
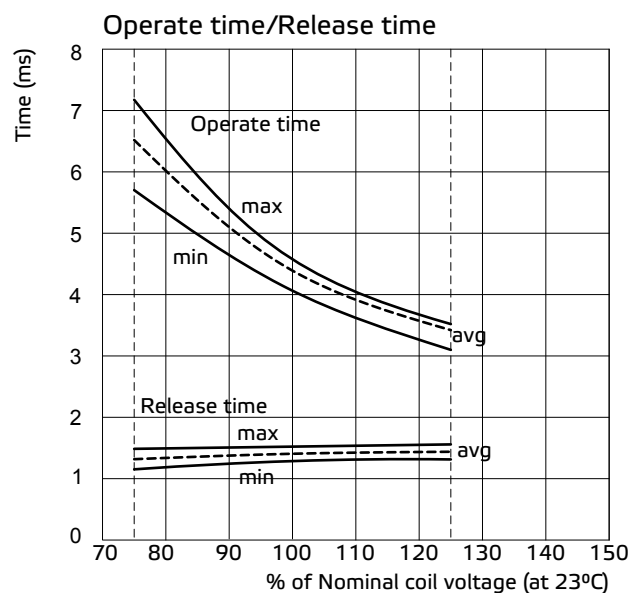
◆861 OPEN TYPE



» Engineering Data



A: 7A B: 10A C: 15A Contact load (resistive)
Maximum mean coil temperature = 155°C





102



»» Features

- Compact size miniature PCB relays.
- Special design of high performance for motor control of wiper and sunroof, and window lift control.
- High rating 20A with maximum switching current up to 30A.
- High temperature endurance up to 125°C.
- IR-Reflow process compatible (special version).
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation(provided with)	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	102-1AH-C	102-1AH-S
	1C (SPDT)	102-1CH-C	102-1CH-S

»» Ordering Information

102 - 1A H - C
1 2 3 4

1. 102 -- Basic series designation
2. 1A -- Single pole normally open
1C -- Single pole double throw
3. H -- Contact material AgSnO
4. C -- Flux tight
S -- Sealed type washable

»» Contact Rating

Resistive load	NO/NC 20A/10A14VDC
Motorload	Inrush 30A Steady state 10A 14VDC, 750K ops.
	MotorLock : 20A 14VDC 200K ops.

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
6	107	56	125 % of rated voltage	60 % of rated voltage	5 % of rated voltage	approx. 0.64W
9	70.8	127		rated voltage	rated voltage	
12	53.3	225		rated voltage	rated voltage	
24	26.7	900		rated voltage	rated voltage	

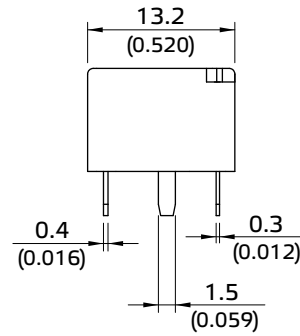
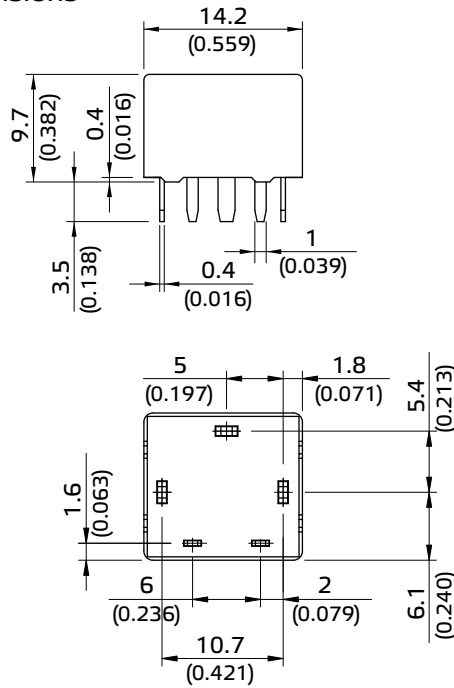
Note:(1)Continuous contact current at 10A.

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	10 ms Max.	
Release time ⁽¹⁾	5 ms Max.	
Insulation resistance ⁽¹⁾	100MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~50Hz , amplitude 1.0 mm
	Damage limits	10~50Hz , amplitude 1.0 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 360 operations/hr)
Operating ambient temperature	-40~+125°C (no freezing)	
Weight	Approx. 4 g	

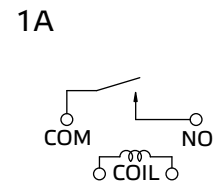
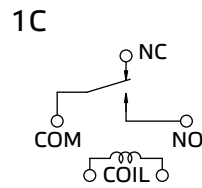
Note:(1)Initial value.

»» Outline Dimensions

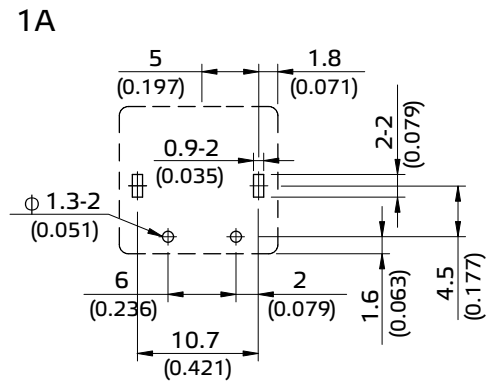
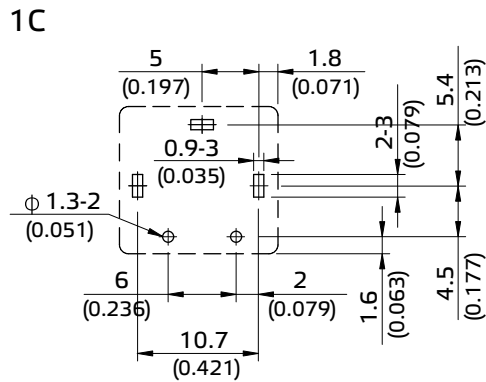


» Wiring Diagram

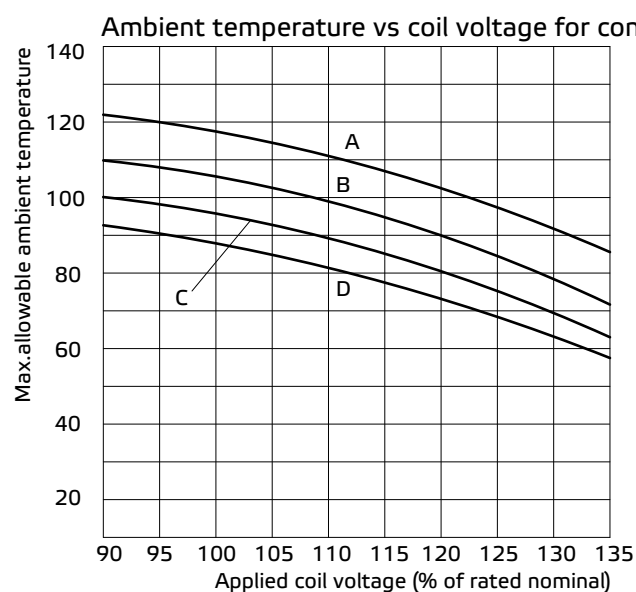
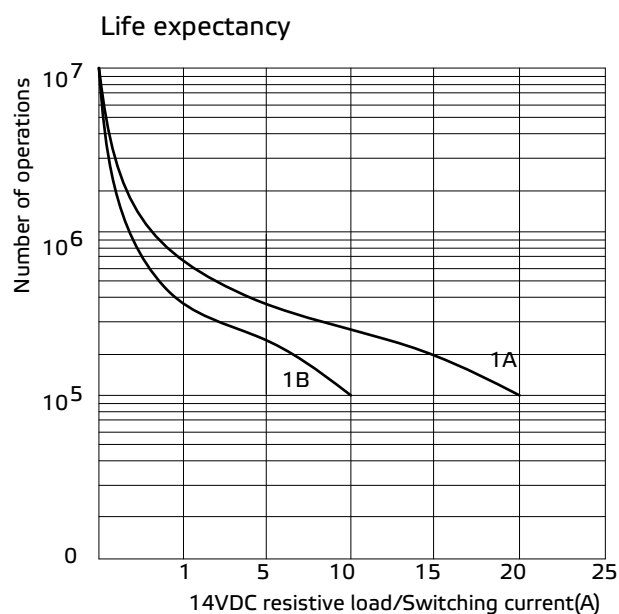
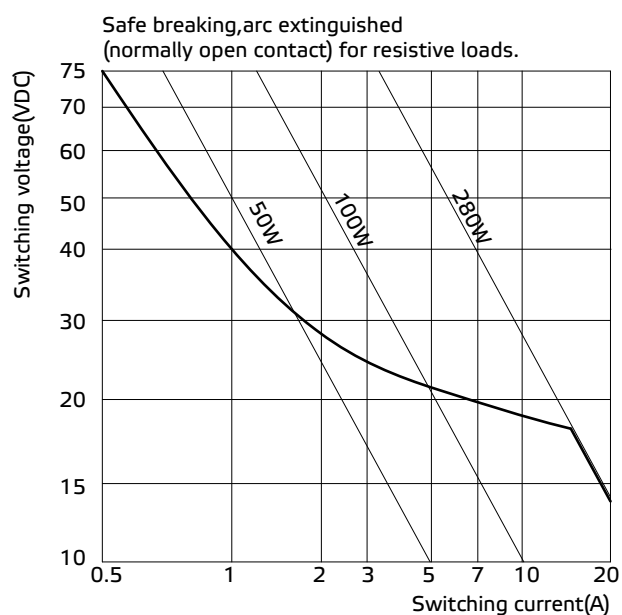
BOTTOM VIEW



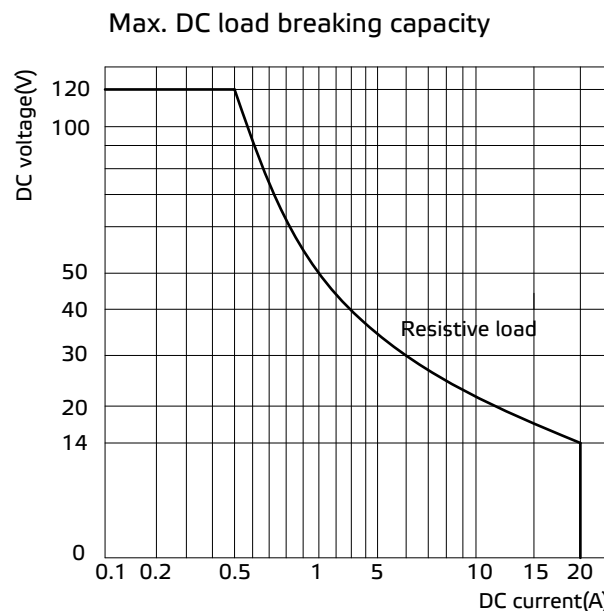
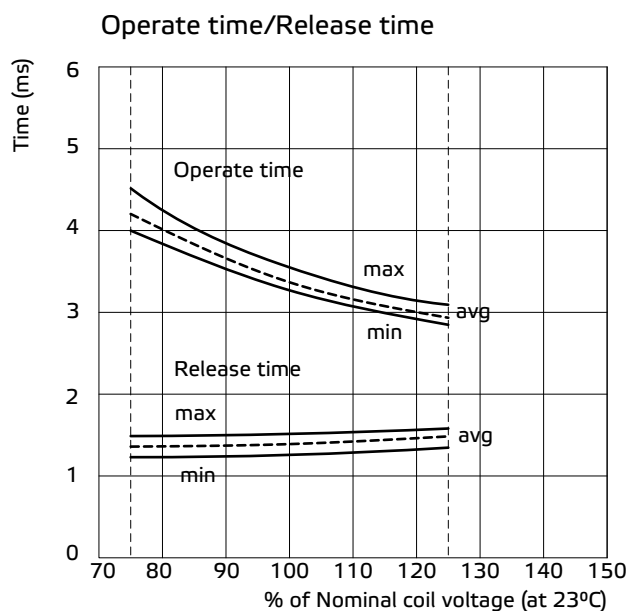
»» PC Board Layout
BOTTOM VIEW



»» Engineering Data

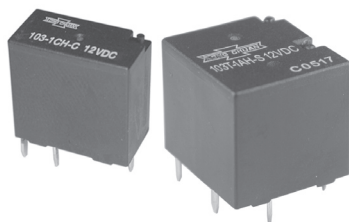


A:5A B:10A C:15A D:20A Contact load(resistive)
Maximum mean coil temperature=155°C





103



»» Features

- Smallest and slim type PCB Automotive relay.
- High rating 20A with maximum switching current up to 30A.
- High Temperature withstand up to 125°C.
- Single or twin relays are both available.
- IR-Reflow process compatible (special version).
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	103-1AH-C	103-1AH-S
		103T-1AH-C	103T-1AH-S
	1C (SPDT)	103-1CH-C	103-1CH-S
		103T-1CH-C	103T-1CH-S

»» Ordering Information

103 T - 1A H - C
 1 2 3 4 5

- 103 -- Basic series designation
- Blank -- Single relay
T -- Twin relay
- 1A -- Single pole normally open
1C -- Single pole double throw
- H -- Contact material AgSnO
- C -- Flux tight
S -- Sealed type washable

»» Contact Rating

Resistive load	NO/NC 20A/10A 14VDC
Motor load	Inrush 30A Steady state 10A 14VDC, 750K ops.
	Motor Lock : 20A 14VDC 200K ops.

»» Coil Rating (DC)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage (Max) at 23°C	Drop out voltage (Min) at 23°C	Power consumption at rated voltage
6	107	56	125 % of rated voltage	60 % of rated voltage	5 % of rated voltage	approx. 0.64W
9	70.8	127				
12	53.3	225				
24	26.7	900				

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	10 ms Max.	
Release time ⁽¹⁾	5 ms Max.	
Insulation resistance ⁽¹⁾	100 MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~50Hz , amplitude 1.0 mm
	Damage limits	10~50Hz , amplitude 1.0 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 360 operations/hr)
Operating ambient temperature	-40~+125°C (no freezing)	
Weight	Approx. 4 g	

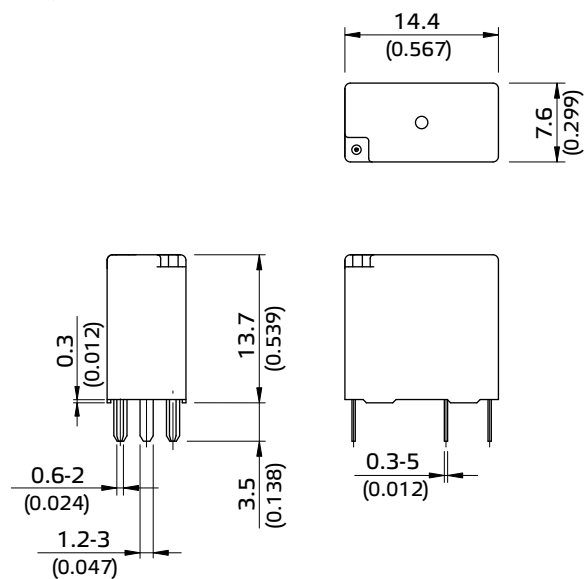
Note : (1) initial value



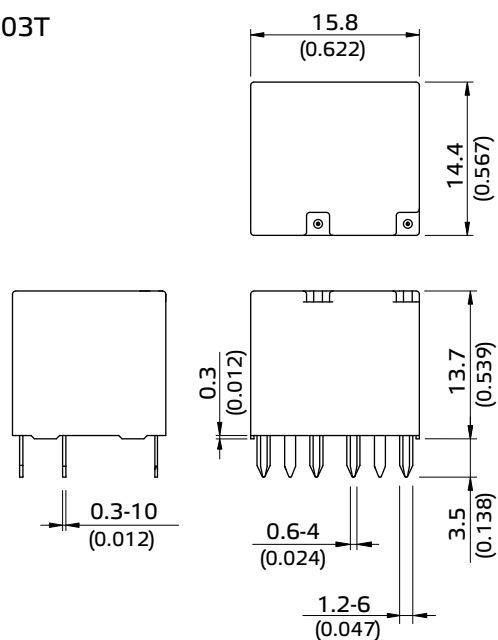
103

»» Outline Dimensions

◆103



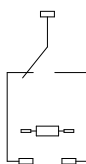
◆103T



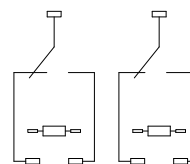
»» Wiring Diagram

BOTTOM VIEW

◆103



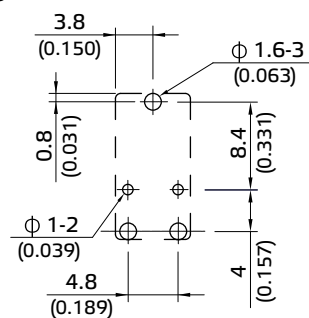
◆103T



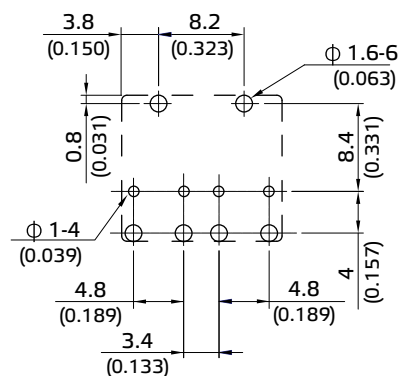
»» PC Board Layout

BOTTOM VIEW

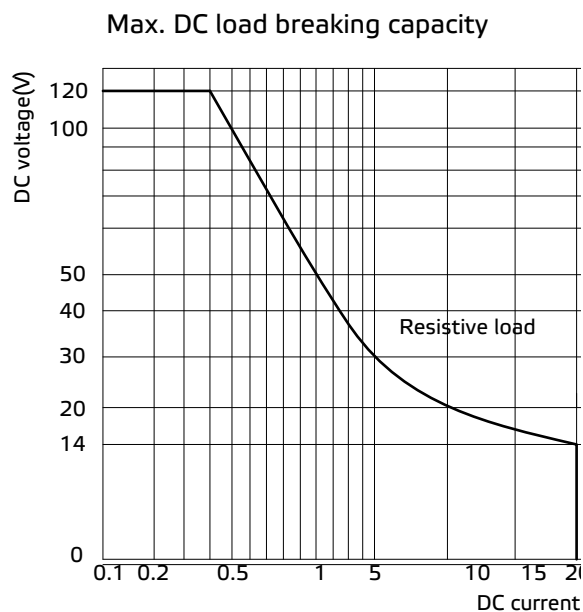
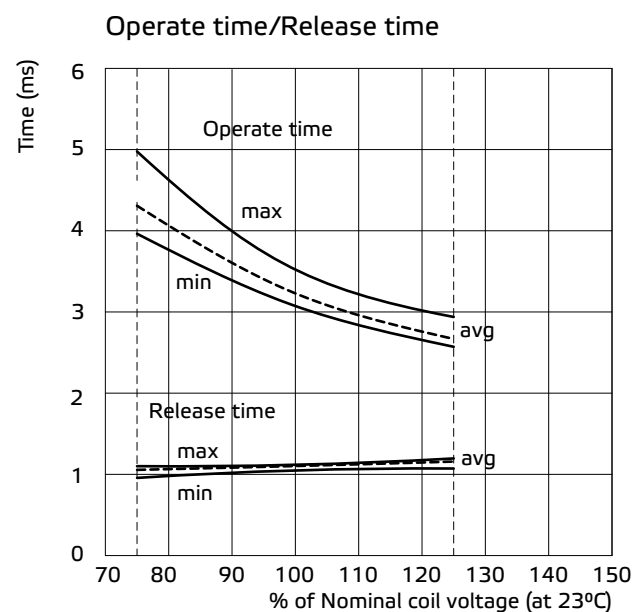
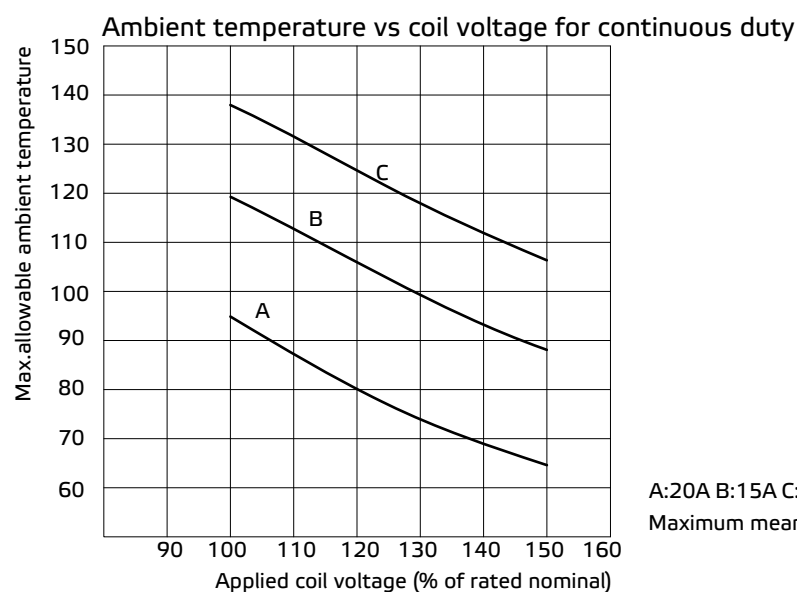
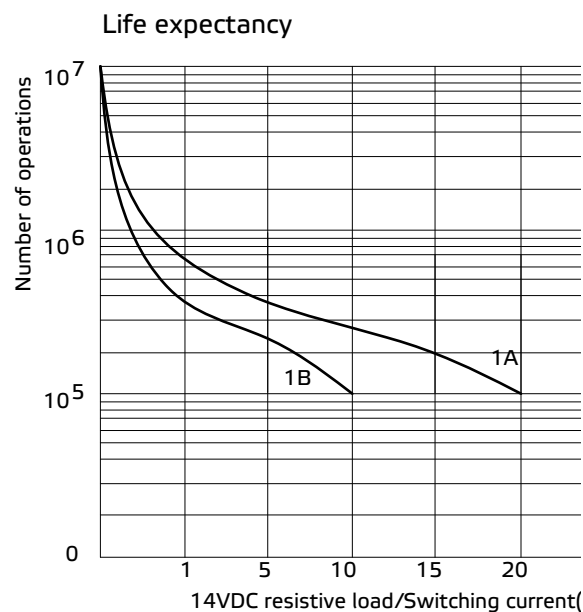
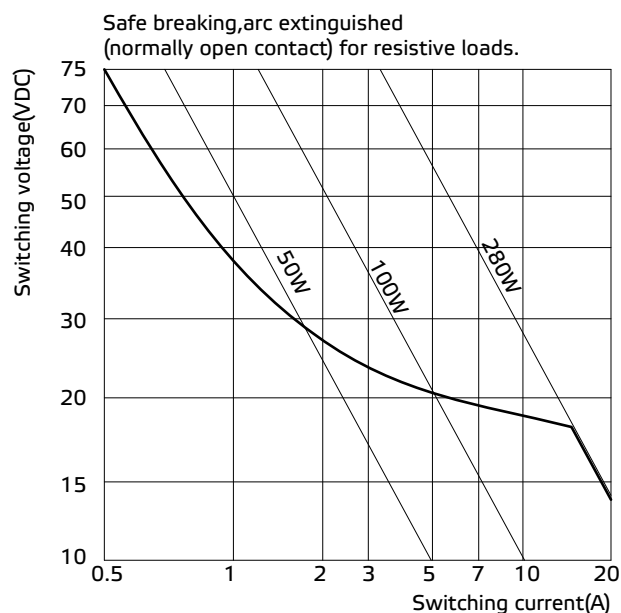
◆103



◆103T



»» Engineering Data





895



»» Features

- Low profile PCB automotive relay.
- High rating 20A/14VDC ; motor load 5A/14VDC ; maximum carry current up to 35A.
- Optional SPNO, SPDT, DPNO contact configurations.
- General purpose application for motor control for power window, sunroof, door lock, and flasher control, etc.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	895-1A-C	895-1A-S
		895-1A-C-H	895-1A-S-H
	1C (SPDT)	895-1C-C	895-1C-S
		895-1C-C-H	895-1C-S-H
		895-2A-C	895-2A-S

»» Ordering Information

895 - 1A - C - H
1 2 3 4

- | | |
|---|---|
| 1. 895 -- Basic series designation | 3. C -- Flux tight
S -- Sealed type washable |
| 2. 1A -- Single pole normally open
1C -- Single pole double throw
2A -- Single pole normally open with two N.O. terminals | 4. Blank -- Standard type
H -- Enlarge contact spacing |

»» Contact Rating

◆ 1P

Resistive load	NC : 10A 14VDC , NO : 20A 14VDC , on 1 sec , off 9 sec , 100,000 ops.
Motor load	5A 14VDC Inrush 25A , on 0.5 sec , off 9.5 sec , 200,000 ops.
Max. carry current	35A/2min. , 25A/1hr (25°C nominal voltage) 30A/2min. , 20A/1hr (85°C nominal voltage)

◆ 2A

Lamp load	2 NO 21WX6 Lamps 14VDC
Max. carry current	2X6A (25°C nominal voltage) 2X4A (85°C nominal voltage)

»» Coil Rating (DC)

◆ 1P

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
5	128	39	120% of rated voltage	60% of rated voltage	8% of rated voltage	approx. 0.64W
9	71.1	127				
12	53.3	225				
24	26.7	900				

◆ 2A

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
9	111.1	81	110 % of rated voltage	60 % of rated voltage	8 % of rated voltage	approx. 1.0W
12	83.3	144				

◆ 1P(-H)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	67.4	178	120 % of rated voltage	60% of rated voltage	8% of rated voltage	approx. 0.8W
24	33.3	720				

»» Specification

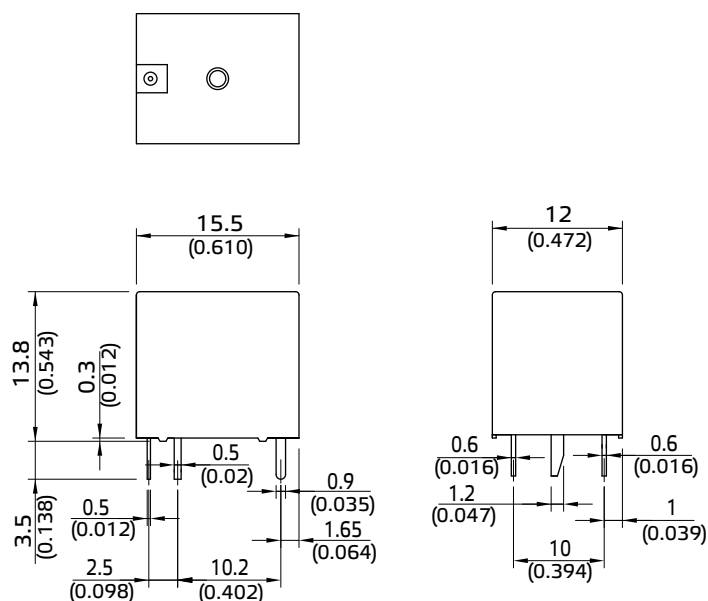
Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 80mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	5ms Max.	
Insulation resistance ⁽¹⁾	100M Ω Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~55Hz , amplitude 1.5 mm
	Damage limits	10~55Hz , amplitude 1.5 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (for 2A) (frequency 240 operations/hr)
Operating ambient temperature	-40~+85°C (no freezing)	
Weight	Approx. 6 g	

Note : (1) initial value



895

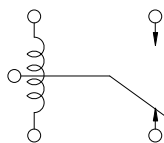
»» Outline Dimensions



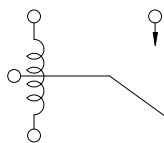
»» Wiring Diagram

BOTTOM VIEW

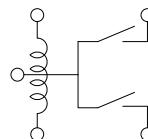
1C



1A

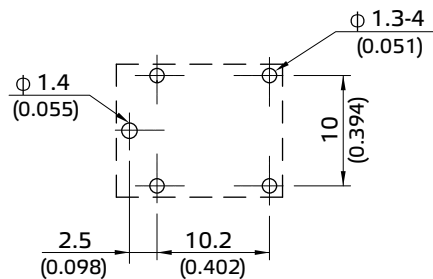


2A

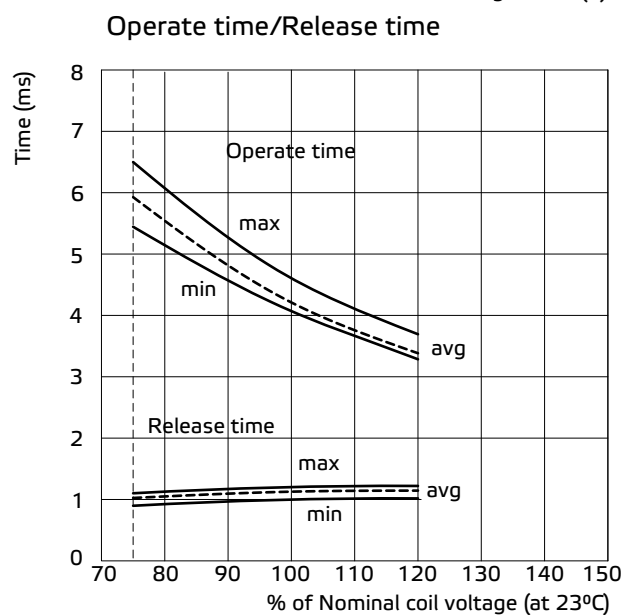
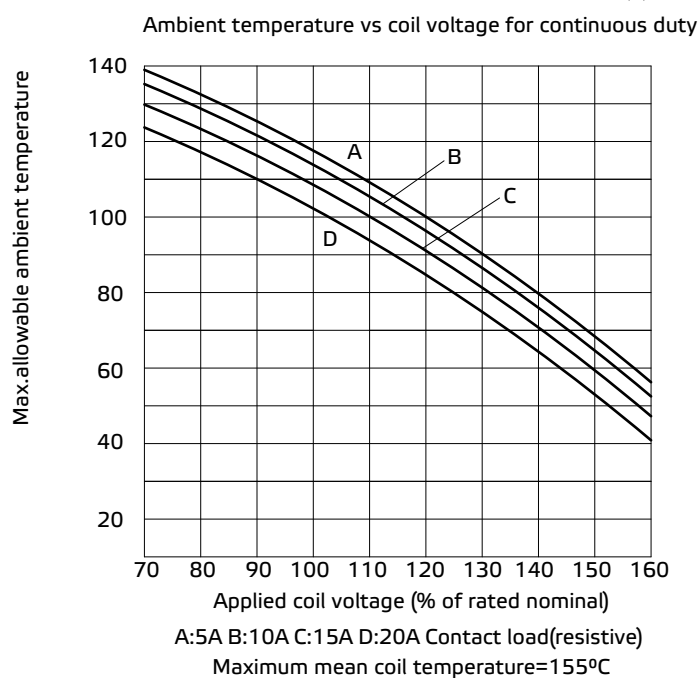
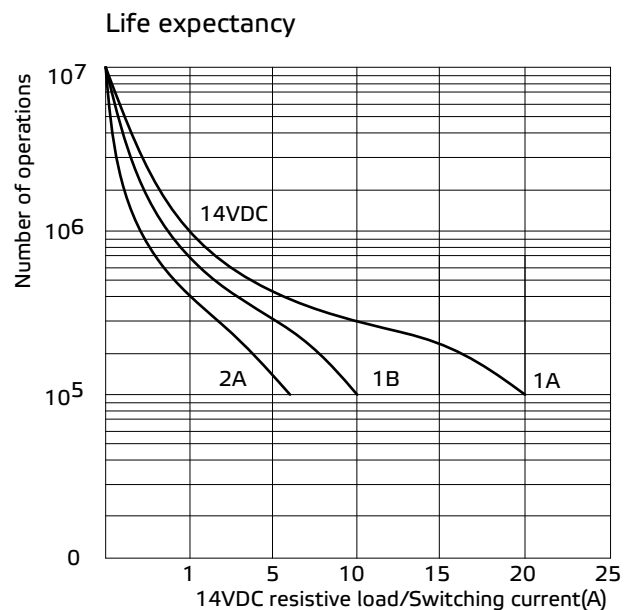


»» PC Board Layout

BOTTOM VIEW



»» Engineering Data





303



»» Features

- Ultra Micro ISO Automotive relay.
- High Rating up to 20A.
- High Temperature withstand up to 125°C ambient.
- General Purpose for Automotive applications.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	-----	303-1AH-C	303-1AH-S
		Resistor	303-1AH-C-R1	303-1AH-S-R1
		Diode	303-1AH-C-D1	303-1AH-S-D1

»» Ordering Information

303 - 1A H - C - R1
 1 2 3 4 5

1. 303 -- Basic series designation

2. 1A -- Single pole normally open

3. H -- Contact material AgSnO

4. C -- Flux tight

 S -- Sealed type washable

5. Blank -- Standard type

R1 -- Coil parallel with 1/2W resistor for 12V 1.1K Ω , 24V 4.3K Ω

D1 -- Coil parallel with diode IN4007 the positive pole on # 85 terminal

»» Contact Rating

Resistive	20A 14VDC, 10A 28VDC, 100K ops.
Motor	16A 14VDC Inrush 80A; ON 2s / OFF 5s, -30~+80°C, 300K ops.
Lamp	16A 14VDC Inrush 80A; ON 3s / OFF 3s, -30~+100°C, 100K ops.

»» Coil Rating (DC)

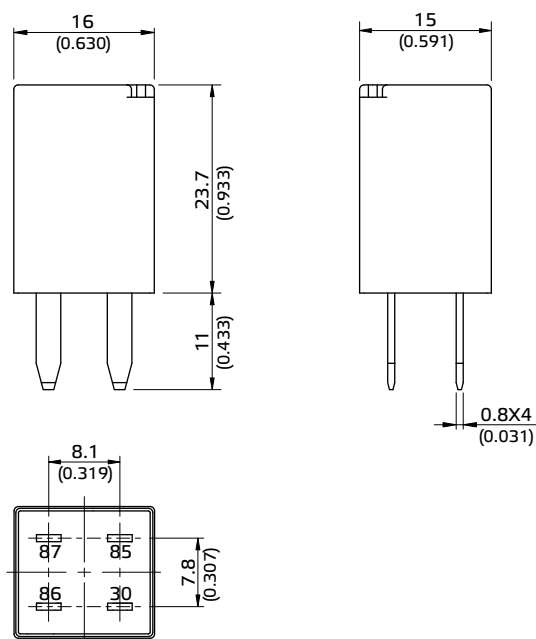
Rated Voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max continuous voltage at 85°C	Pick up voltage(Max) 23°C	Drop out voltage(Min) 23°C	Power consumption at rated voltage
12	80	150	133% of rated voltage	60% of rated voltage	8% of rated voltage	approx. 0.96W
24	40	600				

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	10 ms Max.	
Release time ⁽¹⁾	10 ms Max.	
Insulation resistance ⁽¹⁾	20 MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V, 50/60Hz 1 min.
	Between contact and coil	: AC 500V, 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~500Hz , 5.0G
	Damage limits	10~500Hz , 5.0G
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
Operating ambient temperature	-40 ~ +125°C (no freezing)	
Weight	Approx. 20 g	

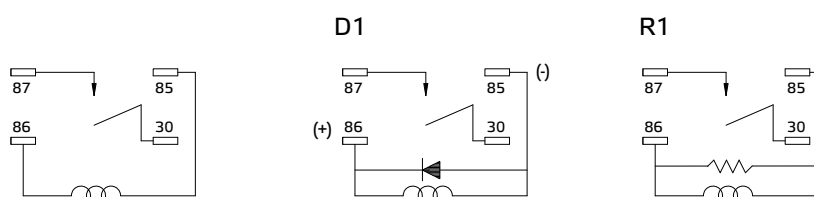
Note : (1) initial value

»» Outline Dimensions



»» Wiring Diagram

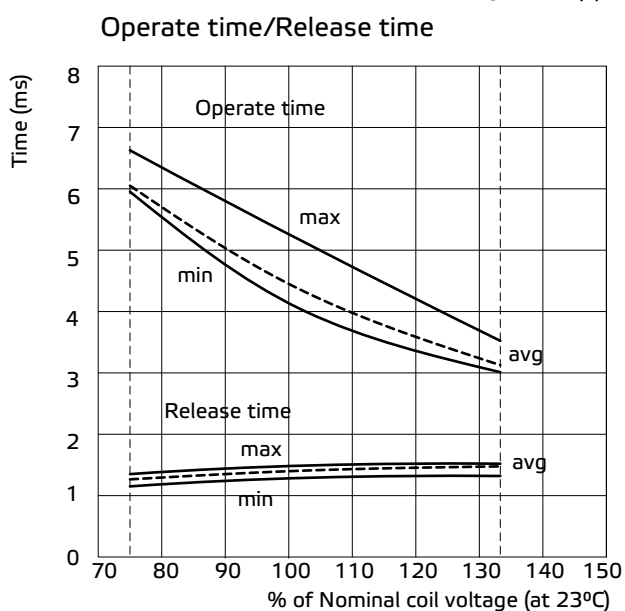
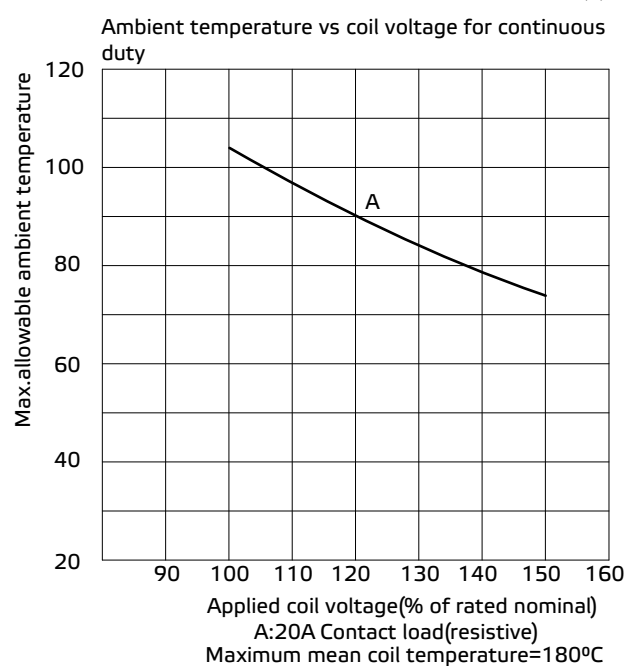
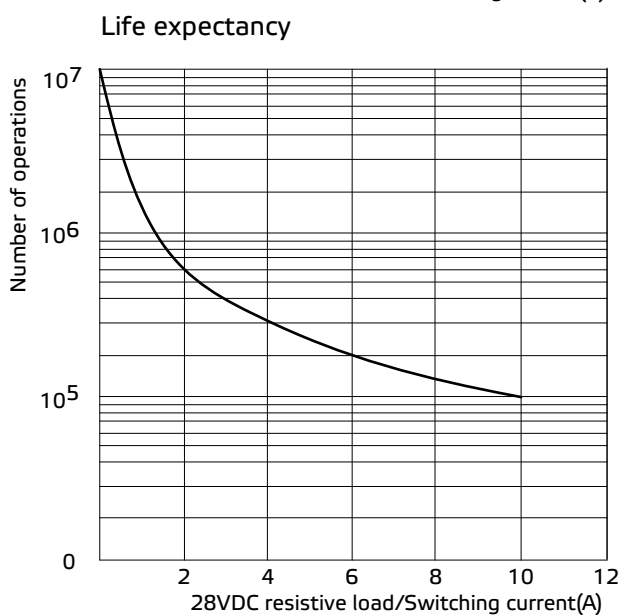
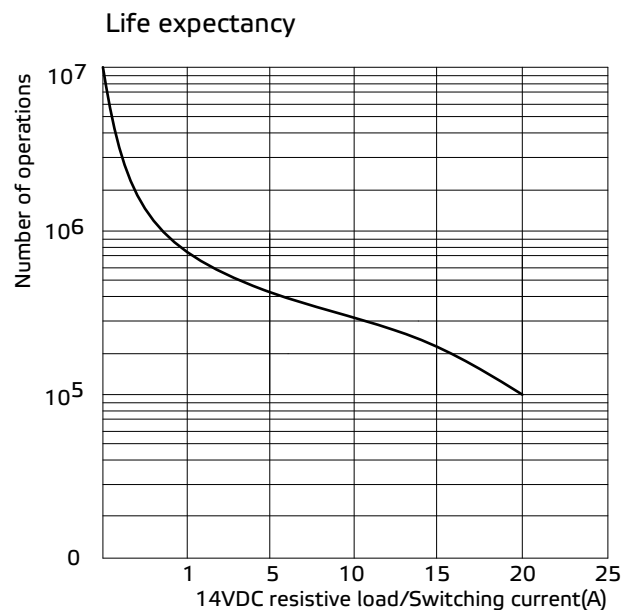
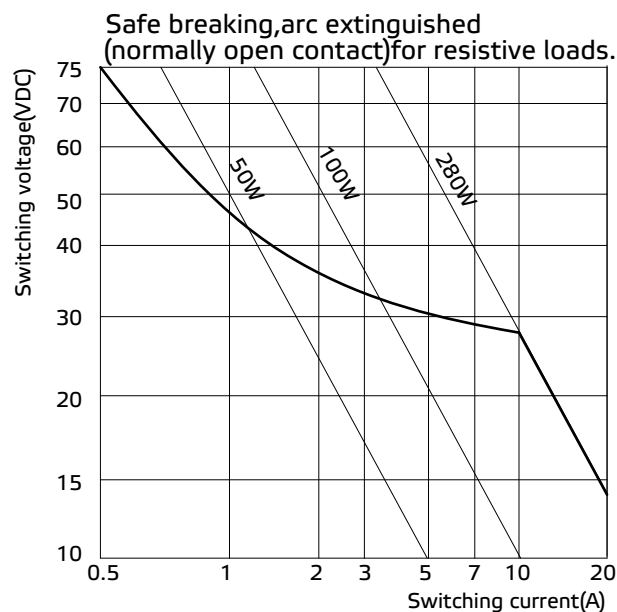
BOTTOM VIEW





303

»» Engineering Data





»» Features

- Low profile Micro ISO Automotive relay.
- Optional to be equipped with diode or resistor.
- High Rating up to 25A
- High temperature withstand up to 105°C
- Both available PCB terminal and quick connect terminal
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.
- Sockets on request

»» Type List

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Dust Cover	Flux tight
Micro ISO Footprint	1A (SPNO)	-----	108-1AH-D	108-1AH-C
		Resistor	108-1AH-D-R1	108-1AH-C-R1
		Diode	108-1AH-D-D1	108-1AH-C-D1

»» Ordering Information

108 - 1A H - D - R1
1 2 3 4 5

- | | | | |
|--------|------------------------------|----------|---|
| 1. 108 | -- Basic series designation | 5. Blank | -- Standard type |
| 2. 1A | -- Single pole normally open | R1 | -- Coil parallel with 1/2W resistor for 12V 1.1KΩ |
| 3. H | -- Contact material AgSnO | D1 | -- Coil parallel with diode 1N4007 the positive pole on #1 terminal |
| 4. D | -- Dust cover | | |
| C | -- Flux tight | | |

»» Contact Rating

Resistive	NO : 25A 14VDC, 100K ops.
-----------	---------------------------

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 80°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	66	180	16V	8.0	0.6V	approx. 0.8W

Note : (1) With 20A contact current

»» Specification

Contact material	AgSnO alloy
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A
Operate time ⁽¹⁾	10 ms MAX
Release time ⁽¹⁾	10 ms MAX
Insulation resistance ⁽¹⁾	20 MΩ Min. (DC 500V)

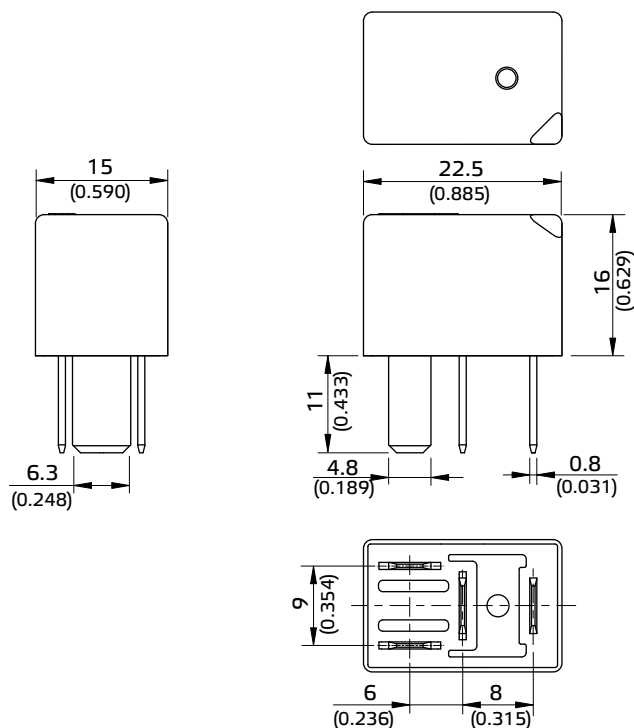


108

Dielectric strength ⁽¹⁾	Between open contact	: AC 500V, 50/60Hz 1 min.
	Between contact and coil	: AC 500V, 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~500Hz , 5.0G
	Damage limit	10~500Hz , 5.0G
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	1,000,000 operations (frequency 18,000 operations/hr)
Temperature range	Operating	-40 ~ +105°C (no freezing)
Weight	Approx. 15 g	

Note : (1) initial value

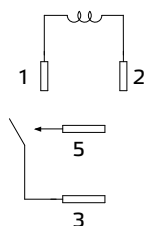
»» Outline Dimensions



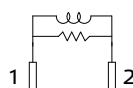
»» Wiring Diagram

BOTTOM VIEW

1A

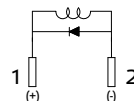


R1



PROVIDED WITH
RESISTOR

D1



PROVIDED WITH
DIODE



»» Features

- New generation of heavy duty PCB automotive relay.
- Design for multiple function applications with THT terminals and smallest mounting space
- Most current relay can be replaced by 1 relay for Relay box / USM / PDM /Smart Junction box, etc.
- Contact rating 30A 14VDC
- High temperature endurance up to 105°C
- Mounting space less than micro ISO relay.
- Comply with RoHS-Directive 2002/95/EC and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Enclosure style	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	905-1AH-C	905-1AH-S
		905-1AC-C	905-1AC-S
	1C (SPDT)	905-1CH-C	905-1CH-S
		905-1CC-C	905-1CC-S

»» Ordering Information

905 - 1A C - S
1 2 3 4

1. 905 -- Basic series designation

2. 1A -- Single pole normally open

1C -- Single pole double throw

3. C -- Contact material AgNi

H -- Contact material AgSnO

4. C -- Flux tight

S -- Sealed type washable

»» Contact Rating

Resistive load	NO: 30A 14VDC, 100K ops. NC: 20A 14VDC, 100K ops.
Motor load	Cooling fan : 230W / 14VDC, 200K ops.
Lamp load	Head lamp : 120W / 14VDC, 200K ops.
Max. carry current	100A/5sec (25 °C nominal voltage) 60A/10sec (85°C nominal voltage) 40.5A/30min (85°C nominal voltage)

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 105°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	60	200	14 V	7.2V	0.6V	approx. 0.72W

Note : (1) Continuous contact current at 25A.



905

» Specification

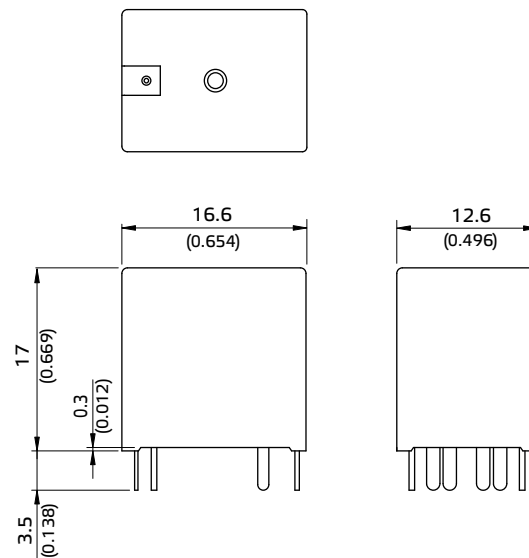
Contact material	AgSnO alloy ⁽²⁾	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	100MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V, 50/60Hz 1 min.
	Between contact and coil	: AC 500V, 50/60Hz 1 min.
Vibration resistance	Operating extremes	10 ~ 55Hz , amplitude 1.5 mm
	Damage limits	10 ~ 55Hz , amplitude 1.5 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
Temperature range	Storage	-40~+125°C (no freezing)
	Operating	-40~+105°C (no freezing) ⁽³⁾
Weight	Approx. 8.6 g	

Note : (1) Initial value

(2) Contact material of AgNi is also available, for the details please contact Song Chuan.

(3) Ambient temperature of -40~+125° C is also available, for the details please contact Song Chuan.

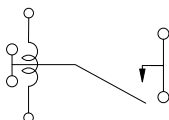
» Outline Dimensions



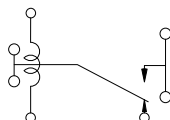
» Wiring Diagram

BOTTOM VIEW

1A

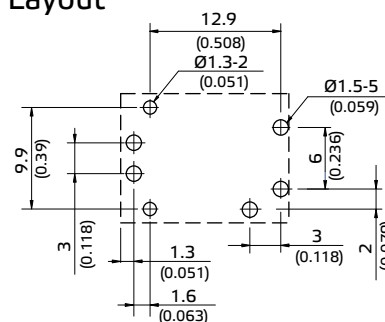


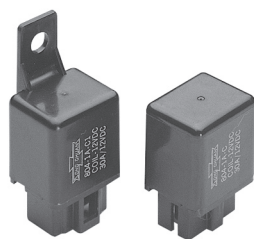
1C



» PC Board Layout

BOTTOM VIEW





»» Features

- Special design of automotive relays 30A/14VDC for Japanese car model.
- Optional to be equipped with diode or resistor.
- Plain cover or flange cover version both available.
- General purpose for air conditioning control, halogen head lamp control, horn control, fog lamp control, etc.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Coil parallel with	Designation (provided with)		
			Dust cover	Sealed type	Mounting ears
Socket terminal	1A (SPNO)	Blank	804-1A-C	804-1A-S	804-1A-C1
		Resistor	804-1A-C-R1	804-1A-S-R1	804-1A-C1-R1
		Resistor	804-1A-C-R2	804-1A-S-R2	804-1A-C1-R2

»» Ordering Information

804 - 1A - C - R1
1 2 3 4

1. 804 -- Basic series designation
2. 1A -- Single pole normally open
3. C -- Dust cover
C1 -- Mounting ears on cover
S -- Sealed type washable
4. Blank -- Standard type
R1 -- Coil parallel with 1/2W resistor for 12V 680Ω, 24V 2700Ω
R2 -- Coil parallel with 1/2W resistor for 12V 820Ω, 24V 3200Ω
D1 -- Coil parallel with diode IN4007

»» Contact Rating

Resistive load	30A 12VDC ; 15A 24VDC
----------------	-----------------------

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	120	100	120 % of rated voltage	65 % of rated voltage	10 % of rated voltage	approx. 1.4W
24	60	400		70 % of rated voltage		

Note:(1)Continuous contact current at 10A.



804

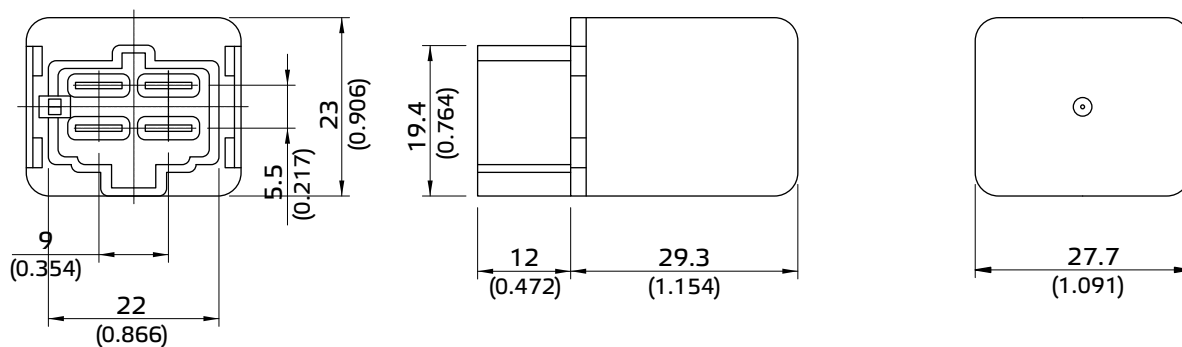
»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	50MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact : AC 500V , 50/60Hz 1 min.	
	Between contact and coil : AC 500V , 50/60Hz 1 min.	
Vibration resistance	10~55Hz , amplitude 2.0mm	
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	5,000,000 operations Min. (frequency 18,000 operations/hr)
	Electrical	100,000 operations Min. (frequency 1,200 operations/hr)
Operating temperature	-30 ~ +85° C (no freezing)	
Weight	Approx. 35 g	

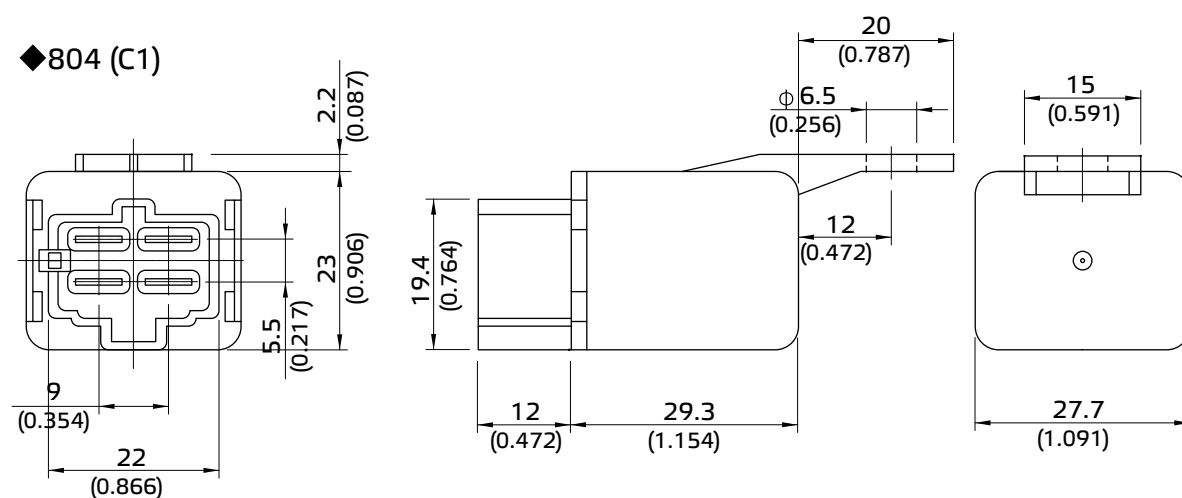
Note:(1)Initial value

»» Outline Dimensions

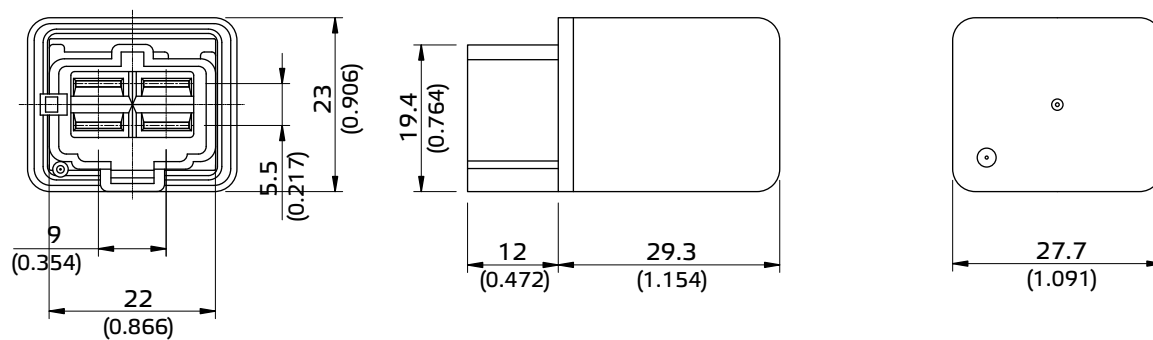
◆804 (C)



◆804 (C1)



◆804 (S)



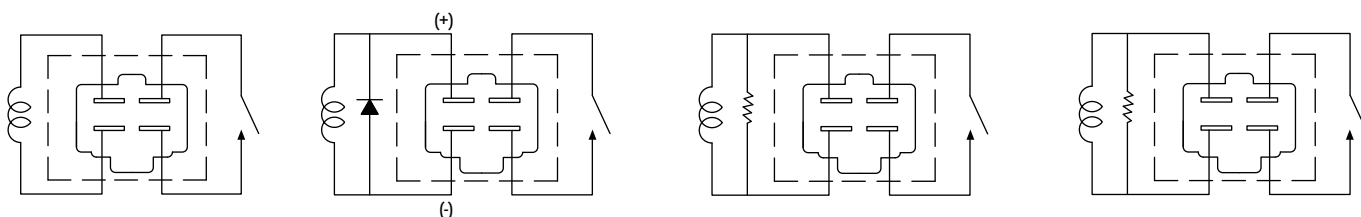
»» Wiring Diagram

BOTTOM VIEW

D1

R1

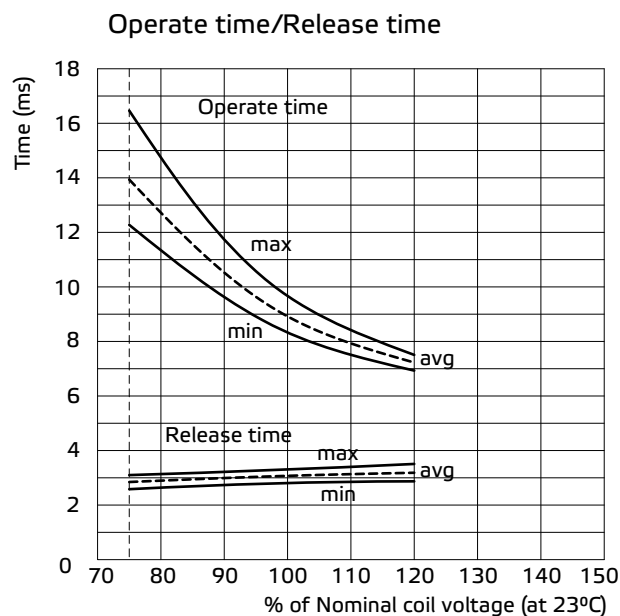
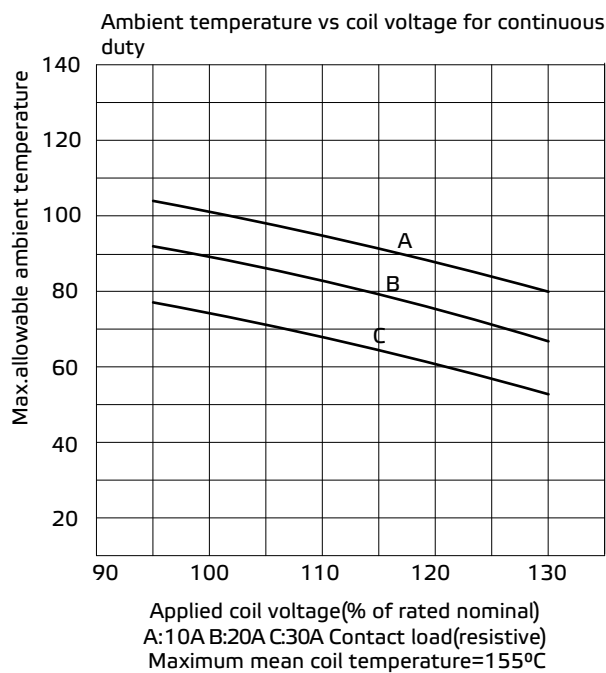
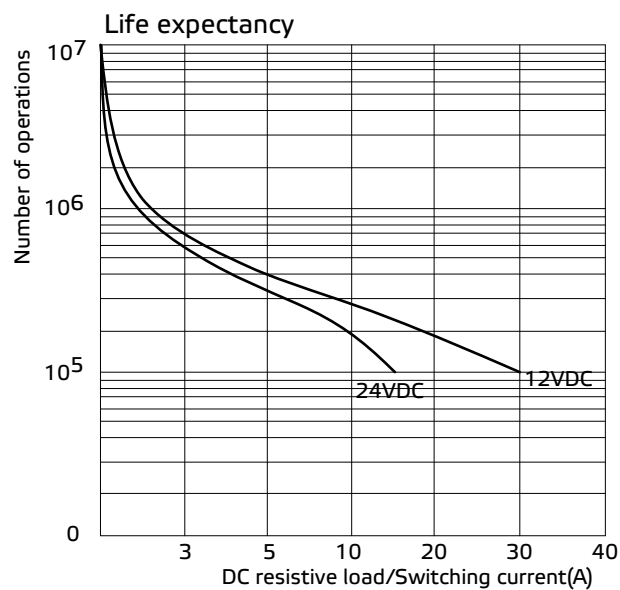
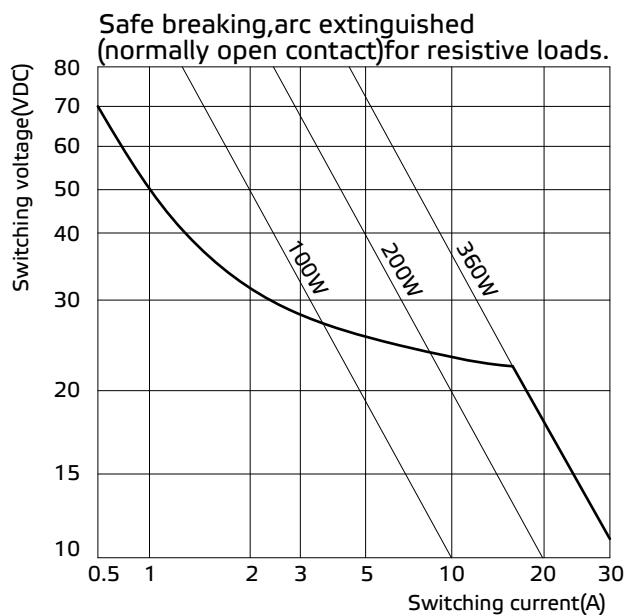
R2





804

»» Engineering Data



832AM



»» Features

- Heavy duty 20/30A automotive PCB Relay.
- High dielectric strength up to 4000Vrms.
- SPNO, SPDT contact configurations.
- Dust cover, flux-free and sealed type.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation	
		Flux tight	Sealed type washable
PCB terminal	1A (SPNO)	832AM-1A-C	832AM-1A-S
	1C (SPDT)	832AM-1C-C	832AM-1C-S

»» Ordering Information

832 A M - 1C - C
1 2 3 4 5

- | | | | |
|--------|---|-------|------------------------------|
| 1. 832 | -- Basic series designation | 4. 1A | -- Single pole normally open |
| 2. A | -- Different type (provided with 1 common terminal) | 1C | -- Single pole double throw |
| 3. M | -- Automotive relay | 5. C | -- Flux tight |
| | | S | -- Sealed type washable |

»» Contact Rating

Load type	1A	1C	
		NO	NC
Resistive load	30A14VDC	20A 14VDC	10A 14VDC

»» Coil Rating (DC)

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up Voltage (Max) at 23°C	Drop out Voltage (Min) at 23°C	Power consumption at rated voltage
9	93	97	120 % of rated voltage	75 % of rated voltage	10 % of rated voltage	approx. 0.93W
12	77	155		rated voltage	rated voltage	
24	36	660		rated voltage	rated voltage	

Note:(1)Continuous contact current at 10A.



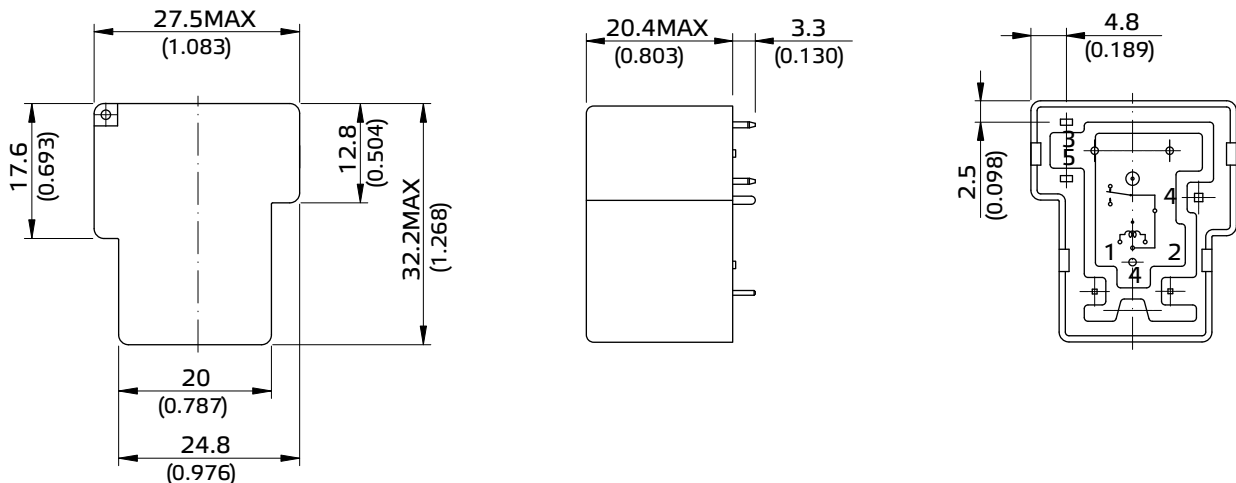
832AM

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Operate time ⁽¹⁾	15ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	100MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: 500Vrms 50/60Hz 1min.
	Between contact and coil	: 500Vrms 50/60Hz 1min.
Vibration resistance	Operating extremes	10~55Hz , amplitude 1.5 mm
	Damage limits	10~55Hz , amplitude 1.5 mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Operating ambient temperature	-55~+85°C (no freezing)	
Weight	Approx. 27g	

Note:(1)Initial value

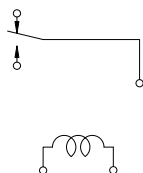
»» Outline Dimensions



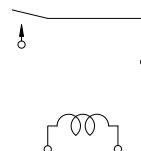
»» Wiring Diagram

BOTTOM VIEW

1C

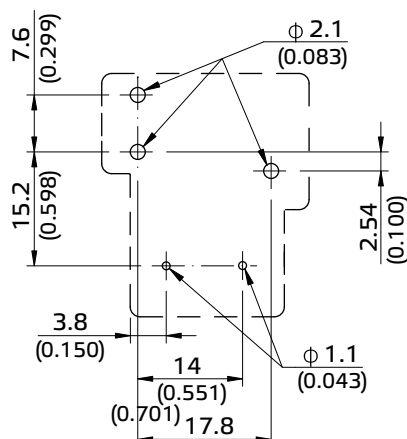


1A

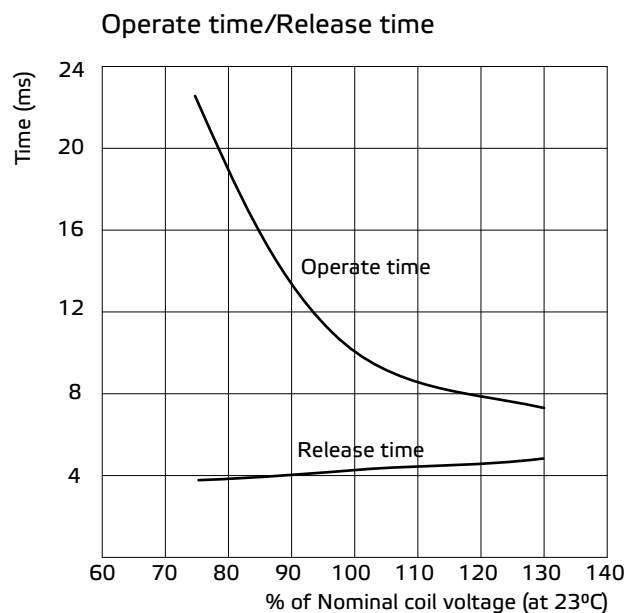
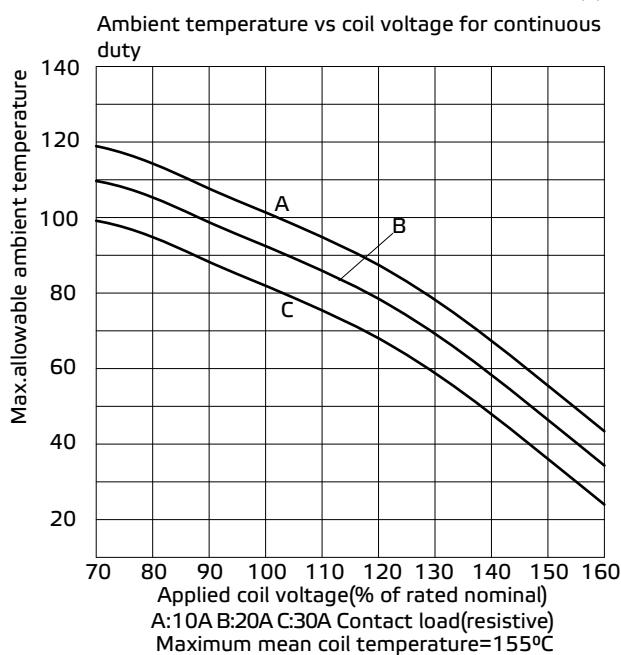
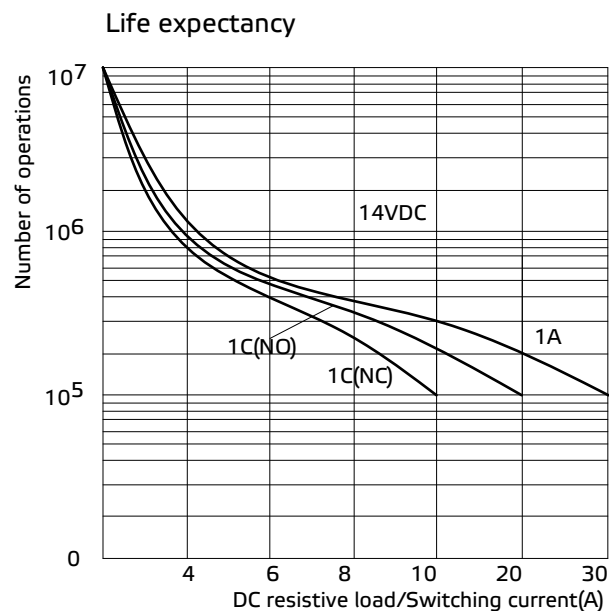
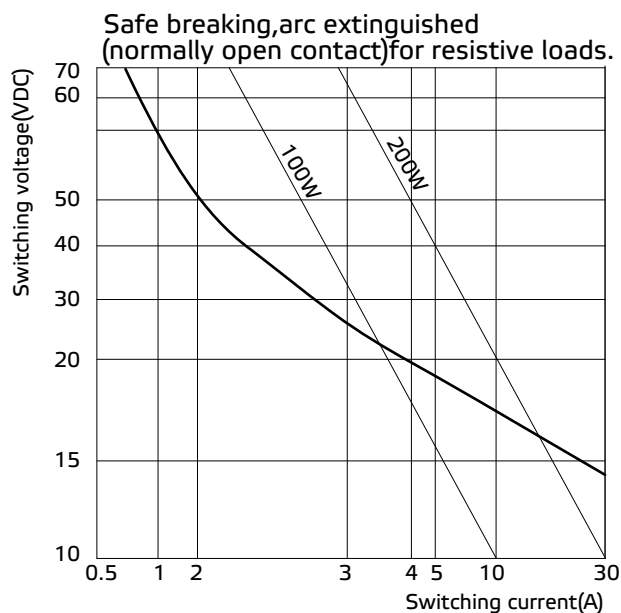


»» PC Board Layout

BOTTOM VIEW

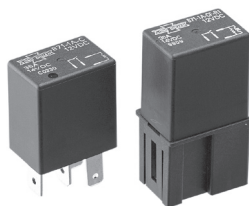


»» Engineering Data





871



»» Features

- High rating Micro ISO automotive relays up to 35A/14VDC.
- SPNO & SPDT of contact configuration.
- Skirted cover and plain cover are both available.
- Optional to be equipped with diode or resistor.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.
- Sockets on request

»» Type List

Terminal style	Contact form	Designation (provided with)	Enclosure style			
			Dust cover	Dust cover /Fixed Base	Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	-----	871-1A-D	871-1A-DF	871-1A-C	871-1A-S
		Resistor	871-1A-D-R1	871-1A-DF-R1	871-1A-C-R1	871-1A-S-R1
		Diode	871-1A-D-D1	871-1A-DF-D1	871-1A-C-D1	871-1A-S-D1
	1C (SPDT)	-----	871-1C-D	871-1C-DF	871-1C-C	871-1C-S
		Resistor	871-1C-D-R1	871-1C-DF-R1	871-1C-C-R1	871-1C-S-R1
		Diode	871-1C-D-D1	871-1C-DF-D1	871-1C-C-D1	871-1C-S-D1

»» Ordering Information

871 - 1A - C - R1
1 2 3 4

- 871 -- Basic series designation
- 1A -- Single pole normally open
1C -- Single pole double throw
- D -- Dust cover
DF -- Dust cover / base holder type available
C -- Flux tight
S -- Sealed type washable
- Blank -- Standard type
R1 -- Coil parallel with 1/2W resistor for 6V 18Ω, 12V 68Ω, 24V 270Ω
D1 -- Coil parallel with diode IN4007 the positive pole on # 85 terminal

»» Contact Rating

Resistive load	1A	1C
	35A 14VDC 15A 28VDC	NO: 35A 14VDC , 15A28VDC NC: 20A 14VDC , 10A28VDC

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
6	187.5	32	133% of rated voltage	60% of rated voltage	10% of rated voltage	approx. 1.2W
12	97.5	123				
24	49.6	483				

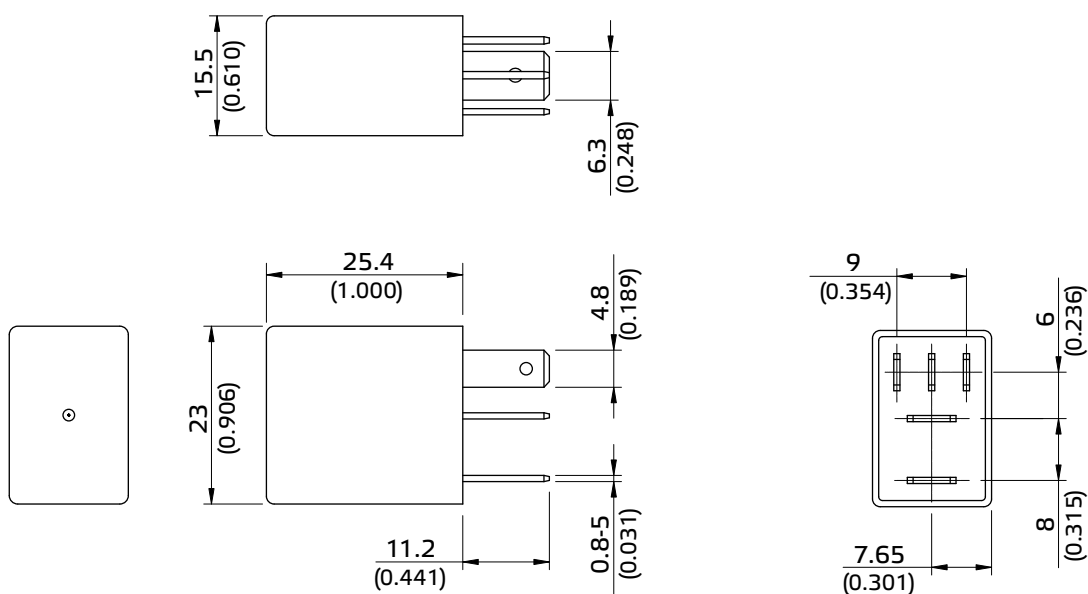
» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 40mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	20MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~500Hz , 5.0G
	Damage limits	10~500Hz , 5.0G
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,800 operations/hr)
Temperature range	Operating	-40~125°C (no freezing)
Weight	Approx. 20 g	

Note:(1)Initial value

» Outline Dimensions

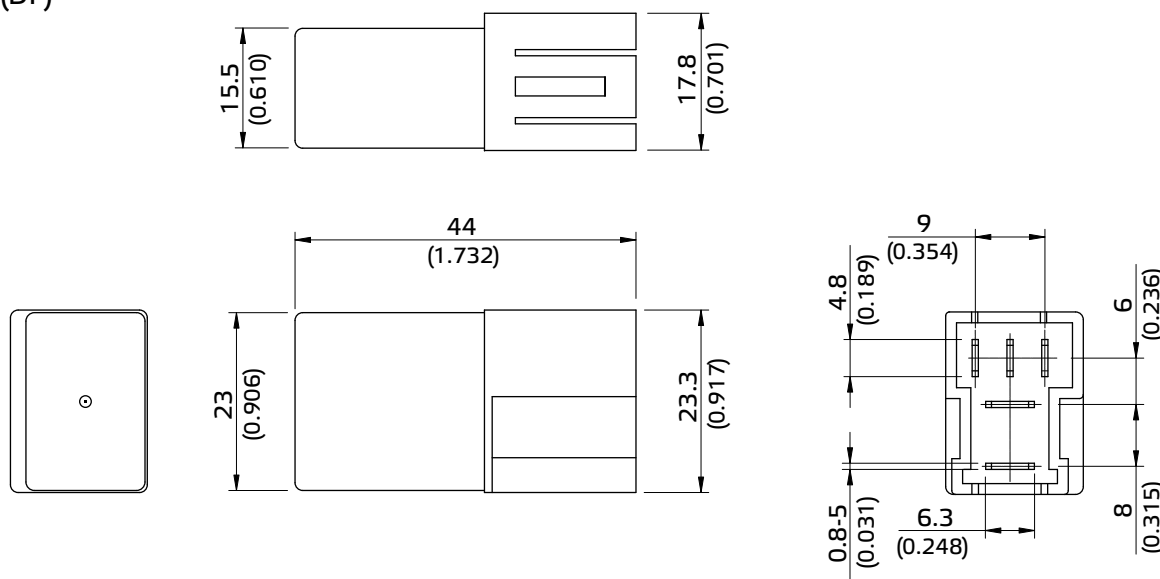
◆871 (C,D)



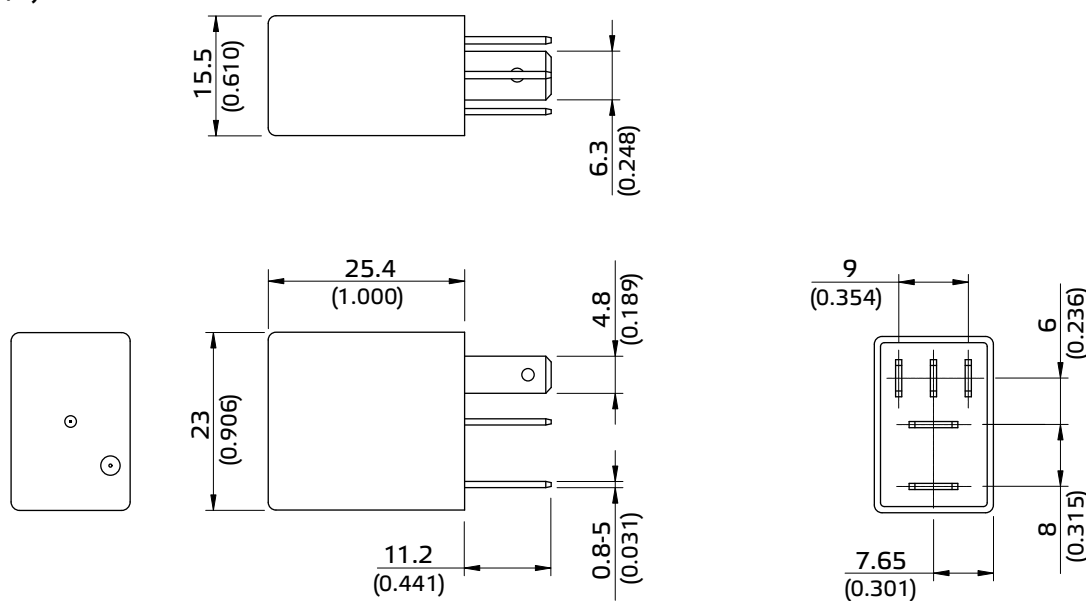


871

◆871 (DF)



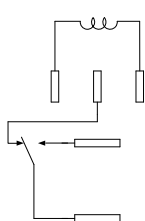
◆871 (S,V)



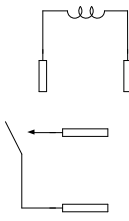
»» Wiring Diagram

BOTTOM VIEW

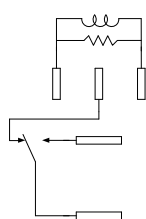
1C



1A

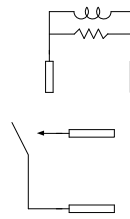


1C



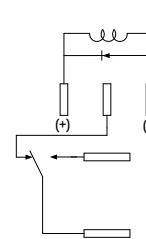
PROVIDED WITH
RESISTOR

1A



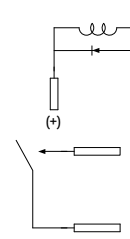
PROVIDED WITH
RESISTOR

1C



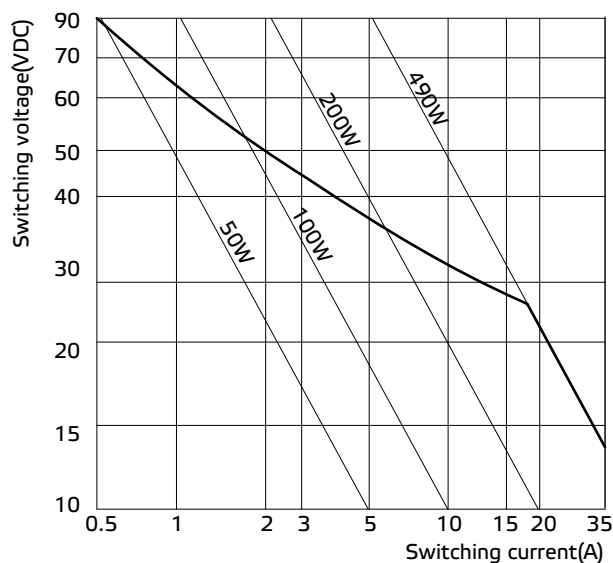
PROVIDED WITH
DIODE

1A

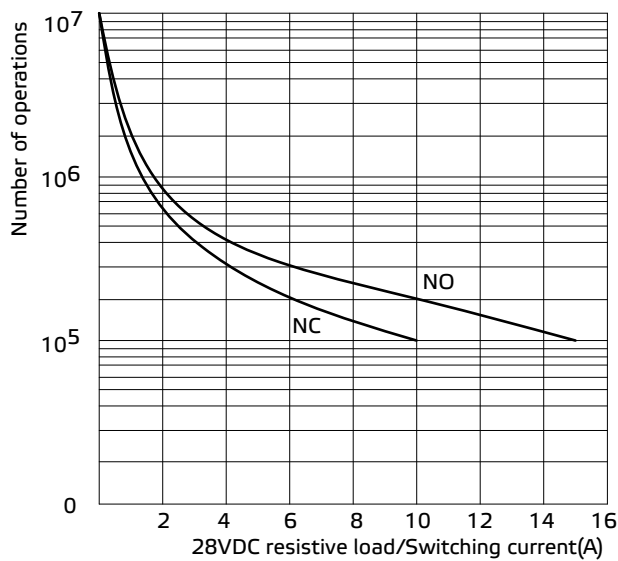


PROVIDED WITH
DIODE

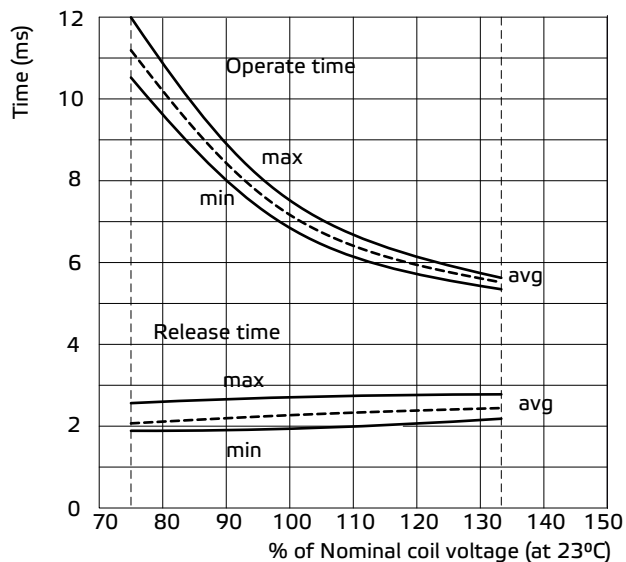
»» Engineering Data



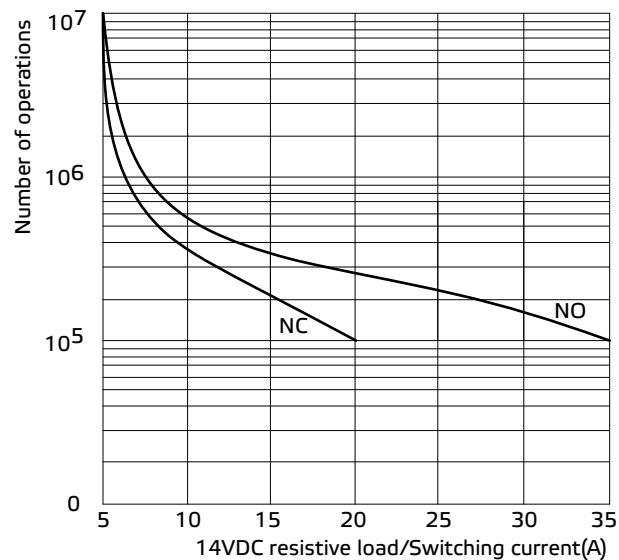
Life expectancy



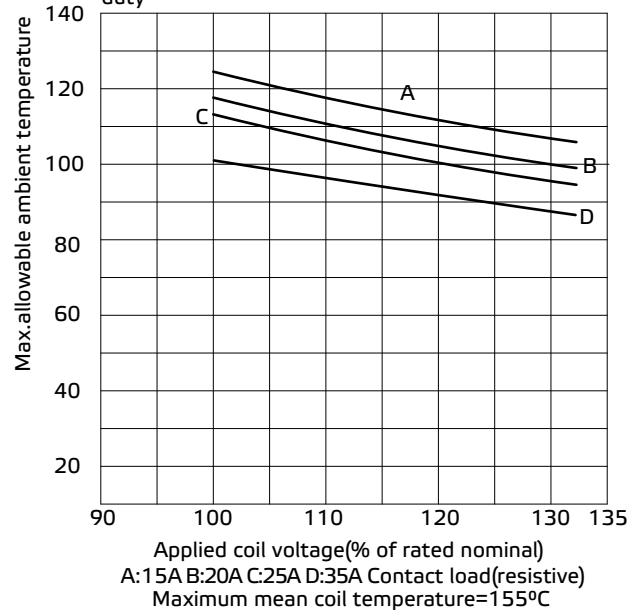
Operate time/Release time



Life expectancy



Ambient temperature vs coil voltage for continuous duty



Applied coil voltage (% of rated nominal)
 A:15A B:20A C:25A D:35A Contact load(resistive)
 Maximum mean coil temperature=155°C



301



»» Features

- ISO 280 footprint automotive relay.
- High rating up to 35A at 125°C
- Optional to be equipped with diode or resistor.
- General purpose applications for automotive in power control box.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	Enclosure style		
			Dust cover	Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	-----	301-1A-D	301-1A-C	301-1A-S
		Resistor	301-1A-D-R1	301-1A-C-R1	301-1A-S-R1
		Diode	301-1A-D-D1	301-1A-C-D1	301-1A-S-D1
	1C (SPDT)	-----	301-1C-D	301-1C-C	301-1C-S
		Resistor	301-1C-D-R1	301-1C-C-R1	301-1C-S-R1
		Diode	301-1C-D-D1	301-1C-C-D1	301-1C-S-D1

»» Ordering Information

301 - 1A - D - R1
1 2 3 4

- 301 -- Basic series designation
- 1A -- Single pole normally open
1C -- Single pole double throw
- D -- Dust cover

- C -- Flux tight
S -- Sealed type washable

- Blank-- Standard type
R1 -- Coil parallel with 1/2W resistor for 6V 180Ω, 12V 680Ω, 24V 2700Ω
D1 -- Coil parallel with diode IN4007 the positive pole on # 85 terminal

»» Contact Rating

Resistive load	1A	1C
	35A 14VDC 15A 28VDC	NO: 35A 14VDC, 15A 28VDC NC: 20A 14VDC, 10A 28VDC

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
6	187.5	32	133 % of rated voltage	60 % of rated voltage	10 % of rated voltage	approx. 1.2W
12	97.5	123		rated voltage	rated voltage	
24	49.6	483		rated voltage	rated voltage	

»» Specification

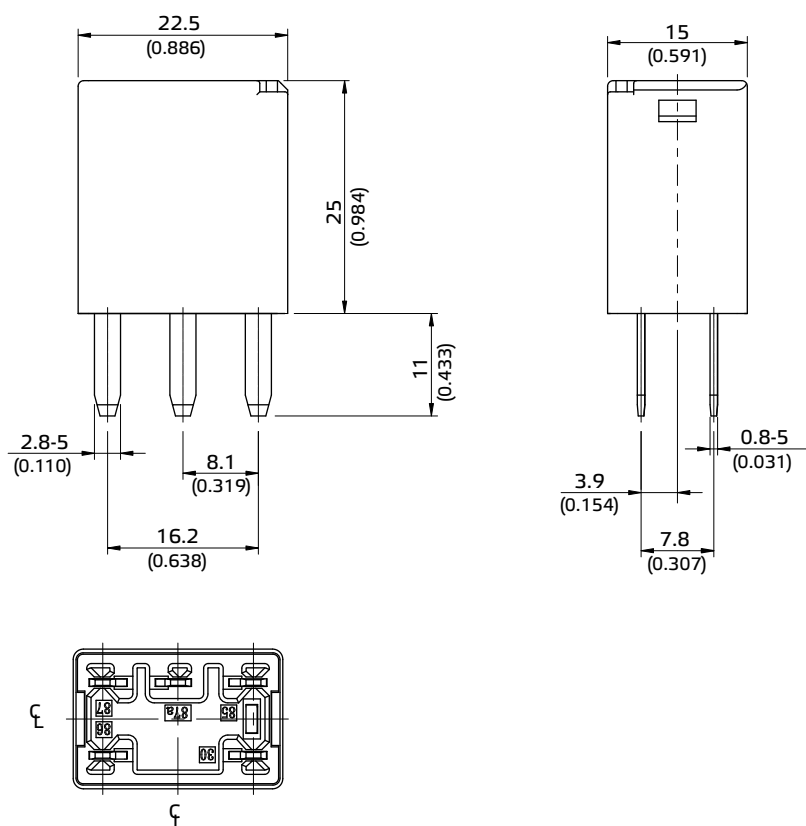
Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 40mV at 10A	
Operate time ⁽¹⁾	10ms Max.	
Release time ⁽¹⁾	10ms Max.	
Insulation resistance ⁽¹⁾	20MΩ Min. (DC 500V)	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10 ~ 500Hz , 5.0G
	Damage limits	10 ~ 500Hz , 5.0G
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,800 operations/hr)
Temperature range	Storage	-40~+155°C (no freezing)
	Operating	-40~+125°C (no freezing)
Weight	Approx. 20 g	

Note:(1)Initial value



301

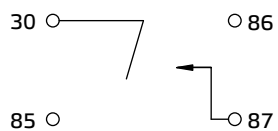
»» Outline Dimensions



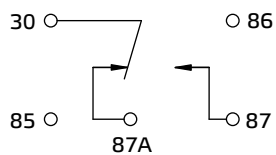
»» Wiring Diagram

BOTTOM VIEW

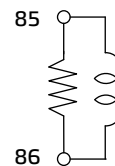
1A



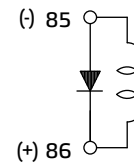
1C



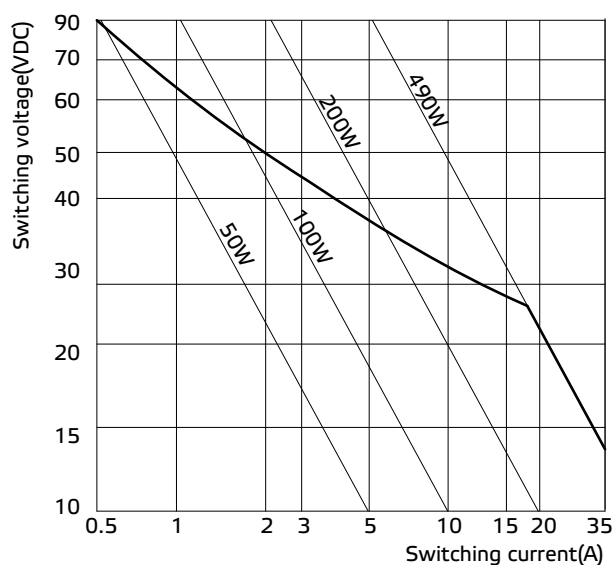
R1



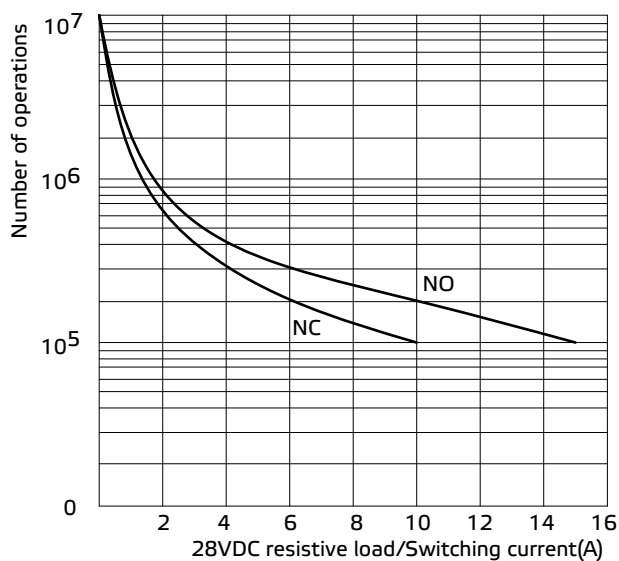
D1



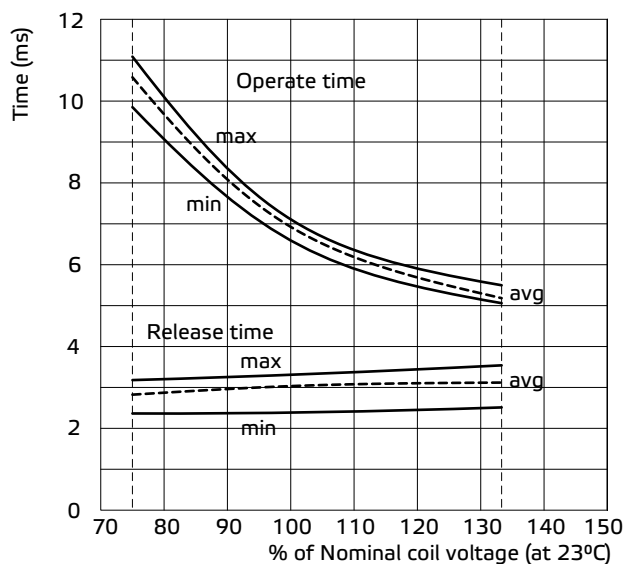
»» Engineering Data



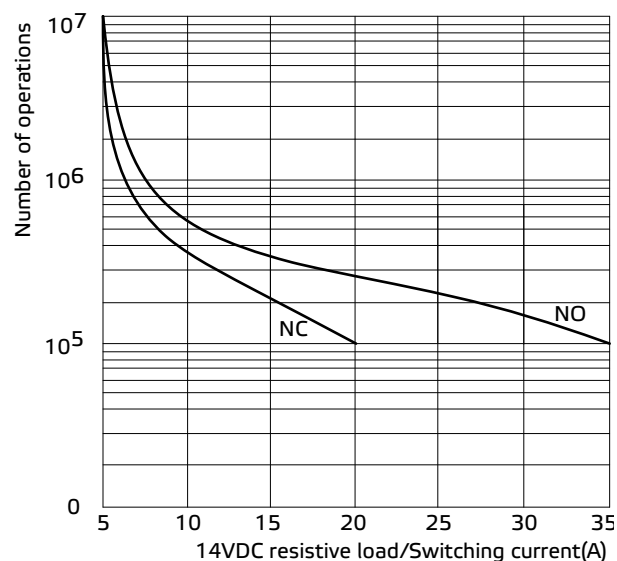
Life expectancy



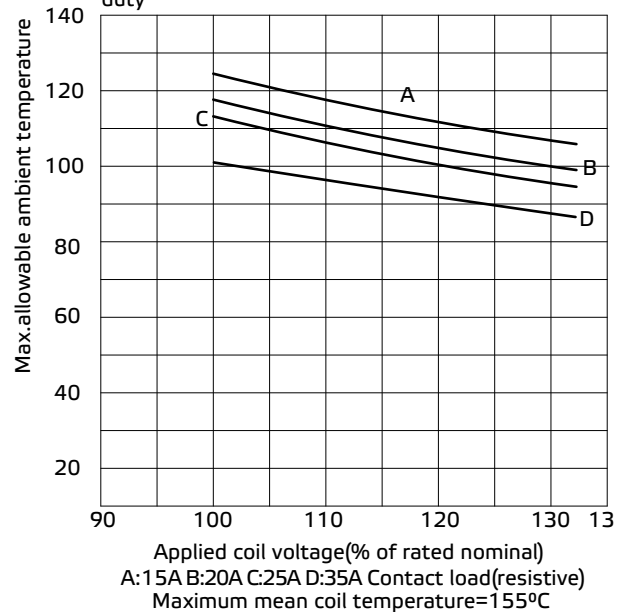
Operate time/Release time



Life expectancy

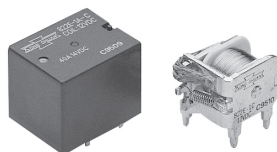


Ambient temperature vs coil voltage for continuous duty





822



»» Features

- High power PCB relay with 40A rating.
- USA & European footprint are both available.
- Open frame, dust cover, flux-free type, and sealed type are available.
- Offering SPNC, SPNO, SPDT of contact configuration
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

◆ Standard type

Terminal style	Contact form	Designation (enclosure)		
		Open type	Flux tight	Sealed type washable
PCB terminal (Footprint for European)	1A (SPNO)	822E-1A	822E-1A-C	822E-1A-S
	1B (SPNC)	822E-1B	822E-1B-C	822E-1B-S
	1C (SPDT)	822E-1C	822E-1C-C	822E-1C-S
PCB terminal (Footprint for USA)	1A (SPNO)	822U-1A	822U-1A-C	822U-1A-S
	1B (SPNC)	822U-1B	822U-1B-C	822U-1B-S
	1C (SPDT)	822U-1C	822U-1C-C	822U-1C-S
PCB terminal (Footprint for USA different terminal)	1A (SPNO)	-----	822UA-1A-C	822UA-1A-S
	1B (SPNC)		822UA-1B-C	822UA-1B-S
	1C (SPDT)		822UA-1C-C	822UA-1C-S

◆ High sensitivity type

PCB terminal (Footprint for European)	1A (SPNO)	822EN-1A	822EN-1A-C	822EN-1A-S
	1B (SPNC)	822EN-1B	822EN-1B-C	822EN-1B-S
	1C (SPDT)	822EN-1C	822EN-1C-C	822EN-1C-S
PCB terminal (Footprint for USA)	1A (SPNO)	822UN-1A	822UN-1A-C	822UN-1A-S
	1B (SPNC)	822UN-1B	822UN-1B-C	822UN-1B-S
	1C (SPDT)	822UN-1C	822UN-1C-C	822UN-1C-S
PCB terminal (Footprint for USA different terminal)	1A (SPNO)	-----	822UAN-1A-C	822UAN-1A-S
	1B (SPNC)		822UAN-1B-C	822UAN-1B-S
	1C (SPDT)		822UAN-1C-C	822UAN-1C-S

»» Ordering Information

822 E N - 1C - C
1 2 3 4 5

- | | |
|---------------------------------------|---------------------------------------|
| 1. 822 -- Basic series designation | 4. 1A -- Single pole normally open |
| 2. E -- Europe footprint | 1B -- Single pole normally close |
| U -- USA footprint | 1C -- Single pole double throw |
| UA -- USA different terminal | |
| 3. Blank -- Standard type | 5. Blank -- Open type |
| N -- High sensitivity type | C -- Flux tight |
| | S -- Sealed type washable |

»» Contact Rating

Resistive load	1A	1B	1C
	40A 14VDC	30A 14VDC	NC: 20A 14VDC ; NO: 40A 14VDC

»» Coil Rating (DC)

◆Standard type

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
6	315	19	130 % of rated Voltage	3.3	0.6	approx. 1.6W
9	180	50		5.0	0.9	
12	133	90		6.8	1.2	
24	66	362		13.9	2.4	

Note:(1)Continuous contact current at 20A.

◆High sensitivity type

Rated voltage (V)	Rated current $\pm 10\%$ at 23°C (mA)	Coil resistance $\pm 10\%$ at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
6	200	30	130 % of rated Voltage	75 % of rated Voltage	10 % of rated Voltage	approx. 1.2W
9	133	67.5				
12	100	120				
24	50	480				

Note:(1)Continuous contact current at 20A.

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 40mV at 10A	
Insulation resistance ⁽¹⁾	50M Ω Min. (DC 500V)	
Operate time ⁽¹⁾	5ms Max.	
Release time ⁽¹⁾	4ms Max.	
Dielectric strength ⁽¹⁾	Between open contact : AC 500V , 50/60Hz 1 min.	
	Between contact and coil : AC 500V , 50/60Hz 1 min.	
Vibration resistance	10 ~ 55Hz , amplitude 1.5 mm	
Shock resistance	20G , 11ms , half sine wave pulse	
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Operating ambient temperature	-40~+85°C (no freezing)	
Storage temperature	-40~+130°C	
Weight	Approx. 17.5g	

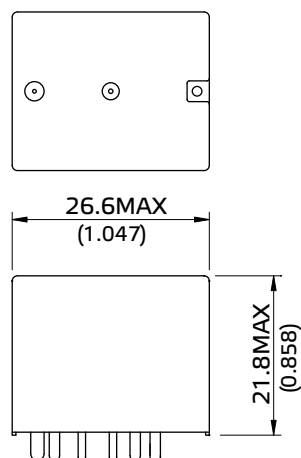
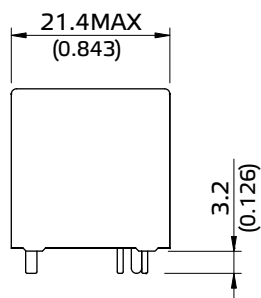
Note: (1) initial value



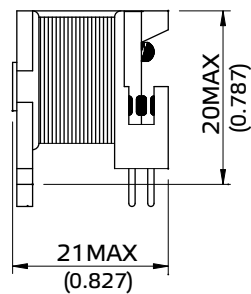
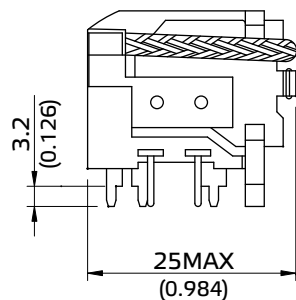
822

»» Outline Dimensions

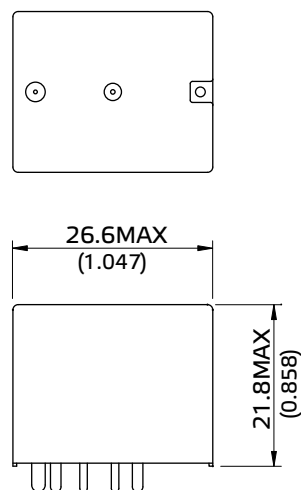
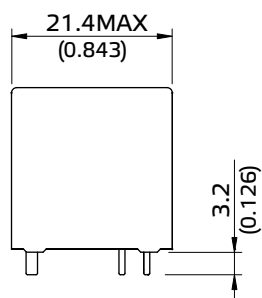
◆ 822E,UA



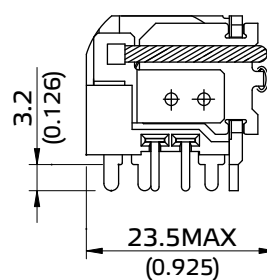
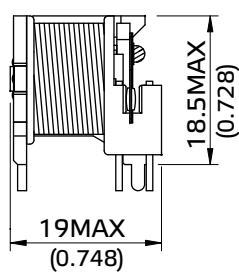
◆ 822E OPEN



◆ 822U



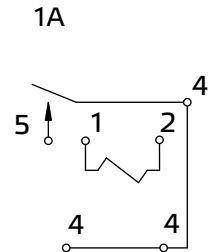
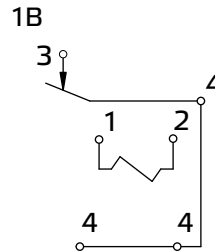
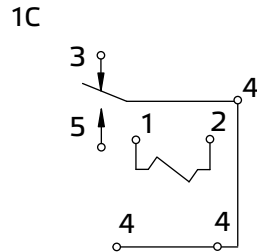
◆ 822U OPEN



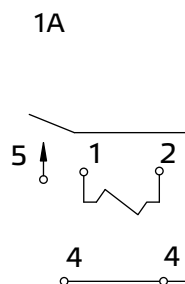
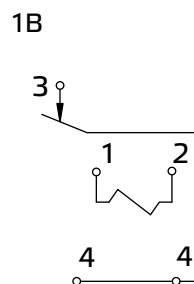
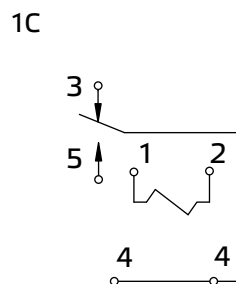
»» Wiring Diagram

BOTTOM VIEW

◆822E,822UA,822U(OPEN)



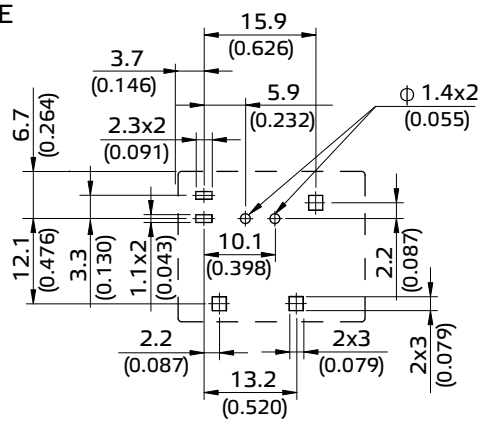
◆822U



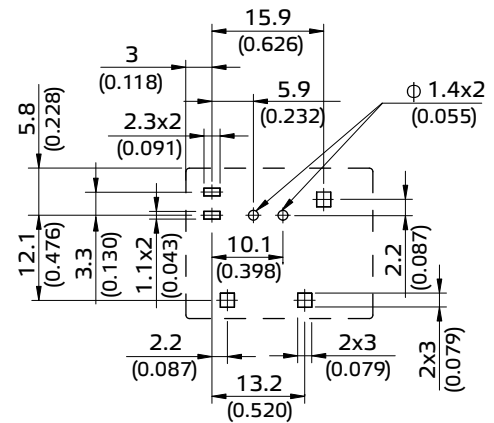
»» PC Board Layout

BOTTOM VIEW

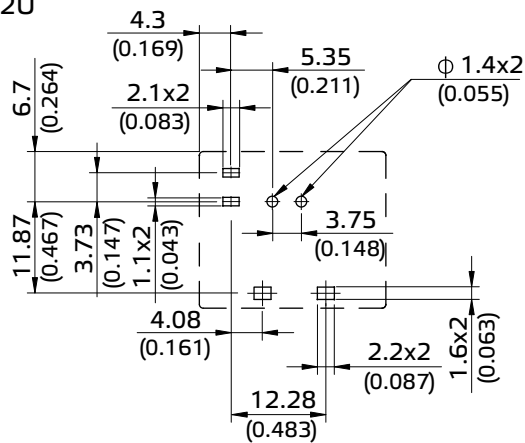
◆822E



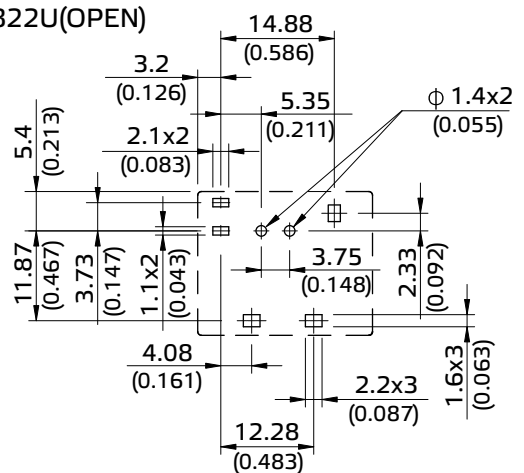
◆822E(OPEN)



◆822U



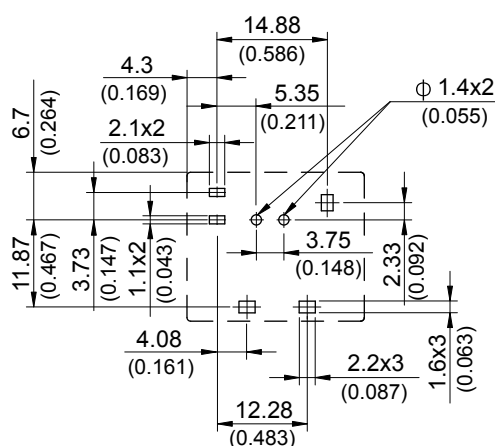
◆822U(OPEN)



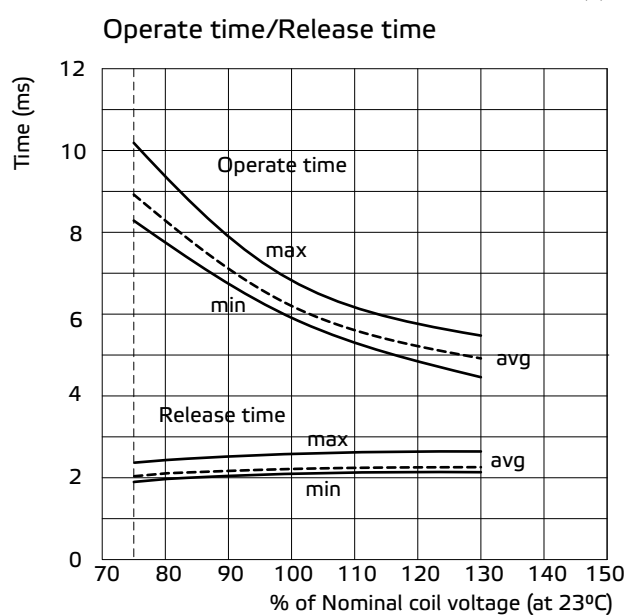
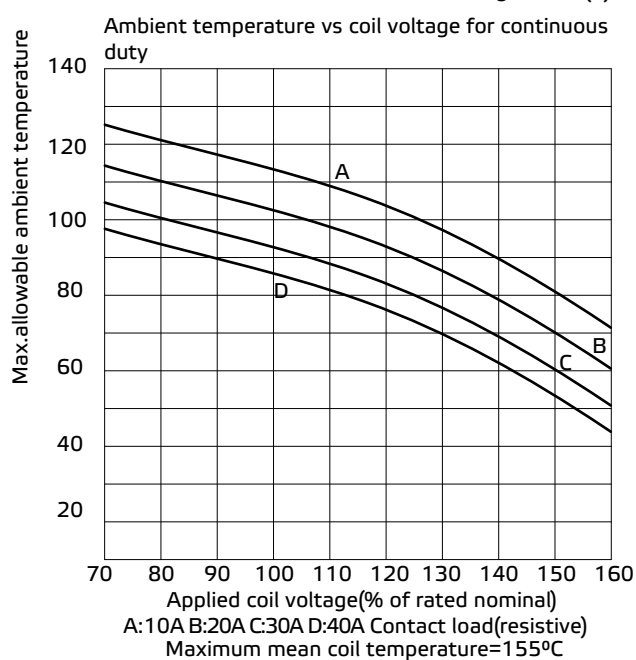
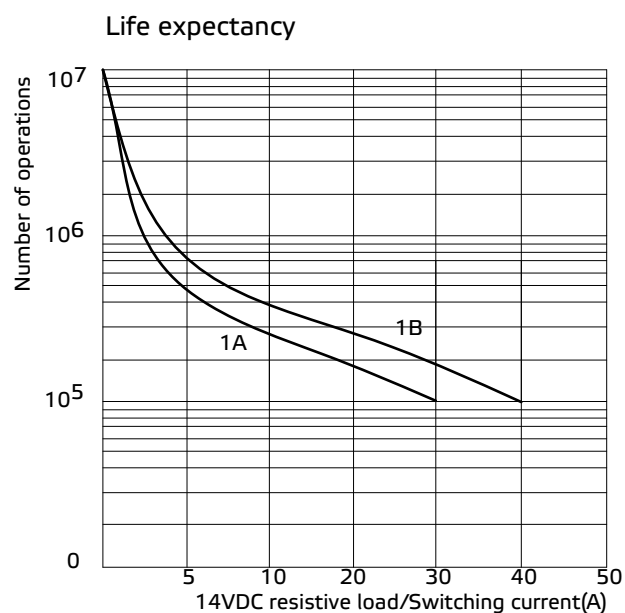
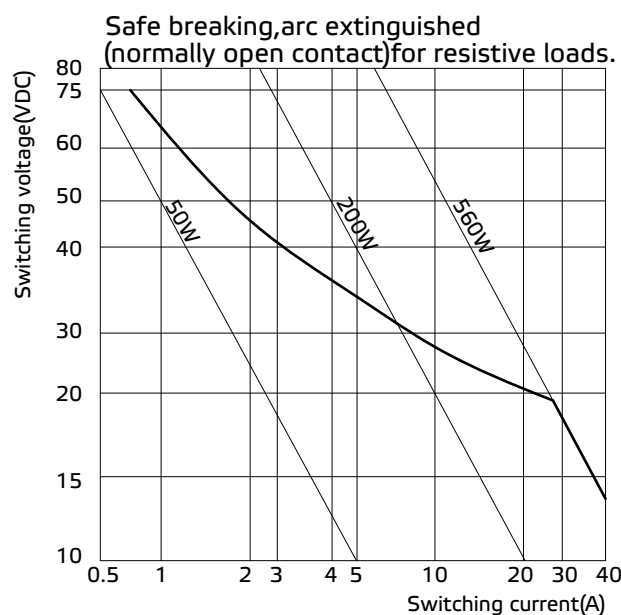


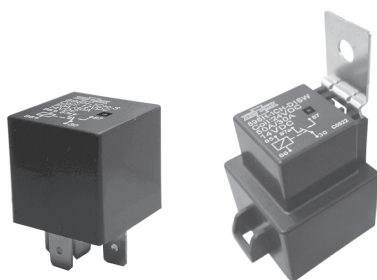
822

◆822UA



» Engineering Data





»» Features

- Mini ISO high power automotive relay 30A/50A.
- High temperature endurance up to 125°C.
- Optional SPNC, SPNO, SPDT, DPNO contact configurations.
- Optional to be equipped with protection diode or resistor.
- Both available PCB terminal and quick connect terminal versions.
- Available for plain cover type, skirted cover flanged cover, and weather proof versions.
- Tinned terminal is available on request.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.
- Sockets on request.

»» Type List

Terminal style	Contact form	Enclosure style		
		Dust cover	Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	896-1AH-D	896-1AH-C	896-1AH-S
		896H-1AH-D	896H-1AH-C	896H-1AH-S
	1C (SPDT)	896-1CH-D	896-1CH-C	896-1CH-S
		896H-1CH-D	896H-1CH-C	896H-1CH-S
	2A (DPNO)	896-2AH-D	896-2AH-C	896-2AH-S
		896H-2AH-D	896H-2AH-C	896H-2AH-S
PCB terminal	1A (SPNO)	896P-1AH-D	896P-1AH-C	896P-1AH-S
		896HP-1AH-D	896HP-1AH-C	896HP-1AH-S
	1C (SPDT)	896P-1CH-D	896P-1CH-C	896P-1CH-S
		896HP-1CH-D	896HP-1CH-C	896HP-1CH-S
	2A (DPNO)	896P-2AH-D	896P-2AH-C	896P-2AH-S
		896HP-2AH-D	896HP-2AH-C	896HP-2AH-S

Terminal style	Contact form	Enclosure style	
		Flanged cover (dust cover)	Flanged cover (flux tight)
Socket terminal	1A (SPNO)	896-1AH-D1	896-1AH-C1
		896H-1AH-D1	896H-1AH-C1
	1C (SPDT)	896-1CH-D1	896-1CH-C1
		896H-1CH-D1	896H-1CH-C1
	2A (DPNO)	896-2AH-D1	896-2AH-C1
		896H-2AH-D1	896H-2AH-C1



896

Terminal style	Contact form	Enclosure style	
		Steel bracket (dust cover)	Steel bracket (flux tight)
Socket terminal	1A (SPNO)	896-1AH-D1S	896-1AH-C1S
		896H-1AH-D1S	896H-1AH-C1S
	1C (SPDT)	896-1CH-D1S	896-1CH-C1S
		896H-1CH-D1S	896H-1CH-C1S
	2A (DPNO)	896-2AH-D1S	896-2AH-C1S
		896H-2AH-D1S	896H-2AH-C1S

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Steel bracket (dust cover with shroud)	Steel bracket (dust cover with weather proof)
Socket terminal	1C (SPDT)	Resistor	896H-1CH-D1SF-R1	896H-1CH-D1SW-R1

»» Ordering Information

896 H P - 1CH - C - R1 - T 001
 1 2 3 4 5 6 7 8

- | | |
|--|---|
| <p>1. 896 -- Basic series designation</p> <p>2. Blank -- Standard type
H -- High power type</p> <p>3. Blank -- Socket terminal
P -- PCB terminal</p> <p>4. 1AH -- Single pole normally open, contact material AgSnO
1BH -- Single pole normally closed, contact material AgSnO
1CH -- Single pole double throw, contact material AgSnO
2AH -- Double pole double make, contact material AgSnO</p> <p>5. D -- Dust cover
C -- Flux tight
S -- Sealed type washable
C1 -- Flanged cover (flux tight)
D1 -- Flanged cover (dust cover)
S1 -- Flanged cover (sealed type washable)</p> | <p>D1S -- Steel bracket (dust cover)
C1S -- Steel bracket (flux tight)
S1S -- Steel bracket (sealed type washable)
D1SF -- Steel bracket (dust cover with shroud)
D1SW -- Steel bracket (dust cover with weather proof)</p> <p>6. Blank -- Standard type
R1 -- Coil parallel with resistor 1/2W for 12V 68Ω , 24V 270Ω</p> <p>7. Blank -- Standard type
T -- Special requirement for Tin plated terminal</p> <p>8. Blank -- Standard type
001 -- Coil parallel with diode IN4007 the positive pole on # 85 terminal
002 -- Coil parallel with diode IN4007 the negative pole on # 85 terminal</p> |
|--|---|

»» Contact Rating

Type	896 1A	896 1B	896 1C	896 2A
Resistive load	40A 14VDC	40A 14VDC	NO : 40A 14VDC NC : 30A 14VDC	2×15A 14VDC

Type	896H 1A	896H 1B	896H 1C	896H 2A
Resistive load	50A 14VDC 20A 28VDC	40A 14VDC 15A 28VDC	NO : 50A 14VDC, 20A 28VDC NC : 30A 14VDC, 15A 28VDC	2×30A 14VDC 2×10A 28VDC

»» Coil Rating(DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous Voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	133	90	120% of rated voltage	65% of rated voltage	10% of rated voltage	approx. 1.6W
24	66.7	360				

Notes : (1) Without switching the load.

»» Specification

Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Insulation resistance ⁽¹⁾	20MΩ Min. (DC 500V)	
Operate time ⁽¹⁾	20ms Max.	
Release time ⁽¹⁾	20ms Max.	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~55Hz , amplitude 2mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Temperature range	Operating	-40~+125° C (no freezing)
Weight	Approx. 40 g	

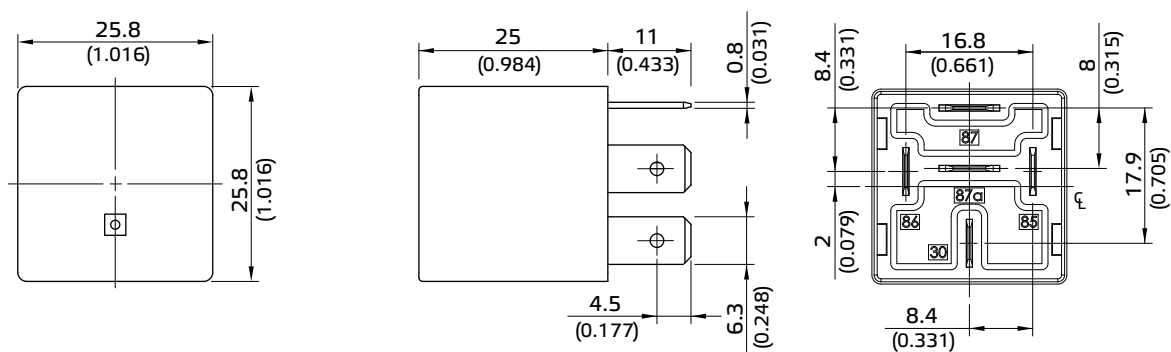
Note : (1) initial value



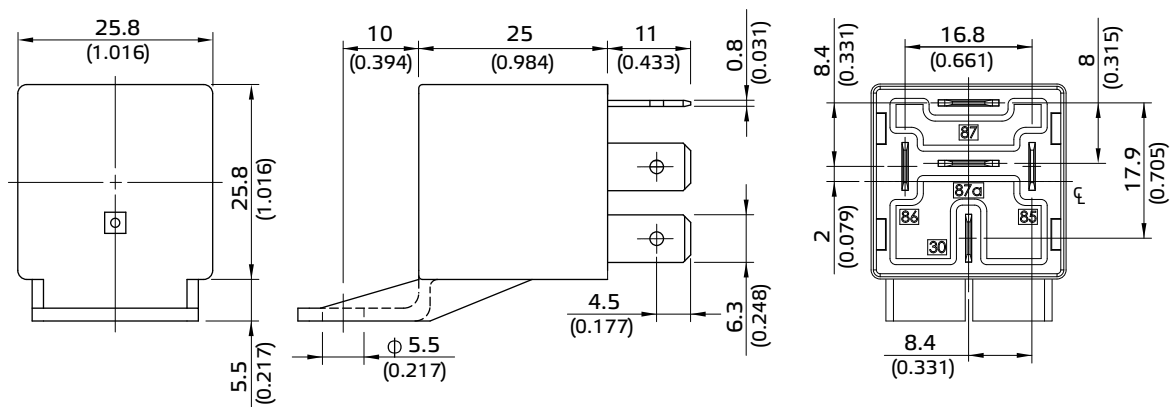
896

»» Outline Dimensions

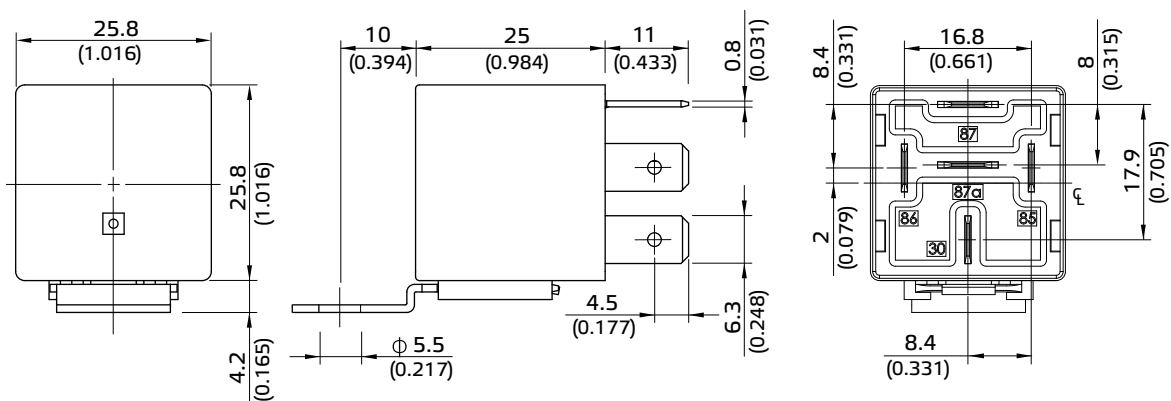
◆896,896H (C,D,S)



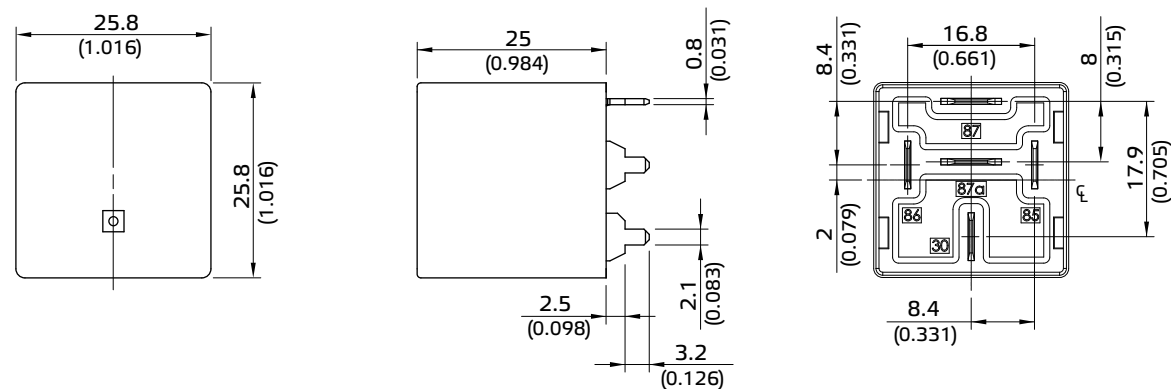
◆896,896H (C1,D1,S1)



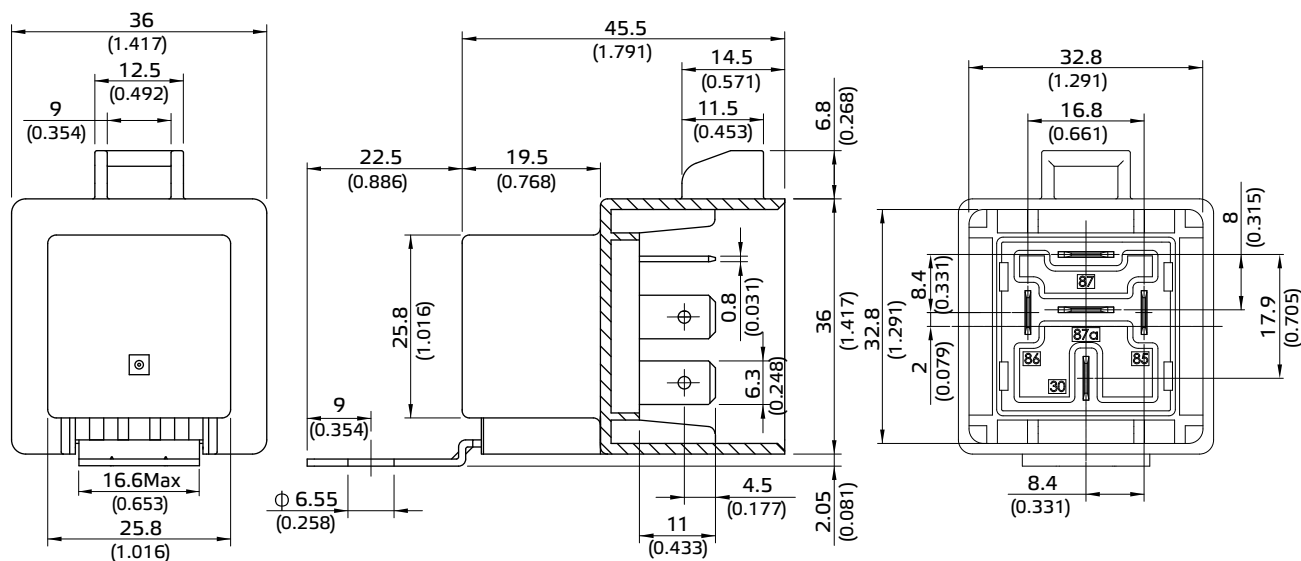
◆896,896H (C1S,D1S,S1S)



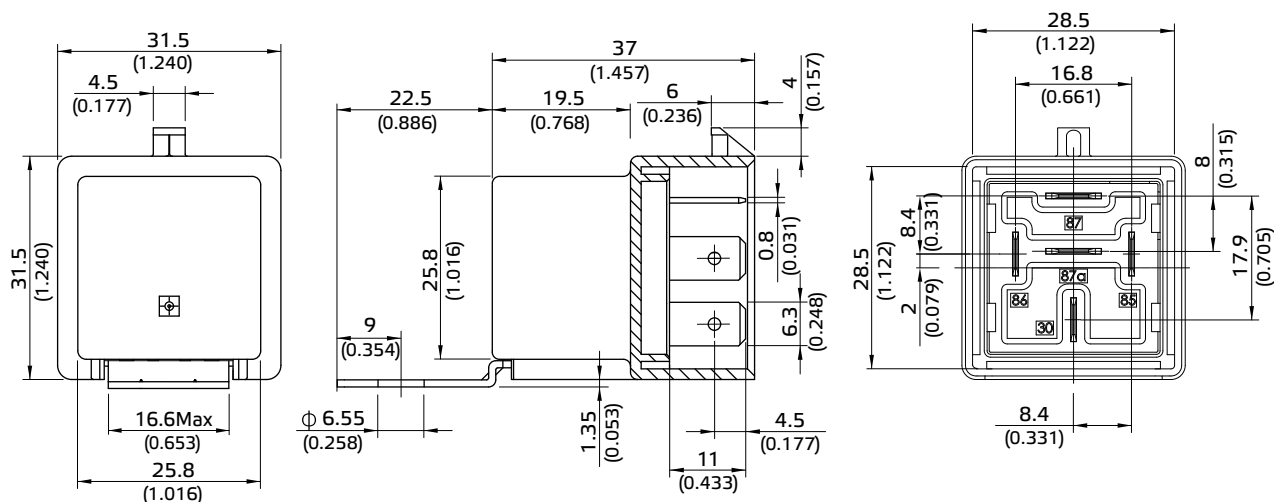
◆896P,896HP (C,D,S)



◆896H (D1SW)



◆896H (D1SF)



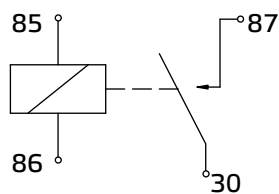


896

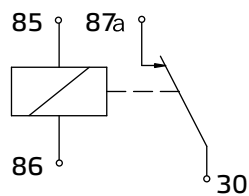
Wiring Diagram

BOTTOM VIEW

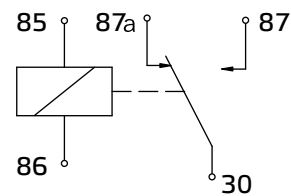
1A



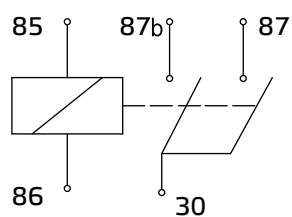
1B



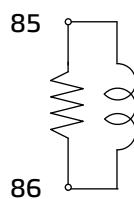
1C



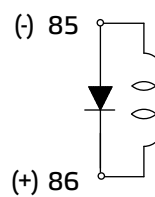
2A



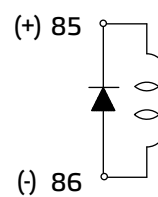
R1



001

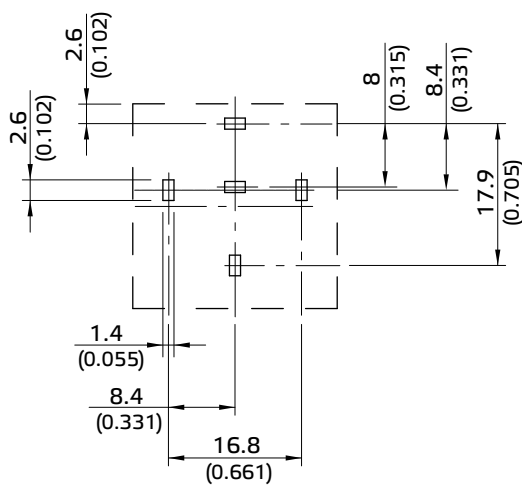


002



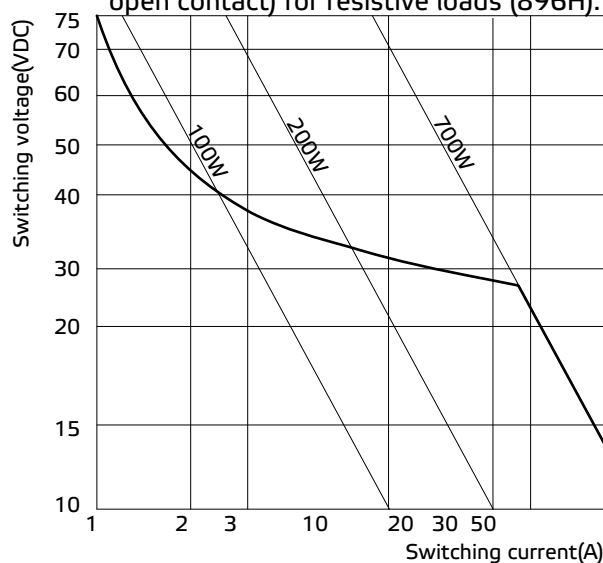
PC Board Layout

BOTTOM VIEW

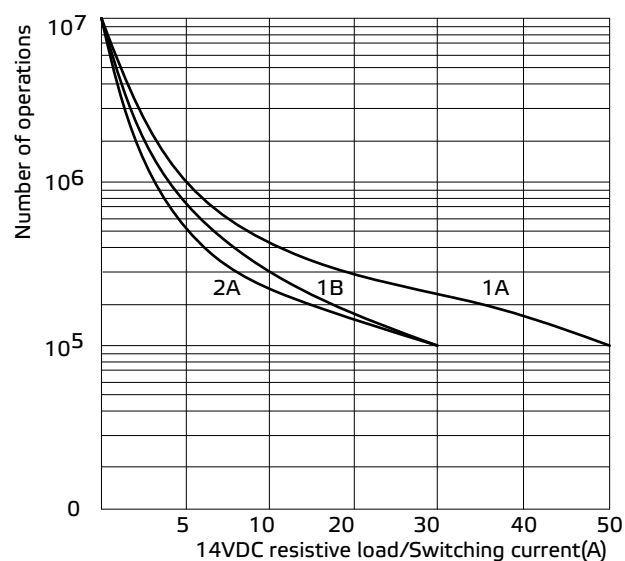


»» Engineering Data

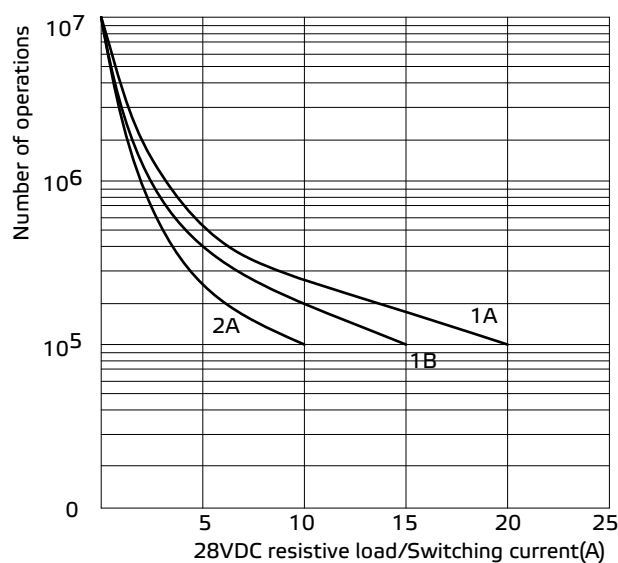
Safe breaking, arc extinguished (normally open contact) for resistive loads (896H).



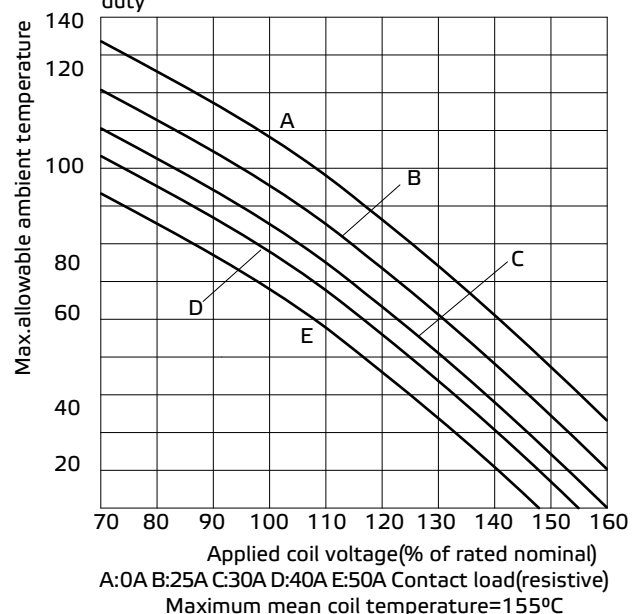
Life expectancy(896H)



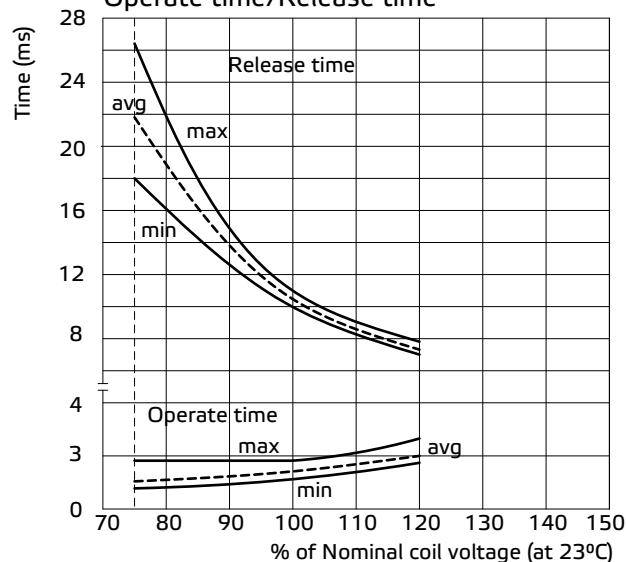
Life expectancy (896H)



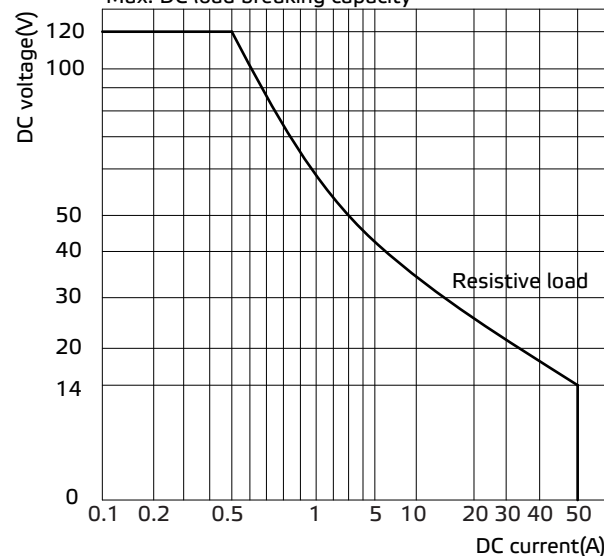
Ambient temperature vs coil voltage for continuous duty



Operate time/Release time



Max. DC load breaking capacity





898



»» Features

- ISO 280 footprint design.
- High temperature endurance up to 125°C.
- Optional SPNC, SPNO, SPDT contact configurations.
- Optional to be equipped with protection diode or resistor.
- Available for dust cover type, skirted cover flanged cover, and weather proof versions.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Enclosure style		
		Dust cover	Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	898-1AH-D	898-1AH-C	898-1AH-S
		898H-1AH-D	898H-1AH-C	898H-1AH-S
	1C (SPDT)	898-1CH-D	898-1CH-C	898-1CH-S
		898H-1CH-D	898H-1CH-C	898H-1CH-S

Terminal style	Contact form	Enclosure style	
		Flanged cover (dust cover)	Flanged cover (flux tight)
Socket terminal	1A (SPNO)	898-1AH-D1	898-1AH-C1
		898H-1AH-D1	898H-1AH-C1
	1C (SPDT)	898-1CH-D1	898-1CH-C1
		898H-1CH-D1	898H-1CH-C1

Terminal style	Contact form	Enclosure style	
		Steel bracket (dust cover)	Steel bracket (flux tight)
Socket terminal	1A (SPNO)	898-1AH-D1S	898-1AH-C1S
		898H-1AH-D1S	898H-1AH-C1S
	1C (SPDT)	898-1CH-D1S	898-1CH-C1S
		898H-1CH-D1S	898H-1CH-C1S

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Steel bracket (dust cover with shroud)	Steel bracket (dust cover with weather proof)
Socket terminal	1C (SPDT)	Resistor	898H-1CH-D1SF-R1	898H-1CH-D1SW-R1

»» Ordering Information

898 H - 1CH - C - R1 001
 1 2 3 4 5 6

- | | | | |
|----------|--|----------|---|
| 1. 898 | -- Basic series designation | D1S | -- Steel bracket (dust cover) |
| 2. Blank | -- Standard type | C1S | -- Steel bracket (flux tight) |
| H | -- High power type | S1S | -- Steel bracket (sealed type washable) |
| 3. 1AH | -- Single pole normally open, contact material AgSnO | D1SF | -- Steel bracket (Dust cover with shroud) |
| 1BH | -- Single pole normally closed, contact material AgSnO | D1SW | -- Steel bracket (Dust cover with weather proof) |
| 1CH | -- Single pole double throw, contact material AgSnO | 5. Blank | -- Standard type |
| | | R1 | -- Coil parallel with resistor 1/2W for 12V 680Ω, 24V 2700Ω |
| 4. D | -- Dust cover | 6. Blank | -- Standard type |
| C | -- Flux tight | 001 | -- Coil parallel with diode IN4007 the positive pole on # 85 terminal |
| S | -- Sealed type washable | 002 | -- Coil parallel with diode IN4007 the negative pole on # 85 terminal |
| D1 | -- Flanged cover (dust cover) | | |
| C1 | -- Flanged cover (flux tight) | | |
| S1 | -- Flanged cover (sealed type washable) | | |

»» Contact Rating

Resistive load	898 1A	898 1B	898 1C
	40A 14VDC	40A 14VDC	NO : 30A 14VDC NC : 20A 14VDC
	898H 1A	898H 1B	898H 1C
	50A 14VDC 20A 28VDC	40A 14VDC 15A 28VDC	NO: 50A 14VDC, 20A 28VDC NC: 30A 14VDC, 15A 28VDC

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	133	90	120 % of rated voltage	65 % of rated voltage	10% of rated voltage	approx. 1.6W
24	66.7	360				

Notes: (1) Without switching the load.



898

»» Specification

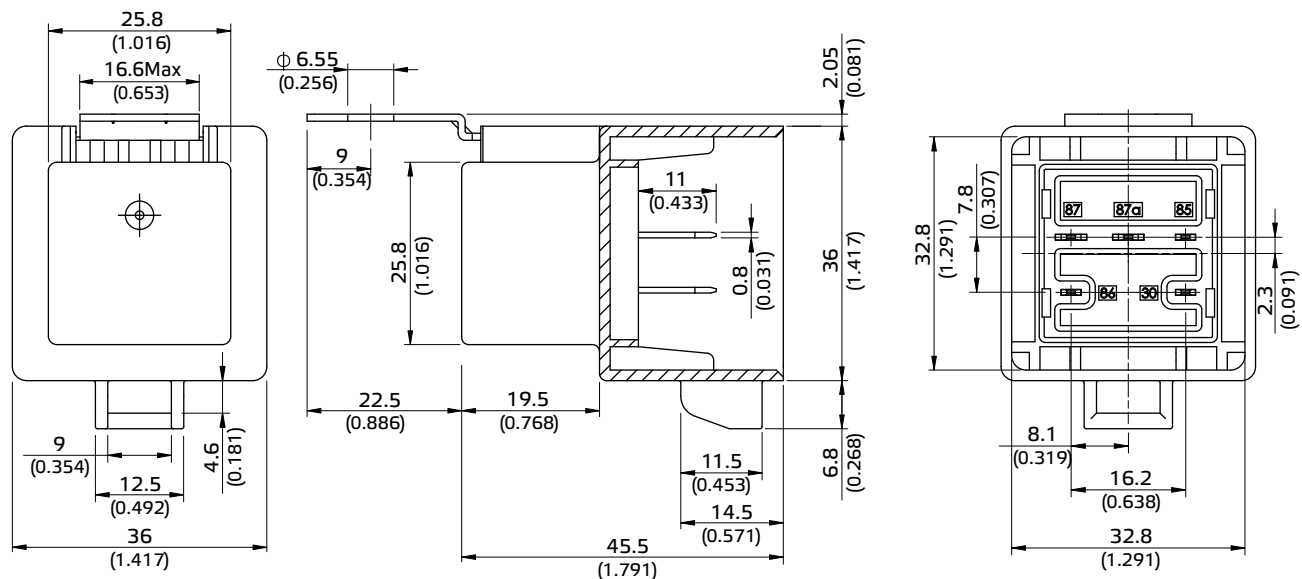
Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 50mV at 10A	
Insulation resistance ⁽¹⁾	20MΩ Min. (DC 500V)	
Operate time ⁽¹⁾	20ms Max.	
Release time ⁽¹⁾	20ms Max.	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~55Hz , amplitude 2mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Temperature range	Operating	-40~+125°C (no freezing)
Weight	Approx. 40 g	

Note : (1) initial value

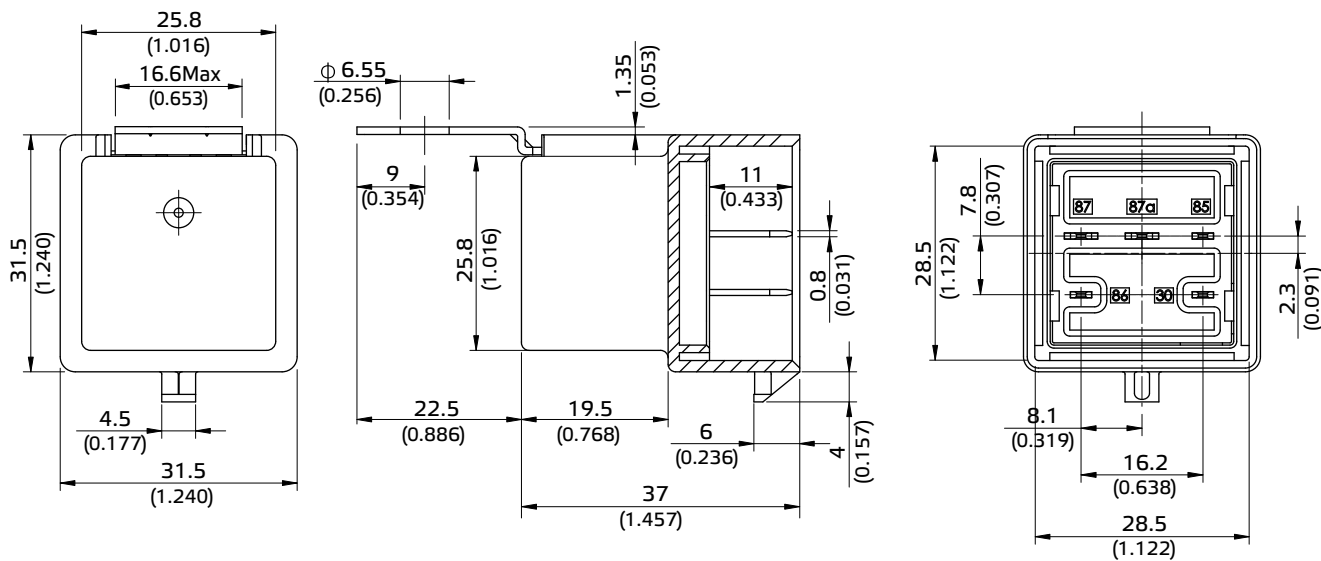


898

◆898H (D1SW)



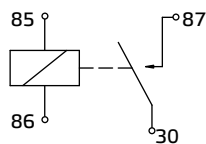
◆898H (D1SF)



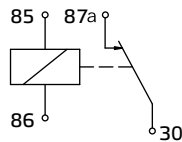
»» Wiring Diagram

BOTTOM VIEW

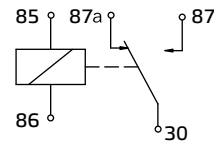
1A



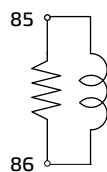
1B



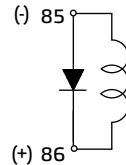
1C



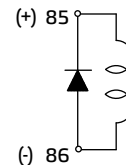
R1



001

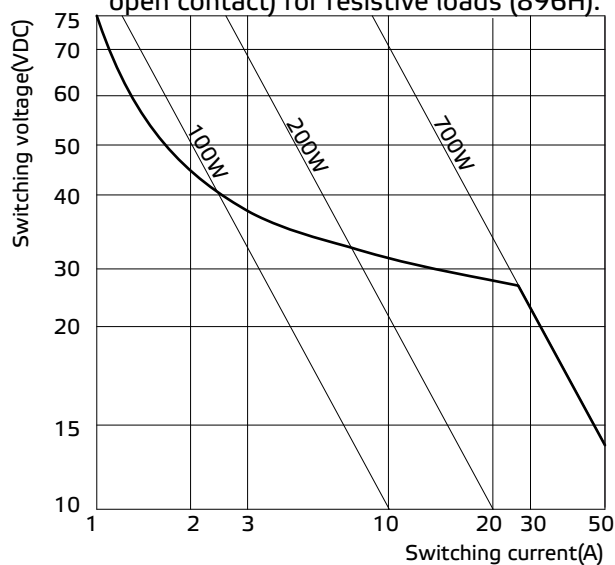


002

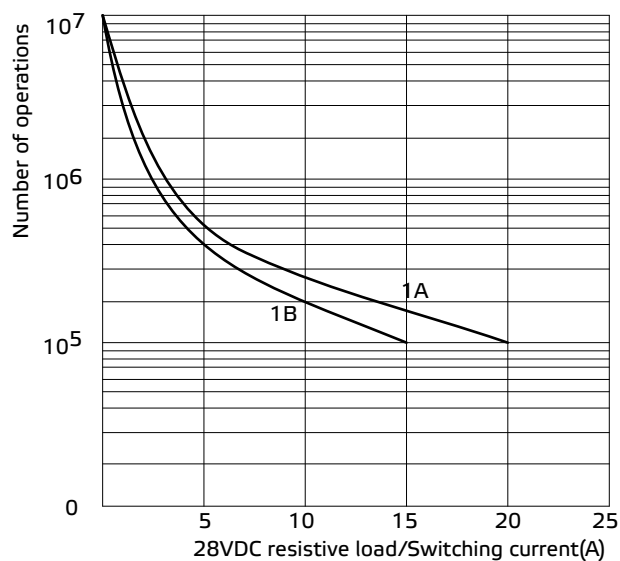


»» Engineering Data

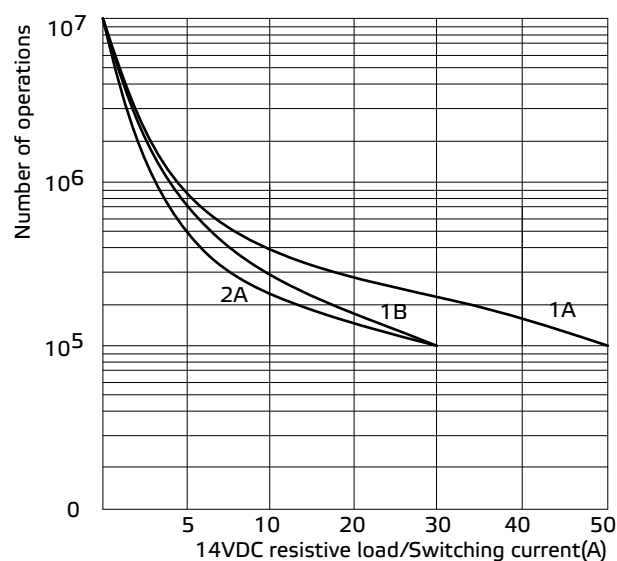
Safe breaking, arc extinguished (normally open contact) for resistive loads (896H).



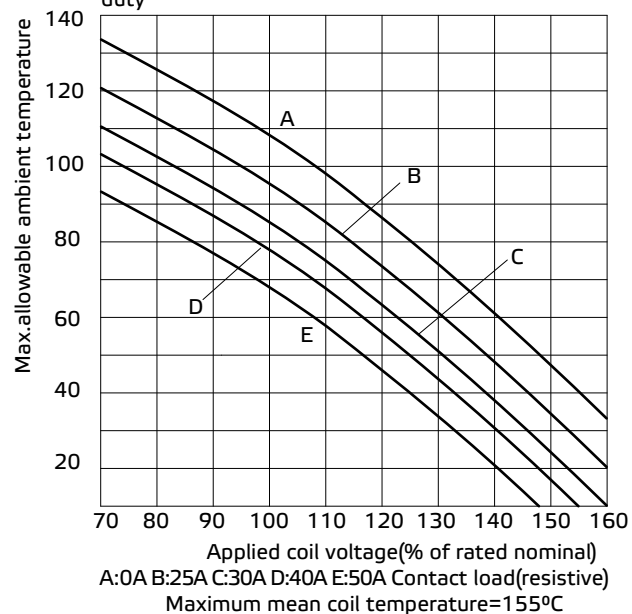
Life expectancy (898H)



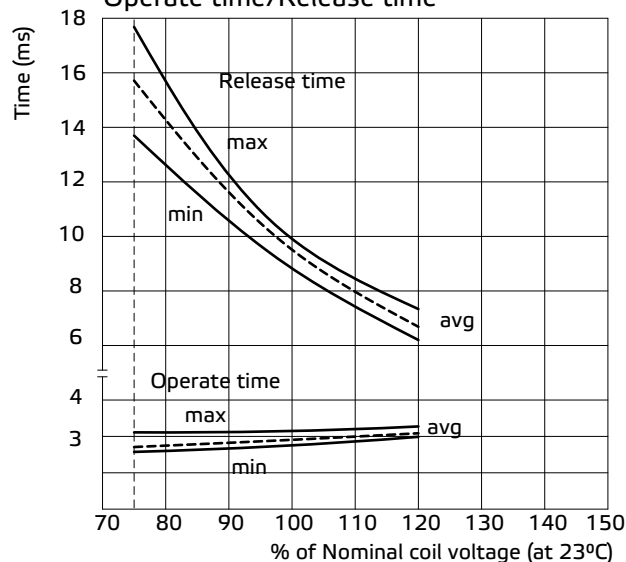
Life expectancy(898H)



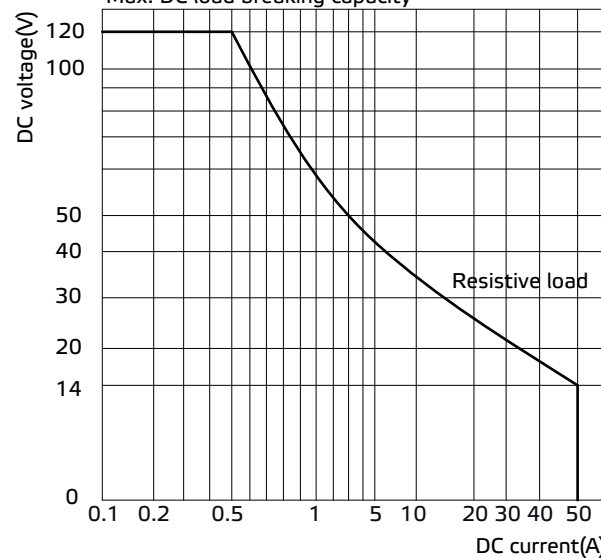
Ambient temperature vs coil voltage for continuous duty



Operate time/Release time



Max. DC load breaking capacity





897



»» Features

- 70A high power automotive relay.
- High temperature endurance up to 125° C.
- Optional to be equipped with protection diode or resistor.
- Dust cover version, flux free type, sealed & weather proof type or flange cover version to be chosen.
- Tinned terminal is available on request.
- Comply with RoHS-Directive 2002/95/EC, and ELV-Directive 2000/53/EC.

»» Type List

Terminal style	Contact form	Designation (provided with)	Enclosure style		
			Dust cover	Flux tight	Sealed type washable
Socket terminal	1A (SPNO)	-----	897-1AH-D	897-1AH-C	897-1AH-S
		Resistor	897-1AH-D-R1	897-1AH-C-R1	897-1AH-S-R1
PCB terminal ⁽¹⁾	1A (SPNO)	-----	897P-1AH-D	897P-1AH-C	897P-1AH-S
		Resistor	897P-1AH-D-R1	897P-1AH-C-R1	897P-1AH-S-R1

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Flanged cover (dust cover)	Flanged cover (flux tight)
Socket terminal	1A (SPNO)	-----	897-1AH-D1	897-1AH-C1
		Resistor	897-1AH-D1-R1	897-1AH-C1-R1

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Steel bracket (dust cover)	Steel bracket (flux tight)
Socket terminal	1A (SPNO)	-----	897-1AH-D1S	897-1AH-C1S
		Resistor	897-1AH-D1S-R1	897-1AH-C1S-R1

Terminal style	Contact form	Designation (provided with)	Enclosure style	
			Steel bracket (dust cover with shroud)	Steel bracket (dust cover with weather proof)
Socket terminal	1A (SPNO)	Resistor	897-1AH-D1SF-R1	897-1AH-D1SW-R1

Note : (1) Special PCB terminal version (NO, COM 3 pin type) are available.

»» Ordering Information

897 P - 1AH - C - R1 - T 001
 1 2 3 4 5 6 7

- | | | | |
|----------|--|------|---|
| 1. 897 | -- Basic series designation | 4. D | -- Dust cover |
| 2. Blank | -- Socket terminal | C | -- Flux tight |
| P | -- PCB terminal | S | -- Sealed type washable |
| P1 | -- Special PCB terminal (NO,COM 3 pin type) | D1 | -- Flanged cover (dust cover) |
| 3. 1AH | -- Single pole normally open, contact material AgSnO | C1 | -- Flanged cover (flux tight) |
| | | S1 | -- Flanged cover (sealed type washable) |
| | | D1S | -- Steel bracket (dust cover) |

- C1S -- Steel bracket (flux tight)
 S1S -- Steel bracket (sealed type washable)
 D1SF -- Steel bracket (dust cover with shroud)
 D1SW -- Steel bracket (dust cover with weather proof)
5. Blank -- Standard type
 R1 -- Coil parallel with resistor 1/2W for 12V 680Ω, 24V 2700Ω
6. Blank -- Standard type
 T -- Special requirement for Tin plated terminal
7. Blank -- Standard type
 001 -- Coil parallel with diode IN4007 the positive pole on # 85 terminal
 002 -- Coil parallel with diode IN4007 the negative pole on # 85 terminal

»» Contact Rating

Max. Continuous current	70A 14VDC, 25A 28VDC
-------------------------	----------------------

»» Coil Rating (DC)

Rated voltage (V)	Rated current ±10 % at 23°C (mA)	Coil resistance ±10 % at 23°C (Ω)	Max. continuous Voltage at 85°C ⁽¹⁾	Pick up voltage(Max) at 23°C	Drop out voltage(Min) at 23°C	Power consumption at rated voltage
12	133	90	100% of rated voltage	65% of rated voltage	10% of rated voltage	approx. 1.6W
24	66.7	360				

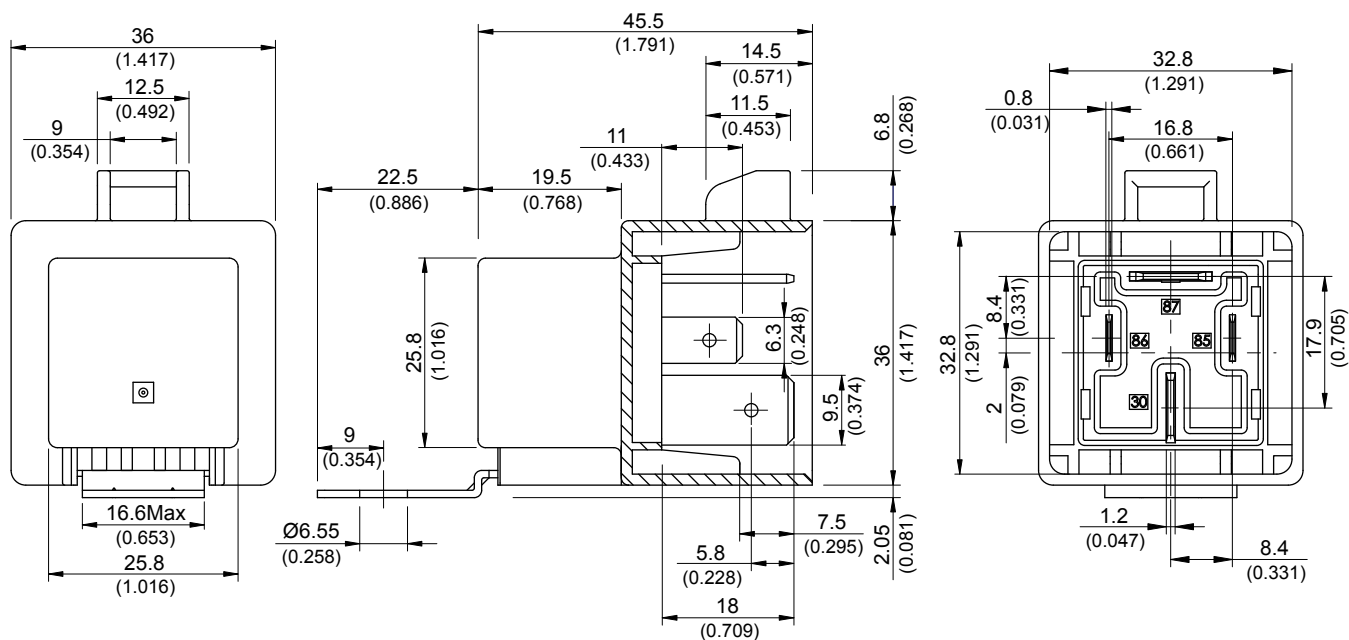
Notes : (1) Continuous contact current at 50A.

»» Specification

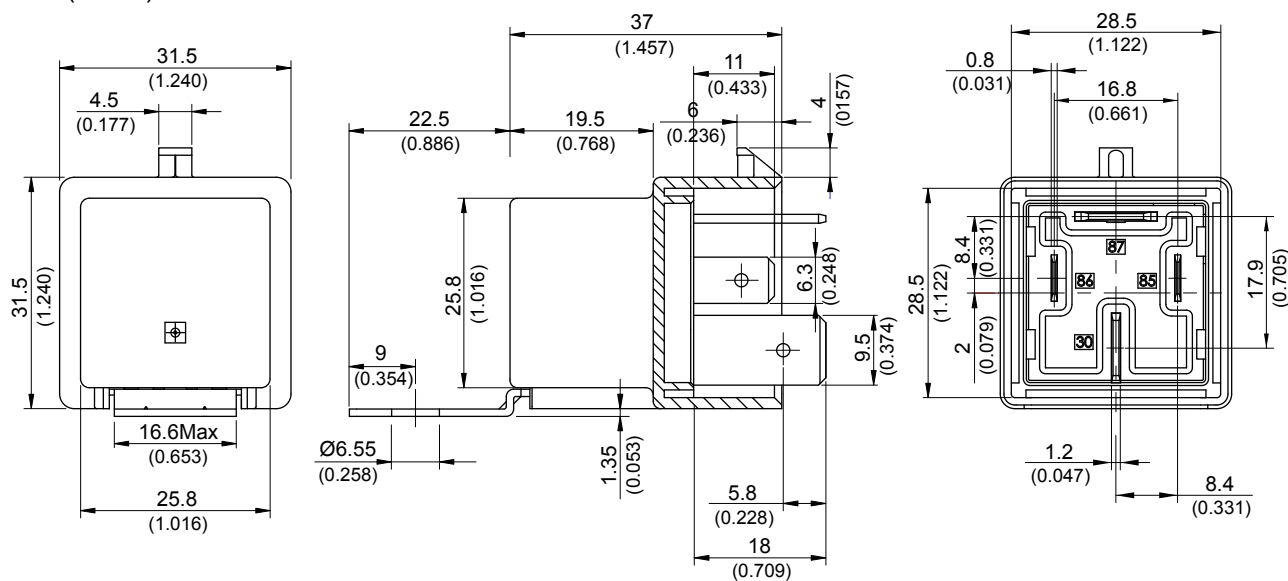
Contact material	AgSnO alloy	
Contact voltage drop ⁽¹⁾	Typ. 30mV at 10A	
Insulation resistance ⁽¹⁾	20 MΩ Min. (DC 500V)	
Operate time ⁽¹⁾	20ms Max.	
Release time ⁽¹⁾	20ms Max.	
Dielectric strength ⁽¹⁾	Between open contact	: AC 500V , 50/60Hz 1 min.
	Between contact and coil	: AC 500V , 50/60Hz 1 min.
Vibration resistance	Operating extremes	10~55Hz , amplitude 2mm
Shock resistance	Operating extremes	10G
	Damage limits	100G
Life expectancy	Mechanical	10,000,000 operations (frequency 18,000 operations/hr)
	Electrical	100,000 operations (frequency 1,200 operations/hr)
Temperature range	Operating	-40~+125°C (no freezing)
Weight	Approx. 40 g	

Note : (1) initial value

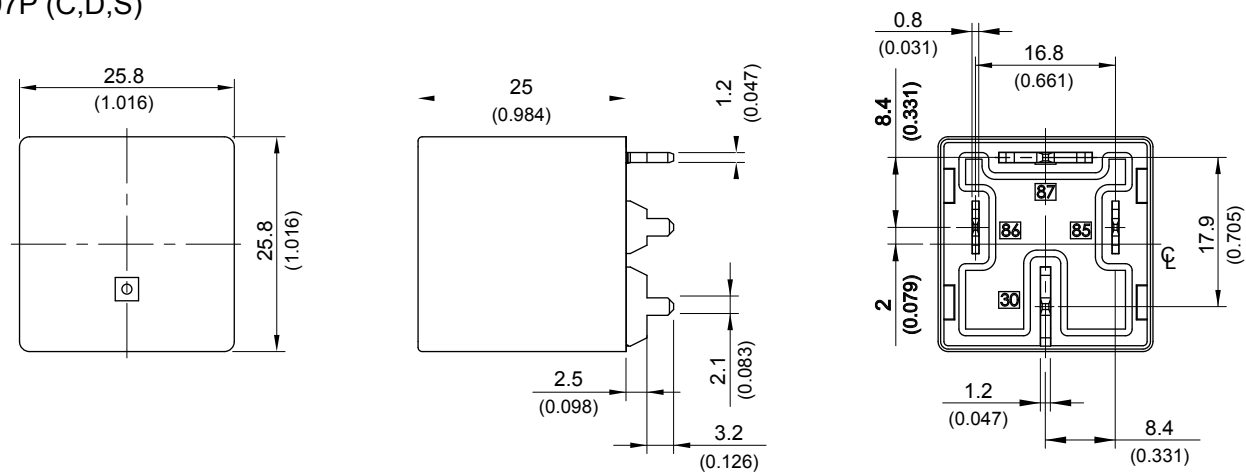
◆897 (D1SW)



◆897 (D1SF)



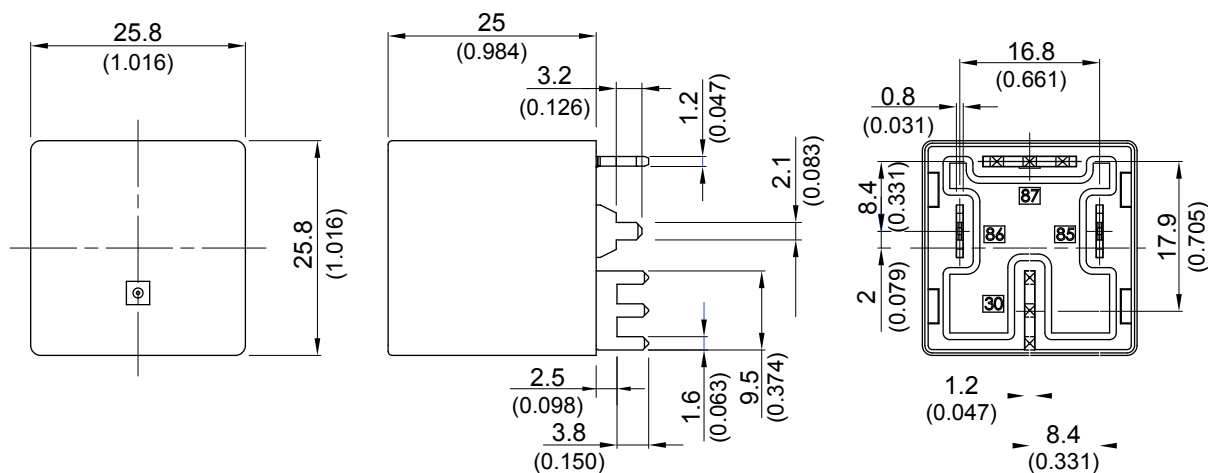
◆897P (C,D,S)





897

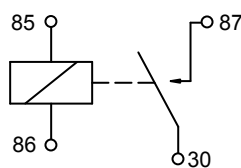
◆897P1 (C,D,S)



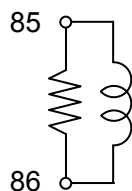
»» Wiring Diagram

BOTTOM VIEW

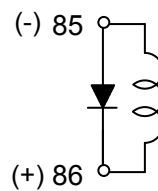
1A



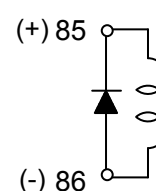
R1



001



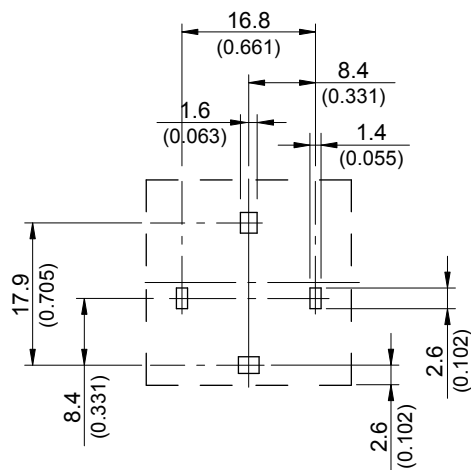
002



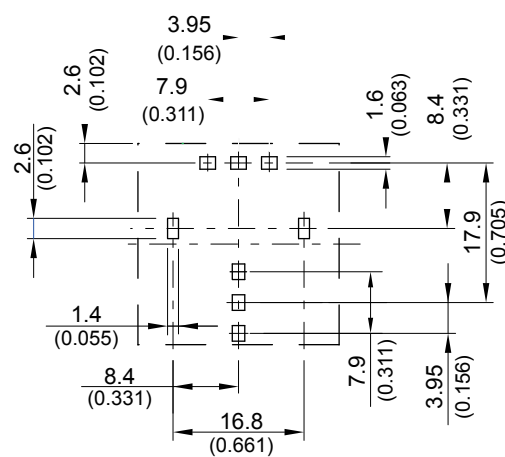
»» PC Board Layout

BOTTOM VIEW

◆897,897P

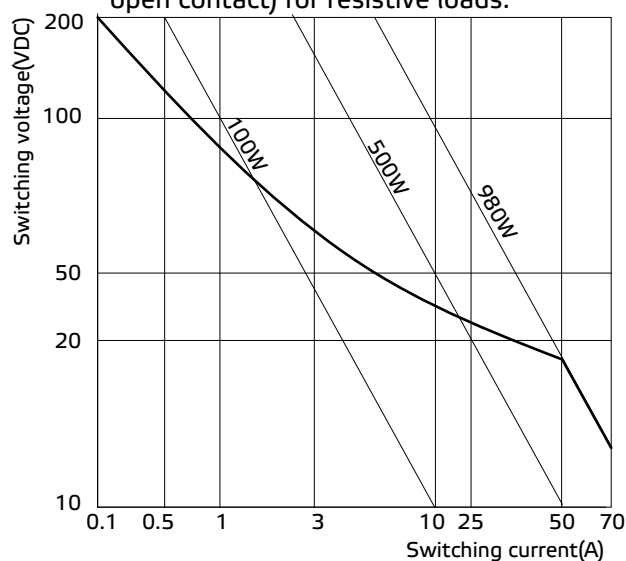


◆897P1

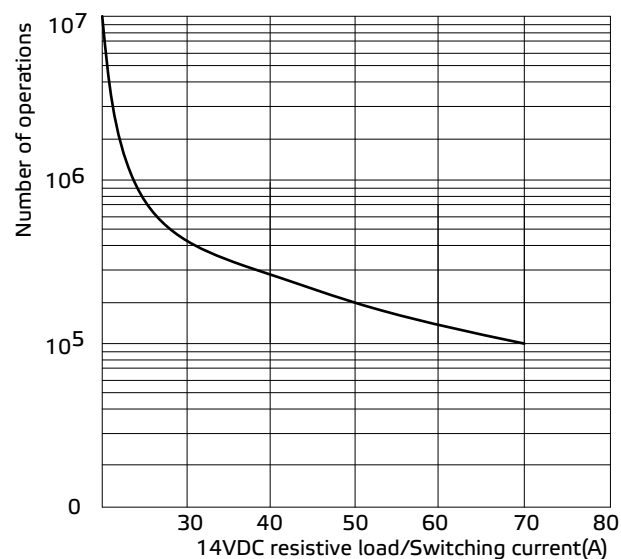


» Engineering Data

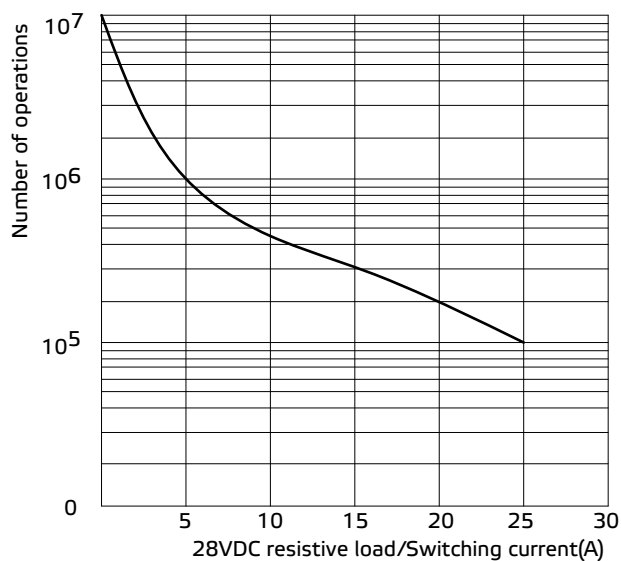
Safe breaking, arc extinguished (normally open contact) for resistive loads.



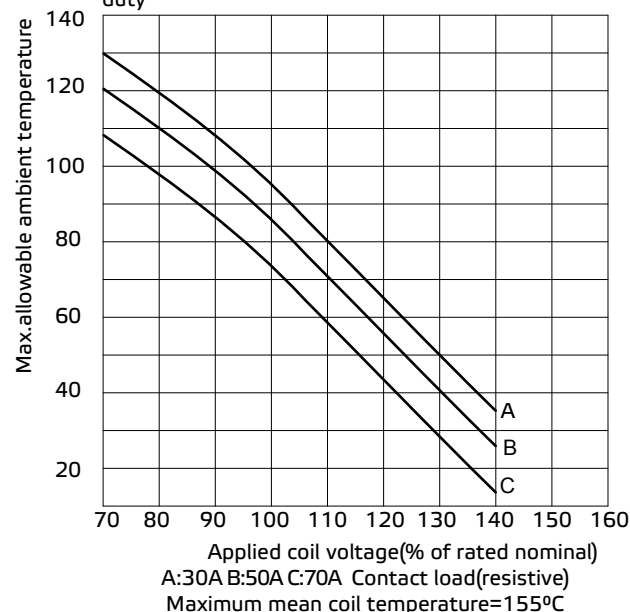
Life expectancy



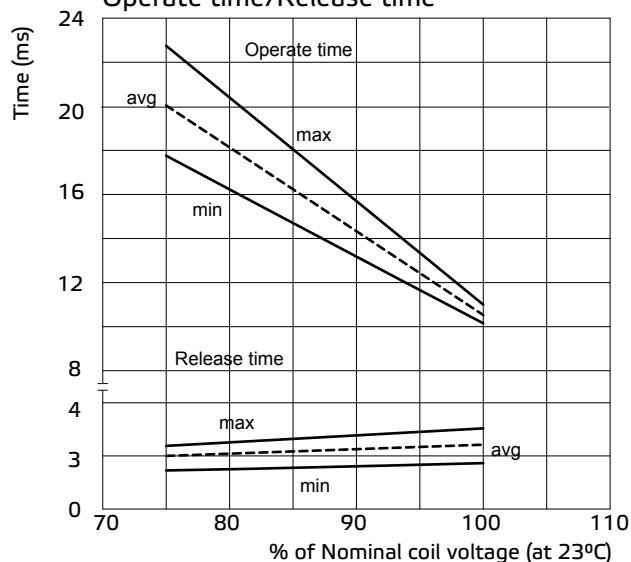
Life expectancy



Ambient temperature vs coil voltage for continuous duty



Operate time/Release time





Song Chuan Group Company Headquarter

SONG CHUAN PRECISION Co. Ltd.

No. 377, Jhonghua Road, Shulin City, Taipei County 238, Taiwan

Tel.: 886-2-86845332, -86845432, Fax: 886-2-86843097, -86843896

E-Mail: info@songchuan.com.tw, info1@songchuan.com.tw

www.songchuan.com



Factories

XIAMEN SONG CHUAN PRECISION Co., Ltd. (Electron)

Zonic Science Building, Xing Long Road, Huli Industrial District,

Xiamen Fujian, China 361006

Tel.: 86-592-6025539-43, Fax: 86-592-6025546

E-Mail: info@songchuan.com.tw, info1@songchuan.com.tw

www.songchuan.com.cn



SHANGHAI SONG CHUAN PRECISION ELECTRON Co., Ltd.

No. 1059, Xiao Yun Road, Baoshang Industrial District, Shanghai, China 200949

Tel.: 86-21-51651666, Fax: 86-21-51651611

www.songchuan.com.cn



Sales Office Europe

SONG CHUAN EUROPE GmbH

Im Petersfeld 5, 65624 Altendiez, Germany

Tel.: 49-6432-8006-0, Fax: 49-6432-8006-50

E-Mail: info@songchuan.eu

www.songchuan.eu



Sales Office USA

SONG CHUAN USA, Inc.

2841 Center Port Circle, Pompano Beach, FL33064

Tel.: 1-954-788-5889, Fax: 1-954-788-8717

E-Mail: scu@songchuan.com

www.songchuan.com



Sales Office Asia

SONG CHUAN PRECISION Co. Ltd.

No. 377, Jhonghua Road, Shulin City, Taipei County 238, Taiwan

Tel.: 886-2-86845332, -86845432, Fax: 886-2-86843097, -86843896

E-Mail: info@songchuan.com.tw, info1@songchuan.com.tw

www.songchuan.com

SONG CHUAN EUROPE GmbH

Im Petersfeld 5
65624 Altdiez
Germany

Tel.: ++49 64 32 8006-0
Fax: ++49 64 32 8006-50
info@songchuan.eu
www.songchuan.eu

