



File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):	
File number:		Edition:	1
		Page number:	1 / 6

Specifications of EVRBE300CI

1. Technical Data

Specs	Project		Parameter
			300A Type
			EVRBE300CI
Coil	Nominal Rated Voltage		DC12V
	Operate Voltage (initial) (at 23°C)		≤9V
	Release Voltage (initial) (at 23°C)		1-4.8V
	Rated Operate Current [±10%](at 23°C)		0.5A
	Rated Power(at 23°C)		6W
	Maximum Voltage (at 23°C)		DC16V
Main Contacts	Structure		A set of normally open contacts
	Range of carrying voltage		DC12V-1000V
	Minimum applicable load (resistive)①		1A 12VDC
	Contact voltage drop (initial)		≤0.15V (300A current through)
	Contact Resistance (initial)		≤0.5mΩ
Electrical Properties	Insulation Resistance	Between contacts	DC1000V 1min, ≥1000MΩ
		Contact to coil	
	Withstanding Voltage	Between contacts	AC 3000V 1min, leakage current≤3mA
		Contact to coil	
	Operate Time (at 23°C)		≤30ms (with nominal rated voltage applied to the coil)
Release Time (at 23°C)		≤15ms (with rated voltage applied to the coil, no diode)	
Mechanical Properties	Vibration Resistance		Three axial directions, acceleration 5G,5-2000Hz.,15 hours per axis
	Mechanical Shock Resistance		Half-sine pulse, duration 11ms. 50G acceleration. 20 times on each direction
Service Life	Mechanical Life		≥200,000 cycles
	Electrical Life (resistive load)②		DC450V 300A ≥1000 cycles, DC800V 250A ≥1000 cycles
	Inverse-connected Electrical Life (resistive load)②		DC450V -300A ≥1000 cycles, DC800V -250A ≥1000 cycles
Usage Conditions	Working environmental requirements		Temperature: -40~+85°C Humidity: 5%RH~85%RH (No freeze, no condensation)
	Storage environmental requirements		Temperature: -40~+95°C Humidity: 5%RH~85%RH (No freeze, no condensation)
Installation Torque	Load		M6 screws 4.5~6.6N•m
	Shell		M5 screws 3~4 N•m
Weight (approximately)			400g

Notes: ①. This value may change according to the on-off frequency, environment conditions, and expected reliability. So it is recommended to confirm the value

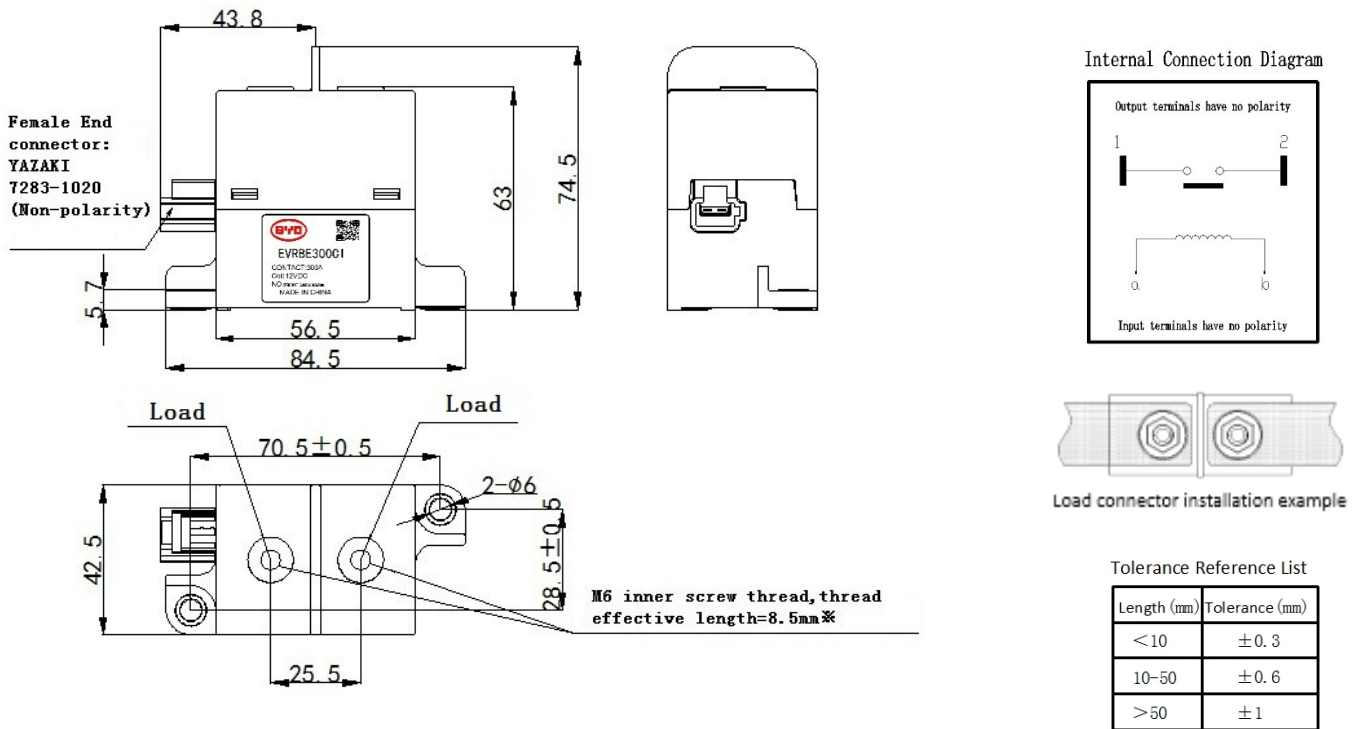


File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):	
File number:		Edition:	1
		Page number:	2 / 6

under the actual load before using.

②. Electrical endurance test condition: on 0.3s, off 2.7s. When using diodes, the contact reset time might be delayed, and thus the electrical lifespan decrease

2. Product Structure

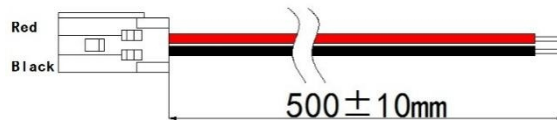


Requirements:

1. If there is no tolerance declared, refer to the tolerance reference list.
2. No dirt or scratches on surfaces; information on labels must be correct.
3. Bottom flatness requirement: roughness $\leq 0.5\text{mm}$
4. Delivery packages meet the requirements of power relay delivery packing standard.

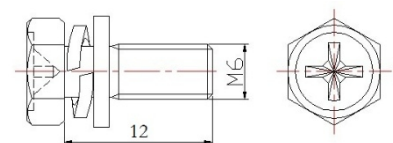
※Supporting connector information (optional)

Female-end type: YAZAKI
 Sheath: 7283-1020
 Metal terminal: 7116-4020



※Supporting screws (optional)

Specs: cross recessed hexagon bolt with indentation _M6×12_ Carbon steel_ color-Zinc_ class8.8





File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):	
File number:		Edition:	1
		Page number:	3 / 6

3. Labeling Information



Mark	Instruction	Mark	Instruction
	QR code scanned content (EVRBE300CIA1605310001AAA01)		Trademark
EVRBE300CI	Product type	300A	Rated carrying current
12VDC	Rated nominal input voltage	A1605310001AAA01	Product code

4. Shipment Inspection Items (at 23°C)

- Appearance Check
- Dimensions Check
- Operate Voltage Check
- Release Voltage Check
- Rated Operating Current Check
- Contact Resistance Check
- Withstanding Voltage Check
- Insulation Resistance Check

5. Cautions:

■ Operate Voltage

- 1) Please be careful that this product's operate voltage and release voltage will change with the ambient temperature.
- 2) When the applied voltage exceeds the maximum applied voltage limit, the abnormal heating in the coil will shorten the lifetime of the insulating coating. So the coil is possible to burn or cause short circuit between layers. In addition, please use the product in the range of the ambient temperature.
- 3) For this type of contactors, if the rated voltage (or current) is applied to the coil and contacts for a long period and then is shut down immediately, the coil temperature will cause the coil resistance higher than its usual value. This means that the operating voltage at that time is increased, and much higher than the rating "warm start". In this case, taking appropriate protection measures is highly recommended. Lowering the load current and operating time, or restricting the environment temperature, is usually helpful to prevent the coil voltage from exceeding the rated operating voltage range.
- 4) When the coil is turned on for a long time, the heating effect will deteriorate the coil's insulation characteristics.



File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):	
File number:		Edition:	1
		Page number:	4 / 6

- 5) For rated values, the values of main contacts are tested with resistive loads. When using inductance loads which satisfies $L/R > 1\text{ms}$, it is recommended to add surge protection circuits in parallel with the loads. No protection measures may cause the lowering of electrical lifetime or breaking failures.
- 6) Please use fast-rising currents to drive the coil of contactors with PCB equipped (with single-trigger pulse generating circuit built in).
- 7) Contactors with PCBs should automatically switch after power-on 0.2s. Please be careful that repeatedly less than 0.2s turning-on cycles would cause contactors failures.
- 8) It is recommended to use varistors or diodes and Zener diodes to build a protection circuit and install it on contactors with no PCBs (there is a reverse voltage absorption circuit built in PCBs) in order to adsorb the reverse surge voltage caused when the coil is turned off. Please be careful that when a diode is connected in parallel with the coil, the release time may increase and the lifetime of the product may be reduced.

■ Operate and storage condition requirements

- 1) Temperature: $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$
- 2) Humidity: 5%RH \sim 85%RH (no freeze, no condensation)
- 3) Air pressure: 86kPa \sim 106kPa
- 4) Condensation: Condensation phenomenon easily occurs when the temperature changes drastically in a hot and humid environment, and may cause a decrease in insulation resistance of the product.
- 5) Low temperature & low humidity environment: If the product is placed in a low temperature and low humidity environment for a long time, plastic materials embrittlement may occur.
- 6) Normal storage environment: Store the product in dry, ventilated and non-corrosive gases environment at 10-30 $^{\circ}\text{C}$ and relative humidity less than or equal to 70%, and avoid any harmful gas, chemical pollutions, static electricity, dampness and mechanical damage. Do not leave the product with chemicals, acids, alkali substances. Avoid mechanical shock and pressure in storage.
- 7) Do not use or store the contactors in vacuum. Otherwise the sealing structure aging will accelerate.

■ Products installation precautions

- 1) Before replacing or wiring contactors, the power source must be shut off and there must be no residual voltage.
- 2) All contactors' loads have polarity, and coils of contactors with PCBs have polarity. During installation, make sure to connect based on the terminal configuration and internal connection diagram as shown in the figures above. If the load terminals are connected reversely, the electrical endurance described in this document cannot be achieved. If the coils of contactors with PCBs are connected reversely, the contactors would be damaged and could not be used any more.
- 3) Each screw tightening torque must be controlled within the above-specified range (see technical data). Loose screw may lead to a fire by abnormal heat generated in electricity. Too tight screws will cause mechanical damage.
- 4) Installation of load connectors or bus-bars must refer to the bus-bar installation example shown in the figure above. Other connection solutions will cause decrease of insulation performance.
- 5) Make sure to use screws provided with the product when wiring the coil's terminals or contact terminals, because using other screws may cause that tightening torque cannot meet requirements, and



File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):		
File number:		Edition:	1	Page number: 5 / 6

thus may cause abnormal heat or even fire during operation.

- 6) Do not use this product in places where water, solvents, chemicals, or oil, can possibly splash on the product's shell or terminals. These situations may lead to the shell resin aging, or terminals corrosion and pollution. If electrolyte contacts output terminals, electrolytic reaction may occur between these terminals, and then the reaction will cause terminals corrosion or circuit disconnection. In addition, using wiring bus products with the following requirements as connection solutions is highly recommended:

Type 40A: nominal cross-sectional area $\geq 15\text{mm}^2$

Type 50A: nominal cross-sectional area $\geq 18\text{mm}^2$

Type 80A: nominal cross-sectional area $\geq 30\text{mm}^2$

Type 100A: nominal cross-sectional area $\geq 38\text{mm}^2$

Type 120A: nominal cross-sectional area $\geq 48\text{mm}^2$

Type 150A: nominal cross-sectional area $\geq 75\text{mm}^2$

Type 200A: nominal cross-sectional area $\geq 100\text{mm}^2$

Type 250A: nominal cross-sectional area $\geq 125\text{mm}^2$

Type 300A: nominal cross-sectional area $\geq 150\text{mm}^2$

Type 350A: nominal cross-sectional area $\geq 200\text{mm}^2$

Type 400A: nominal cross-sectional area $\geq 240\text{mm}^2$

Type 500A: nominal cross-sectional area $\geq 350\text{mm}^2$

- 7) If multiple contactors are installed closely or contactors are installed near devices which can provide strong magnetic field such as motors, transformers, speakers, and magnets, the operating characteristics may change and malfunctions may occur. And arcs occurring during the switching process may be distorted by the magnetic field, causing flash-over arcing or insulation failure. Please avoid this situation and confirm the contactors work well in actual operation conditions.
- 8) Please avoid installing the product near hot objects or objects which will produce heat.
- 9) When installing multiple contactors adjacent to each other, be careful of abnormal heat caused by mutual heat interference, and the insulation distance between the external terminals of contactors.
- 10) Do not hold or drag connector terminals or the connecting wires when moving the contactors, because it may cause the wire or connector loose or broken, and thus unable to work.
- 11) When connecting the connector terminals to loads, use the specified connectors on loads.
- 12) When installing bus-bars, do not apply excessive torque to the terminals. Otherwise it may cause on-off performance failure.

■ Electrical Endurance

- 1) If a contactor drops out to ground, stop using it. Because this product is probably unable to meet its performance specifications, and using it has the potentials of more serious contactor damage, electric shock to people, or fire.
- 2) This product is designed for switching high DC voltage equipment, so the final failure mode is possibly disability to disconnect circuits. Therefore when using, do not exceed the cutoff capacity specified in this document. And since it is a goods with limited usage life, please replace it on time.
- 3) The electrical endurance is a value measured under standard test conditions (temperature 15°C - 35°C , humidity 25%RH-85%RH). The electrical endurance would vary depending on the coil drive circuits,



File name:	Relay_EVRBE300CI_300A_800V- specifications	Project number (optional):		
File number:		Edition:	1	Page number: 6 / 6

load types, switching frequencies, ambient environment. Therefore, please choose the right products according to actual using environment.

- 4) The electrical endurance might be affected in high temperature, so please make sure only use this product under specified temperature range.
- 5) The electrical endurance might decrease at high switching frequency, so please check whether failure modes would cause high-frequency switching when using.
- 6) The electrical endurance value above is tested with resistive loads. The electrical lifetime tested with inductive loads is usually shorter.
- 7) When using capacitive loads, apply measures such as preparatory charging on the loads, so that the inrush current can be limited below 10% of the rated current. If no such measures are applied, contact welding may occur.
- 8) When using inductive loads with $L/R > 1\text{ms}$, apply surge absorption measures on the loads to avoid shortening electrical endurance, or circuit cutoff failure.
- 9) When using the contactor to disconnect AC current, although the contacts are often believed to have no polarities, cutting off reverse currents will usually cause the electrical endurance shorter than it when cutting off DC currents. So please confirm the endurance by using the actual loads. Since the contacts actually have polarities, make sure to connect correctly when doing DC cut-off.
- 10) Abnormal heating and smoking may happen when technical values in coil, contact, and lifespan parts exceeding their specified range.

■ **Contact Resistance**

- 1) When switching without loads, the contact resistance may increase. So please use the product with the minimum applicable load.
- 2) If the contacts have not been used for a long time, the contact surfaces may not be stable due to the formation of organic films.