中熔电气
SINOFUSE

RS309-MD-EV Series Cylindrical Bolt-on Fuse

Specification

ZR/YC-0234 A4

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DC500V 50A-630A

RoHS COMPLIANT

Content

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Basics

- Conform to: IEC60269, ISO8820, GB/T 31465
- Rated Voltage: DC500V
- Rated Current: 50A-630A
- Utilization Category: EV
- Breaking Capacity: DC20kA (Time Constant: 2±0.5ms)
- RoHS Compliant

Designed for road vehicles applications, conforms to environment requirements. Features in wider breaking range and low I²t; Used for HV electric system as backup protection of power battery, drive power, power conversion systems and charging equipment. Also suitable for backup protection of relays, disconnectors, circuit breakers and super capacitors.
Note: Test data is based on DC conditions, test environment and parameters conform to GB/T 31465.

	Part Number	Size	Current A	I^2t (A^2s)		Loss W		Weight (g)	Min Package (pcs)	Max Package (pcs)	Mounting
				Prearcing	Clearing	$0.5I_n$	I_n				
1	RS309-MD-EVS50A-D	3XA	50	289	1089	2.5	12	49±3	7	112	Bolt M8 Torque 12±1N·m
2	RS309-MD-EVS60A-D		60	408	1530	2.9	14				
3	RS309-MD-EVS70A-D		70	551	2150	3.4	16				
4	RS309-MD-EVS80A-D		80	850	3250	4	19				
5	RS309-MD-EVS100A-D		100	1340	5050	5.3	25				
6	RS309-MD-EVS125A-D		125	1980	7580	6.1	29				
7	RS309-MD-EVS150A-D		150	3050	11400	6.9	33				
8	RS309-MD-EVD100A	4ZA	100	1150	4500	5	22	81±5	6	96	
9	RS309-MD-EVD125A		125	1800	7600	6.1	27				
10	RS309-MD-EVD150A		150	2750	12900	7.4	33				
11	RS309-MD-EVD175A		175	3350	13700	8.4	37.5				
12	RS309-MD-EVS200A		200	4700	21400	7.4	33				
13	RS309-MD-EVS250A		250	7700	34700	9.7	43				
14	RS309-MD-EVD225A	5ZA	225	5200	20300	9.5	39.6	143±8	5	80	
15	RS309-MD-EVD250A		250	8100	24300	11	46				
16	RS309-MD-EVS300A		300	12200	39600	13	54				
17	RS309-MD-EVS350A		350	17000	72600	15	61				
18	RS309-MD-EVS400A		400	22500	94800	16	67				
19	RS309-MD-EVS450A	6ZA	450	33800	140000	17.9	70	219±10	5	70	Bolt M10 Torque 21±1N.m
20	RS309-MD-EVS500A		500	41700	172000	19.4	76				
21	RS309-MD-EVS550A		550	56500	249000	22.7	89				
22	RS309-MD-EVS630A		630	80000	339000	26.3	103				
23	RS309-MD-EV125A	5ZA	125	1550	7100	5.8	24	143±8	5	80	Bolt M8 Torque 12±1N.m
24	RS309-MD-EV150A		150	2230	10800	6.7	28				
25	RS309-MD-EV175A		175	3000	13800	8.3	34				
26	RS309-MD-EV200A		200	3970	18700	9.6	40				
27	RS309-MD-EV250A	6ZA	250	7400	34200	11.2	44	219±10	5	70	Bolt M10 Torque 21±1N.m
28	RS309-MD-EV300A		300	10700	49000	12.2	48				
29	RS309-MD-EV350A		350	15900	76800	16.6	65				
30	RS309-MD-EV400A		400	20500	94300	18.6	73				

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	Part Number	Size	Current A	I²t (A²s)		Loss W		Weight (g)	Min Package (pcs)	Max Package (pcs)	Mounting
				Prearc	Clearing	0.5I_n	I_n				
31	RS309-MD-EV450A	7ZB	450	29700	68300	24.5	89	390±12	3	48	Bolt M10 Torque 21±1N.m
32	RS309-MD-EV500A		500	39600	96600	25	91				
33	RS309-MD-EV550A		550	49100	152000	29.4	107				
34	RS309-MD-EV630A		630	62000	181000	32	116				

Note: 1. Above data are under standard test environment: Breaking voltage 500+2V and time constant 2±0.5ms;

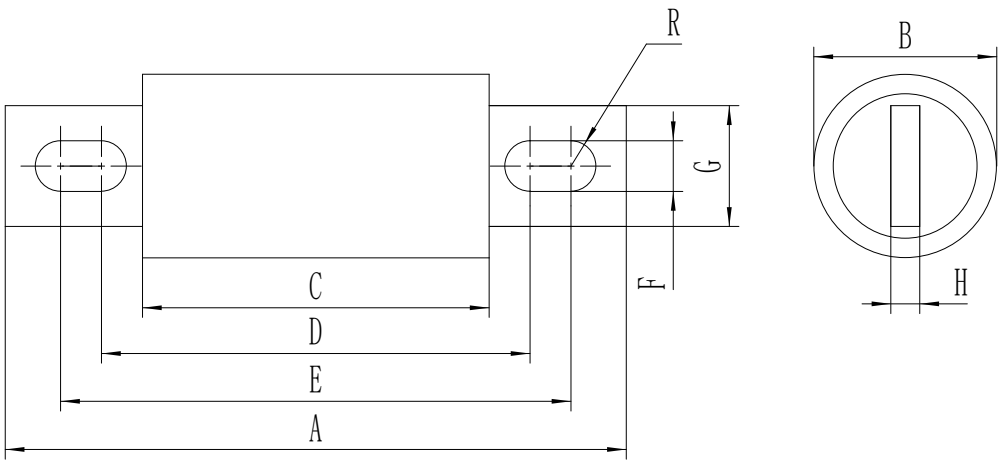
2. Rated loss tested after 15 min of rated current: ambient temp 23±5°C and humidity 45%-75%;

3. Connector: I_n up to 250A, conform to GB/T 31465;

I_n>250A, conform to GB 13539.

Outline Dimensions (mm)

Mounting



Size	A±2	B±0.5	C±0.5	D±1.5	E±1.5	F±0.5	G±0.5	H±0.2
3XA	81	20	40	55	65	9	15	3.3
4ZA	92.2	24	53	68	77	9	18	3.2
5ZA	92.2	31	53	68	75	9	22	5
6ZA	109	37	53	70	87	10.5	25	6
7ZB	110	49	53	70.6	89.8	10.5	38	6

Note:
1, Levelness of terminal blades max 0.3mm.
2, Outer diameter B size excludes the thickness of marking.

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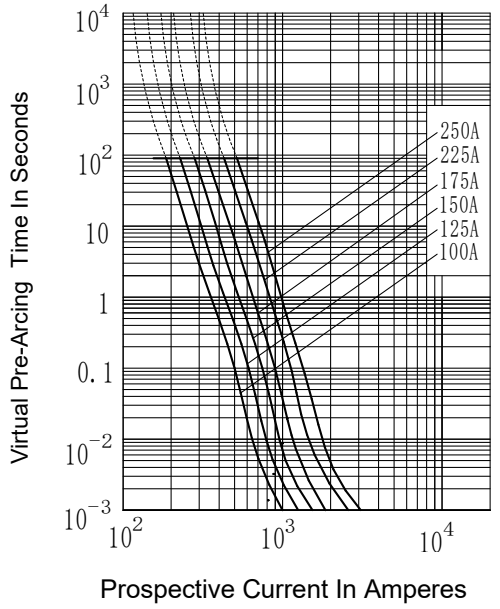
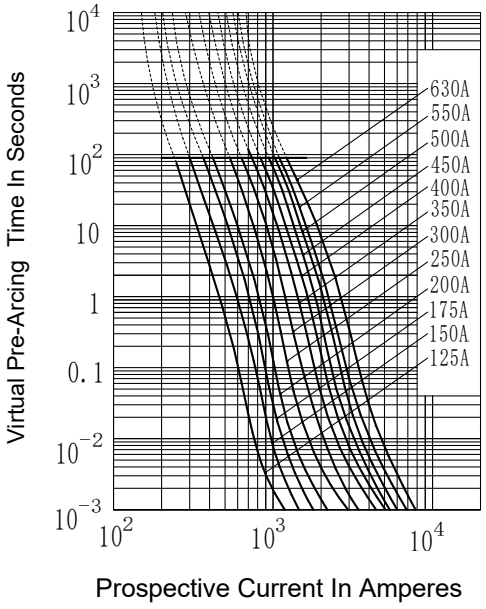
Characteristic Curves

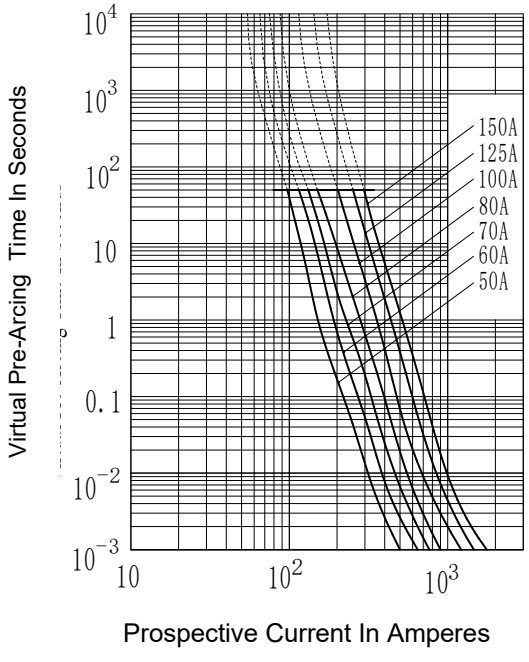
RS309-MD-EVD curves



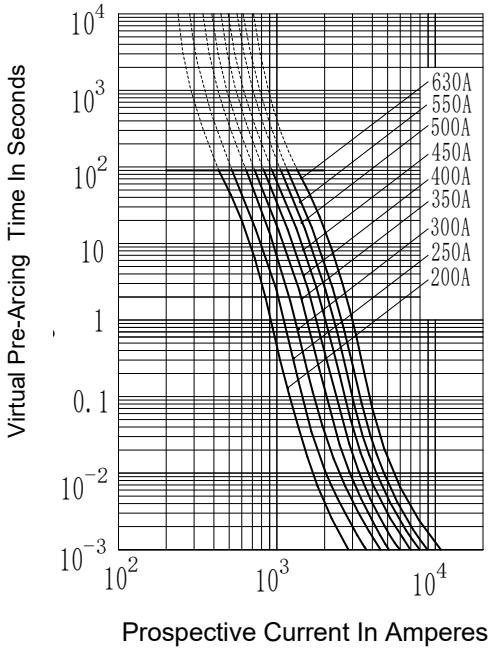
RS309-MD-EV curves



RS309-MD-EVS/EVS-D-curves



RS309-MD-EVS-curves



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Note: 1) I_1, I_2 breaking test voltage: DC500+2V; Time constant: 2±0.5ms; Connector is as described above;

2) Minimum breaking current at least $2I_n$;

3) Above curves below 100ms are equivalent time;

4) Curves current tolerance±10%;

5) I_n<175A, prearcing time for 5In at least 0.01s;

Transport and Storage

Transport

Avoid rain/snow or mechanical damage during transportation.

Storage

Storage temp: -40° C～120° C, Maximum 90% RH at 40° C; Avoid moderate dewing or above.

Package and Storage temp: -40°C～70°C, Maximum 90% RH, no dewing.

Usage Conditions

Normal Condition and Corrections

Correction is not required under normal conditions.

For other conditions, if they are within tolerable range, certain correction measures may be required.

If conditions are beyond tolerable range, please consult our team for evaluation and testing.

Long-term operation current is recommended to be less than 80% of rated current.

Ambient Temperature

Normal Condition

-5° C～40° C

Tolerable Range

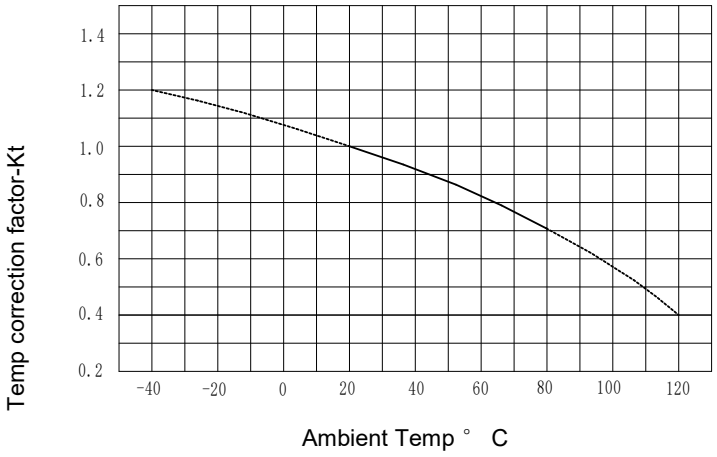
-40° C～120° C

Ambient temperature correction: operating below -5° C, resulting in longer pre-arc time under small over current and slightly increased rated current.

If above 40° C, rated current is corrected as per factor -Kt.

Note 1: Kt value has considered safety margin of rated current during normal operation.

Note 2: ambient temperature should last 1-2 hrs. before it has a significant impact on fuse.



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Altitude

Normal Condition

Below 2000m

Tolerable Condition

Below 4500m

Correction: higher altitude would affect insulation and dissipation, also changes air pressure.

a) For every 100m higher, fuse temperature rise increases by 0.1-0.5k.

b) For every 100m higher, ambient temperature drops by 0.5k approximately.

c) Normally for fuses in open environment, altitude condition is negligible.

d) For closed environment, if ambient temperature inside remains almost stable under different altitude.

If exceed 40° C, fuse should be degraded. For every 1000m, rated current should be degraded by 2%-5%.

Note: for same series, larger rated fuse should use higher degrade %, and lower degrade % for smaller one.

Air Insulation Strength (Breakdown)

a) Air insulation reduces with higher altitude. For 2000-4500m, insulation decreases by 12-15% for every 1000m as per GB/T16935.1. Thus adjust clearing space.

b) Space between fuse terminals is often much larger than specified value in standard.

c) User should consider altitude impact on spacing between fuse and other electric component, earthing etc.

Atmosphere

Normal Conditions

Clean atmosphere, maximum 50% RH at 40° C.

Higher RH is allowed when temperature is low, e.g. maximum 90% at 20 ° C.

Moderate dewing may occur under temperature changes.

Tolerable Conditions

If dewing is minor, RH could be up to 95%.

Vibration

It has great withstand to anti-vibration and mechanical shock, conforming to JASO D622-2006, ISO8820, GB/T 31465.

Conform to rail transport vibration grade II.

Withstand to anti-vibration and mechanical shock is suitable for road vehicles.

For severe vibration application, please consult our team for evaluation and testing.

Pollution Class

Grade 3 pollution withstand

Mounting Condition

Normal Condition

a) Installed in open air without any ventilation. No heat source within 1m except for conductors

b) Contact of fuses must be securely connected. Contact resistance should not affect operation.

c) Fuse can be mounted in any orientation. If spring compression is adopted, make sure it is properly mounted to avoid harmful effect due to gravity or vibration.

Forced Air Cooling

Current carrying capacity of fuse can be improved by implementing forced air or liquid cooling.

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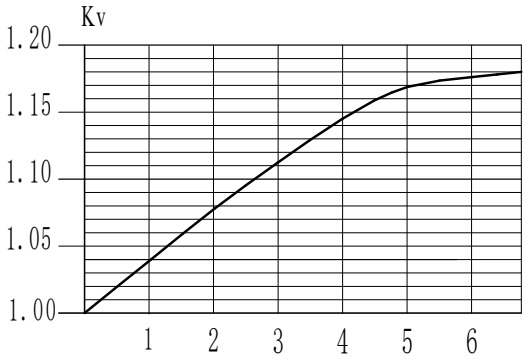

Safety and Maintenance

a) Sufficient space must be ensured between installed fuses. Install insulation if necessary. This is to avoid possible inter-phase short circuit while replacing fuse.

b) Periodic maintenance of fuses includes removal of oxidation layer and dusts.

c) It is compulsory to replace all mechanically damaged fuses.

d) Unless permissive (e.g. fused load-switch), do not replace fuses while energized.

e) While servicing, fuse will not generate gas, dust, noise or others that may harm the environment

f) Metallic part of fuse can be recycled. Non-metal part can be crushed and treated as normal industry waste. It will not cause further pollution to the environment.