TGRS3Z-BQ/CQ

Series Fuse Links for Semiconductor Equipment Protection

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1 Overview

TGRS3Z-BQ/CQ Series Fuse Links for Semiconductor Equipment Protection is used the circuit system with the rated voltages AC500V, AC690V, AC800V, DC250V, DC500V, and DC750V as short circuit protection of semiconductor equipment, and it is widely used in various fields such as chemical industry, metallurgy, electric power, mining, transportation and new energy.

The product complies with the IEC 60269 and GB/T 13539.4 standards.

2. Physical Products

The actual product is shown in the figure below.

Note: The picture is for reference only, and the actual product shall prevail

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3 Type Designation

TG RS 3 Z - □ □ □

① ② ③ ④ ⑤ ⑥ ⑦

①	Enterprise code	
②	Fast fuse	
③	Design No.	
④	AC and DC	
⑤	Max. rated current of the fuse link	
⑥	Voltage code	B: DC250V/DC500V/AC500V/AC690V/DC750V/AC800V; C: DC250V/DC500V/AC500V/AC690V/DC750V/AC800V;
⑦	Connection method	Q: Bolted connection; H: Onboard pin mounting (customized)

4 Main Technical Parameters

Table 1

No.	Model	Size code	Voltage and breaking capacity	Rated current A	Power W	Installation torque
1	TGRS3Z-100BQ/CQ 10A	100	100kA(AC500V/AV690V/AC800V) 50kA(DC250V/DC500V/DC750V)	10	3	Mounting bolt: M5 Recommended torque: 2.6Nm
2	TGRS3Z-100BQ/CQ 16A			16	4.7	
3	TGRS3Z-100BQ/CQ 20A			20	5.2	
4	TGRS3Z-100BQ/CQ 25A			25	7.1	
5	TGRS3Z-100BQ/CQ 32A			32	8.9	
6	TGRS3Z-100BQ/CQ 40A			40	11.3	
7	TGRS3Z-100BQ/CQ 50A			50	13.9	
8	TGRS3Z-100BQ/CQ 63A			63	16.6	
9	TGRS3Z-100BQ/CQ 80A			80	19.6	
10	TGRS3Z-100BQ/CQ 100A			100	24	
11	TGRS3Z-200BQ/CQ 10A	200	100kA(AC500V/AV690V/AC800V) 50kA(DC250V/DC500V/DC750V)	10	1.8	Mounting bolt: M8 Recommended torque: 11Nm
12	TGRS3Z-200BQ/CQ 16A			16	2.5	
13	TGRS3Z-200BQ/CQ 20A			20	4	
14	TGRS3Z-200BQ/CQ 25A			25	5.6	
15	TGRS3Z-200BQ/CQ 32A			32	7	
16	TGRS3Z-200BQ/CQ 40A			40	8	
17	TGRS3Z-200BQ/CQ 50A			50	10.5	
18	TGRS3Z-200BQ/CQ 63A			63	11.8	
19	TGRS3Z-200BQ/CQ 80A			80	19	
20	TGRS3Z-200BQ/CQ 100A			100	22.5	
21	TGRS3Z-200BQ/CQ 125A			125	27.4	
22	TGRS3Z-200BQ/CQ 160A			160	35.5	
23	TGRS3Z-200BQ/CQ 180A			180	37	
24	TGRS3Z-200BQ/CQ 200A			200	40	

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No.	Model	Size code	Voltage and breaking capacity	Rated current A	Power W	Installation torque
25	TGRS3Z-300BQ/CQ 10A	300	100kA(AC500V/AV690V/AC800V) 50kA(DC250V/DC500V/DC750V)	10	1.8	Mounting bolt: M8 Recommended torque: 11Nm
26	TGRS3Z-300BQ/CQ 16A			16	2.5	
27	TGRS3Z-300BQ/CQ 20A			20	4	
28	TGRS3Z-300BQ/CQ 25A			25	5.6	
29	TGRS3Z-300BQ/CQ 32A			32	7	
30	TGRS3Z-300BQ/CQ 40A	300	100kA(AC500V/AV690V/AC800V) 50kA(DC250V/DC500V/DC750V)	40	8	Mounting bolt: M8 Recommended torque: 11Nm
31	TGRS3Z-300BQ/CQ 50A			50	10.5	
32	TGRS3Z-300BQ/CQ 63A			63	11.8	
33	TGRS3Z-300BQ/CQ 80A			80	19	
34	TGRS3Z-300BQ/CQ 100A			100	22.5	
35	TGRS3Z-300BQ/CQ 125A			125	24.8	
36	TGRS3Z-300BQ/CQ 160A			160	35	
37	TGRS3Z-300BQ/CQ 180A			180	37	
38	TGRS3Z-300BQ/CQ 200A			200	38.5	
39	TGRS3Z-300BQ/CQ 225A			225	39.6	
40	TGRS3Z-300BQ/CQ 250A			250	44	
41	TGRS3Z-300BQ/CQ 300A			300	55.7	
42	TGRS3Z-300BQ/CQ 315A			315	58.5	
43	TGRS3Z-400BQ/CQ 50A	400	100kA(AC500V/AV690V/AC800V) 50kA(DC250V/DC500V/DC750V)	50	13.7	Mounting bolt: M8 Recommended torque: 11Nm
44	TGRS3Z-400BQ/CQ 63A			63	16.5	
45	TGRS3Z-400BQ/CQ 70A			70	17.1	
46	TGRS3Z-400BQ/CQ 80A			80	18.9	
47	TGRS3Z-400BQ/CQ 90A			90	24.8	
48	TGRS3Z-400BQ/CQ 100A			100	25.4	
49	TGRS3Z-400BQ/CQ 125A			125	26.9	
50	TGRS3Z-400BQ/CQ 160A			160	30.5	
51	TGRS3Z-400BQ/CQ 180A			180	36.9	
52	TGRS3Z-400BQ/CQ 200A			200	40.5	
53	TGRS3Z-400BQ/CQ 225A			225	42.6	
54	TGRS3Z-400BQ/CQ 250A			250	47.3	
55	TGRS3Z-400BQ/CQ 280A			280	51	
56	TGRS3Z-400BQ/CQ 300A			300	54.6	
57	TGRS3Z-400BQ/CQ 315A			315	58.5	
58	TGRS3Z-400BQ/CQ 350A			350	75.5	
59	TGRS3Z-400BQ/CQ 400A			400	81	

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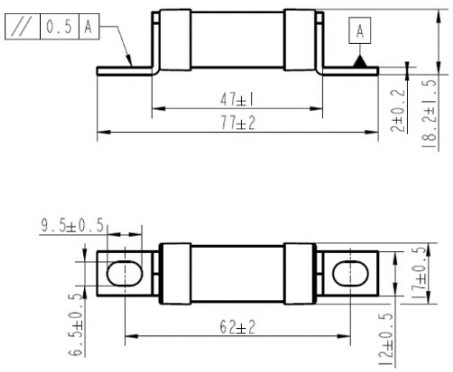
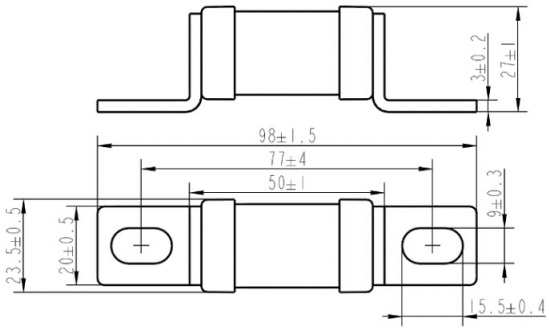
5 Product Outline Dimensions (mm)

The outline and installation dimensions of the product are illustrated in the figure below. Unit: mm

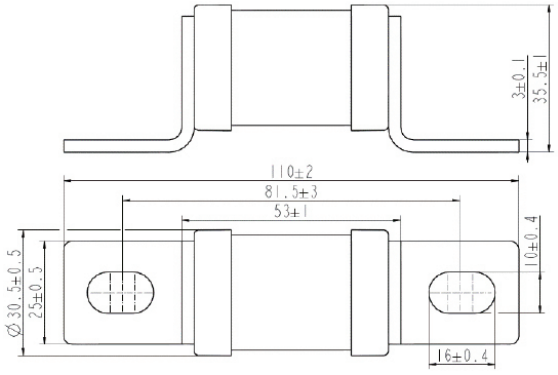
Installation and outline dimensions of TGRS3Z-100BQ/CQ fuse link



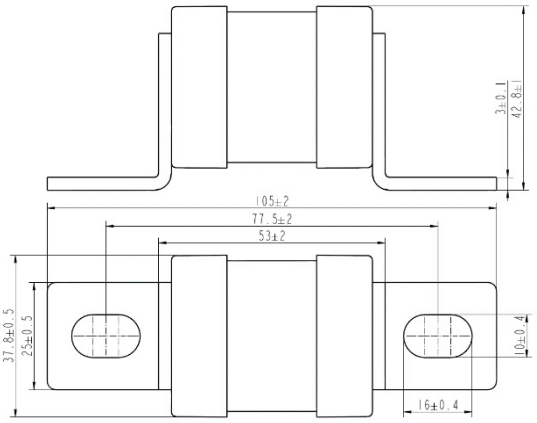
Installation and outline dimensions of TGRS3Z-200BQ/CQ fuse link



Installation and outline dimensions of TGRS3Z-300BQ/CQ fuse link



Installation and outline dimensions of TGRS3Z-400BQ/CQ fuse link



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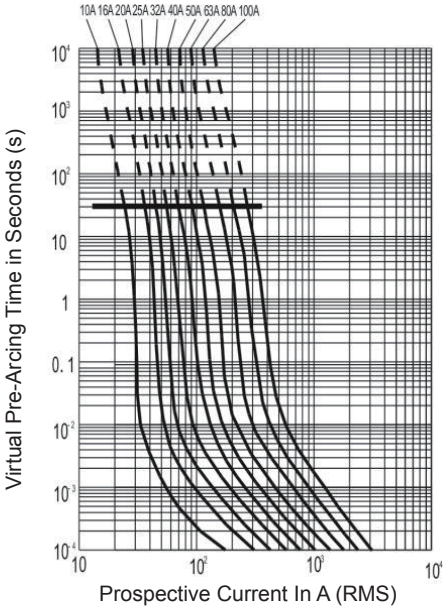
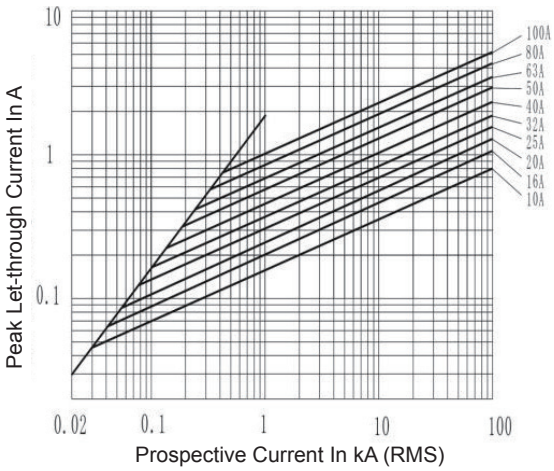
6. Characteristic Curves

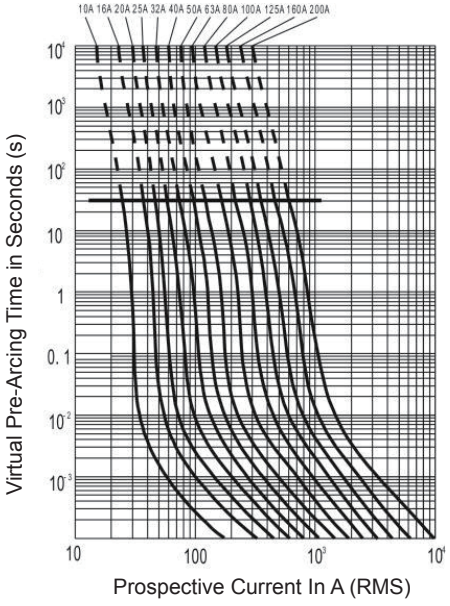
TGRS3Z-100BQ/CQ time - current curve



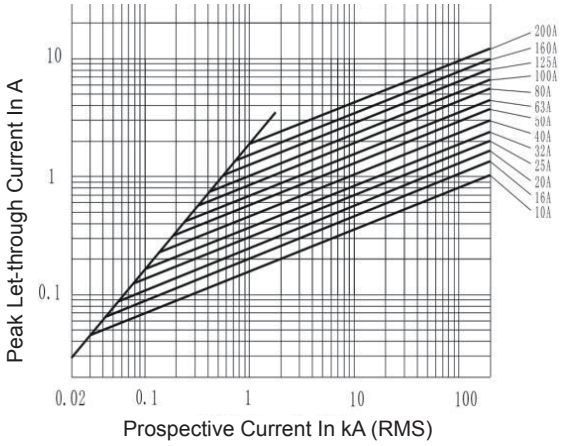
TGRS3Z-100BQ/CQ time - current curve



TGRS3Z-200BQ/CQ time - current curve



TGRS3Z-200BQ/CQ time - current curve



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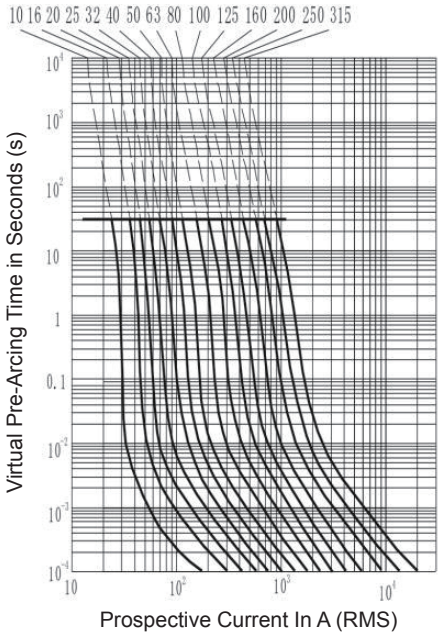
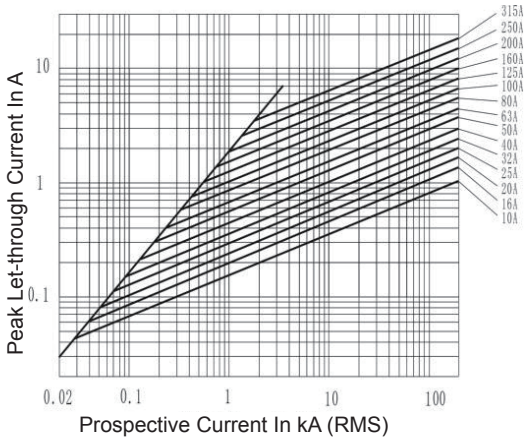
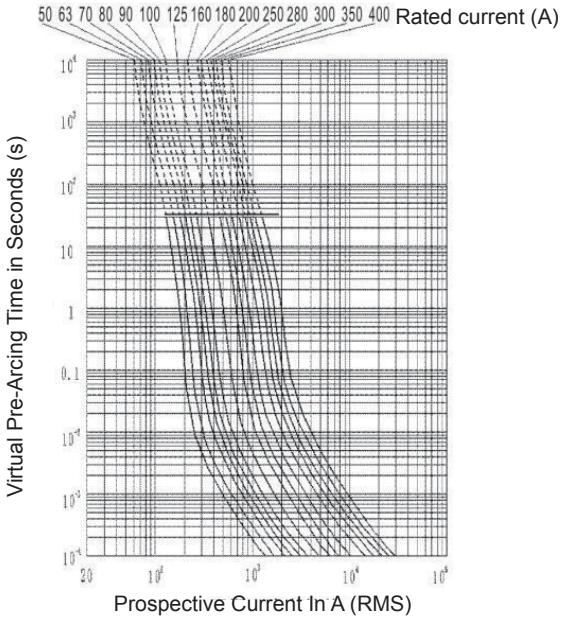
TGRS3Z-300BQ/CQ time - current curve



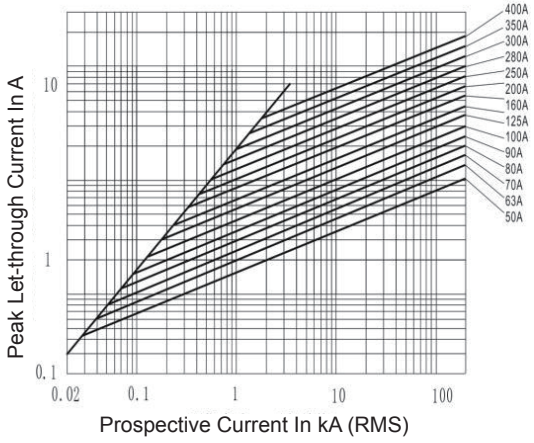
TGRS3Z-300BQ/CQ time - current curve



TGRS3Z-400BQ/CQ time - current curve



TGRS3Z-400BQ/CQ time - current curve



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7 Working Conditions

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7.1 The fuse can work under the normal working conditions described below without additional corrections required.

If out of the normal working conditions, some parameters may be corrected within the allowable working conditions or contact the company for consultation. If out of the allowable working conditions, please consult our company, and the work suitability assessment and testing of the conditions should be carried out.

It is recommended that the current for long-term flow is not more than 80% of the rated current.

7.1.1 Normal working conditions: -5°C ~ 40°C; the air is kept clean, and its relative humidity does not exceed 50% at the maximum temperature of 40°C.

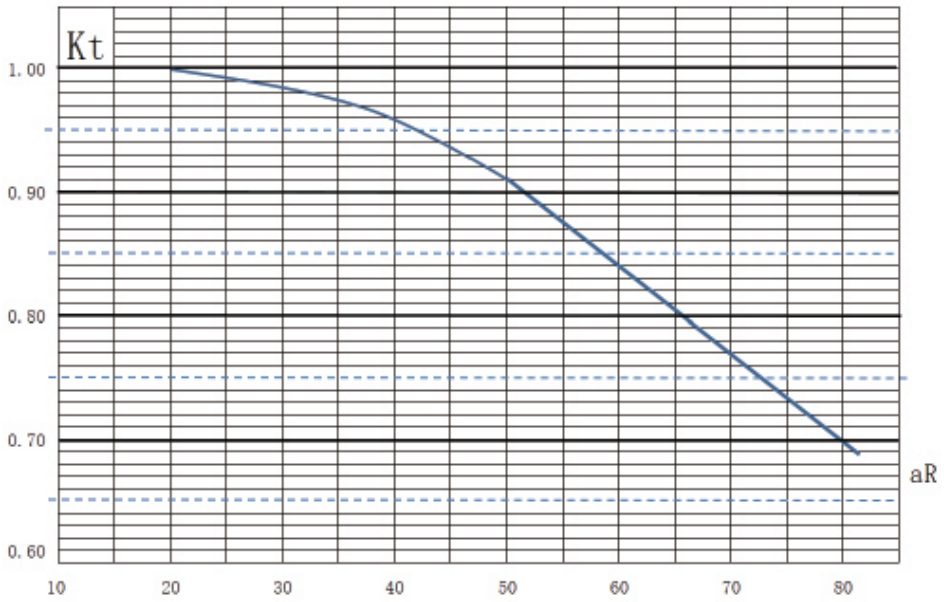
A higher relative humidity can be allowed at lower temperatures, for example, the relative humidity can reach 90% at 20°C.

Moderate condensation may occur occasionally due to changes in temperature under those conditions.

7.1.2 Allowable working conditions: -40°C ~ 85°C; the relative humidity can be up to 95% if there is no obvious condensation.

Parameter correction for changes in ambient air temperature: The virtual pre-arcing time of the low overload overcurrent is extended and the rated current is slightly increased when the product is working below -5°C. However, unless -5°C and above is not within the working temperature range, increasing the rated current of the fuse is generally not considered.

When the fuse is working at 40°C and above, the rated current shall be corrected additionally, and the correction factor is -Kt.



Ambient air temperature of fuse link, °C

Note 1: The value of Kt is taken by considering the influence of the rated current safety margin of the fuse under normal working conditions.
Note 2: There may a significant affect only after the ambient air temperature shall be last for more than 1~2 hours.

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7.1.3 Normal working conditions

The altitude does not exceed 2000 m.

7.1.4 Allowable working conditions

Not exceed 4500 m.

7.2 Parameter correction for altitude change: The higher altitude mainly causes insulation deterioration, heat dissipation condition deterioration, and air pressure changes.

- The temperature of the fuse will rise by 0.1-0.5 k for every 100 m increase of the altitude.
- The ambient temperature decreases by about 0.5k on average for every 100 m increase of the altitude.
- Under normal circumstances, the influence of the altitude on the rated current can be ignored for fuses used in the open environment, so that the fuse can be selected according to the standard conditions.
- For fuses used in closed environments, the rated current shall be decreased if the ambient air temperature of the box or the temperature inside the box does not drop with the increase of the altitude, and can still reach 40°C and above. The rated current is decreased by 2% - 5% for every 1000 m increase of the altitude.

Note: In the same size series, a higher derating ratio is adopted for maximum rated current, and a lower derating ratio is adopted for low rated current.

7.3 Influence of the altitude on the insulation strength of air (breakdown strength)

- As the altitude increases, the insulation strength of air will drop. Within 2000-4500 meters, the insulation strength is reduced by 12-15% for every 1000 m increase of the altitude. The insulation gap should be corrected accordingly with reference to GB/T16935.1.
- The insulation distance between the terminals of the fuse is generally much greater than the value required in Table A1 and Table A2 of GB/T16935.1 standard. No verification of the insulation gap is required except for small fuses.
- The influence of the altitude on the insulation gap between the fuse and other live structure and between the fuse to the earth shall be considered by users.

Specific allowable current data shall be calculated according to the following formula

$$I = I_N * \left(1 - \frac{(h - 2000)}{100} * \frac{0.5}{100}\right)$$

For example, a fuse link with a 400A rated current can carry the following at an altitude of 2500 meters:

$$I = 400 * \left(1 - \frac{(2500 - 2000)}{100} * \frac{0.5}{100}\right) = 400 * (1 - 5 * 0.005) = 400 * 0.975 = 390A$$