TGRS3Z-NEP

Series Fuse Links for Semiconductor Equipment Protection

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1 Overview

TGRS3Z-NEP series fuse links for semiconductor protection is used in circuit systems with a rated voltage of DC1500V; with its breaking capacity of 250kA, it can be used as short circuit protection and backup protection for energy storage systems, power systems and other devices and equipment.

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

2 Basic Information of the Product

- Performance reference: GB/T 13539 IEC60269 UL248
- Rated voltage: DC1500V 1200V 1000V 750V
- Rated current: 1250A-3000A
- Use category: aR
- Breaking capacity: DC150kA (time constant 10ms) DC250kA (time constant 4ms)
- Compliant with RoHS2.0

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3 Type Designation

TG	RS	3	Z	-	N	EP
①	②	③	④		⑤	⑥

①	Enterprise code	
②	Fast fuse	
③	Design No.	
④	DC	
⑤	Max. rated current of fuse link	
⑥	Voltage code and installation method	1500V, plate bolt connection installation

4 Key Technical Parameters

Table 1

No.	Model	Size	Rated voltage V	Rated current A	$I^2t(kA^2s)$		Power consumption W	Minimum packaging quantity	Number of packing boxes	Installation method
					Pre-arcing	Fusing				
1	TGRS3Z-NEP-1250A	N	DC1500V	1250	768	2650	368	1	1	M12 bolt connection
2	TGRS3Z-NEP-1400A			1400	1050	3660	396	1	1	
3	TGRS3Z-NEP-1500A			1500	1268	4560	411	1	1	
4	TGRS3Z-NEP-1600A			1600	1546	5462	438	1	1	
5	TGRS3Z-NEP-1800A			1800	2182	7738	463	1	1	
6	TGRS3Z-NEP-2000A			2000	2964	10680	502	1	1	
7	TGRS3Z-NEP-2200A			2200	3952	14170	530	1	1	
8	TGRS3Z-NEP-2400A			2400	4961	17780	565	1	1	
9	TGRS3Z-NEP-2500A			2500	5675	20490	583	1	1	
10	TGRS3Z-NEP-2600A			2600	6466	23260	615	1	1	
11	TGRS3Z-NEP-2800A			2800	8197	29510	628	1	1	
12	TGRS3Z-NEP-3000A			3000	10330	37210	650	1	1	

Notes: 1. The nominal conditions of the above data I2t are DC1500V, 250kA;
2. The power consumption is measured under the standard natural cooling conditions;
3. For M12 screw installation, the recommended torque is 40±5N.m, and it shall not be greater than 50N.m.

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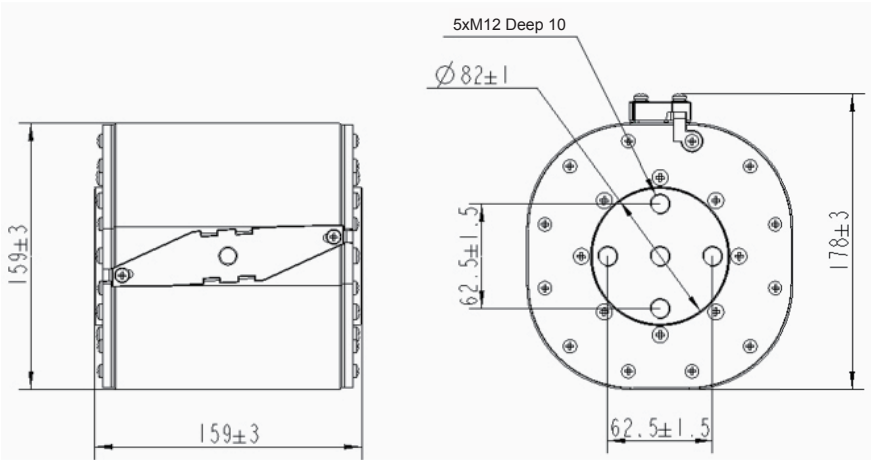
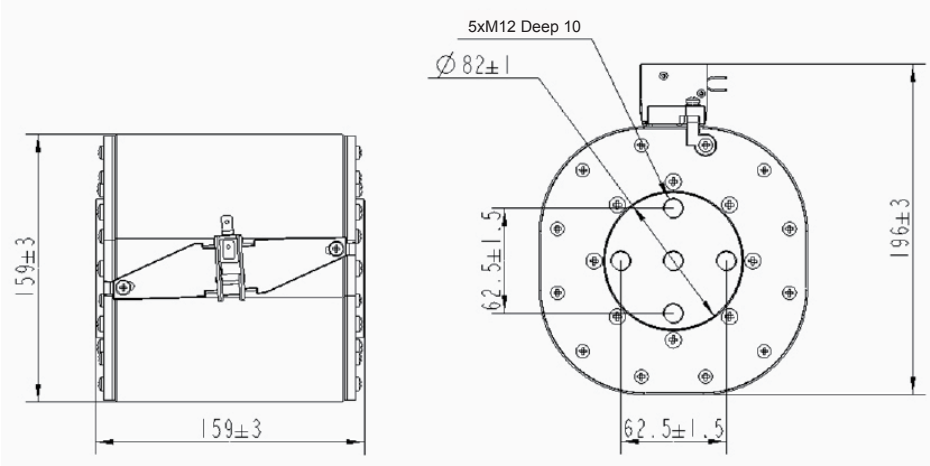
5 Product Outline Dimensions (mm)



With indicator (without micro switches)



With micro switches

Installation:
a) During installation, the screw-in size of the stud shall not exceed 9mm (8mm is recommended, lower 1mm than the thread depth);
b) When tightening the nut, no rotation of the stud is kept;
c) The stud installation is recommended, and there is no recommended torque when tightening the stud.

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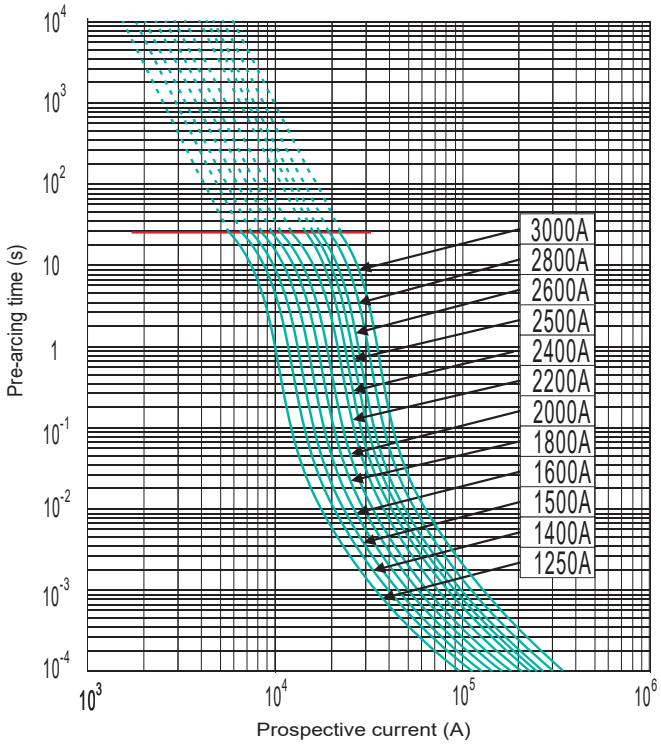
6 Characteristic Curve



7 Working Conditions

7.1 Working conditions and parameter correction

It is recommended that the long-term through-flow current is not greater than 80% rated current.

No additional correction is required when the fuse works at an ambient temperature of 20°C and an altitude of 2000m.

When out of the normal working conditions, some parameters may be corrected within the Permissible working condition range, or contact our company. If out of the Permissible working condition range, please contact our company, and carry out the working adaptability evaluation and testing of the conditions.

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

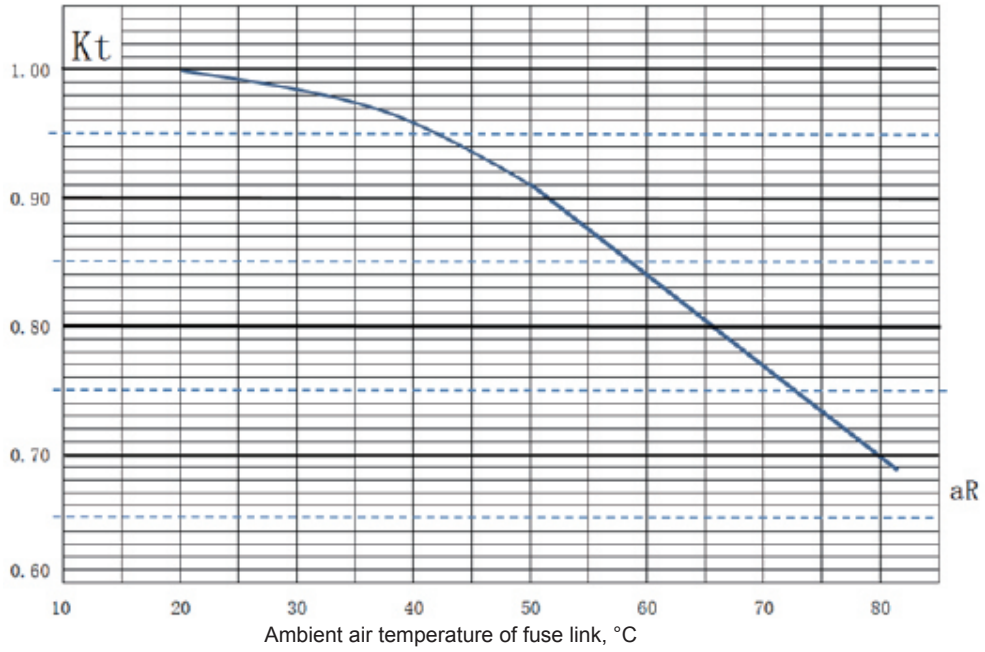
A higher relative humidity is allowed at lower temperatures, for example, the relevant humidity can be up to 90% at 20°C.

Medium condensations may occur occasionally due to temperature changes under those conditions.

7.1.2 Permissible working conditions: -40°C~85°C; the relative humidity can be up to 95% without obvious condensation.

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

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



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 is only a significant influence when the ambient air temperature lasts for more than 1-2 hours.

7.1.3 Normal working conditions

The altitude does not exceed 2000m.

7.1.4 Permissible working conditions

Not exceed 4500m.

Parameter correction for altitude changes: Higher altitudes mainly lead to insulation degradation, heat dissipation degradation, and air pressure changes.

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

Note: In the same size series, the maximum rated current uses a higher derating ratio, and the smaller rated current uses a lower derating ratio.

Influence of altitude on air insulation strength (breakdown strength)

- As the altitude increases, the air insulation strength is reduced. Within 2000-4500 meters, the insulation strength is reduced by 12-15% for every 1000m increase in altitude. The insulation gap should be corrected accordingly according to the GB/T16935.1 standard.
- The insulation distance between the fuse terminals is generally much larger than the insulation gap specified in A2 standard in Table A1 of GB/T16935.1. Except for some small fuse links, the insulation gap check is not required for others.
- The influence of the altitude shall be considered for the insulation gap between the fuse and other energized structure and to the earth.

The specific let-through current data is listed in the table below.

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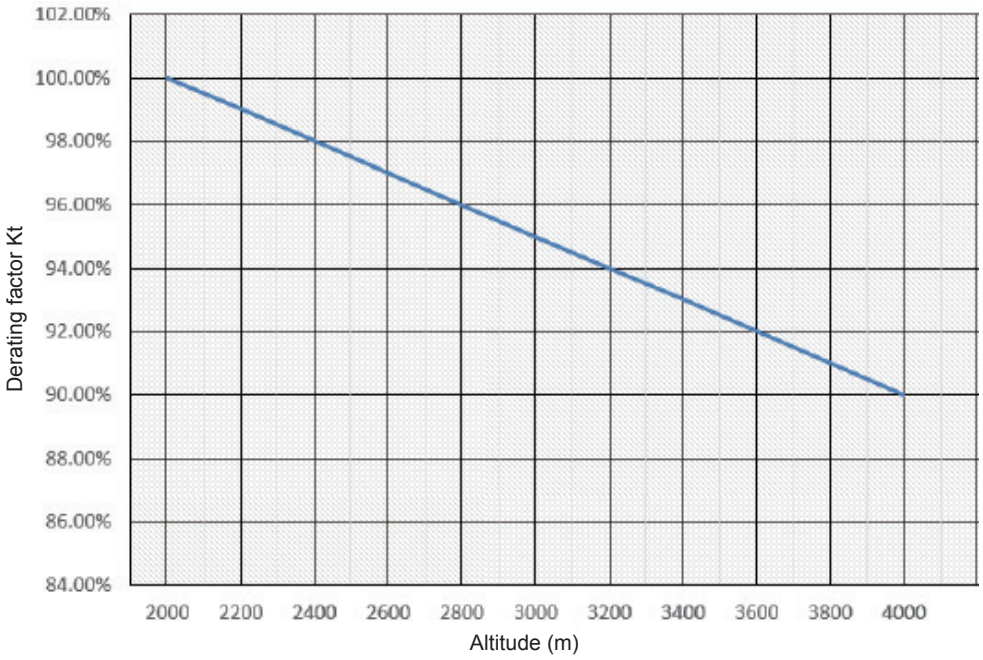

7.1.5 Pollution degree

The pollution degree is Level III.

7.2 Installation conditions

7.2.1 Normal working conditions

- The fuse is installed in natural air separately without ventilation. Except for the connecting wire, there are no other heating parts or heat dissipation components within 1m.
- The fuse connection terminals should ensure stable and reliable electrical contact. The contact resistance should not significantly affect the operation of the fuse.
- The fuse can be installed vertically, horizontally or tilted. If the electrical connection of the fuse is guaranteed by spring pressure, it is advisable to choose an appropriate position when installation to avoid the adverse effects of gravity and vibration on the electrical connection.

7.2.2 Forced air cooling

Forced air cooling can increase the heat dissipation of the fuse and increase the rated current of the fuse. Correction factor of wind speed and rated current - Kv.

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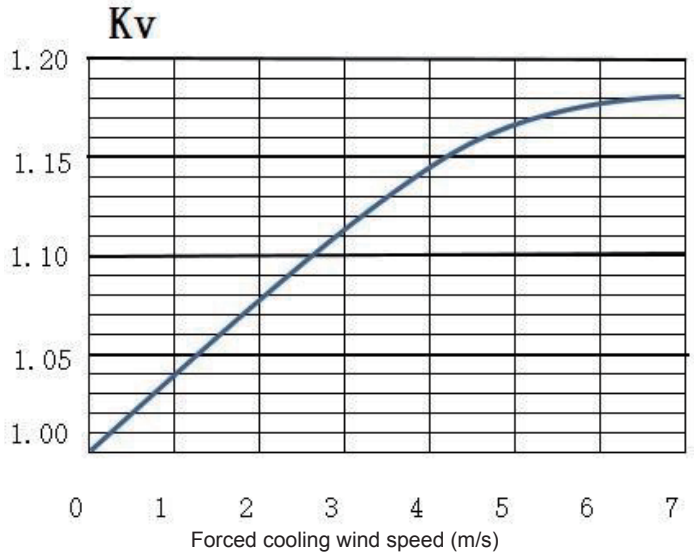

8 Safe Use and Maintenance

- When installing the fuse, the minimum gap between the live parts of two adjacent fuses meets the insulation requirements. If necessary, an insulating partition is provided between the fuses to prevent short circuit between phases when replacing the live fuse.
- Combined with the regular inspection and maintenance of electrical equipment, inspection and maintenance should be carried out to remove dust, oxide layers on conductive parts.
- Mechanically damaged fuses must be replaced.
- Unless the use requirements permits, such as fuse-type load switches, please do not replace fuses with load.
- There shall be no waste gas, dust, and noise of affecting environmental factors throughout the entire service life of the product.
- At the end of the product life, metal parts can be recycled, and non-metal parts can be crushed and disposed of as general industrial waste, which will not cause secondary pollution to the environment.

9 Ordering Notice

9.1 The necessary information must be indicated when ordering

9.1.1 Please specify the product model, rated current, breaking capacity, and quantity for fuse links;

9.1.2 This series has no base, and the fuse link can be directly fixed to the copper busbar through bolt connection.

9.2 Ordering example

For example: TGRS3Z-NEP/2000A 100 sets, indicating to order 100 sets of TGRS3Z-NEP fuses with a rated current of 2000A.