TGRS3Z-3E

Series Fast Fuses

TGRS3Z-3E Series Fuse Links for Semiconductor Equipment Protection

1 Overview

TGRS3Z-3E series fuse links for semiconductor protection is used in the circuit system with a rated voltage not greater than DC1500V, and its rated breaking capacity is 250kA. The product is 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 13539.4 IEC60269
- Rated voltage: DC1500V 1200V 1000V 750V
- Rated current: 20A-1250A
- Use category: aR
- Breaking capacity: DC50kA (time constant 10ms) DC250kA (time constant 4ms)
- Compliant with RoHS2.0

TGRS3Z-3E Series Fuse Links for Semiconductor Equipment Protection

3 Type Designation

TG	RS	3	Z	-	3	E	T	S/M
①	②	③	④		⑤	⑥	⑦	⑧

①	Enterprise code	
②	Fast fuse	
③	Design No.	
④	DC	
⑥	Max. rated current of fuse link	
⑥	DC1500V	
⑦	Cutter type	Hook fork type
⑧	Current range	

4 Key Technical Parameters

Table 1

No.	Model		Size	Rated voltage V	Rated current A	$I^2t(A^2s)$		Power consumption W	Installation method
						Pre-arcing	Fusing		
1	TGRS3Z-3ETS-20A	TGRS3Z-3EQS-20A	3S	DC1500V	20	280	1040	10	Bolt connection method is used
2	TGRS3Z-3ETS-25A	TGRS3Z-3EQS-25A			25	330	1223	12	
3	TGRS3Z-3ETS-32A	TGRS3Z-3EQS-32A			32	412	1529	15	
4	TGRS3Z-3ETS-40A	TGRS3Z-3EQS-40A			40	515	1911	19	
5	TGRS3Z-3ETS-50A	TGRS3Z-3EQS-50A			50	735	2730	28	
6	TGRS3Z-3ETS-63A	TGRS3Z-3EQS-63A			63	1050	3900	38	
7	TGRS3Z-3ETS-80A	TGRS3Z-3EQS-80A			80	1400	6000	48	
8	TGRS3Z-3ETS-100A	TGRS3Z-3EQS-100A			100	1600	8100	56	
9	TGRS3Z-3ETS-125A	TGRS3Z-3EQS-125A			125	3050	15500	66	
10	TGRS3Z-3ETS-160A	TGRS3Z-3EQS-160A			160	5600	28000	80	
11	TGRS3Z-3ETS-200A	TGRS3Z-3EQS-200A			200	10000	51000	90	

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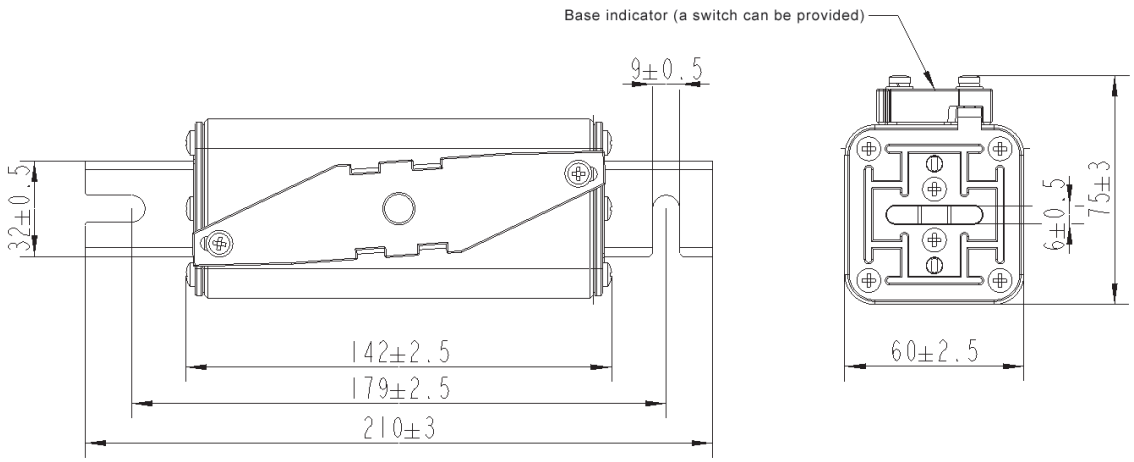
Table 1, continued

No.	Model		Size	Rated voltage V	Rated current A	$I^2t(A^2s)$		Power consumption W	Installation method
						Pre-arcing	Fusing		
12	TGRS3Z-3ETS-250A	TGRS3Z-3EQS-250A	3S	DC1500V	250	20000	110000	101	Bolt connection method is used
13	TGRS3Z-3ETS-300A	TGRS3Z-3EQS-300A			300	36500	180000	106	
14	TGRS3Z-3ETS-315A	TGRS3Z-3EQS-315A			315	39000	210000	112	
15	TGRS3Z-3ETS-350A	TGRS3Z-3EQS-350A			350	53000	280000	120	
16	TGRS3Z-3ETS-400A	TGRS3Z-3EQS-400A			400	81000	410000	130	
17	TGRS3Z-3ETS-450A	TGRS3Z-3EQS-450A			450	115000	590000	135	
18	TGRS3Z-3ETM-500A	TGRS3Z-3EQM-500A	3M		500	71178	199680	206	
19	TGRS3Z-3ETM-550A	TGRS3Z-3EQM-550A			550	93620	286790	216	
20	TGRS3Z-3ETM-630A	TGRS3Z-3EQM-630A			630	109775	437685	230	
21	TGRS3Z-3ETM-700A	TGRS3Z-3EQM-700A			700	334125	600985	241	
22	TGRS3Z-3ETM-800A	TGRS3Z-3EQM-800A			800	496364	866347	259	
23	TGRS3Z-3ETM-900A	TGRS3Z-3EQM-900A			900	567361	1273326	273	
24	TGRS3Z-3ETM-1000A	TGRS3Z-3EQM-1000A			1000	679136	1678801	291	
25	TGRS3Z-3ETM-1100A	TGRS3Z-3EQM-1100A			1100	810293	2137789	301	
26	TGRS3Z-3ETM-1250A	TGRS3Z-3EQM-1250A			1250	1269000	3328755	324	

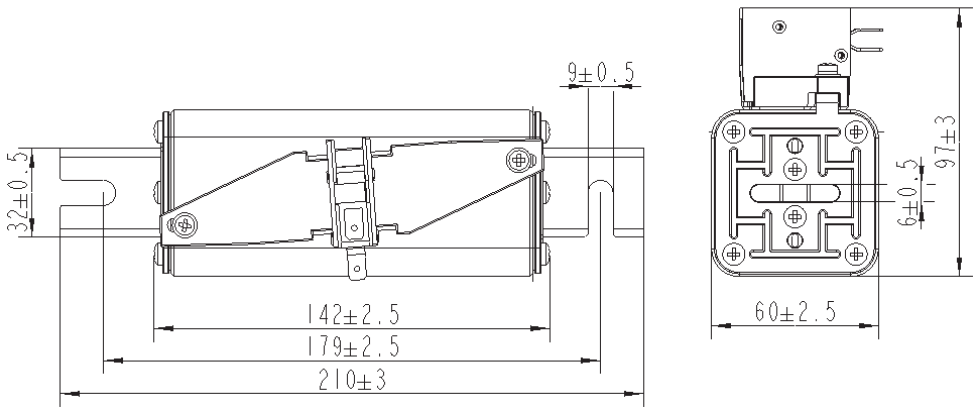
Notes: 1. The nominal conditions of the above data I^2t are DC1584V, 250kA;
2. The power consumption is measured under the standard natural cooling conditions;
3. 3ET adopts the M8 screw installation method, and the recommended torque is 13 ± 1N.m / 3EQ adopts the M10 screw installation method, and the recommended torque is 20 ± 1N.m.

5 Product Outline Dimensions (mm)

5.1 Outline and installation dimensions of TGRS3Z-3ETS products

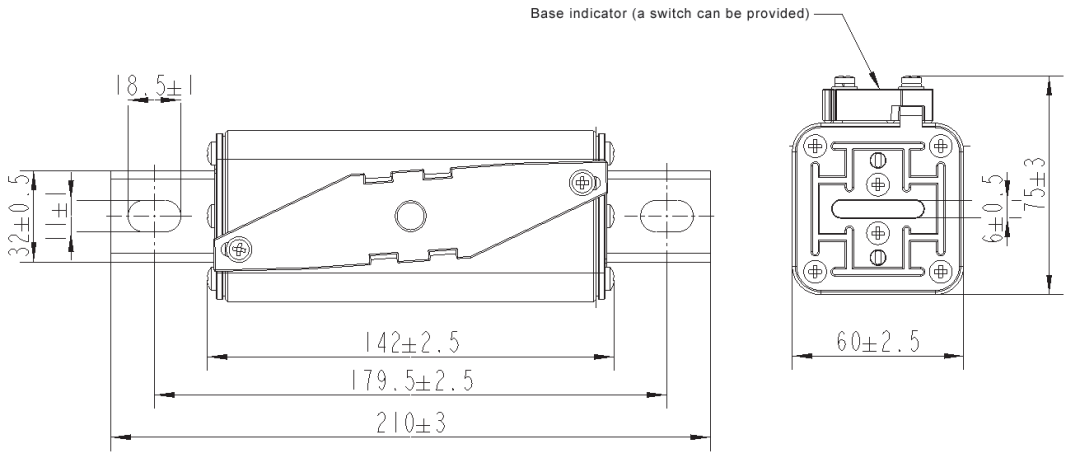


With an indicator (without micro switches)

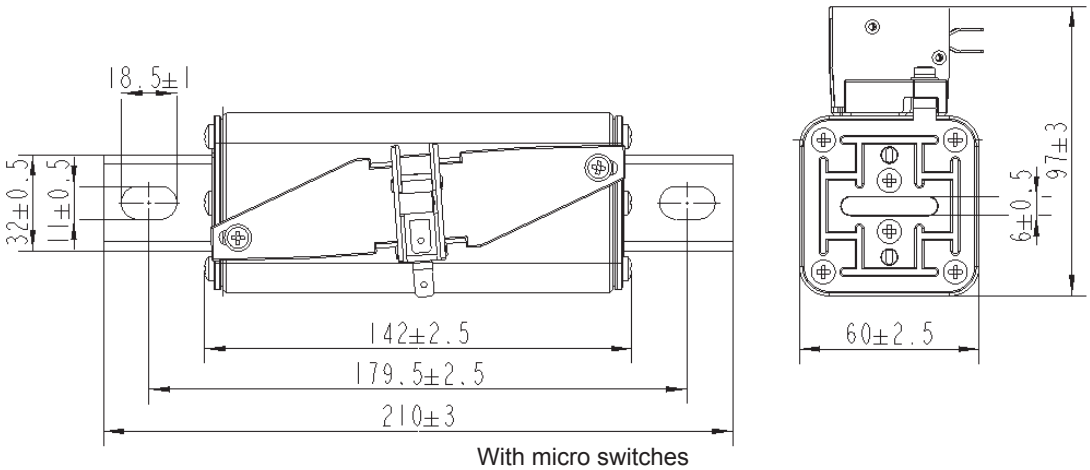


With micro switches

5.2 Outline and installation dimensions of TGRS3Z-3EQS products



With an indicator (without micro switches)



With micro switches

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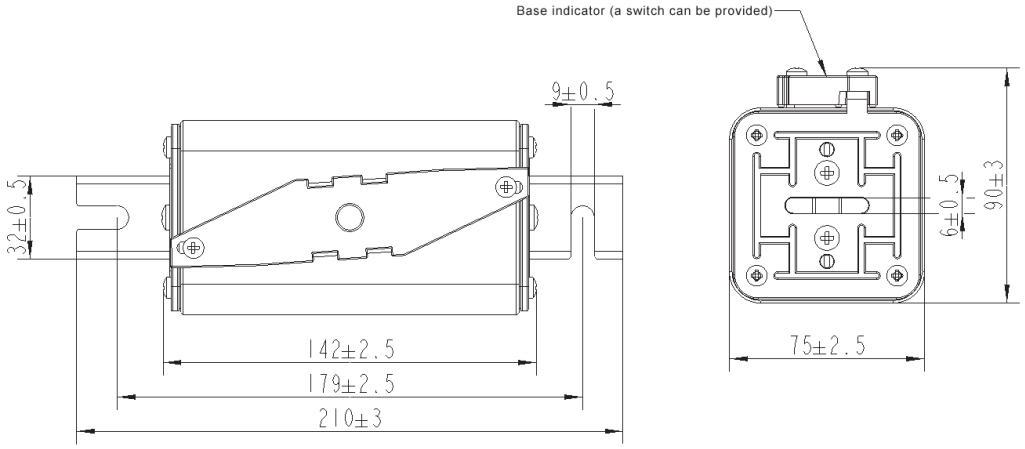
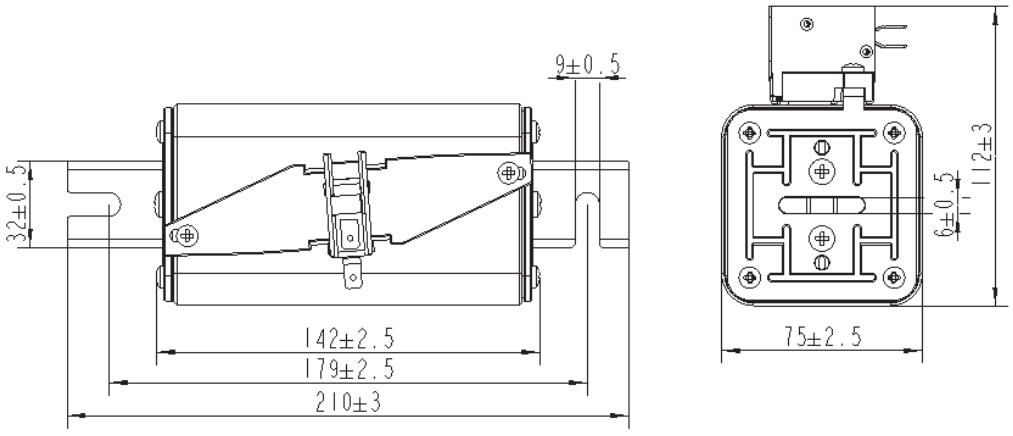
5.3 Outline and installation dimensions of TGRS3Z-3ETM products

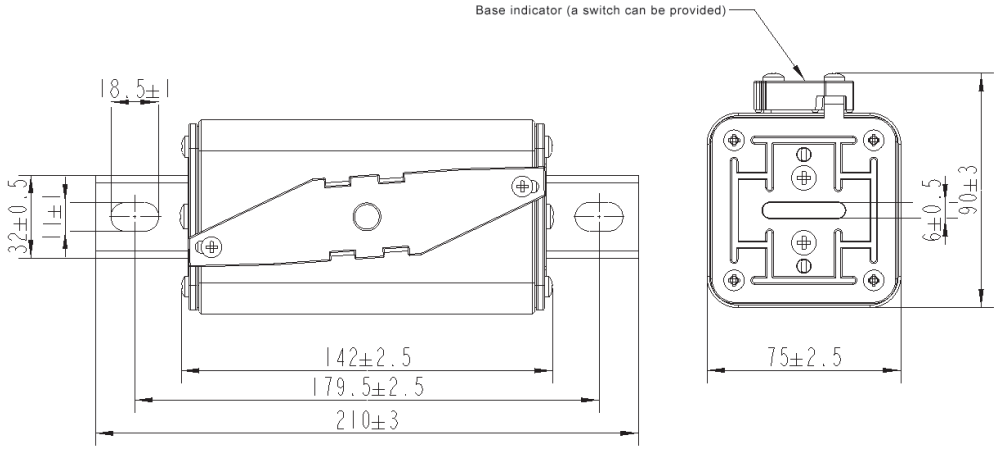


With an indicator (without micro switches)



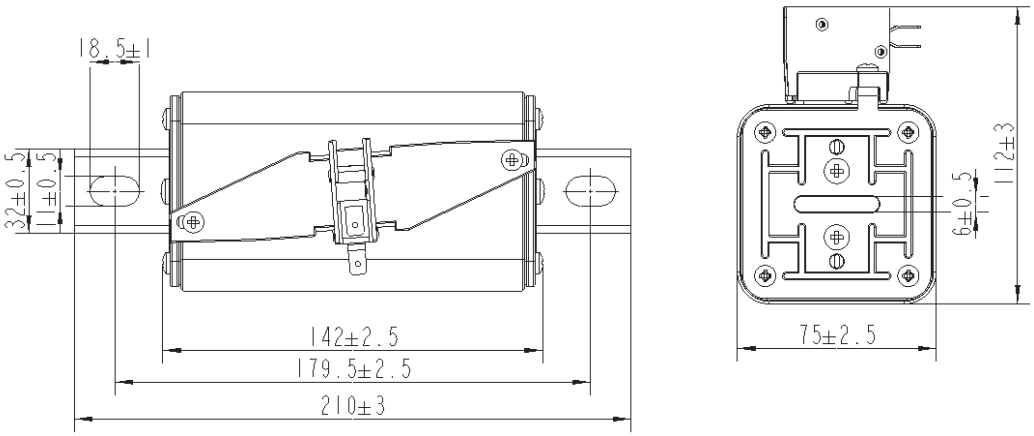
With micro switches

5.4 Outline and installation dimensions of TGRS3Z-3EQM products



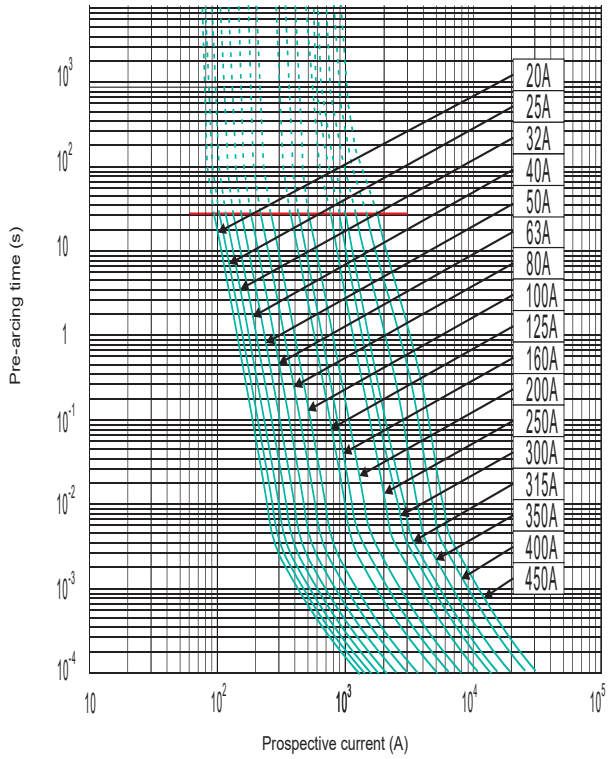
With an indicator (without micro switches)

TGRS3Z-3E Series Fuse Links for Semiconductor Equipment Protection

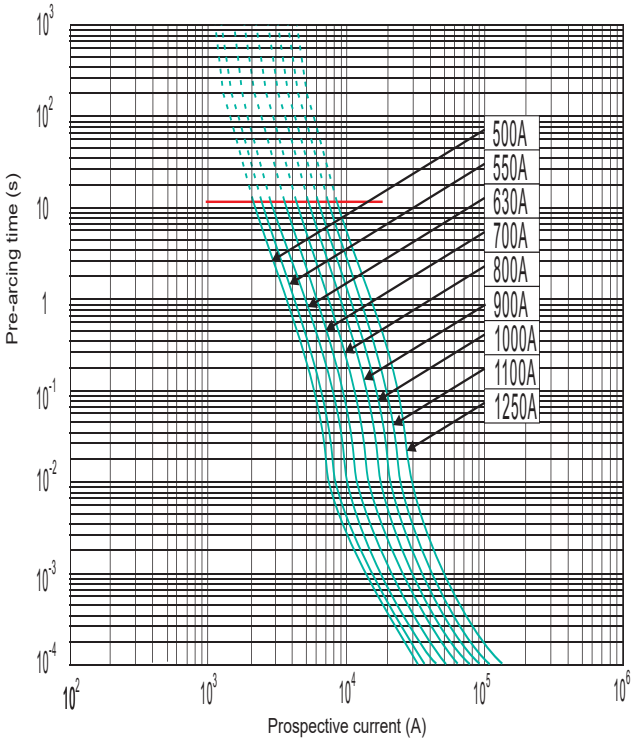


With micro switches

6 Characteristic Curve



TGRS3Z-3ETS Time – Current curve



TGRS3Z-3ETM Time – Current curve

TGRS3Z-3E Series Fuse Links for Semiconductor Equipment Protection

7 Working Conditions

7.1 Working conditions and parameter correction

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.

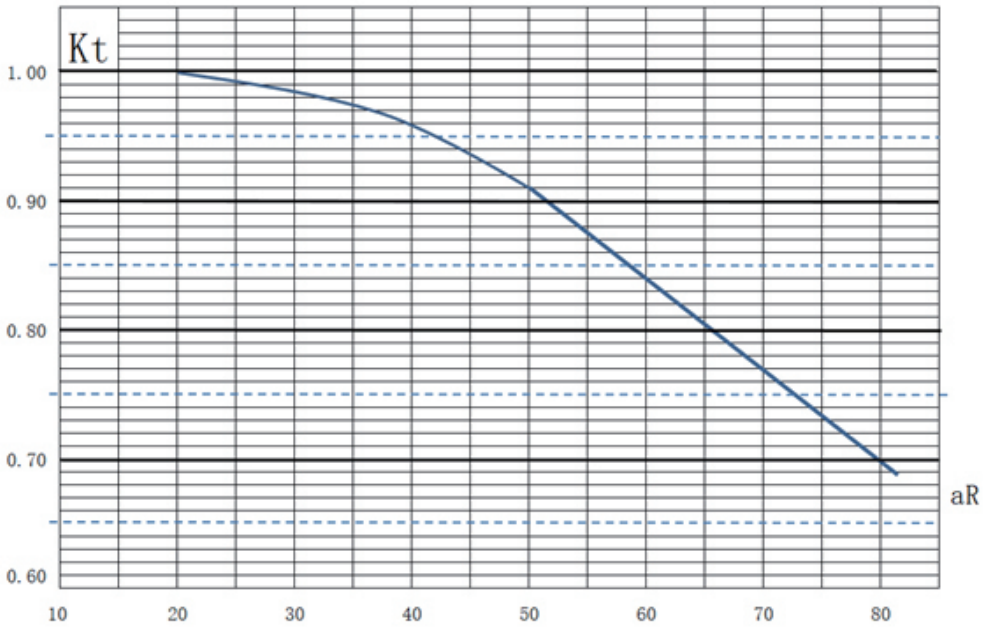
A higher relative humidity is allowed at lower temperatures, for example, the relevant humidity can be up to 90% at 20°C.

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 hour.

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.

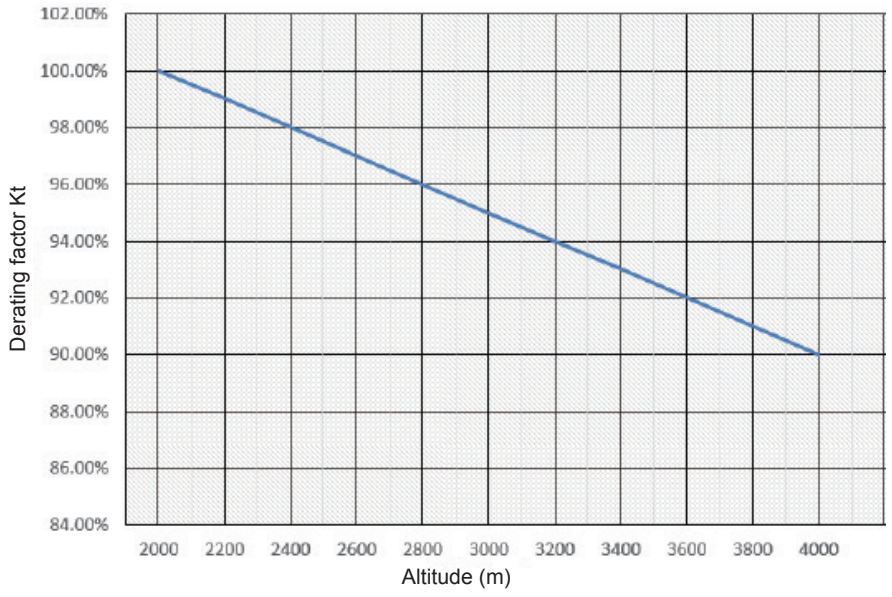
- The fuse temperature rises by 0.1-0.5k for every 100m increase in altitude.
- The mean ambient temperature is decreased by about 0.5k for every 100m increase in altitude.
- Under normal circumstances, the influence of altitude on the rated current can be ignored, and the fuse used in open environments 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.



7.1.5 Pollution degree

The pollution degree is Level III.

TGRS3Z-3E Series Fuse Links for Semiconductor Equipment Protection

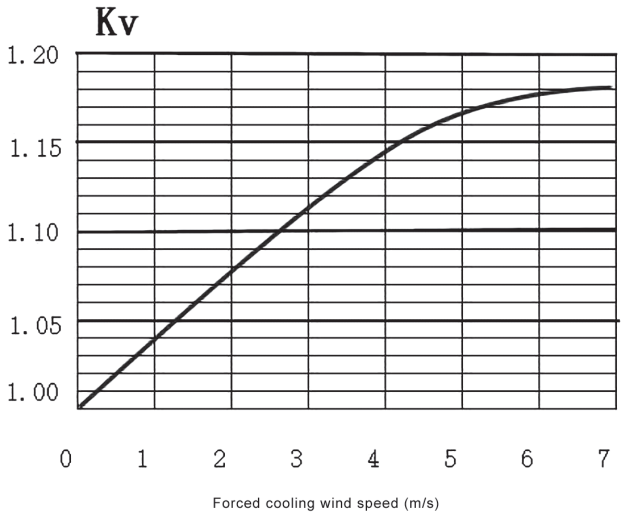
7.2 Installation conditions

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.



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-3ETS/200A 100 sets, indicating to order 100 sets of TGRS3Z-3ETS fuses with a rated current of 200A.