

RAPIDPLUS HIGH SPEED FUSE LINKS FOR SEMICONDUCTORS

Rapidplus®



aR CYLINDRICAL

semiconductor protection fuse links













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RATED VOLTAGE 690V AC

RATED CURRENT

BREAKING CAPACITY 200KA

IEC/EN 60269-1 IEC/EN 60269-4 UL248-1 UL248-13



Rapidplus® Cylindrical fuse links for semiconductors

RAPIDPLUS CYL aR fuse links are intended to clearing short-circuits and have been designed and manufactured to have very low I²t values as well as reduced arc voltages that guarantee an optimum protection of semiconductors. They have a very good cycling ability.

The range comprises the following fuse links:

→ Size 10x38 690V AC 1A to 32A

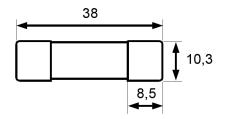
Typical application comprise protection of semiconductors (diodes, thyristors, triacs, etc) used in power rectifiers, UPS, converters, motor drives (AC and DC), soft starters, solid state relays, photovoltaic inverters, welding inverters and any application where it is necessary to protect semiconductor devices.

UL certification according to UL248 standard. UL file Nr. E477155.





Dimensions



Weight 8gr

Range

In (A)	REFERENCE	PACKING Uni /BOX
1	491105	10/100
2	491107 71 °	10/100
3	491100 71 °	10/100
4	491113 71 °	10/100
6	491115 71 °	10/100
8	491120 📆	10/100
10	491125 71 °	10/100
12	491130 71 °	10/100
16	491135 📆	10/100
20	491140 71 °	10/100
25	491145 📆	10/100
32	491155 T L	10/100





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Technical data

Rated voltage	690V AC (UL/IEC) 700V DC (L/R=10ms)(IEC)	
Rated current	1A32A	
Rated breaking capacity 200kA @690V AC 30kA @700V DC		
Operating class	aR	
Storage temperature	-40°C 90°C	
Operating temperature *	-40°C 80°C	

^{*} For ambient temperatures higher than 25°C it is necessary to apply a derating in maximum current.

Standards

IEC/EN 60269-1 IEC/EN 60269-4 UL248-1 UL248-13 RoHS Compliant



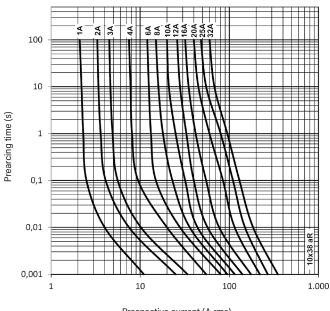
Certifications



Power dissipation

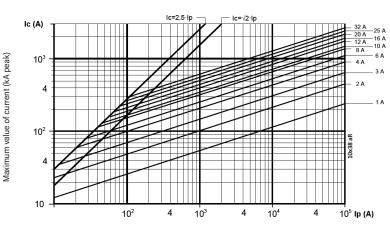
In	POWER DISSIPATION In	POWER DISSIPATION 0.8 · In	PREARCING I2t	l ² t 690V
(A)	(VV)	(VV)	(A ² S)	(A ² S)
1	0,75	0,45	0,20	1,2
2	1,40	0,75	0,80	2,6
3	1,70	0,95	2,5	8,0
4	1,69	0,97	4,9	10
6	2,46	1,4	14,0	28
8	1,52	0,91	3,0	24
10	2,07	1,23	4,7	38
12	2,62	1,53	6,8	54
16	3,72	2,11	12,0	96
20	4,50	2,57	18,8	150
25	4,55	2,60	48,0	384
32	6,65	3,65	75,0	600

t-I characteristics



Prospective current (A rms)

Cut-off characteristics



Prospective current (A ef)







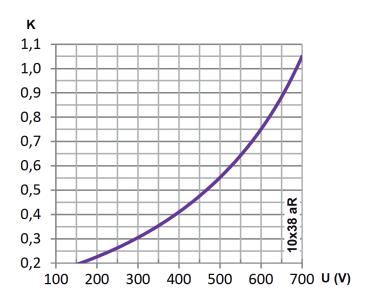




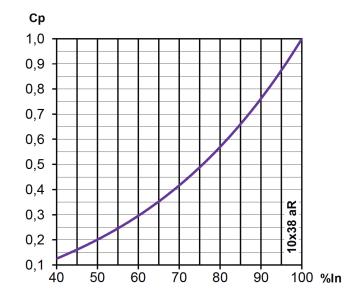


Rapidplus[®]

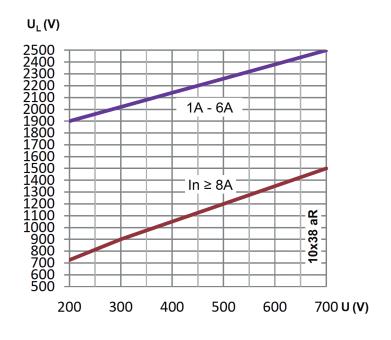
I²t Total clearing correction factor



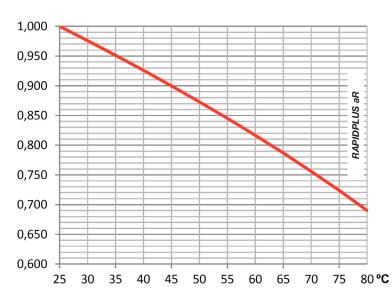
Power dissipation correction factor



Arc voltage



Ambient temperature correction coefficient









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TECHNICAL CHARACTERISTICS

(Introduction)

I²t Total clearing correction factor

Total clearing I²t values at rated voltage and at power factor of 0,15 are given in electrical characteristics tables.

For other voltages, clearing I^2t values can be calculated multiplying these values by correction factor \mathbf{K} .

Arc voltage U_L

This graphic gives the peak arc voltage $\mathbf{U}_{\mathbf{L}}$ that can appear across the fuse link during operation as a function of working voltage.

Power dissipation

Power dissipation values are given at rated voltage (I_n) and at 0,8· I_n (80% of rated current). It is possible to calculate values of power dissipation for other currents multiplying these values by correction factor for power loss (C_p) as a function of % of rated current.

This value is very important to choose the appropriate fuse base to install these fuse links. The power dissipation of fuse link at the normal working conditions must be lower than the maximum value that the fuse base can withstand.

See the section "FUSE HOLDERS AND OPEN FUSE BASES" at the end of this document.



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Use of Rapidplus® in PMX fuse holders

The modular fuse holders for cylindrical fuses have a rated power acceptance according to the maximum power dissipations allowed for the general use fuse links (gG) and back up fuse links.

These maximum values allowed for the fuse links (gG/aM) are regulated by standards (IEC/EN60269-2). In the same way, this standards specify the minimum power acceptance for the fuse holders. This power acceptance is the power dissipated by the fuse links (converted in heat) that the fuse holder can accept with an acceptable increase of the temperature (values also regulated by standards).

The fuse links for protection of semiconductors RAPIDPLUS have a rated power dissipation (or power loss) higher than the gG or aM types, and for this reason there are some limitations for the application of these fuses in closed modular fuse holders.

It is necessary to check that the fuse links have a power dissipation not higher than the maximum value admissible of the fuse holder indicated by the manufacturer.

When it is no possible to use modular fuse holders the solution is the use of an open fuse base where the heat can be appropriately dissipated.

In the following table are indicated the maximum values of power acceptance for DF ELECTRIC fuse holders. These limits should never be exceeded:



RATED POWER ACCEPTANCE IEC/EN60269-2	3W
MAX. POWER ACCEPTANCE DF ELECTRIC FUSE HOLDERS	4W

MAXIMUM CURRENT		
1A		
2A		
3A		
4A		
6A		
8A		
10A		
12A		
16A		
19A		
23A		
26A		

Use of Rapidplus® in BAC Open fuse bases

There are open type fuse bases (BAC) with high values of acceptable power disipations, where heat can be evacuated appropriately.



MAX. POWER ACCEPTANCE

8W



PROTECTING THE WORLD

HEAD OFFICE AND FACTORY

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According to the waste of electrical and electronic equipment directive, electrical material should not be part of the usual waste. This symbol alerts users that these products should be recycled according to local environmental waste disposal regulations.



The "electro technical expert" logo marked on the products included in this data sheet indicates that the installation of these products must be carried out by expert personnel with specialized knowledge.



To prevent electrical hazards, carry out the installation without voltage.



Safety notice
Please capture the following QR code
and read our safety notice carefully
before installing our products.



The data reflected in this technical record are subject to the correct installation of the product in accordance with manufacturer's instructions, relevant installation standards and professional practices, maintained and used in applications for which they were made.

The products described in this document have been designed, developed and tested in accordance with specific standard. They are considered components that are integrated as part of installation, machine or equipment. The correct general operation of the referred product is responsibility of the manufacturer of the installation, machine or equipment.

DF ELECTRIC cannot guarantee the characteristics of an installation, machine or equipment that has been designed by a third party. Once a product has been selected, the user must verify that it is appropriate for its application, through the verifications and/or tests that it

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