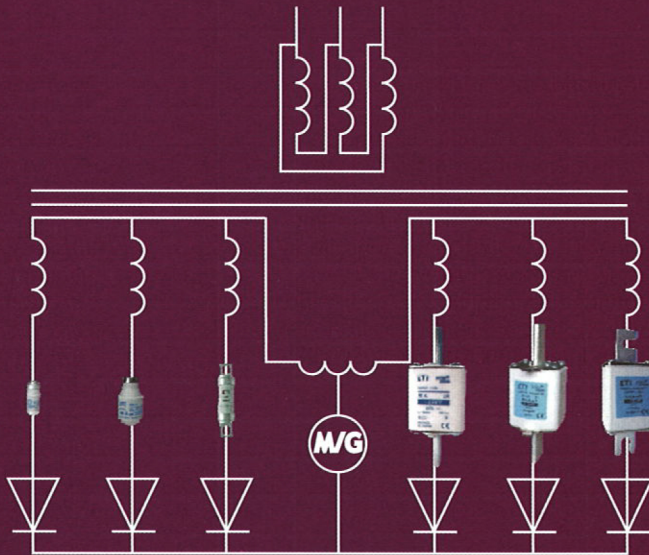


ULTRA QUICK - SEMICONDUCTOR PROTECTION

ETI fuse-links for semiconductor protection ULTRA QUICK present an optimal solution for protection of power semiconductors, such as diodes, thyristors and other power semiconductors in DC and AC power applications such as AC/DC, DC/AC, DC/DC converters and frequency converters. ETI fuse-links elements for semiconductor protection comply with IEC 60269 and VDE 0636 standards.



SEMICONDUCTOR

VV/HH

High voltage fuse-links 836

Technical data 845

CESI atestirano

HIGH VOLTAGE FUSES



ETI POWER NEEDS CONTROL



Ordering Code Numbers

rated voltage U_n [kV]	Dimension "e" according to DIN and IEC (mm)	rated current [A]	VVC Striker type 50N	VVT-D Striker type 80N THERMO	VVT-E Striker type 120N THERMO	Tube diameter "d" (mm)	weight [kg]		
10/17,5	292	2 A	004245103	004246103	004247103	53	1.6		
		4 A	004245104	004246104	004247104				
		6 A	004245105	004246105	004247105				
		10 A	004245106	004246106	004247106				
		16 A	004245107	004246107	004247107				
		20 A	004245108	004246108	004247108				
		25 A	004245109	004246109	004247109	68	2.8		
		32 A	004245110	004246110	004247110				
		40 A	004245111	004246111	004247111				
		50A	004245112	004246112	004247112				
		63 A	004245113	004246113	004247113				
		80 A	004245114	004246114	004247114				
	100A	004245115	004246115	004247115	53	1.9			
	367	2 A	004245003	004246003			004247003		
		4 A	004245004	004246004			004247004		
		6 A	004245005	004246005			004247005		
		10 A	004245006	004246006			004247006		
		16 A	004245007	004246007			004247007		
		20 A	004245008	004246008			004247008		
		25 A	004245009	004246009			004247009	68	3.1
		32 A	004245010	004246010			004247010		
		40 A	004245011	004246011			004247011		
		50 A	004245012	004246012			004247012		
		63 A	004245013	004246013			004247013		
		80A	004245014	004246014	004247014				
	442	53	100 A	004245015	004246015	004247015	85	4.6	
			125A	004245016	004246016	004247016			
			160 A	004245017	004246017	004247017			
			2 A	004245503	004246503	004247503			
			4 A	004245504	004246504	004247504			
6 A			004245505	004246505	004247505				
68		53	10 A	004245506	004246506	004247506	85	2.3	
			16 A	004245507	004246507	004247507			
			20 A	004245508	004246508	004247508			
			25 A	004245509	004246509	004247509			
			32 A	004245510	004246510	004247510			
			40 A	004245511	004246511	004247511			
	85	50 A	004245512	004246512	004247512	85	3.9		
		63 A	004245513	004246513	004247513				
		80A	004245514	004246514	004247514				
		100 A	004245515	004246515	004247515				
		125A	004245516	004246516	004247516				
		100 A	004245515	004246515	004247515			85	5.8

Note 1: Other ratings and dimensions can be supplied by customer request. For particular applications, please contact ETI technical team.
 Note 2: Orange colored types according to IEC 60282-1 dimensions.

Selection of fuses for transformer protection

For HV fuse-link rated current selection, following transformer technical features has to be known:

- Rated power P_n (kVA)
- Short-circuit voltage U_{cc} (%)
- Rated current I_{nt}
- Inrush current usually between $8-12 \times I_{nt}$
- Short-circuit current I_{cc}
- Overload current usually $1.4 I_{nt}$
- Maximum short-circuit duration. Standard 2 sec for transformers up to 630 kVA and 3 sec for higher rated powers

Following HV fuse-link technical features has to be known:

- Rated voltage U_n (kV)
- Rated current I_n (A)
- I/t Characteristics According to the curves
- Melting current (0.1 sec) $I_f(0.1sec)$
- Melting current at 2s ec or 3sec melting time
- Minimum breaking current I_3 (A)
- Breaking capacity I_1 (kA)

General about transformer protection:

- Fuse-link rated voltage U_n must be higher then network voltage.
- Maximum fuse-link breaking current I_1 must be higher then short circuit-current I_{cc} .
- Inrush current should not melt the fuse-link. Melting current at 100 msec must be higher than 12 times transformer rated current
- Fuse-link has to operate before the expected short-circuit current damage the transformer $I_{cc} > I_f(2 \text{ sec})$ or $I_{cc} > I_f(3 \text{ sec})$
- Fuse-link must be able to withstand possible short duration overloads. $I_n \text{ FUSE} > 1.4 I_n \text{ TRAF0}$

Selection table for VV - THERMO back-up fuse links

Pt (kVA)	6/7,2 kV					10/12 kV					15/17.5kV				
	Transformer rated primary current Ip(A) at 6 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse- Link NH gG I _{LV} (A)	Transformer rated primary current Ip(A) at 10 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse- Link NH gG I _{LV} (A)	Transformer rated primary current Ip(A) at 15 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse- Link NH gG I _{LV} (A)
			I _{HV} min (A)	I _{HV} max (A)				I _{HV} min (A)	I _{HV} max (A)				I _{HV} min (A)	I _{HV} max (A)	
50	5	58	10	16	63	3	35	6	10	63	2	23	6	10	63
75	7	86	16	20	100	4	52	10	16	100	3	35	6	10	100
100	10	115	25	32	125	6	70	10	16	125	4	46	10	16	125
125	12	145	32	40	160	7	86	16	20	160	5	58	10	16	160
160	15	185	40	50	200	9	110	20	25	200	6	74	16	20	200
200	19	230	40	50	250	12	138	25	32	250	8	92	20	25	250
250	24	289	50	63	315	14	173	32	40	315	10	115	25	32	315
315	30	364	50	63	400	18	218	40	50	400	12	145	32	40	400
400	39	462	63	80	500	23	276	50	63	500	15	185	40	50	500
500	48	577	80	100	630	29	346	50	63	630	19	230	40	50	630
630	61	727	100	125	800	36	437	63	80	800	24	293	50	63	800
800	77	923	100	125	1000	46	554	80	100	1000	31	370	63	80	1000
1000	96	1154	125	160	1250	58	692	100	125	1250	38	462	80	100	1250
1250	120	1440	160	200*	1250	72	866	100	125	1250	48	577	100	125	1250
1600	154	1848	200*	250*	1500	92	1109	125	160	1500	62	739	125	160	1500
2000	192	2310	250*	315*	1600	115	1380	160	200*	1600					

* Note: nonstandard tube dimension

Selection table for VV - THERMO back-up fuse links

Pt (kVA)	20/24 kV					30/36 kV				
	Transformer rated pri- mary current Ip(A) at 20 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse- Link NH gG I _{LV} (A)	Transformer rated pri- mary current Ip(A) at 30 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse- Link NH gG I _{LV} (A)
			I _{HV} min (A)	I _{HV} max (A)				I _{HV} min (A)	I _{HV} max (A)	
50	1	18	4	6	63	1	12	2	4	63
75	2	26	4	6	100	1	17	4	6	100
100	3	35	6	10	125	2	23	6	10	125
125	4	43	6	10	160	2	29	6	10	160
160	5	55	10	16	200	3	37	6	10	200
200	6	70	10	16	250	4	46	10	16	250
250	7	86	16	20	315	5	58	10	16	315
315	9	109	20	25	400	6	73	16	20	400
400	12	138	25	32	500	8	92	20	25	500
500	14	173	32	40	630	10	115	20	25	630
630	18	217	40	50	800	12	145	25	32	800
800	23	277	50	63	1000	15	185	40	50	1000
1000	29	346	50	63	1250	19	230	50	63	1250

