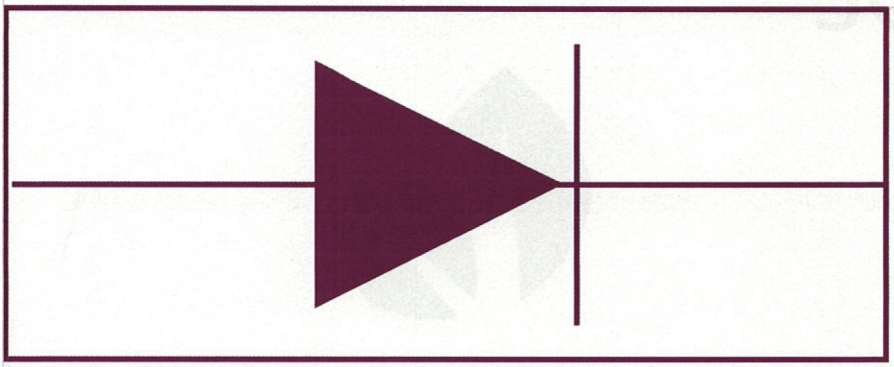
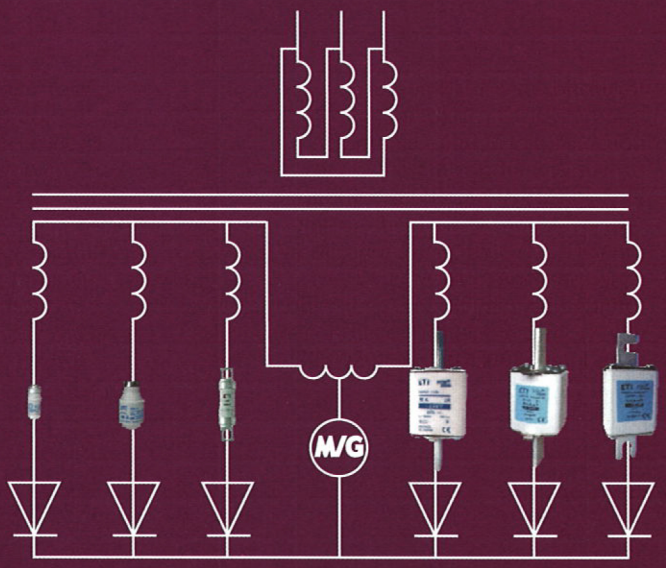


ULTRA QUICK - SEMICONDUCTOR PROTECTION

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.



VV/HH

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]
3/7.2	192	2 A	004225003	004226003	004227003	53	1.1
		4 A	004225004	004226004	004227004		
		6 A	004225005	004226005	004227005		
		10 A	004225006	004226006	004227006		
		16 A	004225007	004226007	004227007		
		20 A	004225008	004226008	004227008		
		25 A	004225009	004226009	004227009		
		32 A	004225010	004226010	004227010		
		40 A	004225011	004226011	004227011		
		50A	004225012	004226012	004227012	68	1.7
		63 A	004225013	004226013	004227013		
		80 A	004225014	004226014	004227014		
		100 A	004225015	004226015	004227015	85	2.7
		125A	004225016	004226016	004227016		
		160 A	004225017	004226017	004227017		
	292	2A	004225503	004226503	004227503	53	1.6
		4A	004225504	004226504	004227504		
		6 A	004225505	004226505	004227505		
		10 A	004225506	004226506	004227506		
		16 A	004225507	004226507	004227507		
		20 A	004225508	004226508	004227508		
		25 A	004225509	004226509	004227509		
		32 A	004225510	004226510	004227510		
		40 A	004225511	004226511	004227511		
		50 A	004225512	004226512	004227512		
		63 A	004225513	004226513	004227513	68	2.8
		80A	004225514	004226514	004227514		
		100 A	004225515	004226515	004227515		
		125A	004225516	004226516	004227516	85	4.0
		160 A	004225517	004226517	004227517		
		200 A	004225518	004226518	004227518		
		250 A	004225519	004226519	004227519		
	442	2A	004225603	004226603	004227603	68	3.9
		4A	004225604	004226604	004227604		
		6A	004225605	004226605	004227605		
		10A	004225606	004226606	004227606		
		16A	004225607	004226607	004227607		
		20A	004225608	004226608	004227608		
		25A	004225609	004226609	004227609		
		32A	004225610	004226610	004227610		
		40A	004225611	004226611	004227611		
		50A	004225612	004226612	004227612		
		63 A	004225613	004226613	004227613		
		80A	004225614	004226614	004227614		
		100 A	004225615	004226615	004227615		
		125A	004225616	004226616	004227616		
		160 A	004225617	004226617	004227617	85	5.8
		200 A	004225618	004226618	004227618		
		250 A	004225619	004226619	004227619		
		315 A	004225620	004226620	004227620		

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.

Technical data on page 845

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 8-12xI_{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 (0.1sec) $I_{f\ (0.1sec)}$
- 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 Icc.
- 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 Icc > I_f (2 sec) or Icc > I_f (3 sec)
- Fuse-link must be able to withstand possible short duration overloads. I_n FUSE > 1.4 I_n TRAFO

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	Transformer rated primary current Ip(A) at 10 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse-Link NH gG	Transformer rated primary current Ip(A) at 15 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse-Link NH gG
			I_{HV} min (A)	I_{HV} max (A)	I_{LV} (A)			I_{HV} min (A)	I_{HV} max (A)	I_{LV} (A)			I_{HV} min (A)	I_{HV} max (A)	I_{LV} (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 primary current Ip(A) at 20 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse-Link NH gG	Transformer rated primary current Ip(A) at 30 kV	Inrush current (A)	HV Fuse-link rated current		LV Fuse-Link NH gG
			I_{HV} min (A)	I_{HV} max (A)	I_{LV} (A)			I_{HV} min (A)	I_{HV} max (A)	I_{LV} (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