

Fast thyristors

ABB Semiconductors' fast thyristors for high frequency applications in industry and traction



ABB offers two lines of fast thyristors with the following features:

- Reverse and blocking voltage from 1000 V to 3000 V
- Average forward current from 500 A to 2700 A
- Optimized turn-on and turn-off parameters
- Turn-off time from 8 μ s to 125 microseconds
- Critical rate of rise of on-state current 800 A/ μ s
- High surge current ratings up to 36 kA
- Operating temperature from -40 °C to 125 °C
- Press-pack devices

Standard fast thyristors

Fast switching thyristors feature an amplifying gate structure and a special lifetime control technology. Their optimized design ensures low on-state voltage drop and switching losses, low reverse recovery and high di/dt performance. Devices for serial or parallel connection are available on request.

Applications:

Induction heating, inverters, DC chopper drives, UPS, pulse power and fast switching applications.

Medium frequency thyristors

Medium frequency thyristors are fast thyristors with an extended distributed gate technology.

They feature a special cathode and gate design for effective operation in the medium frequency range up to 10 kHz.

Applications:

Induction heating, high frequency inverters/converters, UPS, pulse power and fast switching applications.

Product range for standard fast thyristors

Part number	V_{RRM}, V_{DRM} (V)	I_{TAVM} (A)	I_{FSM} (kA)	V_{T0} (V)	r_T (m Ω)	Q_{rr} (μ C)	T_q (μ s)	T_{jmax} ($^{\circ}$ C)	R_{thJC} (K/kW)	F_m (kN)
5STF 13F1220	1200	1252	21	1.77	0.25	-	20	125	16	22
5STF 15F1232	1200	1532	21	1.28	0.21	-	32	125	16	22
5STF 07D1413	1400	710	12	1.65	0.35	190	13	125	32	10
5STF 09D1420	1400	847	13	1.23	0.32	380	20	125	32	10
5STF 12F2040	2000	1202	17	2.00	0.22	550	40	125	16	22
5STF 14F2063	2000	1440	17	1.60	0.17	1100	63	125	16	22
5STF 23H2040	2000	2322	33	1.52	0.11	1200	40	125	10	50
5STF 28H2060	2000	2667	36	1.20	0.10	2400	60	125	10	50
5STF 10F3080	3000	1003	13	2.56	0.25	1000	80	125	16	22
5STF 11F3010	3000	1112	14	2.15	0.26	1600	100	125	16	22

Product range for medium frequency thyristors

Part number	V_{RRM}, V_{DRM} (V)	I_{TAVM} (A)	I_{FSM} (kA)	V_{T0} (V)	r_T (m Ω)	Q_{rr} (μ C)	T_q (μ s)	T_{jmax} ($^{\circ}$ C)	R_{thJC} (K/kW)	F_m (kN)
5STF 18F1210	1200	1779	22	1.37	0.09	380	10	125	16	22
5STF 06D1408	1400	568	11	2.31	0.37	80	8	125	32	10
5STF 07D1414	1400	736	12	1.68	0.27	160	13	125	32	10
5STF 16F1413	1400	1526	21	1.63	0.12	300	13	125	16	22
5STF 17F1420	1400	1693	21	1.40	0.11	670	20	125	16	22
5STF 06D2020	2000	557	8	2.35	0.39	240	20	125	32	10
5STF 07D2032	2000	679	9	1.85	0.31	440	32	125	32	10
5STF 12F2025	2000	1191	17	2.13	0.19	410	25	125	16	22
5STF 15F2040	2000	1489	17	1.61	0.14	1000	40	125	16	22
5STF 05D2425	2400	517	7	2.55	0.43	260	25	125	32	10
5STF 06D2440	2400	617	8	2.05	0.37	450	40	125	32	10

Documentation

Document title	Document number
Design of RC-snubbers for phase control applications	5SYA2020
Gate drive recommendations for phase control thyristors	5SYA2034
Recommendations regarding mechanical clamping of high power press pack semiconductors	5SYA2036
Field measurements on high power press pack semiconductors	5SYA2048
Voltage ratings of high power semiconductors	5SYA2051
Specification of environmental class for pressure contact diodes, PCTs and GTO - STORAGE	5SZK9104
Specification of environmental class for pressure contact diodes, PCTs and GTO - TRANSPORTATION	5SZK9105
Specification of environmental class for pressure contact diodes, PCTs and GTO - operation industry	5SZK9115
Specification of environmental class for pressure contact diodes, PCTs and GTO - operation traction	5SZK9116

ABB Switzerland Ltd. Semiconductors

Fabrikstrasse 3
CH-5600 Lenzburg
Switzerland
Tel: +41 58 586 14 19
Fax: +41 58 586 13 06
abbsem@ch.abb.com
www.abb.com/semiconductors

ABB s.r.o. Semiconductors

Novodvorska 1768/138a
142 21 Prague 4
Czech Republic
Tel: +420 261 306 250
Fax: +420 261 306 308
semiconductors@cz.abb.com
www.abb.com/semiconductors

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