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Power Semiconductors



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YECHAO Shen
Managing Director
MS Power GmbH

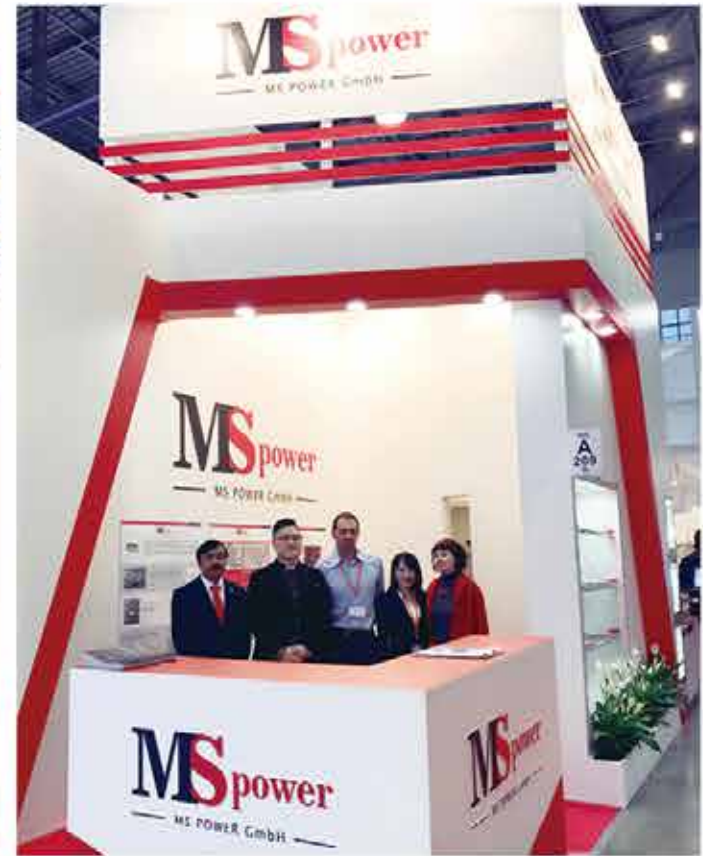
We aim to earn the trust of all our customers, shareholders, employees, and regional societies, to create new corporate values, and to become a company that is always attractive and admired, while fulfilling our responsibilities to the global environment and to society.



Rajesh Salvi
Vice President
MS Power GmbH

Corporate Social Responsibility

At MS Power we believe people are the strength of the organization. That's why we do our best to provide fair working conditions and create a corporate culture in which everyone feels comfortable. We offer a decent work place to our employees. Because only satisfied employees make long-term corporate high performances possible. At MS Power we recognize performance, commitment and achievements and reward them accordingly. This allows us to be attractive and competitive globally.



Message from our Vice President

In Harmony with Earth, Society and People - an innovator in semiconductor technology.

MS Power GmbH is a semiconductor device manufacturer that produces diodes, thyristors in various packages such as screw fit diodes, capsules, power modules and power stacks in an integrated system from design to inspection of finished products. We globally deliver, high-performance and high-quality products.

Under our corporate philosophy to "Contribute to Society," we set a basic quality policy to "Devote ourselves to quality management that places the highest priority on quality" and adhere to a Code of Conduct to have sternness as a company, to value cooperation and harmony as well as trust in and out of the company and especially "commit ourselves to behaviors trusted as one member of society."

The potential needs of our customers are an important factor guiding our strategy as supporter of innovation. Customer feedback relating to our existing products as well as requests for additional technical capabilities are always welcomed, receiving our prompt and careful attention.

In order to provide our customers with full contentment and excitement, MS Power is continuing to strive toward creating new values, as we have been doing since the company was founded.

In this business environment, MS Power is now conducting VISION2020, which is a corporate vision and the target toward 2020. VISION2020 positions MS Power's future image for 2020 as "To establish an agile, responsive management system closely suited to demands of the semiconductor device sector, supported by strong corporate governance," and aims to make rapid progress as a company that creates new values for people and customers. We believe that in order to achieve VISION2020 and to continue sustained growth after 2020, links with all stakeholders are essential.



Company Profile

MS Power GmbH, headquartered in Eschborn, Germany, is a leading company in power semiconductor components and systems. Recognized for manufacturing high quality products, MS Power is committed to providing the highest reliability in various applications such as Motor Drives, Power Suppliers, Solar and Wind Energy systems, Smart Grid etc.

The company's current portfolio of products includes bi-polar semiconductor chips, stud screw fit diodes/ thyristors, capsule devices and modules. In addition, MS Power is capable of providing power stacks and systems as a solution provider. Owing to an increasing demand for green energy and high-power efficiency - in conjunction with application partners - the company is capable of offering complete innovative solutions for energy conversion technology.

MS Power continuously carries out new research for technical solutions adapted for the customized requirements from our clients. The company maintains labs in Italy for IGBT converters and in China for third-generation wide band-gap semiconductor materials such as SiC (Silicon Carbide) and GaN (Gallium Nitride).

Flexibility and localization are the two principal pillars to MS Power's company policy in order to guarantee efficient communication with our clients all around the world.

Corporate Social Responsibility (CSR) ensures MS Power's commitment to the communities where we operate. We strive to protect the environment and safety of our fellow human beings. Combining the pursuit of economic growth with consideration for social and environmental factors is a priority for MS Power.



Wafer Fab

Employee~150
 Floor Space 3000 m²
 Bi-Polar Technology
 Silicon Processing
 R&D
 Production Capacity
 30-40K wafers per Month

Major Equipments

Fully Automatic Diffusion Furnaces
 Diffusion Depth and Lifetime Tester
 KARL SUSS Mask Aligner
 Semicore MARK50 Evaporation System
 Ultrasonic Void Scanning System
 Customized Vacuum Sintering System



Device Packaging

Packaging Fab - World-Class Soldering Technology

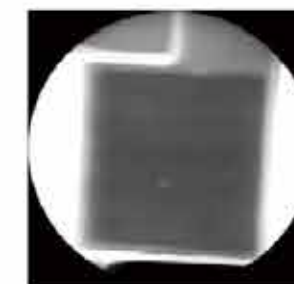
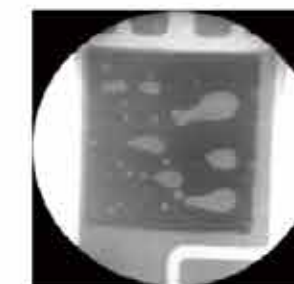
Typical Advantage from Vacuum Soldering

Pressure Contact / Compression Bonded Technology

- No fatigue caused by temperature change
- Rigid Construction
- High reliability



- Reduced voids during soldering
- Finer structure
- Less oxidation
- Better distribution due to increase in wetting capability



Solder voids in conventional soldering Solder voids in vacuum soldering



Testing Center

Facility:

1000m²
Testing Center
(Class 100K Clean Room)

Hardware:

Static Testing Equipments
Dynamic Testing Equipments
Reliability Testing Equipments

MS Power is proud to say that it has international standard testing facility. Each device is uniquely marked and all the test reports are well maintained for traceability. The test equipment are connected to computers and testing results are well maintained for traceability. The company is following ISO9001-2015 standards for all its processes. All the deviations (if any) are recorded for information.



Dynamic Tester

Quality Assurance - Full Dynamic Simulation Testing

In-house simulation of field conditions-Rated current passed through the device and Rated V_{DRM} / V_{RRM} applied when device is in OFF state and observed the blocking voltage characteristic on X-Y curve tracer and record I_{DRM} / I_{RRM} at specified case temperature.

Significance of dynamic test: Confirmation of P_w , R_{th} (J-C)



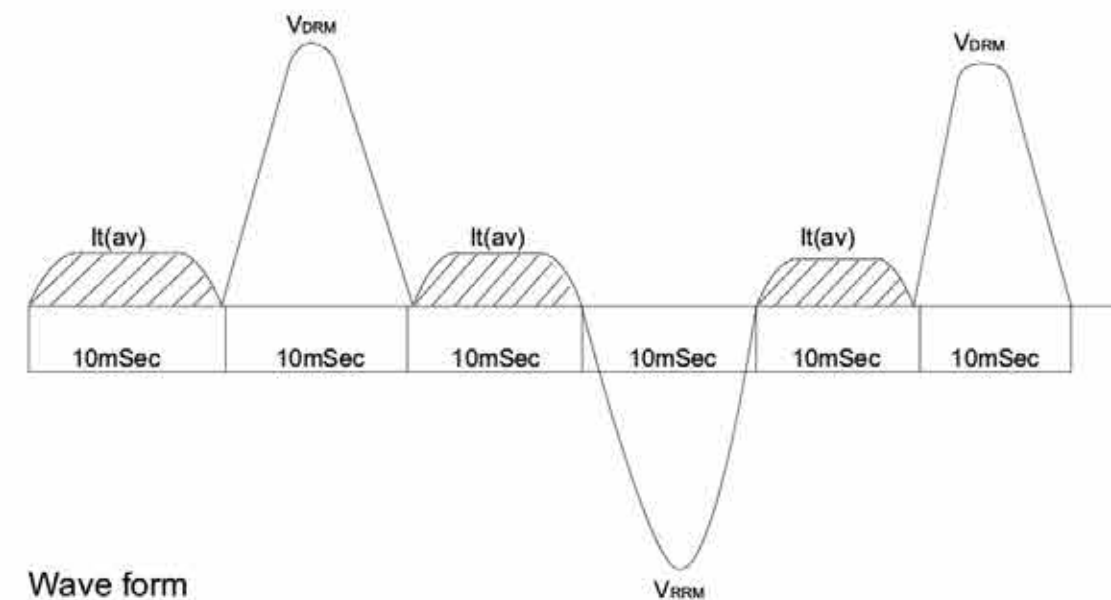
High Reliability Lab



HTRB Tester



Thermal Cycling Equipment



Diodes

Diodes are used in a number of different applications. Each of these applications sets different requirements on the diodes characteristics. Inverter applications demand for fast recovery diodes with soft switching characteristics, high-current rectifiers ask diodes with low on-state losses, medium power rectifiers benefit from diodes with avalanche capability and weld rectifiers require highest current in the smallest package.

MS Power offers following diode families that meet these requirements

Rectifier Diodes -Stud / Flat Base

Rectifier Diodes -Disc / Hockey Puk

Standard Recovery Diodes

Fast Recovery / Soft Recovery Diodes

Welding Diodes



Diodes - Stud

Rectifier Diodes - Stud / Flat Base

We offer a broad range of Stud / Flat base housings containing Diode pellets in voltage range of 200V to 4300V and a current range of 25A to 860A

All discs are assembled in high reliable, robust and hermetic sealed housings in order to avoid mechanical damages as well as almost any negative environmental influences as e.g. High humidity.

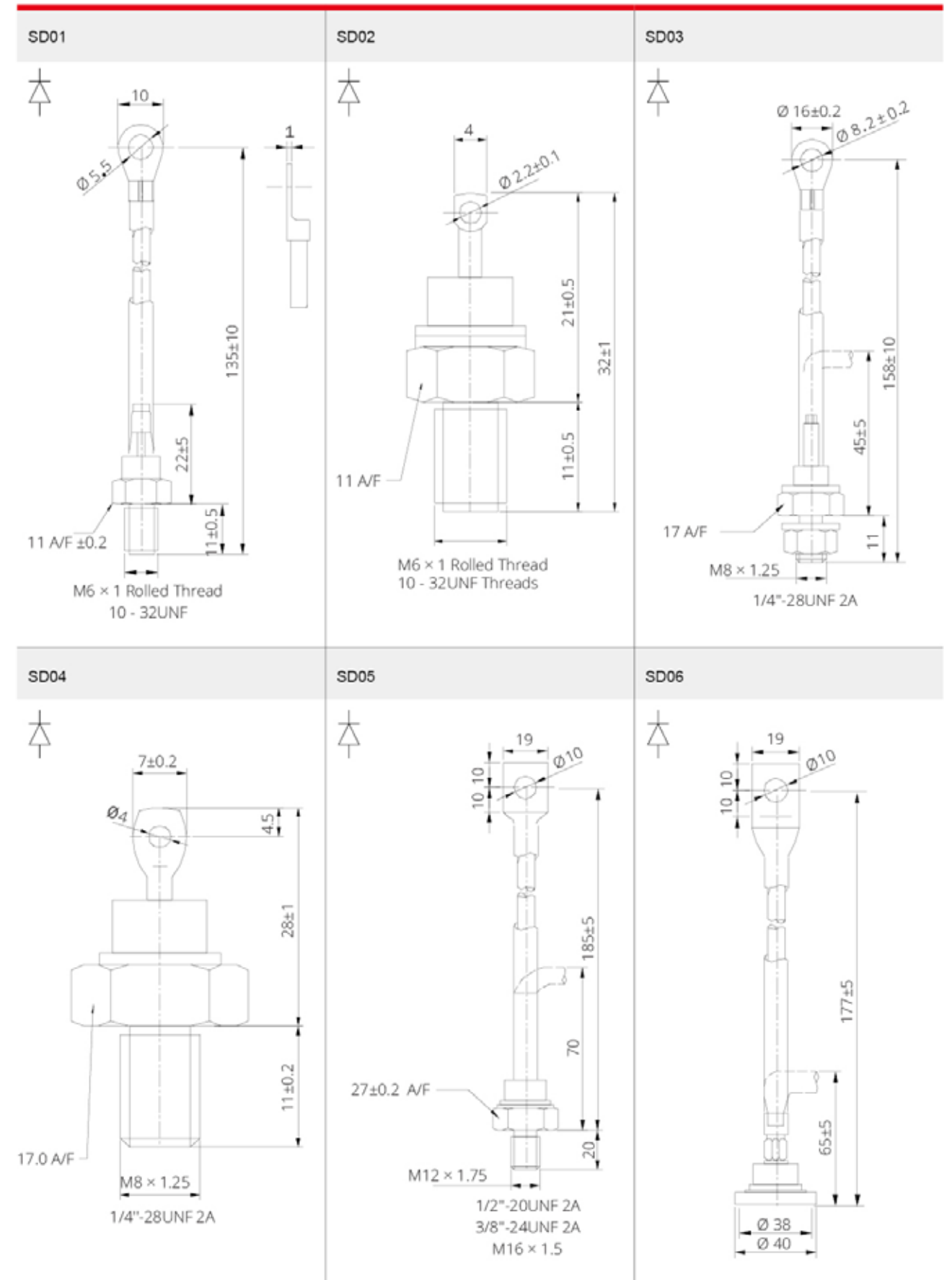
The Standard rectifier diodes are optimized for line frequency and low on-state losses.

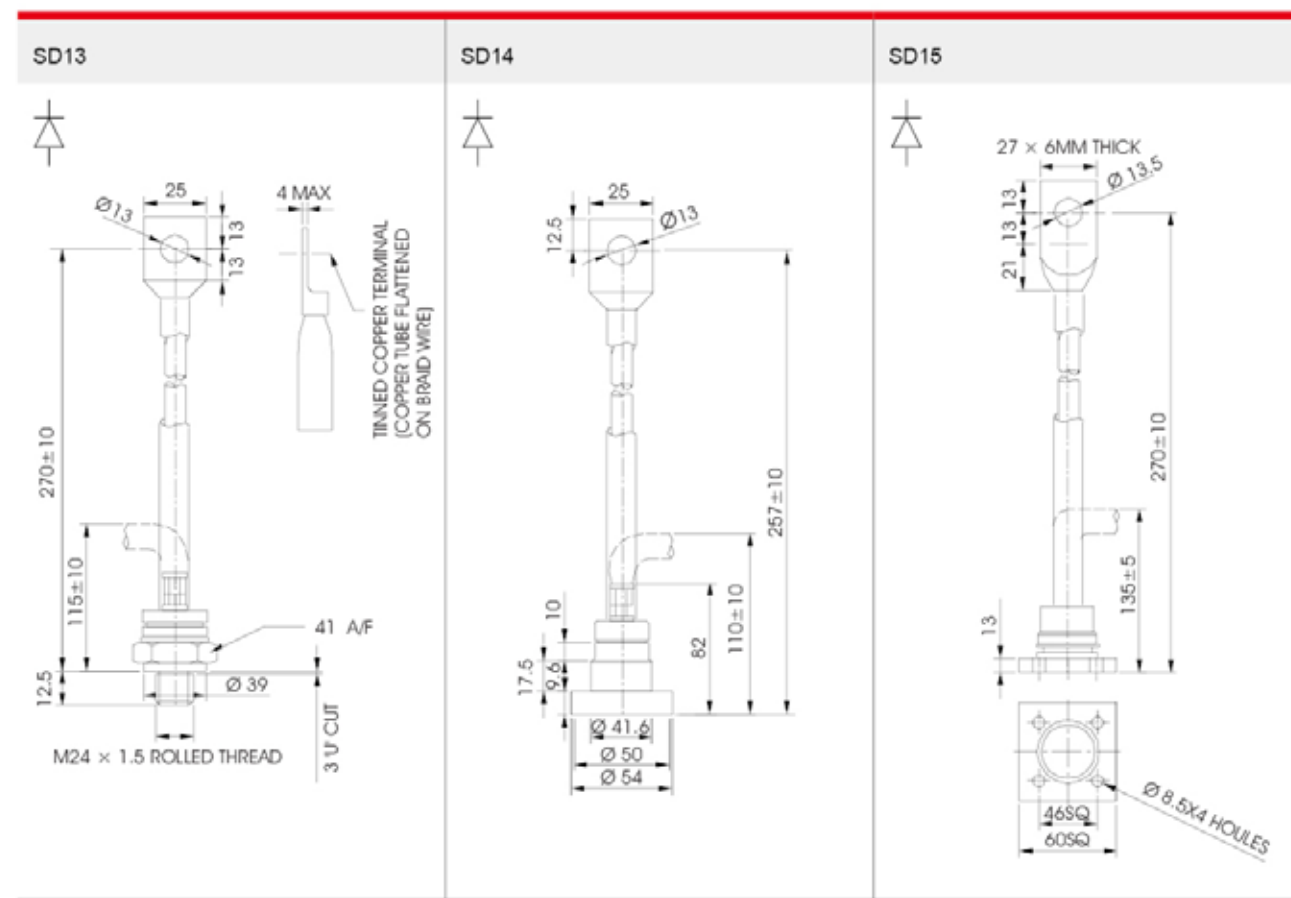
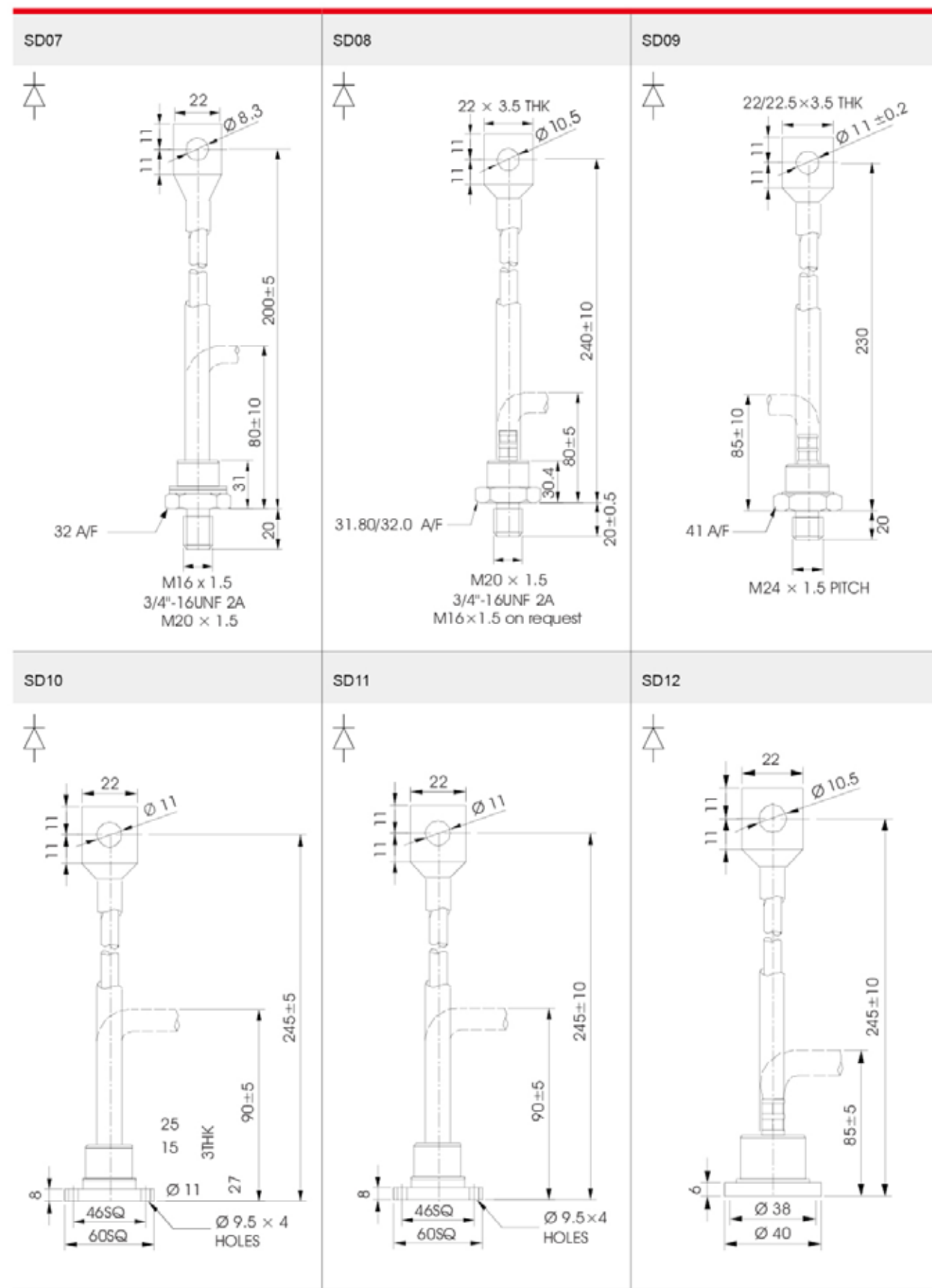
Application Include:

- Battery Chargers
- Induction Heating / Melting
- Motor Control
- Power Supplies
- Transportation
- Welding



Part number	V _{RRM} [V] V _{RSM} =V _{RRM} +100V	I _{F(AV)} / T _C [A / °C] @ 180° Sine	I _{FSM} [A] @ 10ms T _{Jmax}	∫I ² t [A ² S] @ 10ms T _{Jmax}	V _F / I _F [V / A] T _{Jmax}	V _{F(TD)} [V] @ T _{Jmax}	r _F [mΩ] @ T _{Jmax}	R _{thJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS D25N/R	200 -- 1600	25 / 125	320	512	1.63 / 78	0.85	10.00	1.5	180	SD01
MS D26N/R	200 -- 1600	25 / 125	320	512	1.63 / 78	0.85	10.00	1.5	180	SD02
MS D45N/R	200 -- 1600	50 / 115	600	1800	1.60 / 150	0.85	5.00	0.85	180	SD03
MS D46N/R	200 -- 1600	50 / 115	600	1800	1.60 / 150	0.85	5.00	0.85	180	SD04
MS D70N/R	200 -- 1600	95 / 100	1000	5000	1.50 / 210	0.85	3.00	0.55	180	SD03
MS D71N/R	200 -- 1600	95 / 100	1000	5000	1.50 / 210	0.85	3.00	0.55	180	SD04
MS D100N/R	200 -- 1600	125 / 106	1500	11250	1.57 / 400	0.85	1.80	0.42	180	SD05
MS D130N/R	200 -- 1600	165 / 100	2000	20000	1.53 / 520	0.85	1.30	0.35	180	SD05
MS D150N/R	200 -- 1600	150 / 130	3600	64800	1.25 / 470	0.82	0.90	0.28	180	SD06
MS D200N/R	200 -- 1600	200 / 130	4000	80000	1.25 / 630	0.85	0.60	0.22	180	SD06
MS D240N/R	200 -- 1600	320 / 100	5000	125000	1.30 / 750	0.85	0.60	0.19	180	SD07
MS D250N/R	200 -- 1600	250 / 130	4500	101000	1.28 / 785	0.76	0.56	0.18	180	SD06
MS D300N/R	200 -- 1600	300 / 130	5200	135000	1.20 / 1000	0.75	0.40	0.16	180	SD06
MS D320N/R	200 -- 1600	320 / 125	6500	211000	1.35 / 1000	0.77	0.57	0.14	180	SD08
MS D321N/R	200 -- 1600	420 / 100	8000	320000	1.25 / 1000	0.80	0.45	0.15	180	SD09
MS D350N/R	200 -- 1600	350 / 125	6000	180000	1.15 / 1050	0.77	0.36	0.145	180	SD10
MS D400N/R	200 -- 1600	400 / 125	7000	245000	1.12 / 1050	0.75	0.35	0.125	180	SD11
MS D401N/R	200 -- 1600	400 / 125	7000	245000	1.12 / 1050	0.75	0.35	0.125	180	SD12
MS D404N/R	200 -- 1800	400 / 120	7500	281000	1.68 / 1260	0.80	0.68	0.086	170	SD13
MS D450N/R	200 -- 1800	450 / 120	10500	551000	1.45 / 1350	0.75	0.46	0.088	170	SD13
MS D451N/R	200 -- 1800	450 / 120	10500	551000	1.45 / 1350	0.75	0.46	0.088	170	SD14
MS D860N/R	200 -- 1800	860 / 100	16000	1280000	1.48 / 2500	0.74	0.21	0.078	180	SD15
MS D405N/R	200 -- 2800	400 / 105	7500	281000	1.75 / 1260	0.80	0.67	0.094	160	SD14
MS D510N/R	3600	510 / 105	11800	696000	1.48 / 1500	0.95	0.34	0.065	160	SD15
MS D570N/R	3600	570 / 100	12000	720000	1.62 / 1800	0.90	0.39	0.072	160	SD15





Dimensions in mm.

Rectifier Diodes - Disc / Hockey Puk

Standard Recovery Diodes

We offer a broad range of ceramic housings containing Diode pellets in voltage range of 200V to 6500V and a current range of 460A to 10000A.

The Standard rectifier diodes are optimized for line frequency and low on-state losses.

Fast Recovery / Soft Recovery Diodes

MS Power semiconductor's comprehensive family of fast recovery diodes is optimized for enhanced Safe operating area and controlled turn off recovery. This makes these diodes very well suited for all inverter application.

Welding Diodes

MS Power offers welding diodes with blocking voltages from 200V up to 400V and surge currents from 32kA up to 85kA in Disc housings.

They all feature very low on-state voltage and very low thermal resistance. In addition, they are available in small weight, thin and hermetically sealed ceramic housings or even housing-less, another welcomed feature for equipment that is mounted directly on robot arm.

All discs are assembled in high reliable, robust and hermetic sealed ceramic housings in order to avoid mechanical damages as well as almost any negative environmental influences as e.g. High humidity.



Standard Recovery Diodes

Type	V _{RRM} [V] V _{RRM} =V _{RRM} +100V	I _{F(AV)} / T _C [A / °C] @ 180° Sine	I _{FSM} [A] @ 10ms T _{Jmax}	∫i ² t [A ² S] @ 10ms T _{Jmax}	V _F / I _F [V / A] T _{Jmax}	V _{F(TO)} [V] @ T _{Jmax}	r _F [mΩ] @ T _{Jmax}	R _{θJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS D460C	200 -- 1800	460 / 95	5000	125000	1.69 / 1500	0.70	0.66	0.112	170	CD01
MS D500C	200 -- 2400	500 / 114	6500	211000	1.40 / 800	0.85	0.63	0.095	190	CD01
MS D550C	200 -- 1800	550 / 90	6000	180000	1.85 / 1600	0.75	0.64	0.090	170	CD01
MS D690C	4400 -- 5200	690 / 100	7000	245000	1.94 / 1500	1.00	0.62	0.035	150	CD04
MS D800C	1800 -- 2400	800 / 121	7750	300000	1.75 / 1500	0.91	0.518	0.035	175	CD03
MS D1185C	3000 -- 4400	1185 / 72	11000	605000	2.35 / 2400	0.98	0.57	0.028	160	CD04
MS D1200C	200 -- 1800	1200 / 62	11000	605000	1.83 / 3000	0.78	0.35	0.045	160	CD02
MS D1201C	1800 -- 2400	1200 / 86	8500	361000	1.55 / 1500	0.83	0.44	0.035	175	CD03
MS D1204C	4600 -- 5400	1200 / 102	14600	1066000	2.04 / 3000	1.07	0.323	0.020	150	CD05
MS D1250	2000 -- 3000	1250 / 80	14000	980000	1.76 / 3000	0.78	0.29	0.038	160	CD04
MS D1263C	2000 -- 2500	1263 / 91	13000	845000	2.12 / 3770	0.87	0.33	0.035	175	CD02
MS D1360C	6000 -- 6500	1360 / 80	15250	1163000	1.61 / 1500	0.793	0.521	0.020	150	CD05
MS D1401C	200 -- 2000	1400 / 96	13000	846000	1.83 / 3000	0.78	0.35	0.030	180	CD02
MS D1550C	1800 -- 2400	1550 / 90	10500	551000	1.35 / 1500	0.754	0.336	0.033	200	CD03
MS D1600C	2000 -- 2600	1600 / 82	13000	845000	1.06 / 1500	0.68	0.247	0.035	175	CD04
MS D1602C	200 -- 800	1600 / 79	16000	1280000	1.55 / 3000	0.75	0.25	0.040	190	CD02
MS D1604C	200 -- 800	1600 / 98	21000	2205000	1.20 / 2000	0.629	0.292	0.035	200	CD02
MS D1682C	2000 -- 2900	1682 / 78	17900	1602000	1.30 / 1800	0.85	0.26	0.030	175	CD04
MS D1850C	200 -- 2000	1850 / 63	20500	2101000	1.44 / 3000	0.74	0.20	0.038	180	CD04
MS D2000C	4600 -- 5400	2000 / 99	21800	2376000	2.00 / 5000	0.96	0.207	0.013	150	CD11
MS D2200C	200 -- 1600	2200 / 134	27500	3781000	0.97 / 2000	0.78	0.0877	0.020	190	CD05
MS D2201C	200 -- 1800	2200 / 134	35000	6125000	1.35 / 6000	0.78	0.0877	0.020	190	CD09
MS D2300C	3000 -- 4400	2300 / 71	26000	3380000	1.70 / 3000	0.88	0.245	0.017	160	CD05
MS D2500C	800 -- 2400	2500 / 84	28000	3920000	1.27 / 2900	0.80	0.165	0.020	175	CD05
MS D2501C	2600 -- 4200	2500 / 100	25500	3251000	1.40 / 5000	0.74	0.132	0.013	150	CD11
MS D2502C	5600 -- 6500	2500 / 85	61000	18605000	1.55 / 3000	0.79	0.238	0.0115	150	CD13
MS D2700C	2400 -- 3000	2700 / 82	30500	4651000	1.30 / 2900	0.87	0.127	0.020	175	CD05
MS D2900C	3200 -- 4800	2900 / 93	28000	3920000	1.90 / 4000	0.996	0.222	0.009	160	CD09

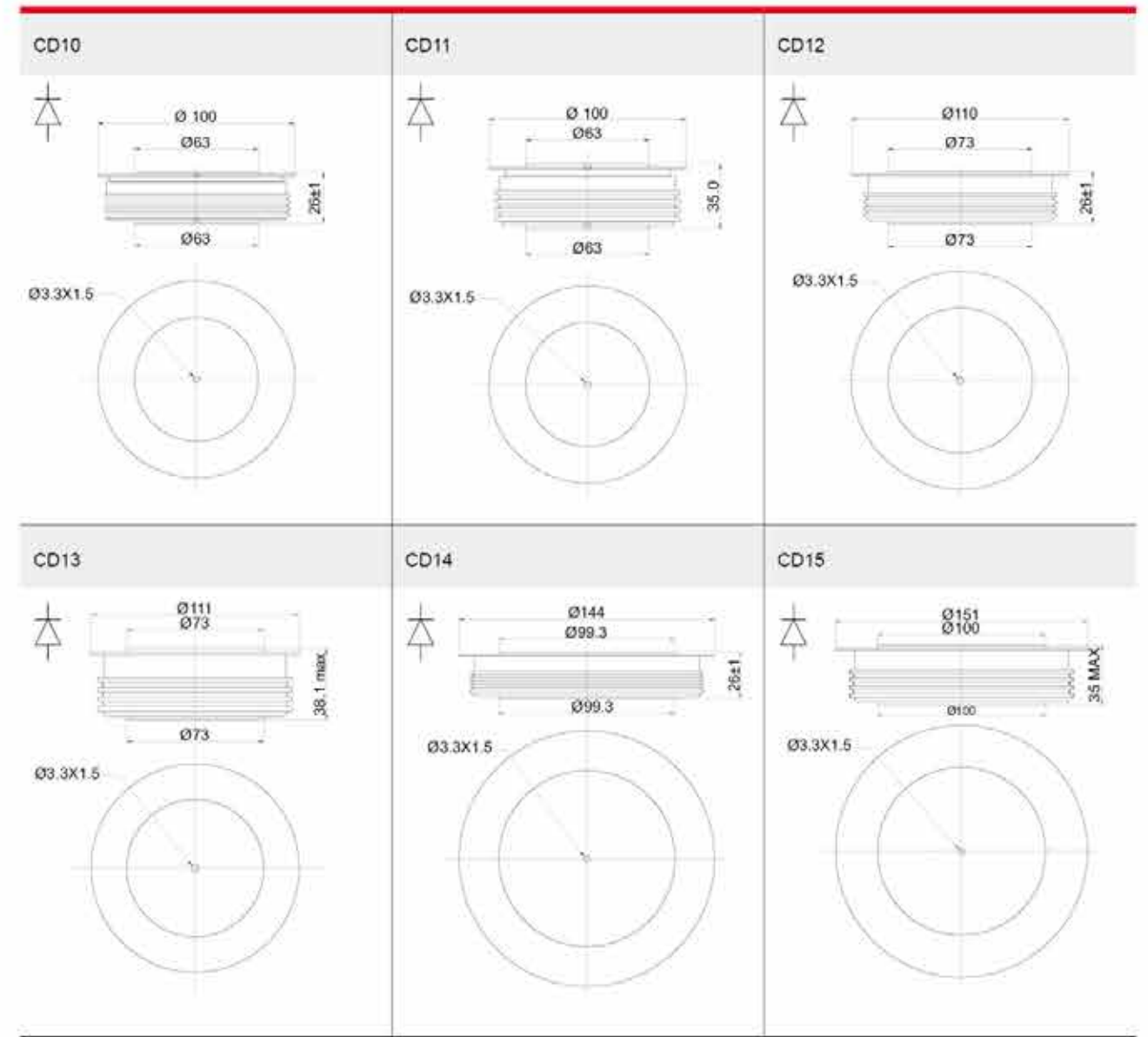
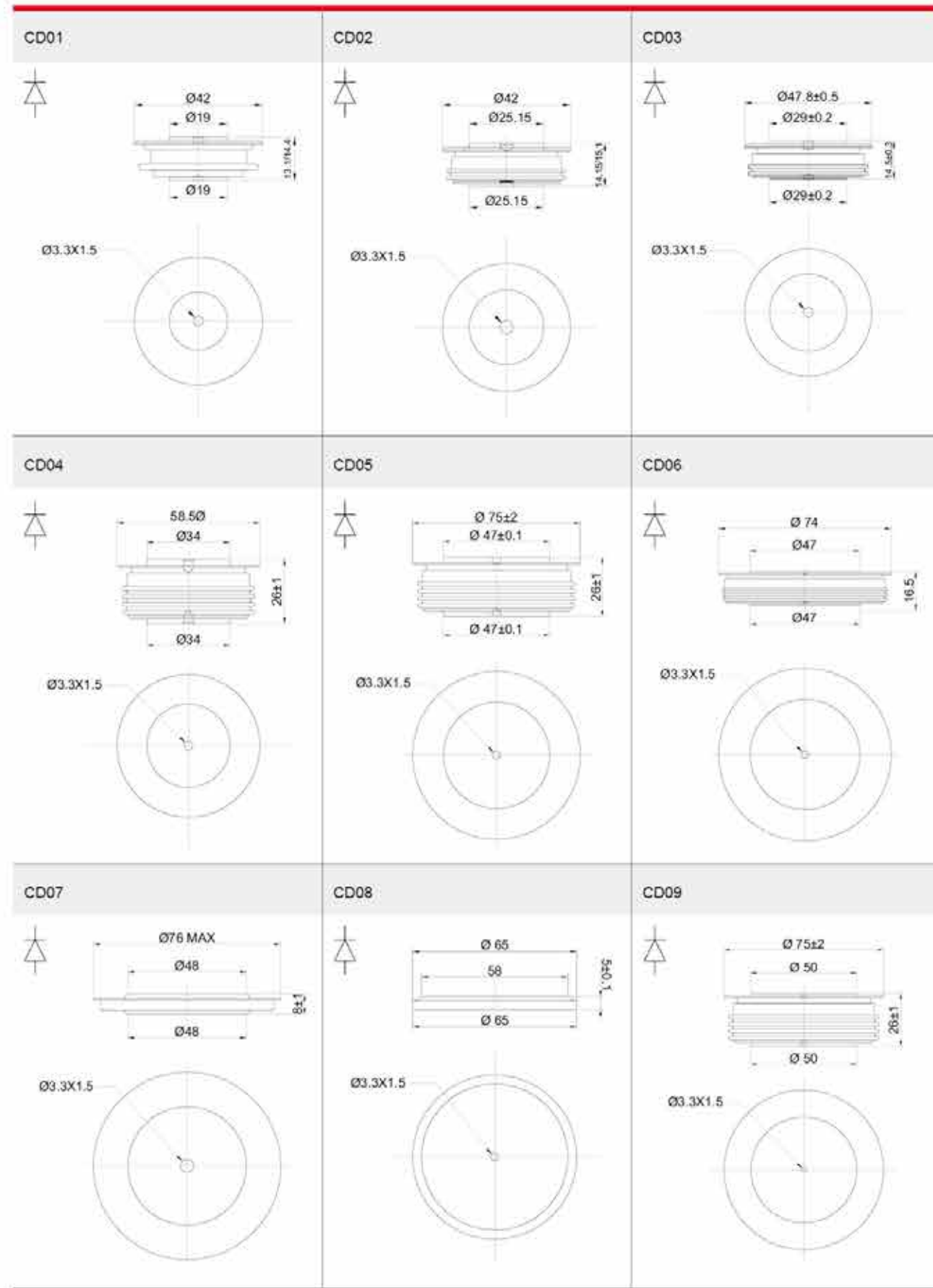
Type	V _{RRM} [V] V _{FSM} =V _{RRM} +100V	I _{F(AV)} / T _C [A / °C] @ 180° Sine	I _{FSM} [A] @ 10ms T _{Jmax}	∫i ² t [A ² S] @ 10ms T _{Jmax}	V _F / I _F [V / A] T _{Jmax}	V _{F(TO)} [V] @ T _{Jmax}	r _F [mΩ] @ T _{Jmax}	R _{θJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS D3000C	1800 -- 2600	3000 / 115	28600	4090000	1.10 / 1500	0.912	0.0885	0.0128	175	CD06
MS D3002C	1200 -- 2600	3000 / 78	31000	4805000	1.41 / 4000	0.76	0.16	0.0175	180	CD05
MS D3454C	2200 -- 2600	3454 / 85	35300	6230000	1.20 / 2900	0.80	0.110	0.015	175	CD05
MS D3590C	2400 -- 3400	3590 / 75	36500	6661000	1.30 / 3000	0.82	0.128	0.0125	175	CD10
MS D3600C	1000 -- 2400	3600 / 100	36500	6661000	1.10 / 3000	0.66	0.11	0.013	175	CD11
MS D3602C	4300 -- 5000	3600 / 100	46000	10580000	1.65 / 4000	1.02	0.12	0.008	160	CD12
MS D4000C	4000 -- 4500	4000 / 80	65500	21451000	1.35 / 4000	0.75	0.133	0.0115	175	CD13
MS D4160C	1600 -- 2200	4160 / 75	42200	8904000	1.20 / 3000	0.79	0.086	0.0125	175	CD10
MS D4500C	2200 -- 3200	4500 / 94	62500	19531000	1.00 / 2000	0.786	0.0997	0.0095	175	CD12
MS D4645C	2000 -- 2500	4645 / 81	45000	10125000	0.90 / 2000	0.70	0.10	0.011	175	CD10
MS D4800C	200 -- 1200	4800 / 98	44600	9946000	0.95 / 3000	0.65	0.063	0.013	190	CD11
MS D4930C	800 -- 1000	4930 / 85	44800	10035000	1.16 / 4500	0.75	0.055	0.015	190	CD05
MS D5002C	1800 -- 2400	5000 / 90	91500	41861000	0.95 / 4000	0.661	0.0659	0.0115	175	CD13
MS D5300C	5000 -- 5600	5300 / 88	58000	16820000	1.70 / 6000	1.027	0.111	0.0055	160	CD12
MS D5680C	1800 -- 2400	5680 / 90	103700	53768000	0.95 / 4000	0.661	0.0659	0.0095	175	CD12
MS D6300C	1200 -- 1600	6300 / 100	116000	67280000	0.85 / 4000	0.688	0.0362	0.0115	190	CD13
MS D6460C	800 -- 1000	6460 / 85	50400	12701000	1.16 / 4500	0.75	0.055	0.010	190	CD07
MS D6520C	2000 -- 2400	6520 / 85	59000	17405000	1.01 / 4000	0.87	0.057	0.009	190	CD10
MS D6830C	2000	6830 / 90	87000	37845000	1.05 / 5000	0.80	0.05	0.0062	160	CD14
MS D6910C	1800 -- 2600	6910 / 80	70000	24500000	1.01 / 3000	0.72	0.065	0.0075	175	CD12
MS D7000C	200 -- 600	7000 / 79	55000	15125000	0.85 / 3000	0.645	0.044	0.0095	175	CD12
MS D7200C	1200 -- 1600	7200 / 85	75000	28125000	0.90 / 4000	0.704	0.0479	0.0094	190	CD12
MS D8000C	2000 -- 2500	8000 / 90	92500	42781000	0.82 / 4000	0.654	0.0382	0.0075	175	CD15
MS D10000	600 -- 1200	10000 / 85	111000	61605000	0.75 / 4000	0.642	0.0228	0.0075	175	CD15

Fast Recovery / Soft Recovery Diodes

Type	V _{RRM} [V] V _{FSM} =V _{RRM} +100V	I _{F(AV)} / T _C [A / °C] @ 180° Sine	I _{FSM} [kA] @ 10ms T _{Jmax}	∫i ² t [A ² S×10 ³] @ 10ms T _{Jmax}	V _F / I _F [V / A] T _{Jmax}	V _{F(TO)} [V] @ T _{Jmax}	r _F [mΩ] @ T _{Jmax}	T _{rr} [μs] @ T _{Jmax}	R _{θJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS DF375	3000 -- 4500	375 / 72	5.5	151	3.20 / 1000	1.71	1.53	4.50	0.045	125	CD04
MS D914C	2200 -- 2600	914 / 70	9.4	442	3.00 / 1800	1.768	0.653	3.20	0.027	150	CD04
MS DS1030	1200 -- 2000	1030 / 65	15.4	1186	1.85 / 2050	1.24	0.33	3.00	0.028	125	CD04
MS DF1060	4000 -- 4500	1060 / 85	19.0	1805	2.85 / 2000	1.73	0.51	6.50	0.020	150	CD05
MS DF1495	2200 -- 2500	1495 / 70	21.5	2311	1.95 / 3000	1.15	0.266	3.90	0.017	125	CD05

Welding Diodes

Type	V _{RRM} [V] V _{FSM} =V _{RRM} +100V	I _{F(AV)} / T _C [A / °C] @ 180° Sine	I _{FSM} [kA] @ 10ms T _{Jmax}	∫i ² t [A ² S×10 ³] @ 10ms T _{Jmax}	V _F / I _F [V / A] T _{Jmax}	V _{F(TO)} [V] @ T _{Jmax}	r _F [mΩ] @ T _{Jmax}	R _{θJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS DW4000	200 -- 400	4000 / 71	32	5120	1.12 / 4500	0.70	0.084	0.0130	180	CD07
MS DW5100	200 -- 400	5100 / 71	52	13520	1.23 / 4500	0.76	0.070	0.0095	180	CD07
MS DW7100	200 -- 400	7100 / 85	55	15125	1.05 / 7000	0.74	0.030	0.0100	175	CD07
MS DW10500	200 -- 400	10500 / 85	70	24500	1.01 / 8000	0.81	0.026	0.0058	175	CD08
MS DW13500	200 -- 400	13500 / 85	85	36125	0.95 / 10000	0.76	0.021	0.0046	175	CD08



Dimensions in mm.

Thyristors

Discover our broad range of thyristors containing pellets in voltage range of 200V to 6500V and a current range of 30A to 6536A. All thyristor silicon chips are assembled in high reliable, robust and hermetic sealed housings in order to avoid mechanical damages as well as to eliminate any negative environmental influences as e.g. High humidity.

High power thyristors are used in applications ranging from 100kW soft starters up to HVDC stations rated 8 to 10GW. Besides commonly being used at line frequency, they are also found in kilohertz range applications like induction heating.

MS Power offers following thyristor families that meet these requirements

Phase Control Thyristor - Stud / Flat Base
Phase Control Thyristor - Disc / Hockey Puk
Fast Switching Thyristors



Thyristors - Stud

Phase Control Thyristor - Stud / Flat Base

We provide one of the most comprehensive ranges of standard phase control thyristors in Stud / Flat Base package available in the industry.

Devices with voltage ranges from 200V up to 1600V are available, making them suitable for application with line voltages from 230V up to 420V.

All thyristor silicon chips are assembled in high reliable, robust and hermetic sealed housings in order to avoid mechanical damages as well as to eliminate any negative environmental influences as e.g. High humidity.

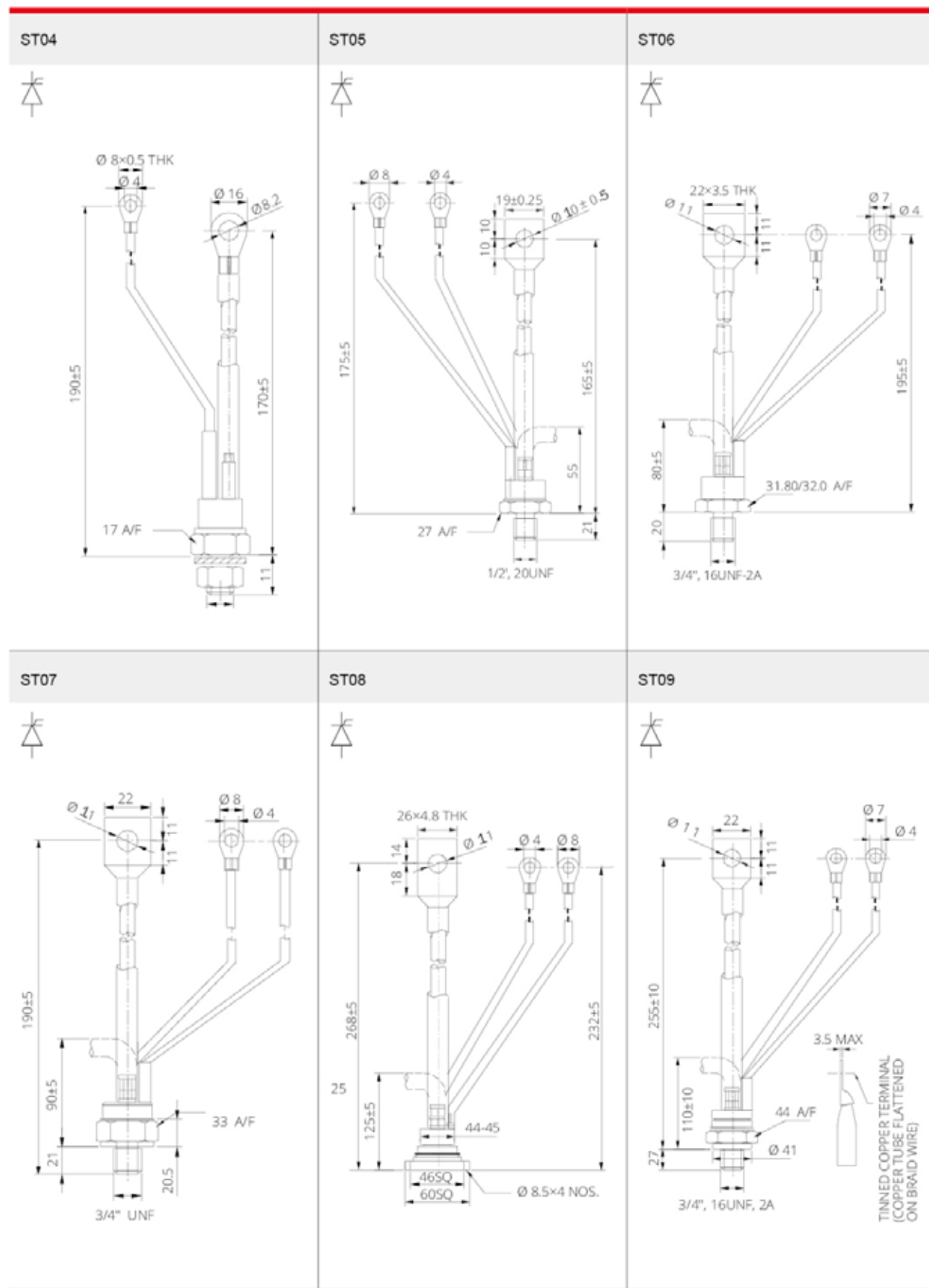
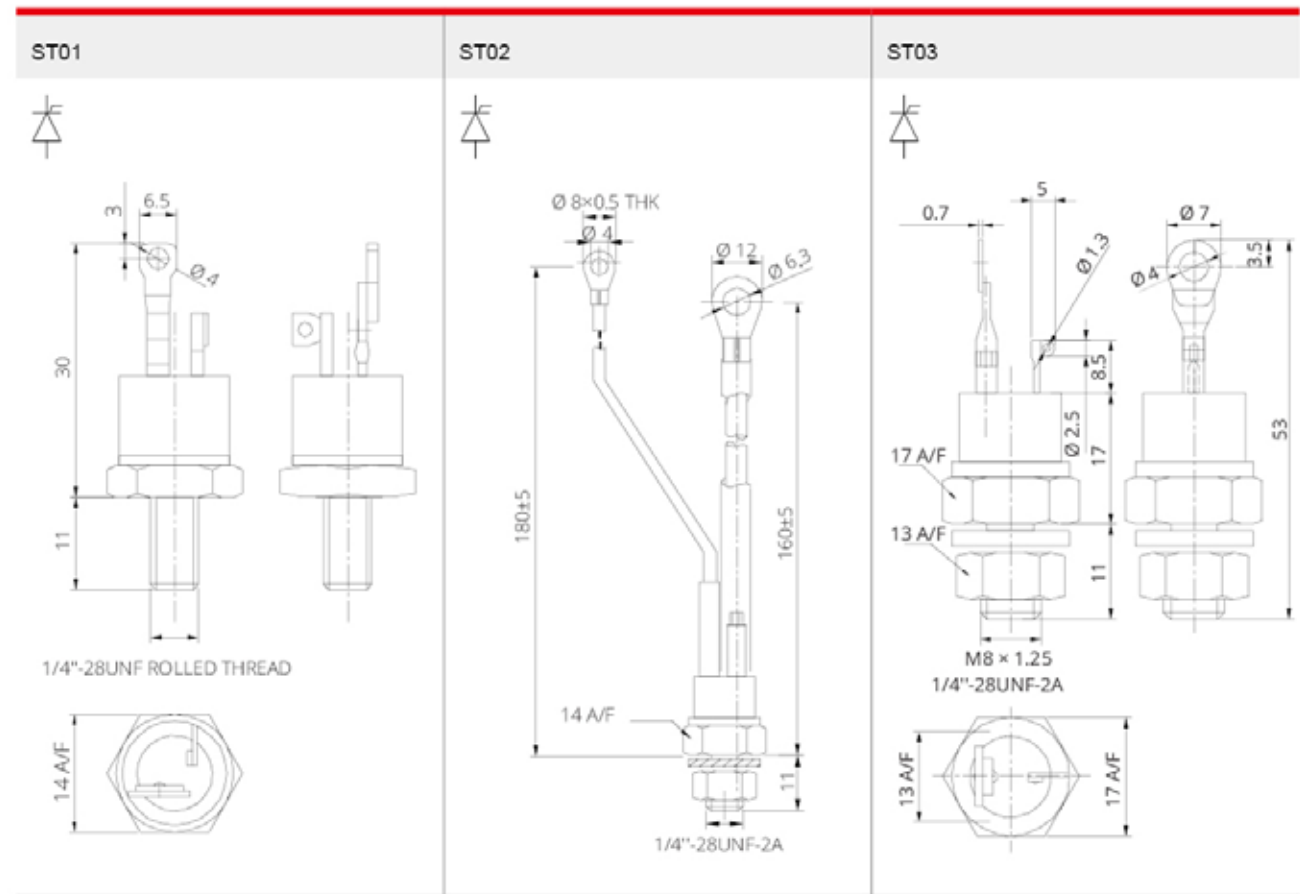
Application Include:

- Battery Chargers
- Induction Heating / Melting
- Medical Equipment
- Medium Voltage Inverters
- Motor Controls
- Power Supplies
- Transportation
- UPS
- VAR Generator
- Welding



Phase Control Thyristor - Stud / Flat Base

Type	V_{DRM}, V_{RRM} [V] $V_{DSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_{CRM}, I_{RRM} [mA] T_{jmax}	I_{TAVM} / T_C [A / °C] @ 180° Sine	I_{TSM} [kA] @ 10ms T_{jmax}	$\int I^2 t$ [A ² S×10 ³] @ 10ms T_{jmax}	V_T / I_T [V / A] T_{jmax}	$V_{T(TO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	I_{gt} [mA]	R_{thJC} [°C / W] @ 180° Sine	T_{jmax} [°C]	Outline Drg.
MS T30S	200 -- 1600	10	30 / 85	500	1250	1.69 / 100	0.95	6.40	100	0.93	125	ST01
MS T31S	200 -- 1600	10	30 / 85	500	1250	1.69 / 100	0.95	6.40	100	0.93	125	ST02
MS T45S	200 -- 1600	10	45 / 85	900	4050	1.71 / 140	1.00	5.00	150	0.56	125	ST03
MS T46S	200 -- 1600	10	45 / 85	900	4050	1.71 / 140	1.00	5.00	150	0.56	125	ST04
MS T65S	200 -- 1600	10	65 / 75	1000	5000	1.95 / 200	0.95	4.70	150	0.45	125	ST03
MS T66S	200 -- 1600	10	65 / 75	1000	5000	1.95 / 200	0.95	4.70	150	0.45	125	ST04
MS T85S	200 -- 1600	30	85 / 85	1250	7812	1.98 / 270	1.20	2.60	150	0.27	125	ST05
MS T125S	200 -- 1600	25	125 / 71	1800	16200	2.00 / 392	1.20	1.90	150	0.24	125	ST05
MS T150S	200 -- 1600	25	150 / 70	2200	24200	1.80 / 470	0.90	1.80	150	0.23	125	ST05
MS T174S	200 -- 1200	50	175 / 85	4000	80000	1.75 / 550	1.03	1.30	200	0.14	125	ST06
MS T175S	200 -- 1600	50	175 / 85	4600	105800	1.75 / 550	1.03	1.30	200	0.14	125	ST07
MS T250S	200 -- 1600	50	250 / 85	6000	180000	1.70 / 785	0.92	0.87	200	0.11	125	ST07
MS T285S	200 -- 800	50	285 / 85	7850	308000	1.35 / 900	0.88	0.47	200	0.115	125	ST07
MS T350S	200 -- 1600	80	350 / 85	8000	320000	1.65 / 1100	0.85	0.50	200	0.088	125	ST08
MS T351S	200 -- 1600	80	350 / 85	8000	320000	1.65 / 1100	0.85	0.50	200	0.088	125	ST09
MS T500S	200 -- 1600	80	500 / 75	12000	720000	1.60 / 1600	0.90	0.35	200	0.076	125	ST08



Dimensions in mm.

Phase Control Thyristor - Disc / Hockey Puk

We provide one of the most comprehensive ranges of standard phase control thyristors in disc package available in the industry.

Devices with voltage ranges from 200V up to 6500V are available, making them suitable for application with line voltages from 230V to over 1kV.

MS Power is a leading supplier of phase control products into demanding markets such as industrial DC drives, induction heating, marine / rail propulsion systems, wind power converters, electrochemical power supplies and soft starters.

These devices are optimised to give low conduction losses and primarily intended for applications from the frequency up to 400Hz.

All thyristor silicon chips are assembled in high reliable, robust and hermetic sealed housings in order to avoid mechanical damages as well as to eliminate any negative environmental influences as e.g. High humidity.

Application Include:

- Battery Chargers
- Induction Heating / Melting
- Medical Equipment
- Medium Voltage Inverters
- Motor Controls
- Power Supplies
- Transportation
- UPS
- VAR Generator
- Welding



Phase Control Thyristor - Disc / Hockey Puk

Type	V _{DRM} , V _{RRM} [V] V _{DSM} =V _{DRM} V _{RSM} =V _{RRM} +100V	I _{DRM} , I _{RRM} [mA] T _{Jmax}	I _{TAVM} / T _C [A / °C] @ 180° Sine	I _{TSM} [kA] @ 10ms T _{Jmax}	∫i ² t [A ² S×10 ³] @ 10ms T _{Jmax}	V _T /I _T [V / A] T _{Jmax}	V _{T(TO)}} [V] @ T _{Jmax}	r _T [mΩ] @ T _{Jmax}	I _{gt} [mA]	R _{thJC} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS T491C	5500 -- 6500	100	490 / 60	6.6	218	2.45 / 800	1.108	1.647	350	0.038	125	CT04
MS T504C	200 -- 1800	50	456 / 60	6.8	231	1.85 / 1000	1.05	0.80	150	0.072	125	CT01
MS T530C	3600 -- 4800	50	530 / 60	7.5	281	3.85 / 1500	1.40	1.70	250	0.034	125	CT04
MS T550C	200 -- 2400	30	550 / 70	9.2	423	1.34 / 625	0.99	0.47	150	0.060	125	CT04
MS T588C	200 -- 1800	50	796 / 61	8.0	320	2.15 / 2400	0.80	0.50	200	0.045	125	CT03
MS T660C	2000 -- 2400	50	660 / 76	7.5	281	2.16 / 1650	0.95	0.72	150	0.035	125	CT02
MS T706C	200 -- 1800	50	706 / 60	8.0	320	1.92 / 1600	0.80	0.60	150	0.05	125	CT02
MS T720C	200 -- 1800	50	720 / 76	9.0	405	1.96 / 1800	0.91	0.58	150	0.035	125	CT02
MS T750C	1800 -- 2400	30	750 / 73	9.6	461	1.35 / 625	0.97	0.48	150	0.035	125	CT03
MS T751C	1800 -- 2400	30	750 / 73	11.0	605	1.35 / 625	0.97	0.48	150	0.035	125	CT04
MS T760C	200 -- 1800	80	760 / 80	13.0	845	1.82 / 2400	0.86	0.36	250	0.038	125	CT04
MS T770C	200 -- 1800	50	770 / 70	11.5	661	1.73 / 1500	0.88	0.50	200	0.035	125	CT03
MS T890C	5000 -- 6500	200	894 / 60	12.0	720	3.10 / 2000	1.185	0.947	350	0.021	125	CT06
MS T950C	3000 -- 4400	100	950 / 70	12.0	720	2.85 / 2000	1.10	0.75	250	0.020	125	CT06
MS T951C	3000 -- 4500	100	950 / 70	13.5	911	2.85 / 2000	1.10	0.75	250	0.020	125	CT06
MS T960C	200 -- 1800	50	960 / 64	13.0	845	2.00 / 3000	0.85	0.35	250	0.038	125	CT04
MS T984C	200 -- 1800	984	984 / 68	12.5	781	1.57 / 1000	1.00	0.38	250	0.030	125	CT06
MS T1102C	6000 -- 6500	200	1100 / 83	11.5	661	2.80 / 2000	1.06	0.837	200	0.015	125	CT09
MS T1200C	200 -- 1800	70	1200 / 85	26.0	3380	1.65 / 3600	0.95	0.18	250	0.022	125	CT06
MS T1201C	3600 -- 4400	250	1200 / 82	37.0	6845	1.86 / 1500	1.262	0.397	200	0.015	125	CT09
MS T1241C	200 -- 1800	100	1240 / 66	17.5	1531	2.02 / 3700	0.85	0.32	250	0.028	130	CT04
MS T1250C	6000 -- 6500	400	1250 / 70	21.0	2205	2.70 / 2000	1.153	0.0744	250	0.013	125	CT12

Thyristors - Capsule

Type	V _{DRM} , V _{RRM} [V] V _{DSM} =V _{DRM} V _{RSM} =V _{RRM} +100V	I _{DRM} , I _{RRM} [mA] T _{Jmax}	I _{TRM} / T _C [A / °C] @ 180° Sine	I _{TSM} [kA] @ 10ms T _{Jmax}	J ² t [A ² S×10 ³] @ 10ms T _{Jmax}	V _T /I _T [V / A] T _{Jmax}	V _{T(TO)} [V] @ T _{Jmax}	r _T [mΩ] @ T _{Jmax}	I _{gt} [mA]	R _{th(j-c)} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS T1258C	200 -- 600	80	1258 / 85	20.0	2000	1.40 / 3000	1.00	0.10	200	0.033	140	CT05
MS T1275C	2800 -- 3600	100	1275 / 75	20.0	2000	2.55 / 2900	1.20	0.45	250	0.015	125	CT06
MS T1350C	2000 -- 2800	70	1350 / 85	30.0	4500	2.04 / 3000	1.04	0.28	250	0.015	125	CT06
MS T1440C	2000 -- 3000	100	1440 / 72	23.0	2645	1.78 / 3000	0.97	0.27	300	0.019	125	CT06
MS T1460C	2000 -- 2800	70	1460 / 82	30.0	4500	2.00 / 3000	0.97	0.27	250	0.015	125	CT06
MS T1501C	200 -- 1800	150	1500 / 64	22.0	2420	1.55 / 3000	0.84	0.195	250	0.026	125	CT06
MS T1502C	2000 -- 2400	45	1500 / 64	21.0	2205	1.70 / 3000	0.879	0.227	250	0.024	125	CT06
MS T1554C	2000 -- 2800	150	1554 / 70	23.6	2785	1.55 / 2000	1.02	0.265	250	0.0173	125	CT06
MS T1600C	2000 -- 2400	100	1600 / 83	25.0	3125	1.60 / 3000	0.89	0.21	200	0.015	125	CT09
MS T1650C	3200 -- 4400	200	1650 / 73	21.0	2205	1.45 / 1500	0.881	0.374	250	0.013	125	CT08
MS T1651C	3600 -- 4500	200	1650 / 70	39.0	7605	1.85 / 2000	1.033	0.358	250	0.012	125	CT12
MS T1745C	200 -- 1800	100	1745 / 74	33.5	5611	1.62 / 4000	0.93	0.16	250	0.018	125	CT06
MS T1800C	2000 -- 2200	100	1800 / 85	37.0	6845	1.30 / 3000	0.719	0.167	200	0.015	125	CT09
MS T1804C	3000 -- 3700	150	1800 / 70	27.0	3645	1.71 / 2000	1.113	0.278	200	0.012	125	CT12
MS T2000C	200 -- 1800	70	2000 / 73	36.0	6480	1.45 / 3000	0.82	0.18	250	0.015	125	CT06
MS T2001C	200 -- 1800	70	2000 / 73	26.0	3380	1.45 / 3000	0.82	0.18	250	0.015	125	CT07
MS T2060C	2000 -- 2800	250	2060 / 60	30.0	4500	1.77 / 3000	1.02	0.25	200	0.0125	125	CT08
MS T2115C	4000 -- 4500	250	2115 / 70	32.0	5120	1.70 / 2000	1.13	0.275	200	0.01	125	CT10
MS T2120C	2000 -- 2800	200	2120 / 85	38.0	7220	1.75 / 5000	0.85	0.20	300	0.01	125	CT08
MS T2150C	3000 -- 4200	200	2150 / 60	29.0	4205	1.87 / 3000	1.08	0.265	250	0.0101	125	CT08
MS T2301C	2200 -- 2500	150	2300 / 70	32.0	5120	1.25 / 2000	0.868	0.17	200	0.012	125	CT11
MS T2374C	3000 -- 3600	250	2374 / 70	32.0	5120	1.85 / 2000	1.20	0.325	300	0.0075	125	CT10
MS T2400C	2400 -- 2800	250	2400 / 85	40.0	8000	1.38 / 1800	1.05	0.154	250	0.0085	125	CT13
MS T2450C	3600 -- 4400	300	2450 / 67	28.5	4061	1.80 / 3000	0.99	0.271	250	0.009	125	CT15
MS T2500C	1200 -- 2100	70	2500 / 72	67.5	22781	1.35 / 3000	0.95	0.123	200	0.012	125	CT12
MS T2501C	1200 -- 2100	70	2500 / 72	67.5	22781	1.35 / 3000	0.95	0.123	200	0.012	125	CT11
MS T2505C	1000 -- 1800	100	2500 / 70	45.0	10125	1.65 / 5000	0.90	0.15	250	0.012	125	CT08
MS T2543C	2400 -- 3000	200	2543 / 67	38.0	7220	1.60 / 3000	0.78	0.274	250	0.009	125	CT12
MS T2585C	200 -- 800	100	2585 / 79	36.0	6480	1.52 / 6000	0.80	0.12	200	0.015	140	CT06
MS T2635C	1400 -- 1800	150	2635 / 70	36.0	6480	1.30 / 3000	0.735	0.163	200	0.011	125	CT08

Thyristors - Capsule

Type	V _{DRM} , V _{RRM} [V] V _{DSM} =V _{DRM} V _{RSM} =V _{RRM} +100V	I _{DRM} , I _{RRM} [mA] T _{Jmax}	I _{TRM} / T _C [A / °C] @ 180° Sine DSC	I _{TSM} [kA] @ 10ms T _{Jmax}	J ² t [A ² S×10 ³] @ 10ms T _{Jmax}	V _T /I _T [V / A] T _{Jmax}	V _{T(TO)} [V] @ T _{Jmax}	r _T [mΩ] @ T _{Jmax}	I _{gt} [mA]	R _{th(j-c)} [°C / W] @ 180° Sine	T _{Jmax} [°C]	Outline Drg.
MS T2810C	2000 -- 2200	250	2810 / 85	50.0	12500	1.25 / 3000	0.90	0.112	250	0.0085	125	CT13
MS T3000C	200 -- 600	150	3000 / 73	44.5	9901	1.00 / 3000	0.69	0.087	250	0.012	125	CT12
MS T3070C	3600 -- 4500	300	3070 / 70	53.0	14045	1.77 / 4000	0.991	0.196	250	0.007	125	CT18
MS T3200C	400 -- 1600	150	3200 / 76	40.5	8201	1.25 / 3000	0.776	0.0889	250	0.010	125	CT10
MS T3201C	400 -- 1600	150	3200 / 74	58.5	17111	1.05 / 2000	0.826	0.107	250	0.010	125	CT12
MS T3300C	3600 -- 4400	300	3300 / 72	47.2	11139	1.60 / 3000	0.991	0.196	250	0.007	125	CT19
MS T3325C	2200 -- 2800	300	3325 / 70	53.0	14045	1.77 / 4000	0.991	0.196	250	0.006	125	CT17
MS T3400C	1800 -- 2800	300	3400 / 70	56.5	15961	1.34 / 3000	0.915	0.14	250	0.008	125	CT14
MS T3401C	400 -- 1800	250	3400 / 60	60.0	18000	1.23 / 3000	0.90	0.11	250	0.010	125	CT10
MS T3450C	200 -- 800	200	3450 / 64	33.5	5611	1.00 / 1500	0.722	0.088	200	0.015	140	CT07
MS T3500C	200 -- 600	150	3500 / 72	44.5	9901	1.00 / 3000	0.69	0.087	250	0.010	125	CT10
MS T3669C	2000 -- 2200	200	3669 / 68	60.0	18000	1.10 / 2000	0.92	0.09	300	0.009	125	CT16
MS T3770C	4800 -- 5200	500	3770 / 60	62.5	19531	2.00 / 6000	1.00	0.15	400	0.0071	125	CT19
MS T3839C	3000 -- 3500	250	3839 / 72	55.0	15125	1.74 / 6000	0.95	0.14	250	0.006	125	CT13
MS T3950C	400 -- 1400	200	3950 / 68	60.0	18000	1.18 / 4000	0.88	0.075	250	0.009	125	CT11
MS T4000C	2400 -- 3000	250	4000 / 70	75.0	28125	1.38 / 4000	0.942	0.0979	250	0.007	125	CT17
MS T4050C	2000 -- 2200	200	4050 / 70	60.0	180000	1.10 / 2000	0.92	0.09	300	0.0075	125	CT10
MS T4307C	200 -- 800	200	4307 / 68	70.0	24500	1.50 / 10000	0.84	0.06	250	0.009	125	CT16
MS T4925C	200 -- 800	200	4925 / 70	70.0	24500	1.50 / 10000	0.84	0.06	250	0.009	140	CT16
MS T5000C	1200 -- 2000	200	5000 / 68	85.0	36125	1.15 / 4000	0.848	0.0658	250	0.0065	125	CT17
MS T6536C	200 -- 800	300	6536 / 72	95.0	45125	1.30 / 9000	0.85	0.05	300	0.006	140	CT19

Fast Switching Thyristors

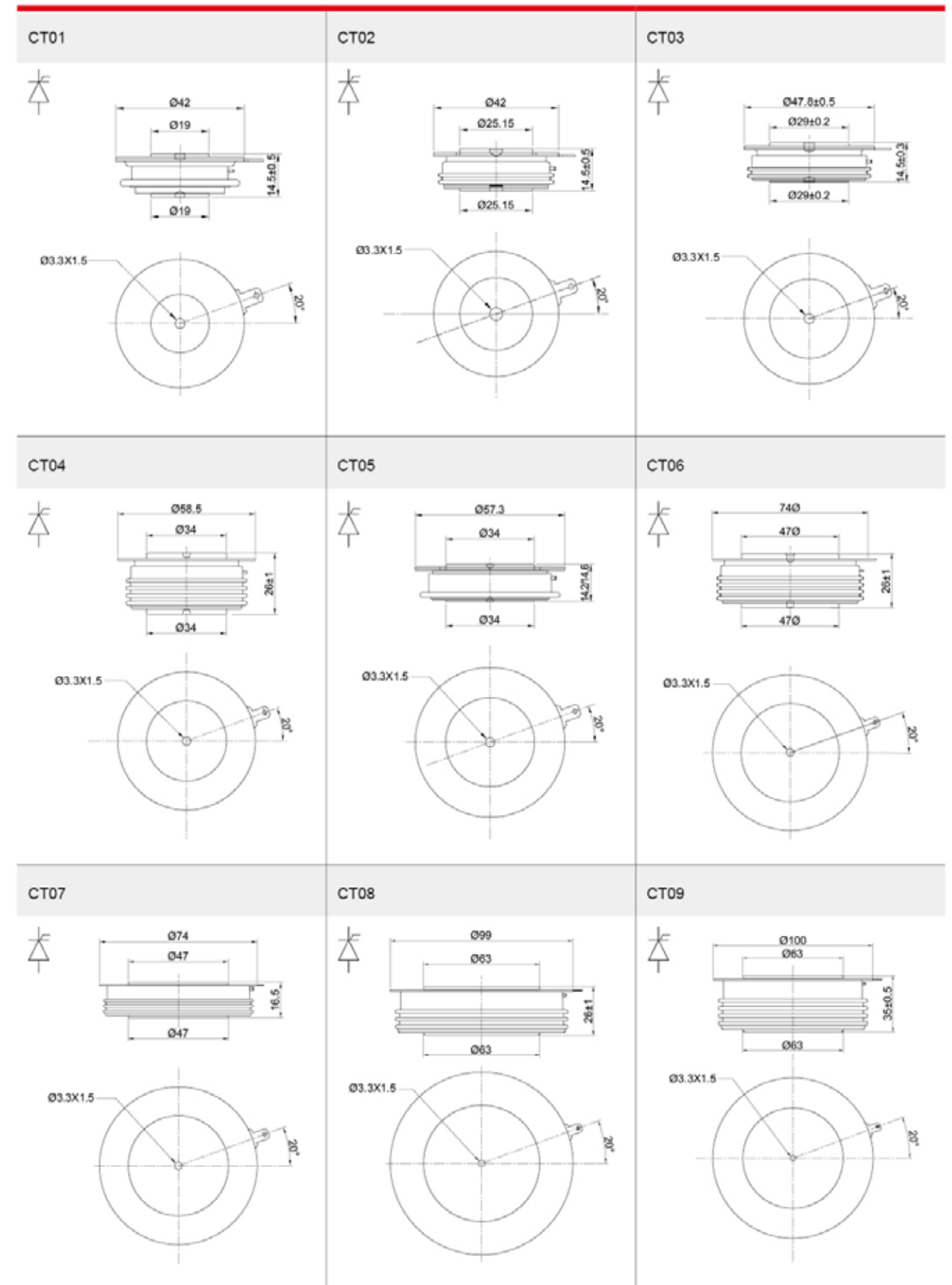
Devices with blocking voltages up to 2800V and current rating up to 4000A are available with turn off times as low as 15µs. Our distributed gate architecture together with highly efficient axial lifetime control produce a unique combination of high di / dt capability, fast / soft recovery and low conduction losses.

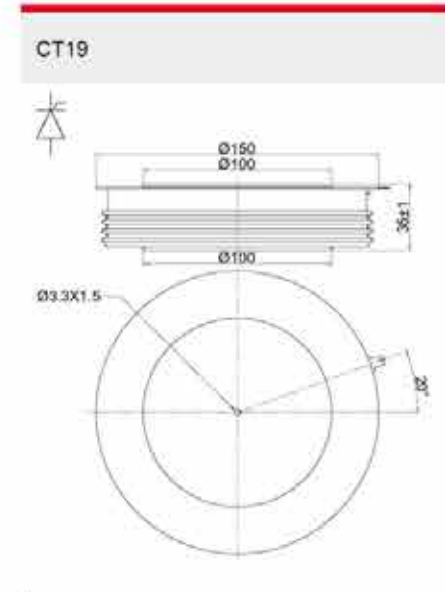
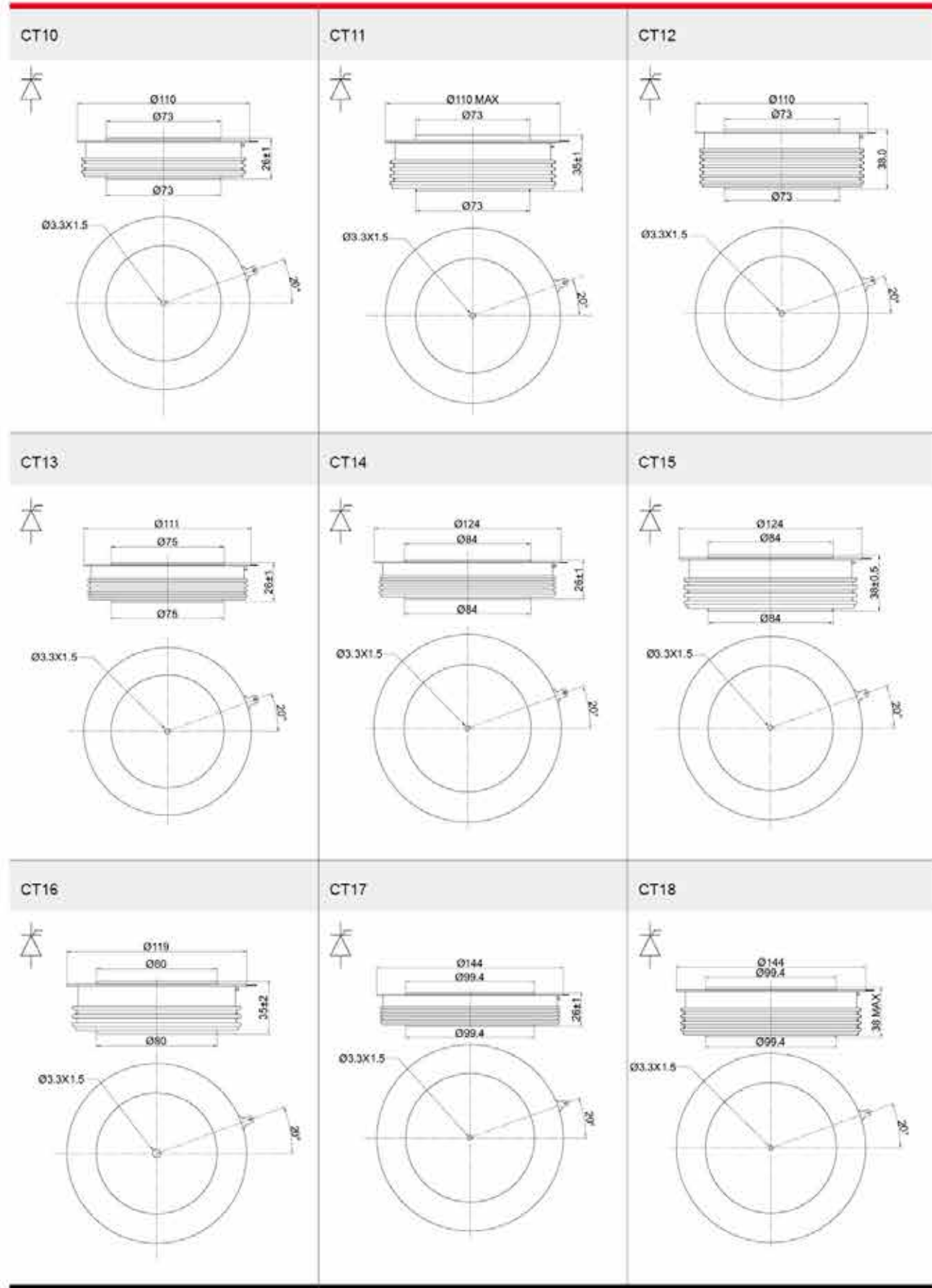
Fast Turn - Off and Distributed Gate Thyristor devices allow the development of highly efficient, compact and reliable high frequency resonant converters for demanding applications such as induction heating, traction and UPS.

Additionally these devices make an excellent choice for fast high energy switches such as pulsed power and crowbars. As with all of our high power semiconductors, these parts utilise advance compression bonded construction ensuring long term reliability in applications subject to repeated power cycles.

Phase Control Thyristor - Disc / Hockey Puk

Type	V_{DRM}, V_{RRM} [V] $V_{DSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_{TAVM} / T_C [A / °C] @ 180° Sine DSC T_{jmax}	I_{TSM} [kA] @ 10ms T_{jmax}	$\int I^2 dt$ [A ² S×10 ³] @ 10ms T_{jmax}	V_T / I_T [V / A] T_{jmax}	$V_{T(TO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	T_q [µsec] @ T_{jmax}	$(di/dt)_{crit}$ [A / µs] @ T_{jmax}	$R_{th(jc)}$ [°C / W] @ 180° Sine	T_{jmax} [°C]	Outline Drg.
MS TF630	2000 -- 2200	630 / 80	10.0	500	2.30 / 1978	1.200	0.650	30	2000	0.034	125	CT04
MS TF831	800 -- 1200	830 / 68	9.35	437	2.40 / 1400	1.900	0.357	15	1000	0.026	125	CT04
MS TF980	800 -- 1200	980 / 73	11.0	605	2.18 / 2400	1.320	0.360	20-50	1200	0.024	125	CT04
MS TF1000	1400 -- 2000	1000 / 77	18.5	1711	1.90 / 2000	1.207	0.342	50-100	250	0.023	125	CT06
MS TF1205	1200 -- 2000	1018 / 70	15.0	1125	2.15 / 2000	1.380	0.385	50	1000	0.020	125	CT06
MS TF1271	800 -- 1200	1271 / 72	20.0	2000	2.26 / 3000	1.540	0.240	20-50	1200	0.018	125	CT06
MS TF1275	1200 -- 2100	1275 / 70	17.5	1531	2.00 / 2000	1.202	0.340	50-60	250	0.019	125	CT06
MS TF1331	800 -- 1200	1331 / 68	20.0	2000	2.02 / 2000	1.450	0.285	15	1000	0.018	125	CT06
MS TF1448	1800 -- 2000	1448 / 70	17.0	1445	1.80 / 2000	1.300	0.250	40-70	1000	0.017	125	CT06
MS TF2100	1400 -- 2000	2100 / 70	33.0	5445	2.04 / 2000	1.271	0.255	60-100	300	0.010	125	CT12
MS TF2475	2000 -- 2800	2475 / 74	34.1	5814	2.55 / 5700	1.504	0.174	80-100	1000	0.008	125	CT11
MS TF2620	2000 -- 2500	2620 / 74	37.2	6919	2.00 / 4000	1.308	0.170	50-70	1000	0.008	125	CT11
MS TF3050	2000 -- 2500	3050 / 64	55.0	15125	2.45 / 5000	1.581	0.171	40-100	1200	0.007	125	CT13
MS TF3370	800 -- 1200	3370 / 74	48.5	11761	1.54 / 4000	1.353	0.064	20-35	1000	0.008	125	CT11
MS TF3400	2200 -- 2400	3400 / 55	40.0	8000	2.38 / 7850	1.350	0.146	40-60	1000	0.0074	125	CT14
MS TF3559	1600 -- 2000	3559 / 64	42.7	9116	1.95 / 5000	1.173	0.155	60-200	500	0.006	125	CT13





Dimensions in mm.



Power Module

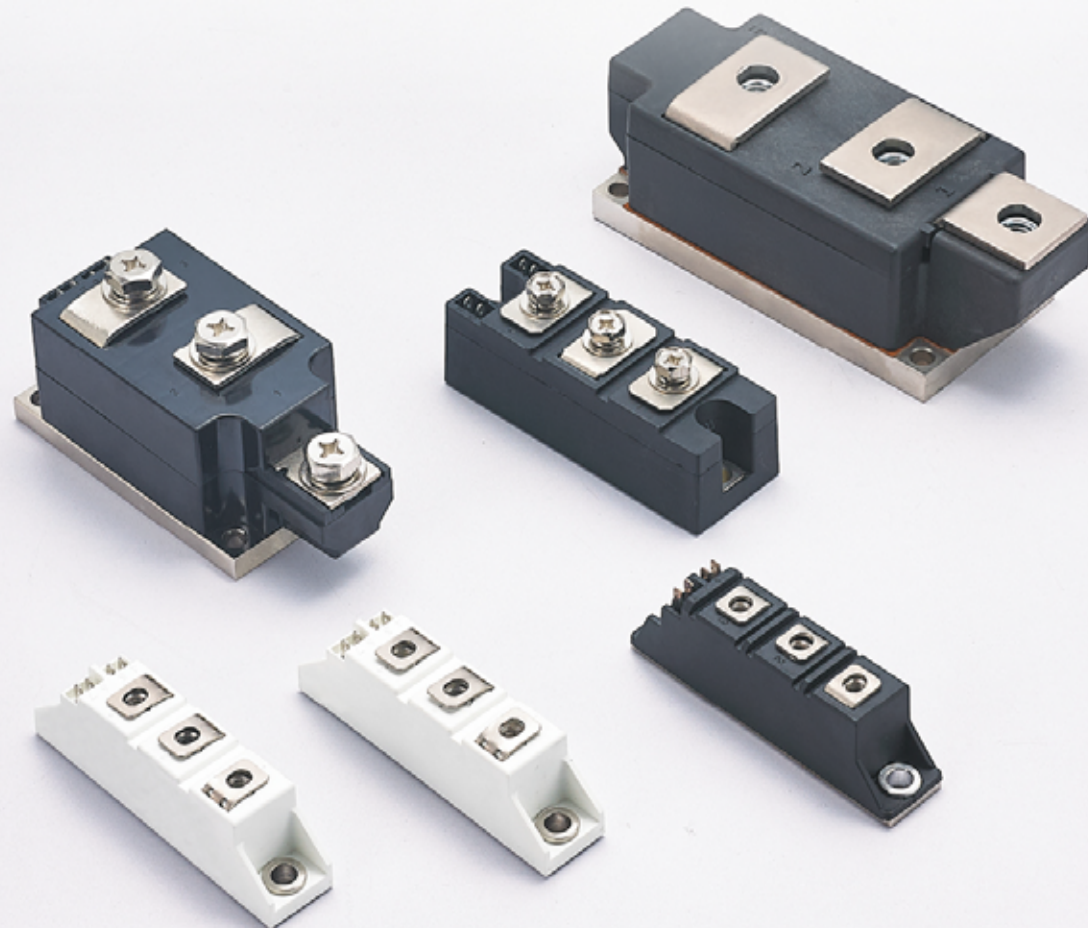
We offer a broad range of Power Modules containing thyristor and diode pellets in a voltage range 200V to 3600V and a current range of 25A up to 807A. The modules are designed and assembled in pressure contact technology for highest reliability and as well as highly reliable and cost saving solder bond technology using an isolated copper base plate.

Application Include:

- Battery Charges
- Induction Heating / Melting
- Medical Equipment
- Motor Controls
- Power Suppliers
- Transportation
- UPS
- Welding

Circuit Configurations:

- Single
- Dual
- Common Anode
- Common Cathode
- AC Switch



Power Modules

Diode-Diode Module

Part number	V_{RRM} [V] $V_{OSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_{TAVM} / T_c [A / °C] @ 180° Sine	I_{TSM} [A] @ 10ms T_{max}	J_{ft} [A ² S] @ 10ms T_{max}	V_f / I_f [V / A] @ 25°C	$V_{F(TO)}$ [V] @ T_{max}	r_T [mΩ] @ T_{max}	R_{thJC} [°C / W] @ 180° Sine per chip	R_{thJC} [°C / W] per chip	T_{max} [°C]	Outline Drg.
20mm Base Plate - Solder Version											
MS DD25S	200 --- 1800	25 / 100	500	1250	1.40 / 80	0.85	6.00	1.6	0.2	150	M01
MS DD55S	200 --- 1800	55 / 100	1150	6612	1.60 / 175	0.85	4.00	0.65	0.2	150	
MS DD95S	200 --- 1800	95 / 100	1700	14450	1.45 / 300	0.85	1.90	0.4	0.2	150	
MS DD104S	200 --- 1800	104 / 100	2000	20000	1.40 / 300	0.85	1.50	0.39	0.2	150	
MS DD120S	200 --- 1800	120 / 100	2050	21000	1.44 / 350	0.85	1.40	0.33	0.2	150	
34mm Base Plate - Solder Version											
MS DD140S	200 --- 1800	140 / 100	3200	51200	1.45 / 300	0.90	1.50	0.25	0.1	150	M02
MS DD170S	200 --- 1800	170 / 100	5200	135200	1.44 / 400	0.85	1.30	0.21	0.1	150	
MS DD190S	200 --- 1800	190 / 100	5600	156800	1.32 / 500	0.85	0.80	0.21	0.1	150	
50mm Base Plate - Pressure Contact											
MS DD250K	3000 --- 3600	250 / 98	5000	125000	2.0 / 785	0.90	1.57	0.11	0.04	150	M03
MS DD260K	200 --- 1800	260 / 100	10000	500000	1.40 / 800	0.70	0.68	0.17	0.04	150	
MS DD350K	200 --- 1800	350 / 100	11000	605000	1.35 / 1000	0.75	0.40	0.13	0.04	150	
MS DD380K	200 --- 1800	380 / 100	11500	661000	1.40 / 1500	0.75	0.32	0.125	0.04	150	
60mm Base Plate - Pressure Contact											
MS DD480K	4000 --- 4500	480 / 87	9000	405000	2.19 / 1600	0.89	0.815	0.07	0.02	150	M04
MS DD500K	200 --- 1800	500 / 100	14000	980000	1.35 / 1500	0.84	0.24	0.088	0.03	150	
MS DD600K	200 --- 1800	600 / 100	19000	1805000	1.35 / 1800	0.75	0.215	0.078	0.02	150	
MS DD710K	200 --- 2000	710 / 100	22000	2420000	1.30 / 2200	0.75	0.145	0.069	0.02	150	
MS DD810K	200 --- 1800	807 / 85	19000	1805000	1.24 / 2000	0.78	0.23	0.062	0.02	150	
70mm Base Plate - Pressure Contact											
MS DZ1100	600 --- 1800	1100 / 100	35000	6125000	1.11 / 3000	0.75	0.073	0.048	0.015	150	M11

Thyristor-Thyristor Modules

Type	V_{DSM}, V_{DRM} [V] $V_{DSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_{TAVM} / T_C [A / °C] @ 180° Sine	I_{TSM} [A] @ 10ms T_{jmax}	$\int I^2 t$ [A ² S] @ 10ms T_{jmax}	V_T / I_T [V / A] @ 25°C	$V_{T(TO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	R_{thJC} [°C / W] @ 180° Sine per chip	R_{thJC} [°C / W] per chip	T_{jmax} [°C]	Outline Drg.
20mm Base Plate - Solder Version											
MS TT25S	800 --- 1800	25 / 85	480	1152	1.80 / 75	0.90	12.00	0.95	0.2	125	M05
MS TT40S	800 --- 1800	40 / 85	850	3612	1.95 / 200	1.00	4.50	0.69	0.2	125	
MS TT50S	800 --- 1800	50 / 85	1250	7812	1.65 / 200	0.90	3.50	0.60	0.2	125	
MS TT70S	800 --- 1800	70 / 85	1450	10512	1.85 / 250	0.90	3.50	0.38	0.2	125	
MS TT95S	800 --- 1800	95 / 85	1750	15312	1.65 / 300	0.90	2.00	0.30	0.2	125	
MS TT106S	800 --- 1800	106 / 85	1900	18050	1.65 / 300	0.90	2.00	0.30	0.2	130	
MS TT119S	800 --- 1800	119 / 85	1900	18050	1.75 / 300	0.90	3.25	0.20	0.2	130	
34mm Base Plate - Pressure Contact											
MS TT140K	800 --- 1800	140 / 85	4000	80000	1.47 / 450	0.90	1.15	0.22	0.06	125	M06
MS TT162K	800 --- 1800	162 / 85	4400	96800	1.45 / 500	0.85	0.95	0.20	0.06	125	
50mm Base Plate - Pressure Contact											
MS TT139K	3000 --- 3600	139 / 85	3200	51200	2.54 / 400	1.50	2.60	0.12	0.04	125	M07
MS TT169K	3000 --- 3600	169 / 85	4000	80000	2.60 / 600	1.20	2.30	0.11	0.04	125	
MS TT170K	800 --- 1800	170 / 85	5000	125000	1.65 / 600	0.95	1.00	0.17	0.04	125	
MS TT210K	200 --- 1800	210 / 85	5800	168000	1.65 / 700	1.00	0.85	0.13	0.04	125	
MS TT215K	800 --- 2200	215 / 85	6300	198000	1.75 / 800	0.95	0.92	0.13	0.04	125	
MS TT250K	800 --- 1800	250 / 85	8000	320000	1.53 / 600	0.85	1.00	0.11	0.04	125	
MS TT260K	2000 --- 2200	260 / 85	8000	320000	1.45 / 800	0.85	0.64	0.12	0.04	125	
MS TT320K	200 --- 1800	320 / 85	8000	320000	1.32 / 600	0.84	0.58	0.12	0.04	135	
MS TT330K	800 --- 1800	330 / 80	8000	320000	1.40 / 750	0.84	0.58	0.115	0.04	130	
50mm Base Plate - Pressure Contact											
MS TZ560K	200 --- 1800	560 / 85	14500	1051000	1.27 / 1000	0.80	0.38	0.072	0.024	140	M12
60mm Base Plate - Pressure Contact											
MS TT240K	2000 --- 4000	240 / 74	6000	180000	3.50 / 1000	1.563	2.141	0.065	0.02	125	M08
MS TT310K	2000 --- 2600	310 / 85	9000	405000	2.22 / 1300	1.00	0.86	0.078	0.02	125	
MS TT430K	2000 --- 2200	430 / 85	15000	1125000	1.78 / 1500	0.95	0.45	0.065	0.02	125	
MS TT460	800 --- 1800	460 / 83	15500	1201000	1.60 / 1400	0.88	0.45	0.074	0.02	130	
MS TT461K	200 --- 2800	460 / 85	12000	72000	2.00 / 1600	1.10	0.552	0.05	0.02	125	
MS TT600K	800 --- 1800	600 / 85	14000	980000	1.27 / 1500	0.80	0.23	0.058	0.02	125	
70mm Base Plate - Pressure Contact											
MS TZ800K	400 --- 1800	800 / 85	32000	5120000	1.55 / 3000	0.83	0.25	0.042	0.01	130	M09
77mm Base Plate - Pressure Contact											
MS TT740K	2000 --- 2400	740 / 77	24500	3001000	1.55 / 3140	0.91	0.21	0.50	0.016	125	M10

Thyristor-Diode Modules

Type	V_{DSM}, V_{DRM} [V] $V_{DSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_{TAVM} / T_C [A / °C] @ 180° Sine	I_{TSM} [A] @ 10ms T_{jmax}	$\int I^2 t$ [A ² S] @ 10ms T_{jmax}	V_T / I_T [V / A] @ 25°C	$V_{T(TO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	R_{thJC} [°C / W] @ 180° Sine per chip	R_{thJC} [°C / W] per chip	T_{jmax} [°C]	Outline Drg.
20mm Base Plate - Solder Version											
MS TD25S	800 --- 1800	25 / 85	480	1152	1.80 / 75	0.90	12.00	0.95	0.2	125	M05
MS TD40S	800 --- 1800	40 / 85	850	3612	1.95 / 200	1.00	4.50	0.69	0.2	125	
MS TD50S	800 --- 1800	50 / 85	1250	7812	1.65 / 200	0.90	3.50	0.60	0.2	125	
MS TD70S	800 --- 1800	70 / 85	1450	10512	1.85 / 250	0.90	3.50	0.38	0.2	125	
MS TD95S	800 --- 1800	95 / 85	1750	15312	1.65 / 300	0.90	2.00	0.30	0.2	125	
MS TD106S	800 --- 1800	106 / 85	1900	18050	1.65 / 300	0.90	2.00	0.30	0.2	130	
MS TD119S	200 --- 1600	119 / 85	1900	18050	1.75 / 300	0.90	3.25	0.20	0.2	130	
34mm Base Plate - Pressure Contact											
MS TD140K	800 --- 1800	140 / 85	4000	80000	1.47 / 450	0.90	1.15	0.22	0.06	125	M06
MS TD162K	800 --- 1800	162 / 85	4400	96800	1.45 / 500	0.85	0.95	0.20	0.06	125	
50mm Base Plate - Pressure Contact											
MS TD139K	3000 --- 3600	139 / 85	3200	51200	2.54 / 400	1.50	2.60	0.12	0.04	125	M07
MS TD169K	3000 --- 3600	169 / 85	4000	80000	2.60 / 600	1.20	2.30	0.11	0.04	125	
MS TD170K	800 --- 1800	170 / 85	5000	125000	1.65 / 600	0.95	1.00	0.17	0.04	125	
MS TD210K	200 --- 1800	210 / 85	5800	168000	1.65 / 700	1.00	0.85	0.13	0.04	125	
MS TD215K	800 --- 1800	215 / 85	6300	198000	1.75 / 800	0.95	0.92	0.13	0.04	125	
MS TD250K	2000 --- 2200	250 / 85	8000	320000	1.53 / 600	0.85	1.00	0.11	0.04	125	
MS TD260K	800 --- 1800	260 / 85	8000	320000	1.45 / 800	0.85	0.64	0.12	0.04	125	
MS TD320K	2000 --- 2200	320 / 85	8000	320000	1.32 / 600	0.84	0.58	0.12	0.04	135	
MS TD330K	200 --- 1800	320 / 85	8000	320000	1.32 / 600	0.84	0.58	0.12	0.04	135	
60mm Base Plate - Pressure Contact											
MS TD240K	2000 --- 4000	240 / 74	6000	180000	3.50 / 1000	1.563	2.141	0.065	0.02	125	M08
MS TD310K	2000 --- 2600	310 / 85	9000	405000	2.22 / 1300	1.00	0.86	0.078	0.02	125	
MS TD430K	2000 --- 2200	430 / 85	15000	1125000	1.78 / 1500	0.95	0.45	0.065	0.02	125	
MS TD460	800 --- 1800	460 / 83	15500	1201000	1.60 / 1400	0.88	0.45	0.074	0.02	130	
MS TD461K	2000 --- 2800	460 / 85	12000	72000	2.00 / 1600	1.10	0.552	0.05	0.02	125	
MS TD600	800 --- 1600	600 / 85	14000	980000	1.27 / 1500	0.80	0.23	0.058	0.02	125	
77mm Base Plate - Pressure Contact											
MS TD740K	2000 --- 2400	740 / 77	24500	3001000	1.55 / 3140	0.91	0.21	0.50	0.016	125	M10

<p>M01</p>	<p>M02</p>	<p>M03</p>
<p>M04</p>	<p>M05</p>	<p>M06</p>
<p>M07</p>	<p>M08</p>	<p>M09</p>

<p>M10</p>	<p>M11</p>	<p>M12</p>
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Dimensions in mm.

Bridges

Discover our broad range of standard Thyristors and Diode combination in Bridge configuration. We offer a wide range of Power Bridges in voltage range of 200V to 2200V and a current of 25A up to 500A.

Application Include:

- Battery Charges
- Power Suppliers
- Motor Controls
- Transportation
- Welding
- Medical Equipment
- UPS



Bridges

Power Bridge Subcategories

- Single Phase Uncontrolled Rectifier
- Single Phase Half controlled Rectifier with Free wheeling Diode
- Three Phase Uncontrolled Rectifier

Single Phase Diode Bridges

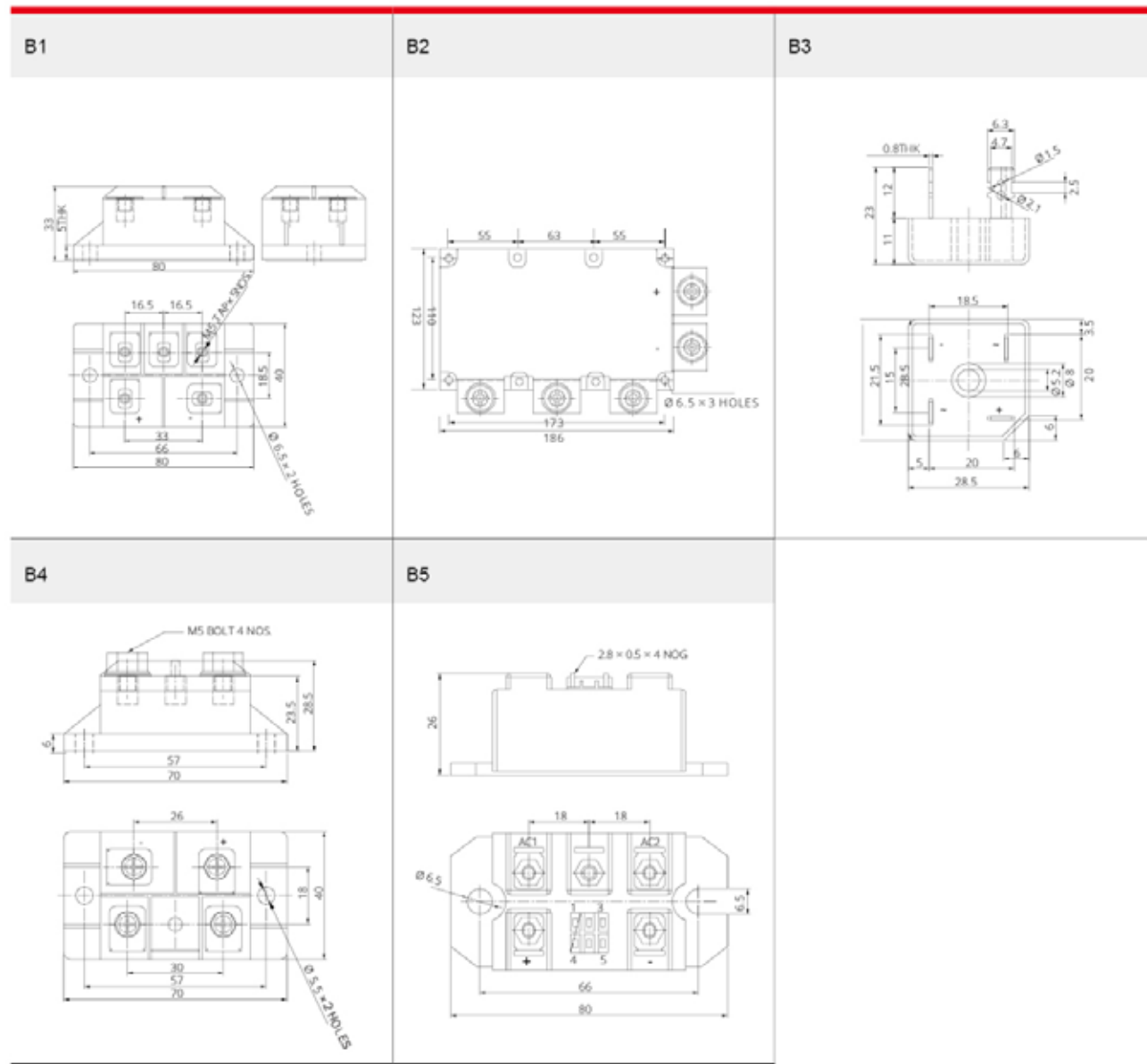
Part number	V_{DRM}, V_{RRM} [V] $V_{RSM}=V_{RRM}+100V$	I_b / T_c [A / °C]	I_{FSM} [kA] @ 10ms 25°C	$\int I^2 t$ [A ² S] @ 10ms 25°C	V_f / I_f [V / A] 25°C	$V_{T(FO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	$R_{th(jc)}$ [°C / W] @ 180° Sine per arm	$R_{th(jc)}$ [°C / W] per bridge	T_{jmax} [°C]	Outline Drg.
MDQ35	200 --- 1200	35 / 85	400	800	1.35 / 50	0.85	10	2.8	0.4	150	B3
MDQ50	200 --- 1600	50 / 55	500	1250	1.20 / 50	0.75	8	3.05	1.0	150	B3
MDQ60	200 --- 1600	50 / 110	500	1250	1.50 / 75	0.80	8	1.19	0.05	150	B4
MDQ80	200 --- 1600	80 / 85	750	2812	1.50 / 125	0.80	6	1.16	0.05	150	B4
MDQ100	200 --- 1600	110 / 85	1150	6612	1.35 / 150	0.85	4	0.80	0.05	150	B4

Single Phase Half Controlled Bridge with Free Wheeling Diode

Part number	V_{DRM}, V_{RRM} [V] $V_{DSM}=V_{DRM}$ $V_{RSM}=V_{RRM}+100V$	I_b / T_c [A / °C]	I_{TSM} [A] @ 10ms T_{jmax}	$\int I^2 t$ [A ² S] @ 10ms 25°C	V_T / I_T [V / A] T_{jmax}	$V_{T(FO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	$R_{th(jc)}$ [°C / W] @ 180° Sine per arm	$R_{th(jc)}$ [°C / W] per bridge	T_{jmax} [°C]	Outline Drg.
MHQ45	800 --- 1600	45 / 85	470	1104	2.0 / 70	0.95	15.00	1.04	0.05	125	B5

Three Phase Diode Bridges

Part number	V_{RRM} [V] $V_{RSM}=V_{RRM}+100V$	I_b / T_c [A / °C]	I_{FSM} [kA] @ 10ms 25°C	$\int I^2 t$ [A ² S] @ 10ms 25°C	V_f / I_f [V / A] 25°C	$V_{T(FO)}$ [V] @ T_{jmax}	r_T [mΩ] @ T_{jmax}	$R_{th(jc)}$ [°C / W] @ 180° Sine per arm	$R_{th(jc)}$ [°C / W] per bridge	T_{jmax} [°C]	Outline Drg.
MDS60	800 --- 1600	60 / 100	800	3200	1.26 / 60	0.90	6	1.2	0.05	130	B1
MDS80	1400 --- 1600	80 / 100	1000	5000	1.40 / 100	0.85	6	0.86	0.05	150	B1
MDS100	800 --- 1600	110 / 85	1150	6612	1.30 / 100	0.85	5	0.85	0.05	130	B1
MDS500	800 --- 2200	500 / 100	12000	720000	1.16 / 500	0.88	0.36	0.28	0.01	150	B2



Dimensions in mm.

Power Stack Assemblies

MS Power has developed a wide range of standard air or liquid cooled rectifier / thyristor assemblies in all common circuit configuration using either isolated base plate or disc / stud base power semiconductors. A range of standard extrusion heatsink and clamps are used to produce a comprehensive range of assemblies from 100A to 10000A DC output.

Circuit Configurations:

- Single
- Single Phase Bridge
- Three Phase Bridge
- Common Cathode / Common Anode
- Half Bridge
- AC Switch

Application Include :

- Battery Chargers
- Power Supplies
- Motor Controls
- Transportation
- Welding
- Induction Heating / Melting
- UPS

Part number	I _{max} (A) T _{amb} =40°C	V _{max} SCR(V)	SCR	Fuse		Dimensions (L*H*P)	Weight(Kg)
				n	690V 1250V		
MS 900F B6C 16	900	1600	MS T960	1	630A	500*570*310	45
MS 1200F B6C 16	1200	1600	MS T1200	1	800A	500*570*310	45
MS 1500F B6C 16	1500	1600	MS T1453	1	1000A	570*760*310	72
MS 1800F B6C 16	1800	1600	MS T1545	1	1250A	570*760*310	72
MS 2000F B6C 16	2000	1600	MS T1648	1	1250A	570*760*310	72
MS 2400F B6C 16	2400	1600	MS T1648	1	1400A	655*760*420	115
MS 2700F B6C 16	2700	1600	MS T1968	1	1600A	736*770*420	155
MS 2900F B6C 16	2900	1600	MS T2398	2	900A	736*770*420	155
MS 3300F B6C 22	3300	2200	MS T3669	2	1000A	736*890*420	155
MS 3500F B6C 22	3500	2200	MS T4050	2	1100A	736*890*420	155



Certificates



Part Numbering Structure

Rectifier Diode: Stud / Flat Base

MS D 130 N XX M B

- Rectifier Diode
- Current Code
- Polarity
 - R = Stud Anode
 - N = Stud Cathode
- Voltage Code
 - Code X 100 = V_{RRM}
- Stud Threads
 - M/M1 = Metric Threads
 - U/U1 = UNF Threads
 - F = Flat Base
- Technology
 - B = Solder Bond Technology
 - K = Pressure Contact Technology

Rectifier Diode: Capsule Package

MS D 1250 C XX

- Rectifier Diode
- Current Code
- C - Capsule package with Alloyed silicon Technology
- CZ - Capsule package with Free floating silicon Technology
- Voltage Code
 - Code X 100 = V_{RRM}

Fast Recovery Diode - Capsule Package

MS DF 1260 C XX

- Fast Recovery Diode
- Current Code
- C - Capsule package with Alloyed silicon Technology
- CZ - Capsule package with free Floating silicon Technology
- Voltage Code
 - Code X 100 = V_{RRM}

Fast Recovery Diode with Soft Characteristics

MS SR 1030 C XX

- Fast Recovery Diode with Soft Characteristics
- Current Code
- C - Capsule package with Alloyed silicon technology
- CZ - Capsule package with Free floating silicon technology
- Voltage Code
 - Code X 100 = V_{RRM}

Phase Control Thyristor - Stud / Flat Base

MST 45 S XX U B

- Phase Control Thyristor
- Current Code
- Stud / Flat Base Version
- Voltage Code
 - Code X 100 = V_{DRM} / V_{RRM}
- Stud Threads
 - M/M1 = Metric Threads
 - U/U1 = UNF Threads
 - F = Flat Base
- Technology
 - B = Solder Bond Technology
 - K = Pressure Contact Technology

Phase Control Thyristor - Capsule Package

MST 2585 C XX

- Phase Control Thyristor
- Current Code
- C - Capsule Package with Alloyed silicon Technology
- CZ - Capsule package with Free floating silicon Technology
- Voltage Code
 - Code X 100 = V_{DRM} / V_{RRM}

Fast Switching Thyristor - Capsule Package

MS TF 400 C XX D J

- Fast Switching Thyristor - Capsule Package
- Current Code
- C - Capsule package with Alloyed silicon Technology
- CZ - Capsule package with Free floating silicon Technology
- Voltage Code
 - Code X 100 = V_{DRM} / V_{RRM}
- Reapplied dv/dt
 - D = 50V/ μ sec
 - F = 200V/ μ sec
 - H = 400V/ μ sec
- Turn Off time Code
 - B = 12 μ sec
 - E = 15 μ sec
 - K = 20 μ sec
 - J = 25 μ sec
 - N = 30 μ sec
 - G = 35 μ sec
 - 2N = 60 μ sec
 - 2G = 70 μ sec

Thyristor - Thyristor / Thyristor - Diode Module

MS TT 25 S XX XX

Fixed Code

TT - Thyristor - Thyristor Module

TD - Thyristor - Diode Module

Current Code

Technology

S = Solder Bond Technology

K = Pressure Contact Technology

Voltage Code

Code X 100 = V_{DRM} / V_{RRM}

Non - Standard Connection

AA - Common Anode

KK - Common Cathode

Diode - Diode Module

MS DD 25 S XX XX

Fixed Code

DD - Diode - Diode Module

Current Code

Technology

S = Solder Bond Technology

K = Pressure Contact Technology

Voltage Code

Code X 100 = V_{RRM}

Non - Standard Connection

AA - Common Anode

KK - Common Cathode

Symbol	Description
$I_{F(AV)}$	Average Forward Current
$I_{F(RMS)}$	RMS Forward current
I_{FSM}	Surge Forward Current
$I_{T(AV)}$	Mean On-State Current
I_{TM}	Peak On-State Current
$I_{T(RMS)}$	RMS On-State Current
I_{TSM}	Surge On-State Current
I_{RRM}	Repetitive Peak Reverse Current
I_{DRM}	Repetitive Peak Off-State Current
I_D	Average Converter Output Current
I_{gt}	Gate Trigger Current
I_L	Latching Current
I_H	Holding Current
I_{2t}	Maximum Rated Value I_2t
I_{RR}	Reverse Recovery Peak Current
V_{RRM}	Repetitive Peak Reverse Voltage
V_{DRM}	Repetitive Peak Off-state Voltage
V_F	Forward Voltage
V_{FM}	Peak Forward Voltage Drop
V_T	On-State Voltage
V_{TM}	Peak On-State Voltage Drop
V_{gt}	Gate Trigger Voltage
V_{ISO}	Insolation Voltage
V_{RMS}	RMS Voltage Value
$V_{T(TO)}$	On-State Threshold Voltage
$V_{F(TO)}$	Forward Threshold Voltage
di/dt	Rate Of Rise Of On-state Current
dv/dt	Rate Of Rise Of On-State Voltage
r_T	On-state Slope Resistance
r_F	Forward Slope Resistance
R_{th}	Thermal Resistance
$R_{th(j-c)}$	Thermal Resistance (Junction To Case)
$R_{th(j-h)}$	Thermal Resistance (Junction To Heatsink)
$R_{th(c-h)}$	Thermal Resistance (Case To Heatsink)
$R_{th(h-a)}$	Thermal Resistance (Heatsink To Ambient)
Z_{th}	Thermal Impedance
T_A	Ambient Temperature
T_h	Heatsink Temperature
T_c	Case Temperature
T_{stg}	storage Temperature
T_j	Maximum Junction Temperature
T_p	Pulse Time
T_q	Turn-Off Time
T_{RR}	Reverse Recovery Time
Q_{RR}	Recovery Charge
W	Weight