

## Thyristors & Diodes


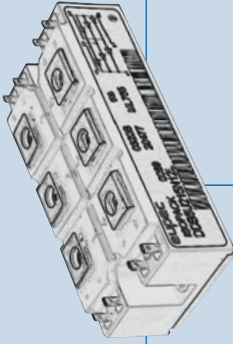
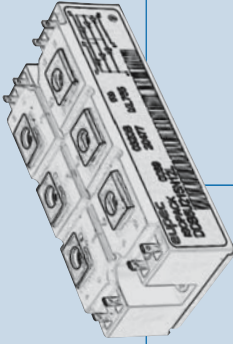
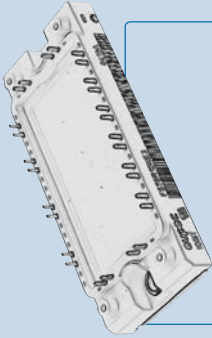
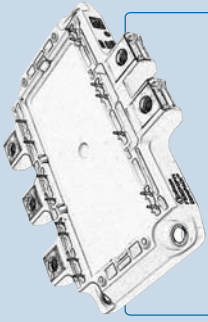


WE OFFER BRIDGE RECTIFIER MODULES in solder pin design like EasyBRIDGE or EconoBRIDGE™ modules. The available configurations are fully- and half controlled rectifiers with brake IGBT and optional NTC resistor. They cover the current range  $I_d$  from 25 A up to 180 A at 800 V and 1600 V. The IsoPACK™ family with screwable load terminals are fully-, half- and uncontrolled rectifier modules. The three phase AC Switches complete the IsoPACK™ product family. The current range covers  $I_d$  85 A up to 205 A at 1600 V.

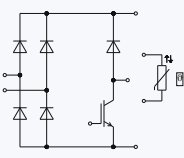
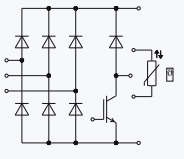
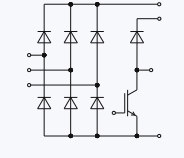
BESIDES THE STANDARD PHASE THYRISTORS and rectifier diodes, we also provide bipolar products for fast switching applications. For nearly all AC/DC power systems we provide discs in ceramic and epoxy housing as well as PowerBLOCK modules in various thyristor and diode configurations.

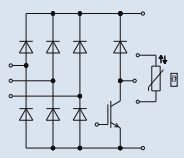
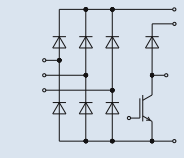
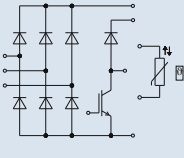
AS AN EXTENSION, our product portfolio also counts the Light Triggered Thyristors (LTT). These ceramic discs offer an easy way of triggering by using optic couplers. No insulation problem between load and trigger unit. Higher reliability thanks of less electronic components on high potential by using the internal protection functions (BoD and  $dv/dt$  protection). The power range covers blocking voltages from  $V_{RRM}$  5200 V up to 8000 V and current ratings from  $I_{TAV}$  550 A up to 3480 A.

# Overview Bridge Rectifier, AC-Switches

2000	 <p><b>EasyBRIDGE</b></p>	 <p><b>eupec™ IsoPACK™ Bridge</b></p>	 <p><b>eupec™ IsoPACK™ AC-Switch</b></p>	 <p><b>eupec™ EconoBRIDGE™</b></p>	 <p><b>eupec™ EconoBRIDGE™4</b></p>
	$I_d = 25 - 75A$	$I_d = 85 - 205A$	$I_{RMS} = 85 - 145A$	$I_d = 84 - 180A$	$I_d = 240 - 360A$
	Configuration B2U B6U	Configuration B6 U/HK/C	Configuration W3C	Configuration B6U B6HK	Configuration B6HK
$V_{RRM}$					

# EasyBRIDGE

800 V <sub>CES</sub>		IGBT Inverter					Brake Chopper			Outline/ page
Type		V <sub>RRM</sub> V	I <sub>d</sub> A	R <sub>thjC</sub> K/W max.	V <sub>t0</sub> V T <sub>vj</sub> = 150°C	r <sub>t</sub> mΩ	V <sub>CE</sub> V	I <sub>C</sub> * A T <sub>C</sub> = 80°C	R <sub>thjC</sub> K/W max.	
	single phase									
	DDB2U30N08VR	800	48	1,30	0,75	6,95	600	20	1,50	L_750d/72
	three phase									
	DDB6U30N08VR	800	30	1,80	0,85	8,30	600	20	1,50	L_750e/72
	three phase									
	DDB6U50N08XR	800	50	1,20	0,75	6,95	600	30	1,05	L_1c/72

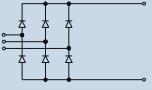
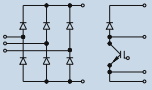
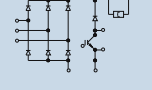
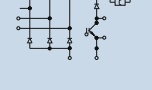
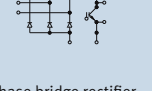
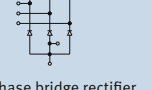
1600 V <sub>CES</sub>		IGBT Inverter					Brake Chopper			Outline/ page
Type		V <sub>RRM</sub> V	I <sub>d</sub> A	R <sub>thjC</sub> K/W max.	V <sub>t0</sub> V T <sub>vj</sub> = 150°C	r <sub>t</sub> mΩ	V <sub>CE</sub> V	I <sub>C</sub> * A T <sub>C</sub> = 80°C	R <sub>thjC</sub> K/W max.	
	three phase									
	DDB6U25N16VR	1600	30	1,55	0,76	7,60	1200	15	1,45	L_750e/72
	three phase									
	■ DDB6U40N16XR	1600	50	0,90	0,80	4,35	1200	25	0,90	L_1c/72
	three phase									
	DDB6U75N16YR	1600	65	0,90	0,83	3,90	1200	50	0,55	L_2i/72
	◆ DDB6U75N16W1R	1600	75	data on request			data on request			data on request
	◆ DDB6U75N16W1R_B11	1600	75	data on request			data on request			data on request

■ Not for new design  
...\_B11 PressFIT Modules

◆ New type

\* as specified in data sheet

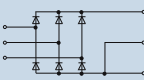
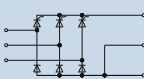
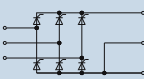
# eupec™ EconoBRIDGE™ Rectifier

Type	$V_{DRM}, V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100V$	$I_{FRMSM}$ ( $I_{TRMSM}$ ) A	$I_{FSM}$ ( $I_{TSM}$ ) A 10 ms $T_{vj\ max}$	$I_d/T_c$ A/°C	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	$r_T$ mΩ $T_{vj} =$ $T_{vj\ max}$	$R_{thJC}$ °C/W per arm 120° el Square wave	$T_{vj\ max}$ °C	$V_{CES}$ V	$I_C$ A	Outline/ page	
 3 phase bridge rectifier, uncontrolled	DD B6U 100 N 16 R	1600	60	550	100/100	0,75	5,5	1,15	150		M_EB2a/73	
	DD B6U 144 N 16 R	1600	100	1000	145/100	0,75	3,1	0,89	150		M_EB2a/73	
 3 phase bridge rectifier, uncontrolled with brake chopper	DD B6U 84 N 16 RR	1600	60	550	85/100	0,75	5,50	1,45	150	1200	50	M_EB2b/73
	DD B6U 100 N 16 RR	1600	60	550	100/100	0,75	5,50	1,15	150	1200	50	M_EB2b/73
 3 phase bridge rectifier, uncontrolled with brake chopper and NTC	DD B6U 104 N 16 RR	1600	60	550	105/100	0,75	5,50	1,08	150	1200	50	M_EB2c/73
	DD B6U 134 N 16 RR	1600	80	550	134/100	0,75	6,30	0,70	150	1200	70	M_EB2c/73
 3 phase bridge rectifier, halfcontrolled with brake chopper and NTC	TD B6HK 124 N 16 RR	1600	70	550	125/85	0,75	6,30	0,63	125	1200	70	M_EB2d/73
 3 phase bridge rectifier, halfcontrolled with brake chopper (PressFIT)	TDB6HK180N16RR_B11	1600	150	1400	180/80	0,83	2,30	0,35	150	1200	100	M_EB2e/73
 3 phase bridge rectifier, half-controlled with NTC	◆ TDB6HK240N16P	1600	data on request								M_EB4a/73	
	◆ TDB6HK360N16P	1600	data on request								M_EB4a/73	

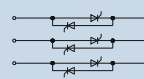
◆ New type  
\_B11 PressFIT Modules

eupec™ EconoBRIDGE™ Rectifiers are UL recognized

# eupec™ IsoPACK™ Bridge Rectifier

Type	$V_{DRM}, V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100V$	$I_{FRMSM}$ ( $I_{TRMSM}$ ) A	$I_{FSM}$ ( $I_{TSM}$ ) A 10 ms $T_{vj\ max}$	$I_d/T_c$ A/°C	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	$r_T$ mΩ $T_{vj} =$ $T_{vj\ max}$	$R_{thJC}$ °C/W per arm 120° el Square wave	$T_{vj\ max}$ °C	Outline/ page	
 3 phase bridge rectifier, uncontrolled	DD B6U 85 N	1600	60	550	85/100	0,75	5,50	1,45	150	M_1Pa/74
	DD B6U 145 N	1600	100	1000	145/100	0,75	3,10	0,89	150	M_1Pa/74
	DD B6U 205 N	1600	120	1375	205/100	0,75	2,20	0,59	150	M_1Pa/74
	DD B6U 215 N	1600	125	1850	215/100	0,75	1,60	0,49	150	M_1Pa/74
 3 phase bridge rectifier, half controlled	TD B6HK 95 N	1600	75	620	95/85	0,95	5,50	0,82	125	M_1Pb/74
	TD B6HK 135 N	1600	100	870	135/85	0,95	4,30	0,59	125	M_1Pb/74
	TD B6HK 165 N	1600	120	1050	165/85	0,95	3,20	0,49	125	M_1Pb/74
 3 phase bridge rectifier, fully controlled	TT B6C 95 N	1600	75	620	95/85	0,95	5,50	0,82	125	M_1Pb/74
	TT B6C 135 N	1600	100	870	135/85	0,95	4,30	0,59	125	M_1Pb/74
	TT B6C 165 N	1600	120	1050	165/85	0,95	3,20	0,49	125	M_1Pb/74

# eupec™ IsoPACK™ AC-Switches

Type	$V_{DRM}, V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100V$	$I_{FRMSM}$ ( $I_{TRMSM}$ ) A	$I_{FSM}$ ( $I_{TSM}$ ) A 10 ms $T_{vj\ max}$	$I_d/T_c$ A/°C	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	$r_T$ mΩ $T_{vj} =$ $T_{vj\ max}$	$R_{thJC}$ °C/W per arm 120° el Square wave	$T_{vj\ max}$ °C	Outline/ page	
 3 phase AC-Switches, fully controlled	TT W3C 85 N	1600	75	620	85/85	0,95	5,50	0,70	125	M_1Pb/74
	TT W3C 115 N	1600	100	870	115/85	0,95	4,30	0,50	125	M_1Pb/74
	TT W3C 145 N	1600	120	1050	145/85	0,95	3,20	0,42	125	M_1Pb/74

eupec™ IsoPACK™ modules are UL recognized

# Outlines

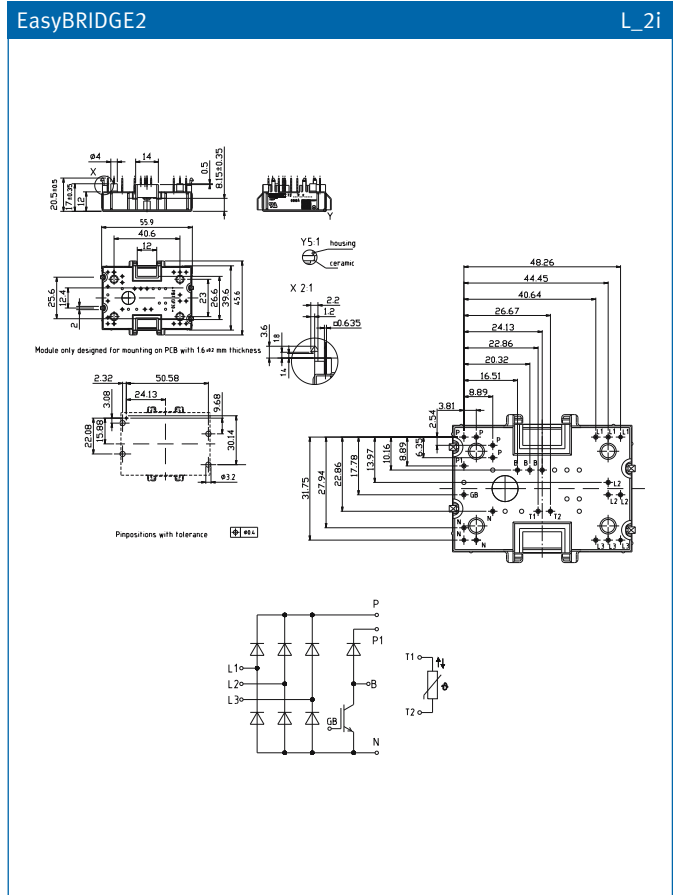
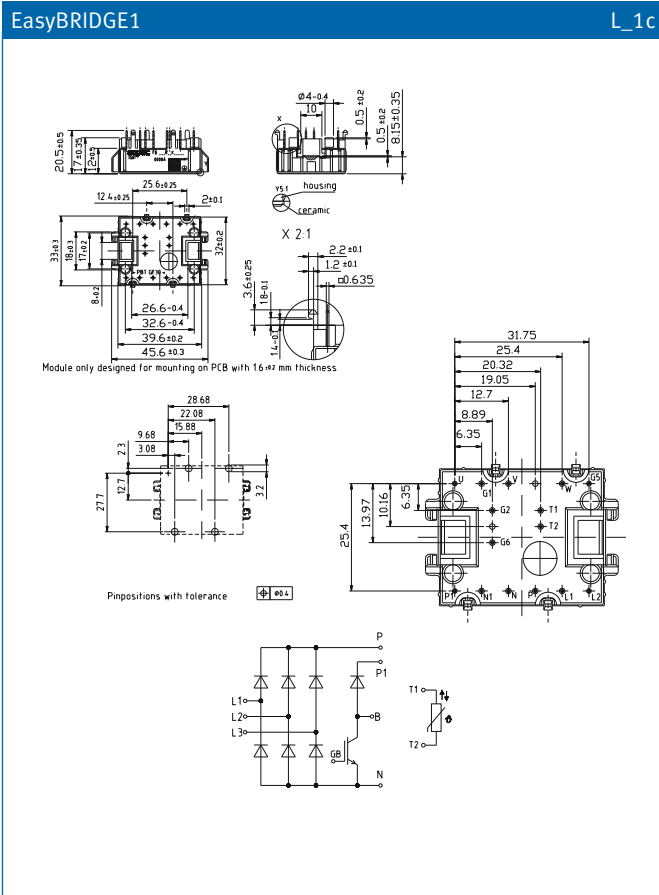
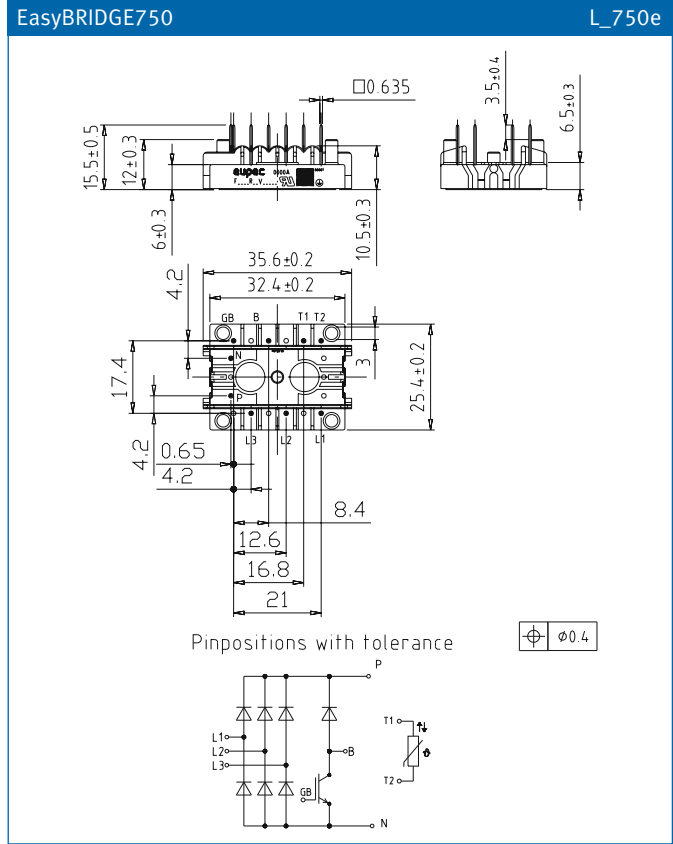
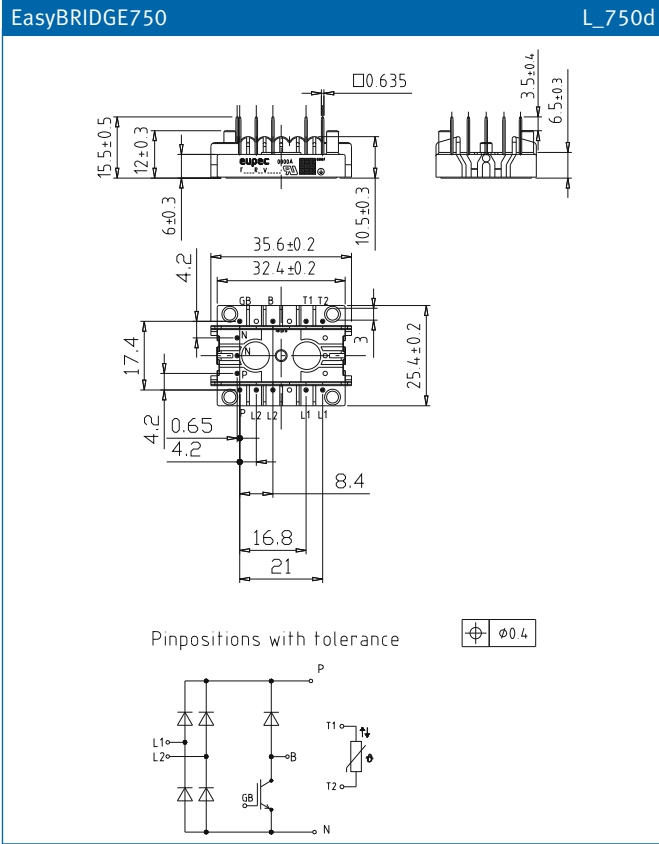
IGBT

SCR/Diode Modules

Presspacks

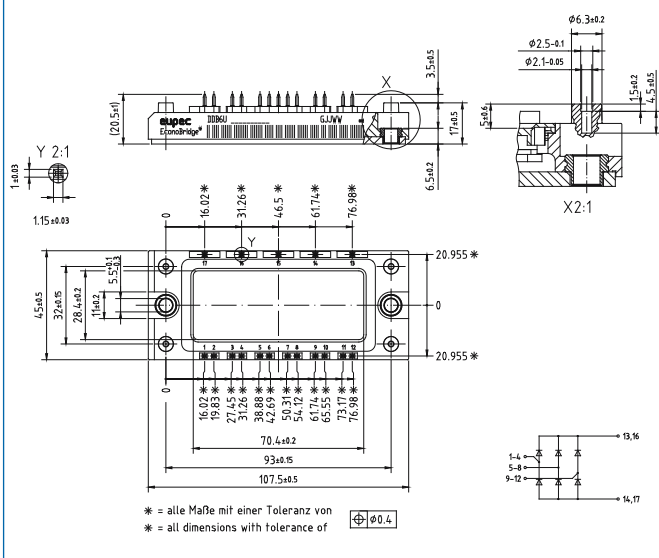
Stacks

Explanations



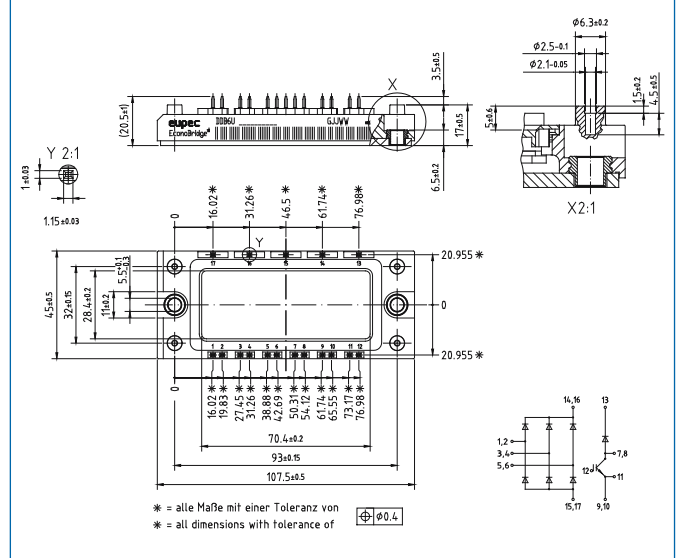
eupec™ EconoBRIDGETM 2 Rectifier

M\_EB2a



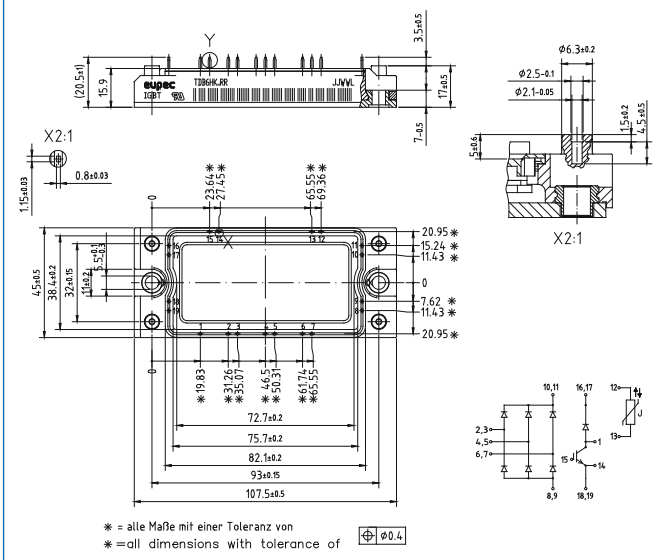
eupec™ EconoBRIDGETM 2 Rectifier

M\_EB2b



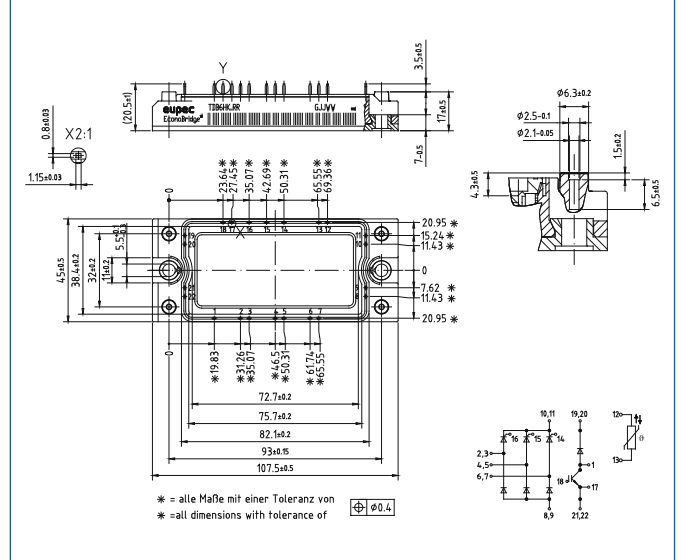
eupec™ EconoBRIDGETM 2 Rectifier

M\_EB2c



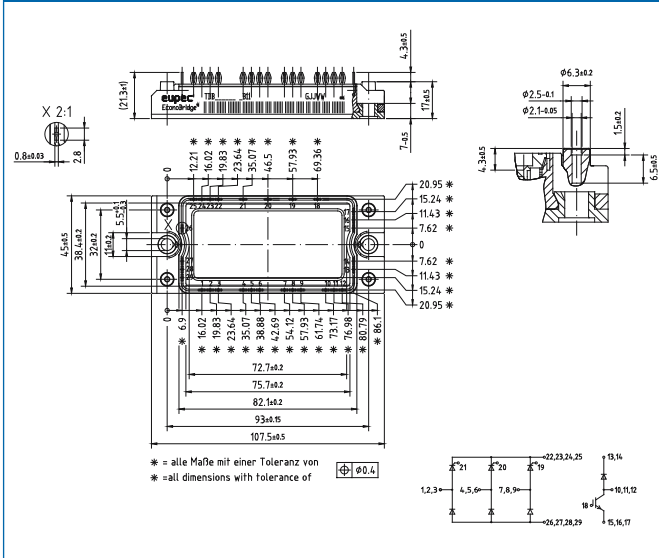
eupec™ EconoBRIDGETM 2 Rectifier

M\_EB2d



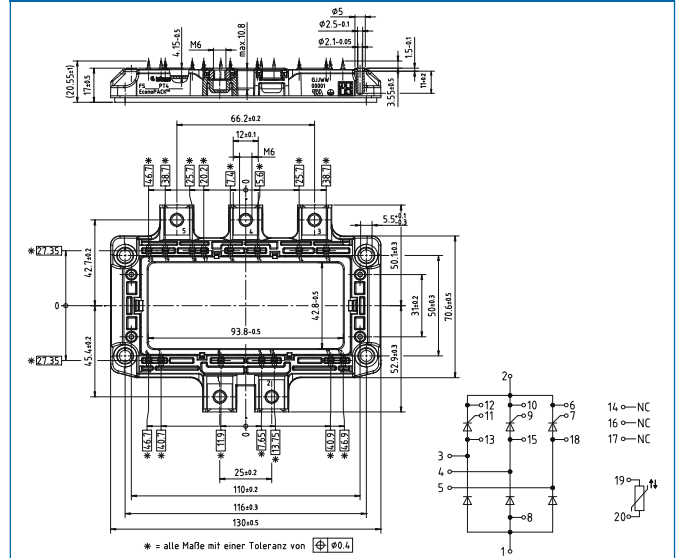
eupec™ EconoBRIDGETM 2 Rectifier

M\_EB2e



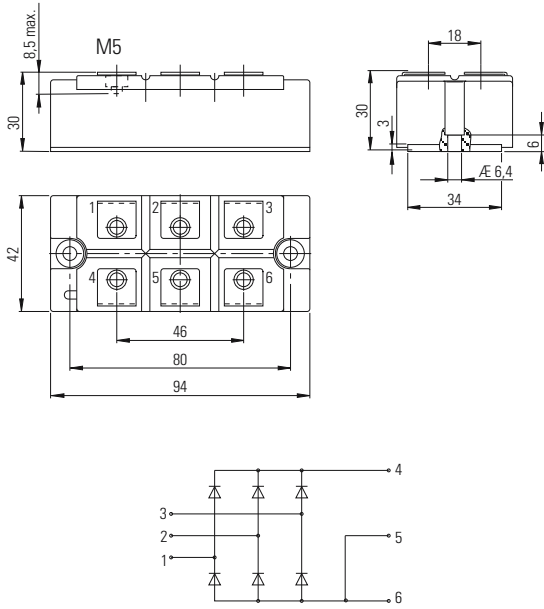
eupec™ EconoBRIDGETM 4

M\_EB4a



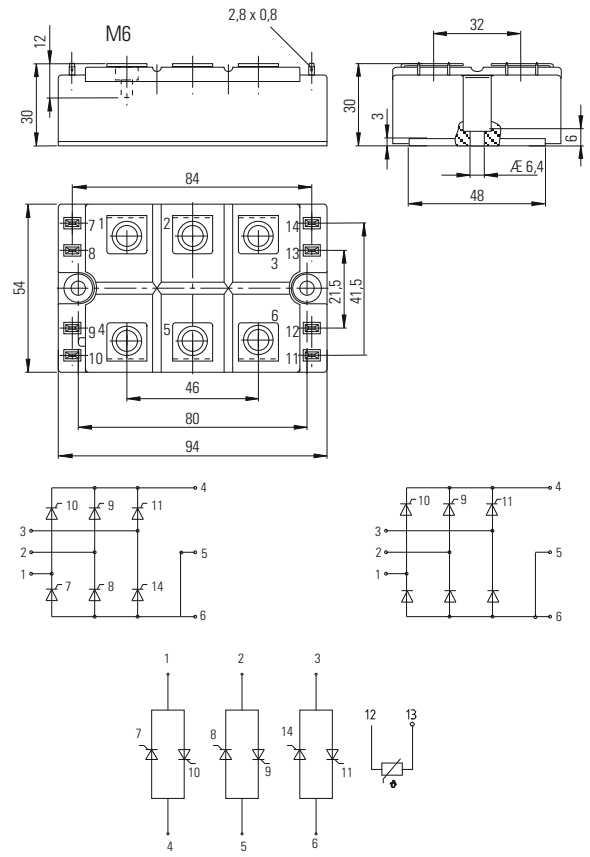
eupec™ IsoPACK™ 42

M\_1Pa



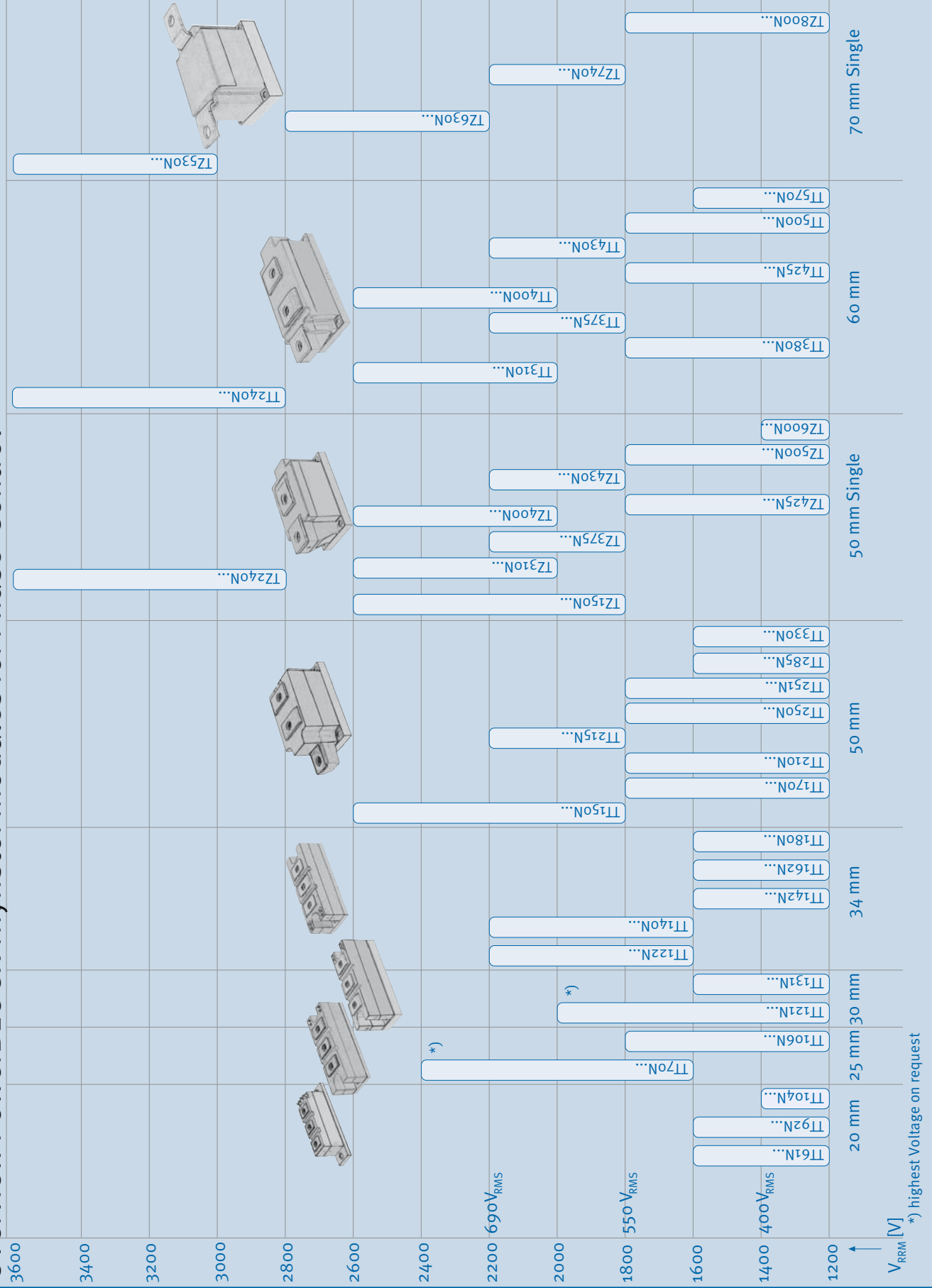
eupec™ IsoPACK™ 54

M\_1Pb





# Overview PowerBLOCK Thyristor Modules for Phase Control



$V_{RRM}$  [V] \*) highest Voltage on request

# PowerBLOCK

## Thyristor Modules for Phase Control

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{TRMSM}$ A	$I_{TSM}$ A 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ $A/^\circ C$ 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ m $\Omega$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu s$ DIN IEC 747-6	$t_q$ $\mu s$ typ.	$(dv/dt)_{cr}$ V/ $\mu s$ DIN IEC 747-6	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ $^\circ C$	Outline / page
Base plate = 20 mm	TT 61 N	1200 ... 1600	120	1400	9,8	60/85	0,80	3,40	150	120	F = 1000	0,520	0,16	125	TP20/86
	TT 92 N	1200 ... 1600	160	1800	16,2	92/85	0,85	2,15	150	150	F = 1000	0,370	0,10	130	TP20/86
	TT 104 N	1200 ... 1400	160	1800	16,2	104/85	0,85	2,15	150	150	F = 1000	0,370	0,10	140	TP20/86
Base plate = 25 mm	TT 70 N	1600 ... 2400*	150	1450	10,5	70/85	1,00	3,80	100	300	F = 1000	0,350	0,08	125	TP25/86
	TT 106 N	1200 ... 1800	180	2000	20	106/85	0,90	2,60	150	150	F = 1000	0,330	0,08	140	TP25/86
Base plate = 30 mm	TT 121 N	1200 ... 2000*	200	2350	27,6	121/85	0,85	2,00	150	180	F = 1000	0,230	0,06	125	TP30/86
	TT 131 N	1200 ... 1600	220	3200	51,2	131/85	0,85	1,50	150	180	F = 1000	0,230	0,06	125	TP30/86
Base plate = 34 mm	TT 122 N	1600 ... 2200	220	2950	43,5	122/85	1,00	2,15	100	300	F = 1000	0,200	0,06	125	TP34/86
	TT 140 N	1600 ... 2200	250	3200	51,2	140/85	0,90	1,75	150	300	F = 1000	0,190	0,06	125	TP34/86
	TT 142 N	1200 ... 1600	230	4100	84	142/85	0,90	1,10	150	200	F = 1000	0,220	0,06	125	TP34/86
	TT 162 N	1200 ... 1600	260	4400	97	162/85	0,85	0,95	150	200	F = 1000	0,200	0,06	125	TP34/86
	TT 180 N	1200 ... 1600	285	4100	84	180/85	0,85	0,90	150	200	F = 1000	0,200	0,06	130	TP34/86
Base plate = 50 mm	TT 150 N	1800 ... 2600	350	4000	80	150/85	1,20	2,30	60	300	F = 1000	0,130	0,04	125	TP50/86
	TT 170 N	1200 ... 1800	350	4600	106	170/85	0,95	1,00	150	250	F = 1000	0,170	0,04	125	TP50/86
	TT 210 N	1200 ... 1800	410	5800	168	210/85	1,00	0,85	150	200	F = 1000	0,130	0,04	125	TP50/86
	TT 215 N	1800 ... 2200	410	6300	198	215/85	0,95	0,92	100	300	F = 1000	0,130	0,04	125	TP50/86
	TT 250 N	1200 ... 1800	410	7000	245	250/85	0,80	0,70	150	250	F = 1000	0,130	0,04	125	TP50/86
	TT 251 N	1200 ... 1800	410	8000	320	250/85	0,80	0,70	250	250	F = 1000	0,130	0,04	125	TP50/86
	TT 285 N	1200 ... 1600	450	8000	320	285/92	0,80	0,70	250	250	F = 1000	0,117	0,04	135	TP50/86
TT 330 N	1200 ... 1600	520	8000	320	330/85	0,80	0,60	250	250	F = 1000	0,117	0,04	135	TP50/86	
Base plate = 60 mm	TT 240 N	2800 ... 3600	700	5500	151	240/85	1,17	1,70	100	350	F = 1000	0,078	0,02	125	TP60/87
	TT 310 N	2000 ... 2600	700	9000	405	310/85	1,00	0,86	120	300	F = 1000	0,078	0,02	125	TP60/87
	TT 375 N	1800 ... 2200	900	10600	561	375/85	0,85	0,56	120	300	F = 1000	0,078	0,02	125	TP60/87
	TT 380 N	1200 ... 1800	800	11000	605	380/85	1,00	0,38	120	250	F = 1000	0,078	0,02	125	TP60/87
	TT 400 N	2000 ... 2600	800	11000	605	400/85	1,00	0,50	150	300	F = 1000	0,065	0,02	125	TP60/87
	TT 425 N	1200 ... 1800	800	12500	781	425/85	0,90	0,30	120	250	F = 1000	0,078	0,02	125	TP60/87
	TT 430 N	1800 ... 2200	800	12000	720	430/85	0,95	0,45	150	300	F = 1000	0,065	0,02	125	TP60/87
	TT 500 N	1200 ... 1800	900	14500	1051	500/85	0,90	0,27	200	250	F = 1000	0,065	0,02	125	TP60/87
	TT 570 N	1200 ... 1600	900	14000	980	570/87	0,90	0,27	200	250	F = 1000	0,065	0,02	135	TP60/87

PowerBLOCK modules are UL recognized

Common anode or cathode on request

\* Highest voltage on request

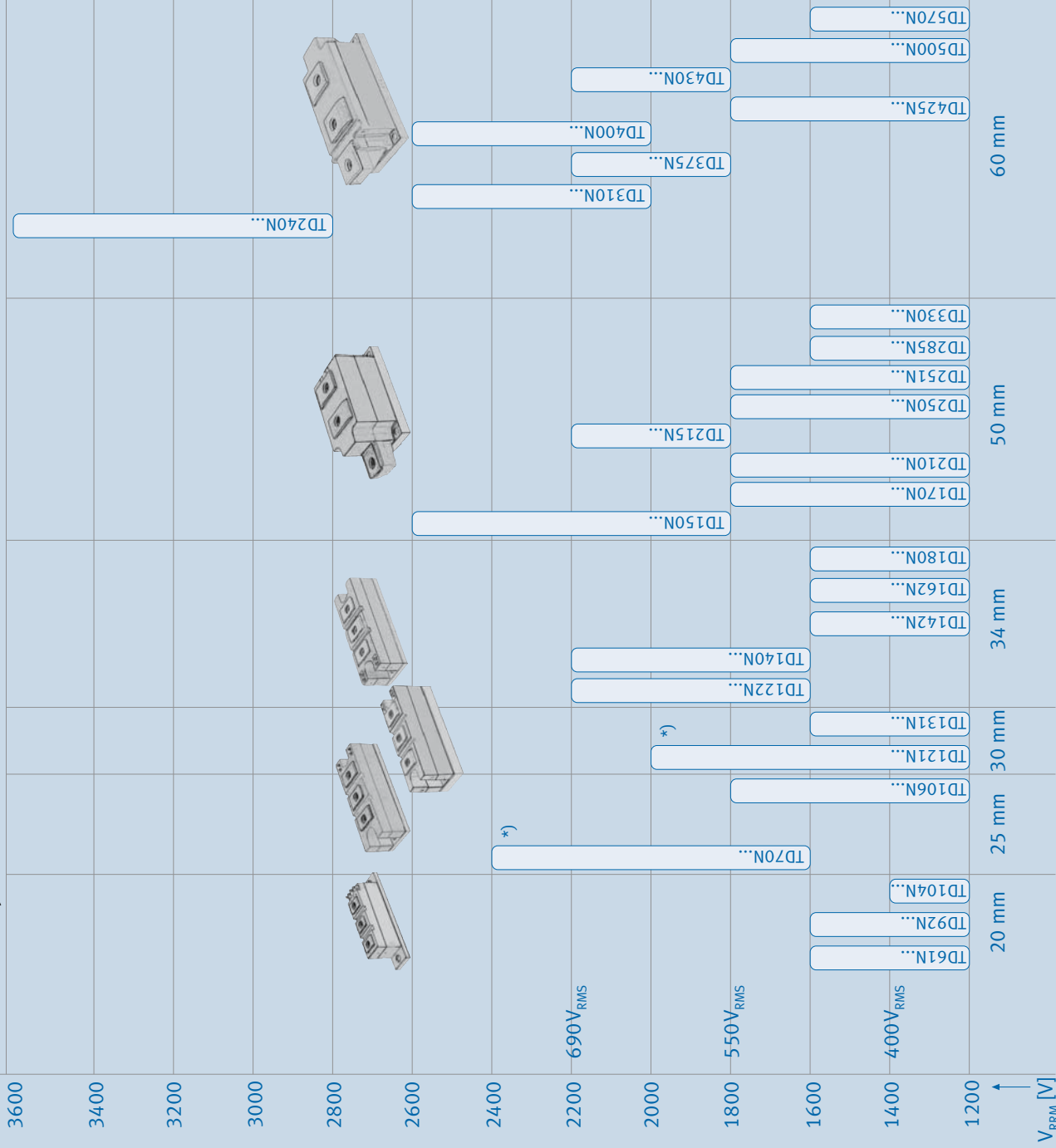
# PowerBLOCK

## Single Thyristor Modules for Phase Control

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{TRMSM}$ A	$I_{TSM}$ A 10ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ A/°C 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	$t_q$ μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ °C	Outline / page
Base plate = 50 mm	TZ 150 N	1800 ... 2600	350	4000	80	150/85	1,20	2,30	60	300	F = 1000	0,13	0,04	125	TP50.1/86
	TZ 240 N	2800 ... 3600	700	5500	151	240/85	1,17	1,70	100	350	F = 1000	0,078	0,02	125	TP50.1/86
	TZ 310 N	2000 ... 2600	700	8000	320	310/85	1,00	0,86	120	300	F = 1000	0,078	0,02	125	TP50.1/86
	TZ 375 N	1800 ... 2200	1050	10600	561	375/85	0,85	0,56	120	300	F = 1000	0,078	0,02	125	TP50.1/86
	TZ 400 N	2000 ... 2600	1050	11000	605	400/85	1,00	0,50	150	300	F = 1000	0,065	0,02	125	TP50.1/86
	TZ 425 N	1200 ... 1800	800	12500	781	425/85	0,90	0,30	120	250	F = 1000	0,078	0,02	125	TP50.1/86
	TZ 430 N	1800 ... 2200	1050	12000	720	430/85	0,95	0,45	150	300	F = 1000	0,065	0,02	125	TP50.1/86
	TZ 500 N	1200 ... 1800	1050	14500	1051	500/85	0,90	0,27	200	250	F = 1000	0,065	0,02	125	TP50.1/86
TZ 600 N	1200 ... 1600	1050	14000	980	600/85	0,90	0,27	200	250	F = 1000	0,065	0,02	135	TP50.1/86	
Base plate = 70 mm	TZ 530 N	3000 ... 3600	1500	20000	2000	530/85	1,05	0,49	80	400	F = 1000	0,045	0,01	125	TP70/87
	TZ 630 N	2200 ... 2800	1500	23000	2650	630/85	0,95	0,37	150	400	F = 1000	0,042	0,01	125	TP70/87
	TZ 740 N	1800 ... 2200	1500	26500	3500	740/85	0,90	0,21	200	350	F = 1000	0,042	0,01	125	TP70/87
	TZ 800 N	1200 ... 1800	1500	30000	4500	800/85	0,85	0,17	200	240	F = 1000	0,042	0,01	125	TP70/87

PowerBLOCK modules are UL recognized

# Overview PowerBLOCK Thyristor/Diode Modules for Phase Control



\*) highest Voltage on request

# PowerBLOCK

## Thyristor/Diode Modules for Phase Control

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{TRMSM}$ A	$I_{TSM}$ A 10ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ A/°C 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	$t_q$ μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ °C	Outline / page
Base plate = 20 mm	TD 61 N	1200 ... 1600	120	1400	9,8	60/85	0,80	3,40	150	120	F = 1000	0,52	0,16	125	TP20/86
	TD 92 N	1200 ... 1600	160	1800	16,2	92/85	0,85	2,15	150	150	F = 1000	0,37	0,10	130	TP20/86
	TD 104 N	1200 ... 1400	160	1800	16,2	104/85	0,85	2,15	150	150	F = 1000	0,37	0,10	140	TP20/86
Base plate = 25 mm	TD 70 N	1600 ... 2400*	150	1450	10,5	70/85	1,00	3,80	100	300	F = 1000	0,35	0,08	125	TP25/86
	TD 106 N	1200 ... 1800	180	2000	20	106/85	0,90	2,60	150	150	F = 1000	0,33	0,08	140	TP25/86
Base plate = 30 mm	TD 121 N	1200 ... 2000*	200	2350	27,6	121/85	0,85	2,00	150	180	F = 1000	0,23	0,06	125	TP30/86
	TD 131 N	1200 ... 1600	220	3200	51,2	131/85	0,85	1,50	150	180	F = 1000	0,23	0,06	125	TP30/86
Base plate = 34 mm	TD 122 N	1600 ... 2200	220	2950	43,5	122/85	1,00	2,15	100	300	F = 1000	0,2	0,06	125	TP34/86
	TD 140 N	1600 ... 2200	250	3200	51,2	140/85	0,90	1,75	150	300	F = 1000	0,19	0,06	125	TP34/86
	TD 142 N	1200 ... 1600	230	4100	84	142/85	0,90	1,10	150	200	F = 1000	0,22	0,06	125	TP34/86
	TD 162 N	1200 ... 1600	260	4400	97	162/85	0,85	0,95	150	200	F = 1000	0,2	0,06	125	TP34/86
	TD 180 N	1200 ... 1600	285	4100	84	180/85	0,85	0,90	150	200	F = 1000	0,2	0,06	130	TP34/86
Base plate = 50 mm	TD 150 N	1800 ... 2600	350	4000	80	150/85	1,20	2,30	60	300	F = 1000	0,13	0,04	125	TP50/86
	TD 170 N	1200 ... 1800	350	4600	106	170/85	0,95	1,00	150	250	F = 1000	0,17	0,04	125	TP50/86
	TD 210 N	1200 ... 1800	410	5800	168	210/85	1,00	0,85	150	200	F = 1000	0,13	0,04	125	TP50/86
	TD 215 N	1800 ... 2200	410	6300	198	215/85	0,95	0,92	100	300	F = 1000	0,13	0,04	125	TP50/86
	TD 250 N	1200 ... 1800	410	7000	245	250/85	0,80	0,70	150	250	F = 1000	0,13	0,04	125	TP50/86
	TD 251 N	1200 ... 1800	410	8000	320	250/85	0,80	0,70	250	250	F = 1000	0,13	0,04	125	TP50/86
	TD 285 N	1200 ... 1600	450	8000	320	285/92	0,80	0,70	250	250	F = 1000	0,117	0,04	135	TP50/86
	TD 330 N	1200 ... 1600	520	8000	320	330/85	0,80	0,60	250	250	F = 1000	0,117	0,04	135	TP50/86
Base plate = 60 mm	TD 240 N	2800 ... 3600	700	5500	151	240/85	1,17	1,70	100	350	F = 1000	0,078	0,02	125	TP60/87
	TD 310 N	2000 ... 2600	700	9000	405	310/85	1,00	0,86	120	300	F = 1000	0,078	0,02	125	TP60/87
	TD 375 N	1800 ... 2200	908	10600	561	375/85	0,85	0,56	120	300	F = 1000	0,078	0,02	125	TP60/87
	TD 400 N	2000 ... 2600	800	11000	605	400/85	1,00	0,50	150	300	F = 1000	0,065	0,02	125	TP60/87
	TD 425 N	1200 ... 1800	800	12500	781	425/85	0,90	0,30	120	250	F = 1000	0,078	0,02	125	TP60/87
	TD 430 N	1800 ... 2200	800	12000	720	430/85	0,95	0,45	150	300	F = 1000	0,065	0,02	125	TP60/87
	TD 500 N	1200 ... 1800	900	14500	1051	500/85	0,90	0,27	200	250	F = 1000	0,065	0,02	125	TP60/87
	TD 570 N	1200 ... 1600	900	14000	980	570/87	0,90	0,27	200	250	F = 1000	0,065	0,02	135	TP60/87

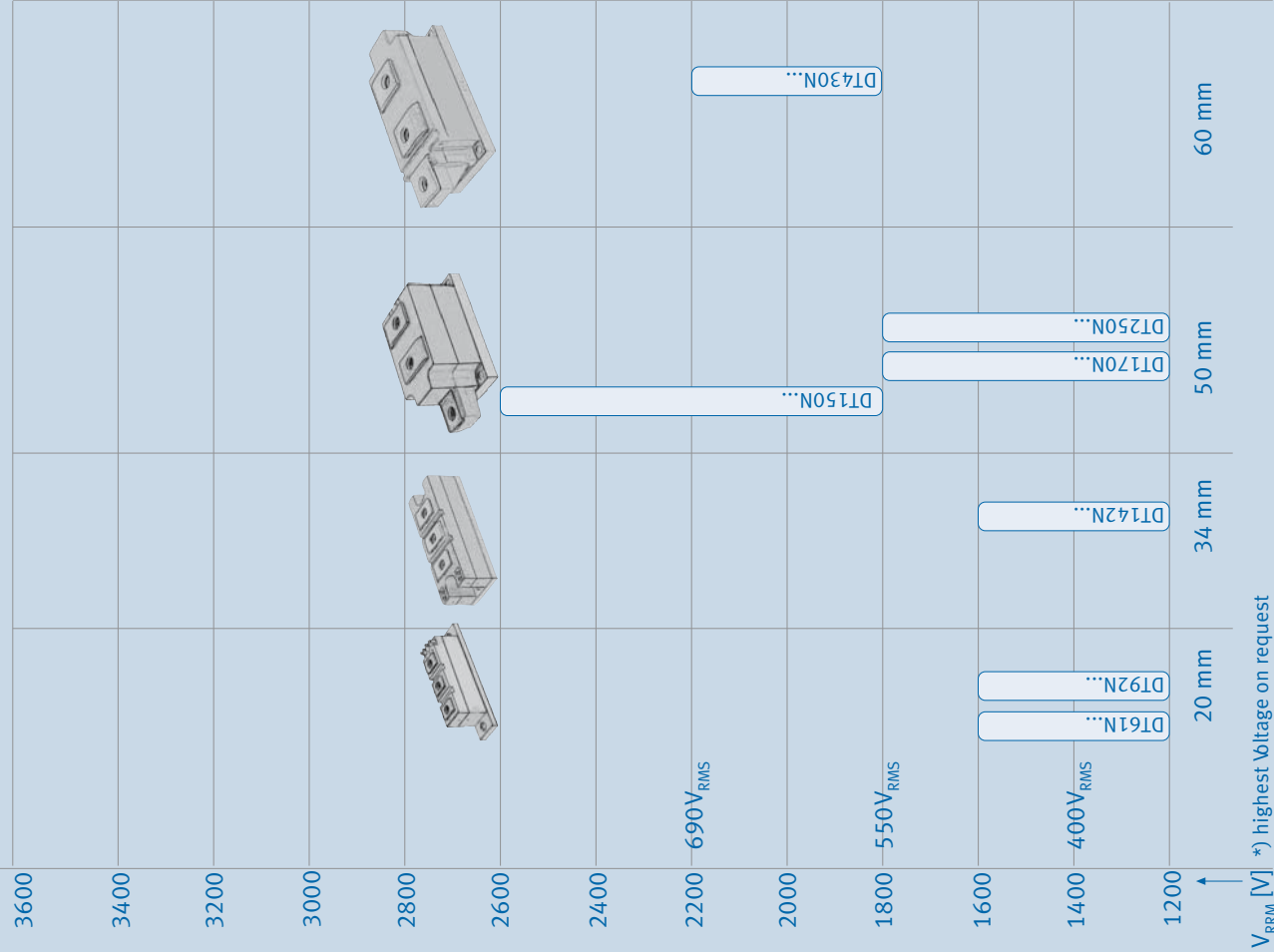
PowerBLOCK modules are UL recognized

Common anode or cathode on request

\* Highest voltage on request

Modules for current source inverter with higher blocking Diodes on request

# Overview PowerBLOCK Diode/Thyristor Modules for Phase Control



$V_{RRM}$  [V] \*) highest voltage on request

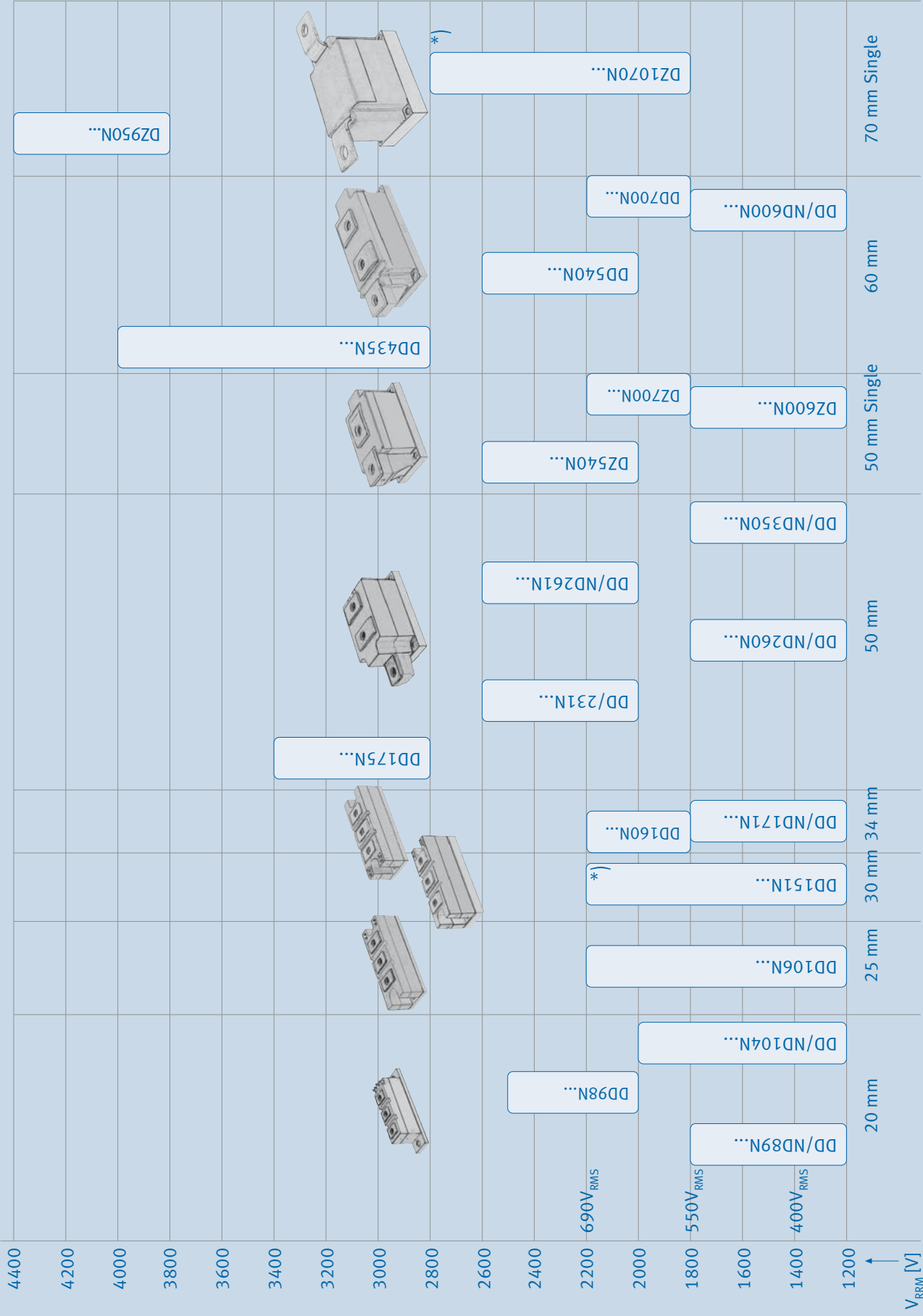
# PowerBLOCK

## Diode/Thyristor Modules for Phase Control

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{TRMSM}$ A	$I_{TSM}$ A 10ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ A/°C 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	$t_q$ μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ °C	Outline / page
Base plate = 20 mm	DT 61 N	1200 ... 1600	120	1400	9,8	60/85	0,80	3,40	150	120	F = 1000	0,52	0,16	125	TP20/86
	DT 92 N	1200 ... 1600	160	1800	16,2	92/85	0,85	2,15	150	150	F = 1000	0,37	0,10	130	TP20/86
Base plate = 34 mm	DT 142 N	1200 ... 1400	230	4100	84	142/85	0,90	1,10	150	200	F = 1000	0,22	0,06	125	TP34/86
Base plate = 50 mm	DT 150 N	2600	350	4000	80	150/85	1,20	2,30	60	300	F = 1000	0,13	0,04	125	TP50/86
	DT 170 N	1200	350	4600	106	170/85	0,95	1,00	150	250	F = 1000	0,17	0,04	125	TP50/86
	DT 250 N	1200 ... 1600	410	7000	245	250/85	0,80	0,70	150	250	F = 1000	0,13	0,04	125	TP50/86
Base plate = 60 mm	DT 430 N	2200	800	12000	720	430/85	0,95	0,45	150	300	F = 1000	0,065	0,02	125	TP60/87

PowerBLOCK modules are UL recognized  
 Common anode or cathode on request  
 Modules for current source inverter with higher blocking Diodes on request

# Overview PowerBLOCK Diode Modules for Phase Control



(\*) highest Voltage on request



# PowerBLOCK

## Rectifier Diode Modules for Phase Control

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ A 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{FAVM}/T_c$ A 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ m $\Omega$ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$R_{thJC}$ K/W	$T_{vj\ max}$ °C	Outline / page
Base plate = 20 mm	DD 89 N	1200 ... 1800	140	2400	28,8	89/100	0,75	2,300	0,450	0,10	150	DP20/88
	ND 89 N	1200 ... 1800	140	2400	28,8	89/100	0,75	2,300	0,450	0,10	150	DP20/88
	DD 98 N	2000 ... 2500	160	2000	20	98/100	0,82	2,000	0,390	0,10	150	DP20/88
	DD 104 N	1200 ... 1800	160	2500	31,25	104/100	0,70	2,100	0,390	0,10	150	DP20/88
	ND 104 N	1200 ... 1800	160	2500	31,25	104/100	0,70	2,100	0,390	0,10	150	DP20/88
Base plate = 25 mm	DD 106 N	1200 ... 2200	180	2600	33,8	106/100	0,70	2,000	0,390	0,08	150	DP25/88
Base plate = 30 mm	DD 151 N	1200 ... 2200*	240	4600	105,8	151/100	0,75	0,900	0,300	0,06	150	DP30/88
Base plate = 34 mm	♦ DD 160 N	2200	270	4600	105,8	160/100	0,80	1,000	0,260	0,06	150	DP34/88
	DD 171 N	1200 ... 1800	270	5600	157	170/100	0,75	0,800	0,260	0,06	150	DP34/88
	ND 171 N	1200 ... 1800	270	5600	157	170/100	0,75	0,800	0,260	0,06	150	DP34/88
Base plate = 50 mm	DD 175 N	3000 ... 3400	350	4000	80	175/100	0,90	1,800	0,170	0,04	150	DP50/88
	DD 231 N	2000 ... 2600	410	6400	205	231/100	0,80	0,840	0,170	0,04	150	DP50/88
	DD 260 N	1200 ... 1800	410	8300	344	260/100	0,70	0,680	0,170	0,04	150	DP50/88
	ND 260 N	1200 ... 1800	410	8300	344	260/100	0,70	0,680	0,170	0,04	150	DP50ND/89
	DD 261 N	2000 ... 2600	410	8300	344	260/100	0,70	0,680	0,170	0,04	150	DP50/88
	ND 261 N	2000 ... 2600	410	8300	344	260/100	0,70	0,680	0,170	0,04	150	DP50ND/89
	DD 285 N	400 ... 8001)	450	8300	344	285/100	0,75	0,400	0,170	0,04	150	DP50/88
	DD 350 N	1200 ... 1800	550	11000	605	350/100	0,75	0,400	0,130	0,04	150	DP50/88
	ND 350 N	1200 ... 1800	550	11000	605	350/100	0,75	0,400	0,130	0,04	150	DP50ND/89
	DZ 435 N	2800 ... 4000	1100	12000	720	435/100	0,84	0,600	0,078	0,02	150	DP50.1/89
	DZ 540 N	2000 ... 2600	1150	14000	980	540/100	0,78	0,310	0,078	0,02	150	DP50.1/89
	DZ 600 N	1200 ... 1800	1150	19000	1805	600/100	0,75	0,215	0,078	0,02	150	DP50.1/89
	DZ 700 N	1800 ... 2200	1150	21000	2205	700/100	0,78	0,185	0,065	0,02	150	DP50.1/89
	Base plate = 60 mm	DD 435 N	2800 ... 4000	900	12000	720	435/100	0,84	0,600	0,078	0,02	150
DD 540 N		2000 ... 2600	900	14000	980	540/100	0,78	0,310	0,078	0,02	150	DP60/89
DD 600 N		1200 ... 1800	950	19000	1800	600/100	0,75	0,215	0,078	0,02	150	DP60/89
ND 600 N		1200 ... 1800	950	19000	1800	600/100	0,75	0,215	0,078	0,02	150	DP60/89
DD 700 N		1800 ... 2200	1100	21000	2205	700/100	0,78	0,185	0,065	0,02	150	DP60/89
Base plate = 70 mm	DZ 950 N	3600 ... 4400	1500	29000	4205	950/100	0,85	0,280	0,042	0,01	150	DP70/89
	DZ 1070 N	1800 ... 2800*	1700	35000	6125	1070/100	0,80	0,170	0,045	0,01	160	DP70/89

PowerBLOCK modules are UL recognized

Common anode or cathode on request

\* Highest voltage on request

1)  $V_{RSM} = V_{RRM} + 50$  V

♦ New type

# PowerBLOCK

## Fast Thyristor Modules

Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} +$ 100 V	$I_{TRMSM}$ A	$I_{TSM}$ A 10ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2 \cdot s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ A/°C 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	$t_q$ μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ °C	Outline / page	
Base plate = 20 mm	TT 46 F06 KGF	600	120	1150	6,6	45/85	1,30	3,40	120	$G \leq 30$	$F = 1000$	0,52	0,16	125	TP20/86
	TT 46 F08 KDC	800	120	1150	6,6	45/85	1,30	3,40	120	$D \leq 15$	$C = 500$	0,52	0,16	125	TP20/86
	TT 46 F10 KDC	1000	120	1150	6,6	45/85	1,30	3,40	120	$D \leq 15$	$C = 500$	0,52	0,16	125	TP20/86
	TT 46 F10 KFC	1000	120	1150	6,6	45/85	1,30	3,40	120	$F \leq 25$	$C = 500$	0,52	0,16	125	TP20/86
	TT 46 F12 KFC	1200	120	1150	6,6	45/85	1,30	3,40	120	$F \leq 25$	$C = 500$	0,52	0,16	125	TP20/86
	TT 46 F12 KFM	1200	120	1150	6,6	45/85	1,30	3,40	120	$F \leq 25$	$M = 1000$	0,52	0,16	125	TP20/86
	TD 46 F08 KDC	800	120	1150	6,6	45/85	1,30	3,40	120	$D \leq 15$	$C = 500$	0,52	0,16	125	TP20/86
	TD 46 F10 KDC	1000	120	1150	6,6	45/85	1,30	3,40	120	$D \leq 15$	$C = 500$	0,52	0,16	125	TP20/86
	TD 46 F10 KFC	1000	120	1150	6,6	45/85	1,30	3,40	120	$F \leq 25$	$C = 500$	0,52	0,16	125	TP20/86
	TD 46 F12 KFC	1200	120	1150	6,6	45/85	1,30	3,40	120	$F \leq 25$	$C = 500$	0,52	0,16	125	TP20/86
	DT 46 F08 KEC	800	120	1150	6,6	45/85	1,30	3,40	120	$E \leq 20$	$C = 500$	0,52	0,16	125	TP20/86
	DT 46 F10 KEC	1000	120	1150	6,6	45/85	1,30	3,40	120	$E \leq 20$	$C = 500$	0,52	0,16	125	TP20/86
Base plate = 25 mm	TT 60 F11 KDM	1100	150	1300	8,45	60/85	1,30	4,00	200	$D \leq 15$	$M = 1000$	0,35	0,08	125	TP25/86
Base plate = 30 mm	TT 101 F12 KFC	1200	200	2400	28,8	101/85	1,20	2,10	160	$F \leq 25$	$C = 500$	0,23	0,06	125	TP30/86
		600	200	2600	33,8	111/85	1,20	1,40	200	$S \leq 18$	$C = 500$	0,23	0,06	125	TP30/86
	TD 111 F08	800	200	2600	33,8	111/85	1,20	1,40	200	$S \leq 18$	$C = 500$	0,23	0,06	125	TP30/86
Base plate = 50 mm	TD 180 F12 KFC	1200	350	6000	180	180/85	1,30	0,90	200	$F \leq 25$	$C = 500$	0,13	0,04	125	TP50/86
	TD 180 F13 KFL	1300	350	6000	180	180/85	1,30	0,90	200	$F \leq 25$	$L = 500$	0,13	0,04	125	TP50/86
	DT 180 F12 KFC	1200	350	6000	180	180/85	1,30	0,90	200	$F \leq 25$	$C = 500$	0,13	0,04	125	TP50/86
	TD 200 F12 KFC	1200	410	6400	205	200/85	1,20	0,75	200	$E \leq 20$	$C = 500$	0,13	0,04	125	TP50/86
	TZ 335 F12 KFM	1200	700	10000	500	335/85	1,15	0,42	200	$F \leq 25$	$M = 1000$	0,08	0,02	125	TP50.1/86
	TZ 335 F12 KGC	1200	700	10000	500	335/85	1,15	0,42	200	$G \leq 30$	$C = 500$	0,08	0,02	125	TP50.1/86

PowerBLOCK modules are UL recognized

1)  $V_{RRM} \leq 1000$  V :  $V_{RSM} = V_{RRM} + 50$  V

# PowerBLOCK

## Fast Diode Modules

Type		$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{TRMSM}$ A	$I_{TSM}$ A 10ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TAVM}/T_c$ A/°C 180° el sin	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$I_{RM}$ A $T_{vj} = T_{vj\ max}$ -di/dt = 100 A/μs	$R_{thJC}$ K/W 180° el sin	$R_{thCK}$ K/W	$T_{vj\ max}$ °C	Outline / page
Base plate = 20 mm	DD 46 S	800 ... 1200 <sup>1)</sup>	100	850	3,6	45/85	0,90	3,90		0,68	0,16	125	DP20/88
	DD 61 S	1000 ... 1400 <sup>1)</sup>	120	1600	12,8	61/100	1,00	2,20	82	0,62	0,16	150	DP20/88
	DD 81 S	1000 ... 1400	150	1900	18,05	81/100	0,95	1,70	87	0,48	0,16	150	DP20/88
	DD 82 S	400 ... 1000 <sup>1)</sup>	150	1900	18,05	81/100	0,95	1,70	65	0,48	0,16	150	DP20/88
Base plate = 30 mm	DD 121 S	1000 ... 1400	200	2000	20	121/100	0,95	1,70	95	0,28	0,06	150	DP30/88
	DD 122 S	400 ... 1000 <sup>1)</sup>	200	2000	20	121/100	0,95	1,70	70	0,28	0,06	150	DP30/88
Base plate = 50 mm	DD 230 S	1800 ... 2600	410	7500	281	230/100	1,00	0,80		0,15	0,04	150	DP50/88
	ND 230 S	1800 ... 2600	410	7500	281	230/100	1,00	0,80		0,15	0,04	150	DP50ND/89
	DD 241 S	1000 ... 1400	410	7500	281	240/100	1,10	0,50	135	0,15	0,04	150	DP50/88
	ND 241 S	1000 ... 1400	410	7500	281	240/100	1,10	0,50	135	0,15	0,04	150	DP50ND/89
	DD 242 S	600 ... 1000 <sup>1)</sup>	410	7500	281	240/100	1,10	0,50	98	0,15	0,04	150	DP50/88
	ND 242 S	600 ... 1000 <sup>1)</sup>	410	7500	281	240/100	1,10	0,50	98	0,15	0,04	150	DP50ND/89

PowerBLOCK modules are UL recognized

Common anode or cathode on request

<sup>1)</sup>  $V_{RRM} \leq 1000$  V :  $V_{RSM} = V_{RRM} + 50$  V

# Outlines

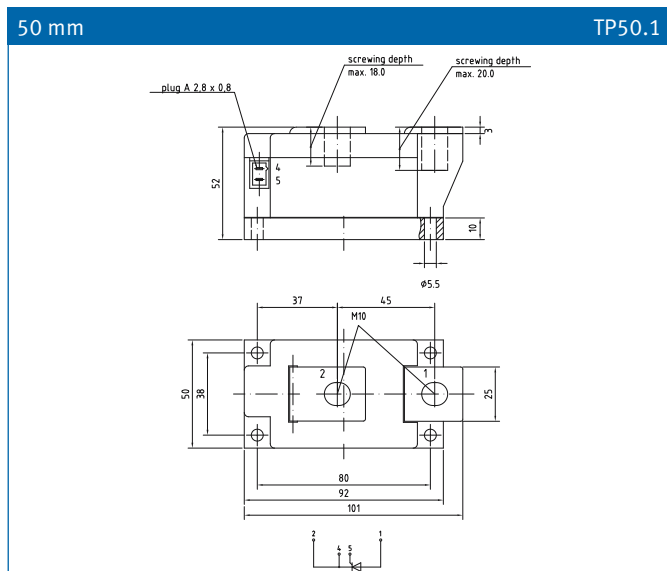
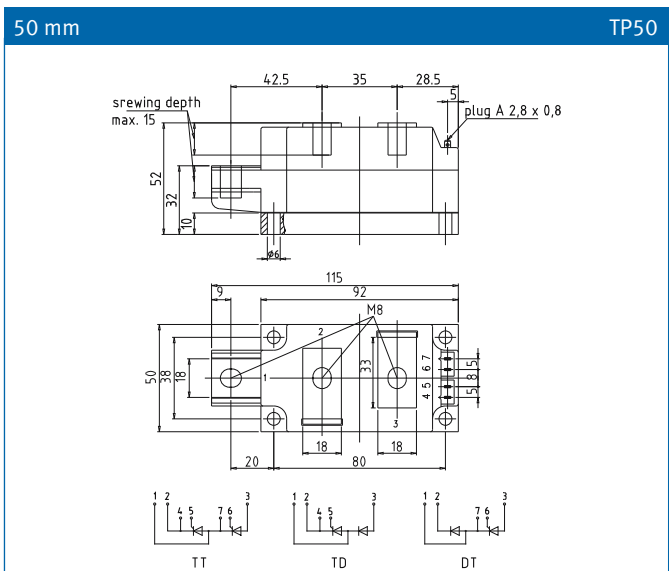
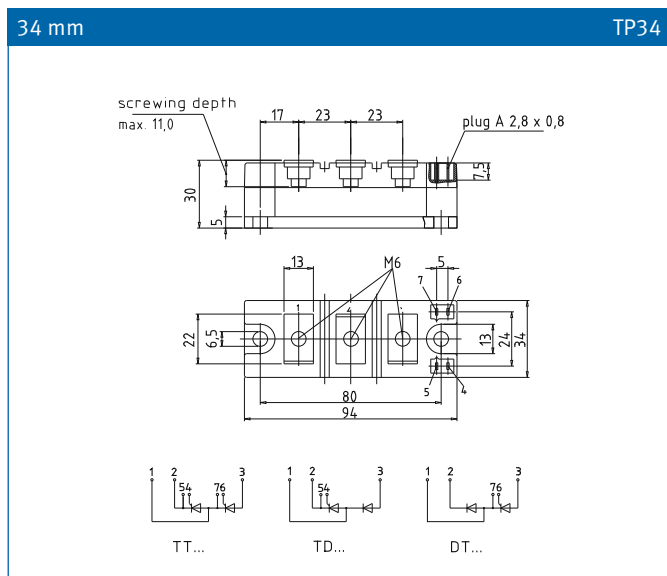
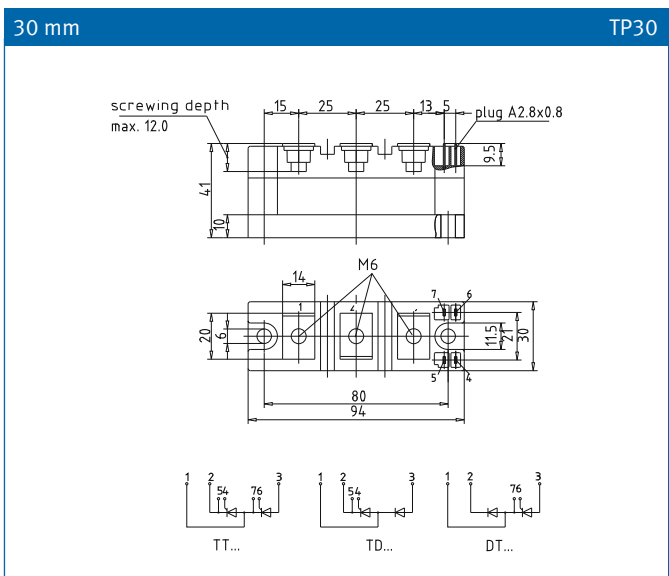
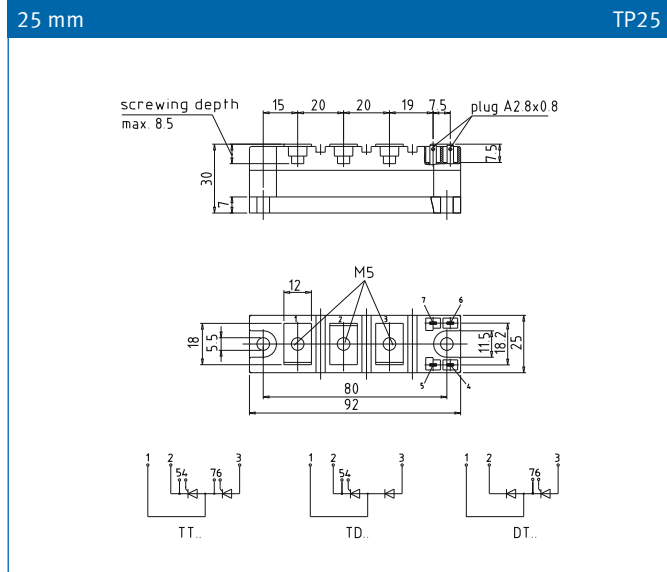
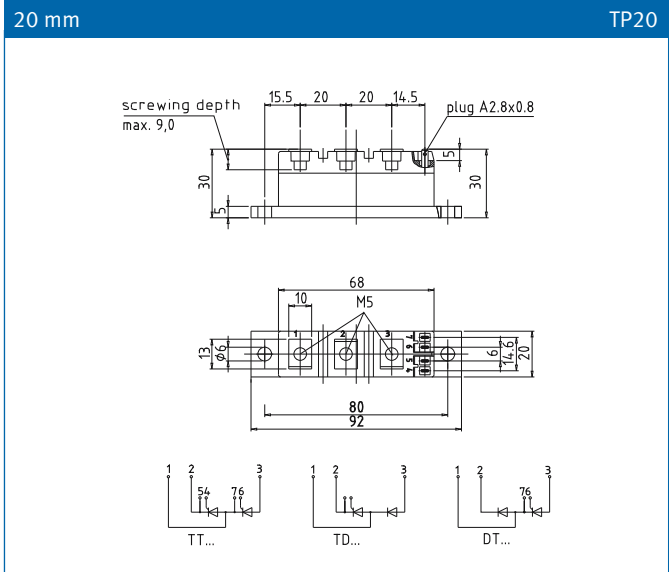
IGBT

SCR/Diode Modules

Presspacks

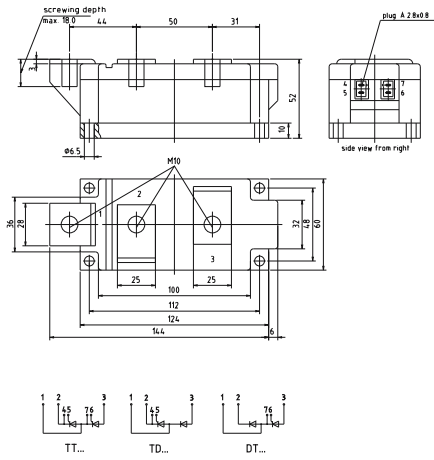
Stacks

Explanations



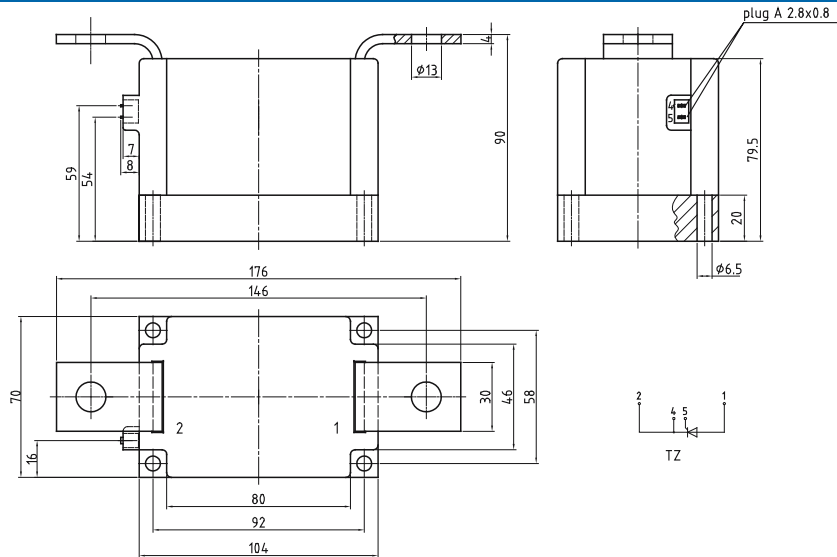
60 mm

TP60



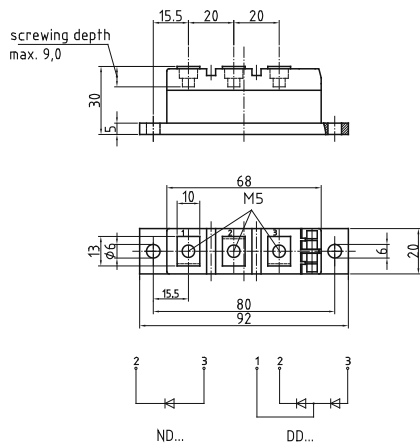
70 mm

TP70



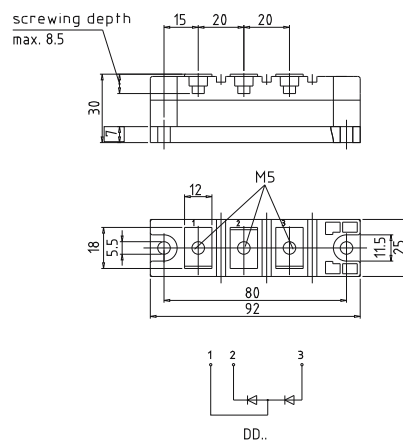
20 mm

DP20



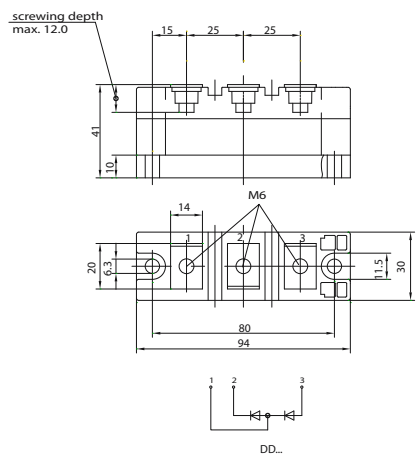
25 mm

DP25



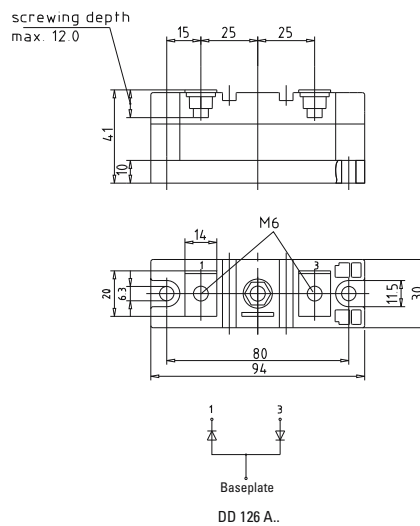
30 mm

DP30



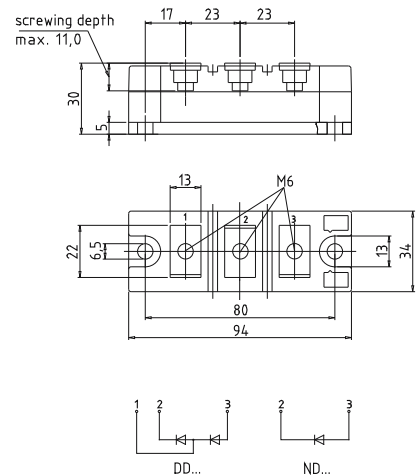
30 mm

DP30.1



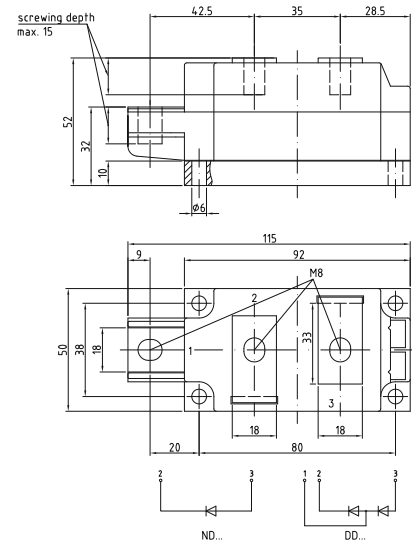
34 mm

DP34



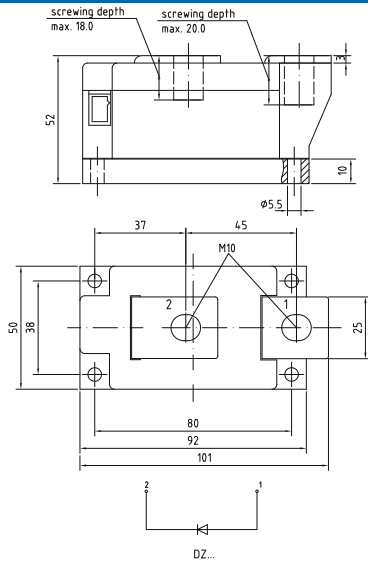
50 mm

DP50



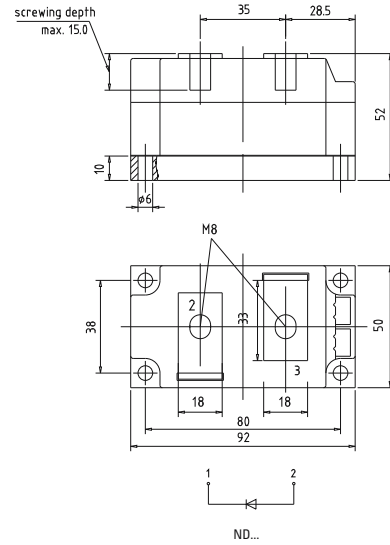
50 mm

DP50.1



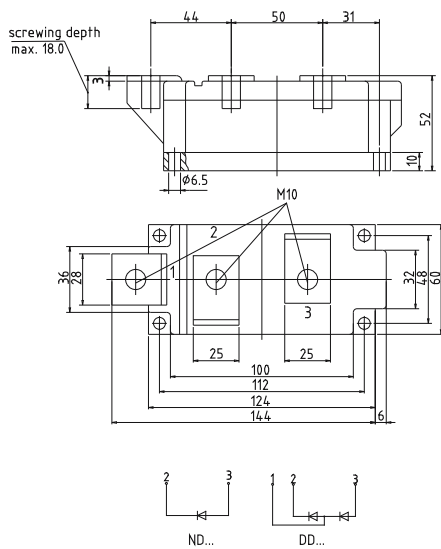
50 mm

DP50ND



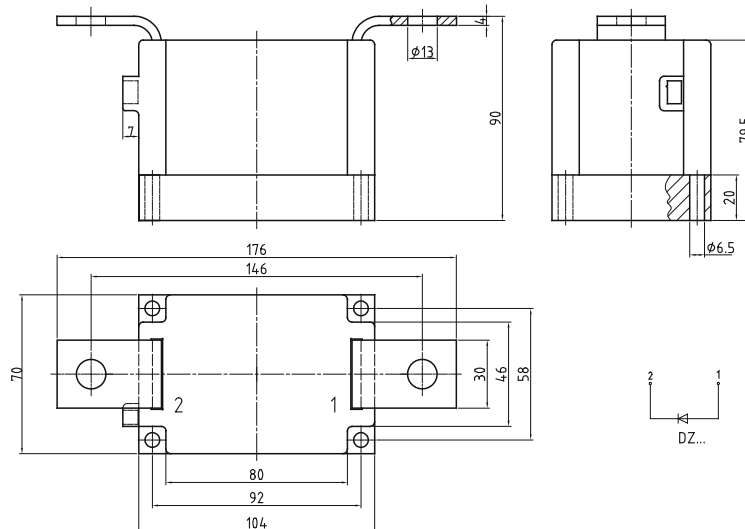
60 mm

DP60



70 mm

DP70



IGBT

SCR/Diode Modules

Presspacks



Stacks

Explanations





# Pulsed Power Applications

Type	$V_{BO}$ kV	$V_{RRM}$ kV	$V_{TM}/I_{TM}$ V/kA	$I_{TSM}$ kA	$di/dt_{cr(on)}$ A / $\mu$ s single pulse	$di/dt_{cr(off)}$ A / $\mu$ s single pulse	$R_{thJC}$ K / W	$T_{vj\ max}$ $^{\circ}$ C	Outline / page
 									
T 4003 NH	5200	5200	1,80/5	100	5000		0,0045	120	T172.40L/106
T 1503 NH	7500	7500 ... 8000	3,00/4	55	5000		0,0060	120	T150.40L/106
T 2563 NH	7500	7500 ... 8000	2,95/5	90	5000		0,0045	120	T172.40L/106
D 2601 NH		9000	5,50/4	22		7500	0,0075	140	D120.26K/101

# Phase Control Thyristors

IGBT

SCR/Diode Modules

Presspacks

Stacks

Explanations

up to 600 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 50 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^{-3}$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	rT mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	tq μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 348 N	200 ... 600	600	80	41,9	2,00/1,10	348	1,00	0,700	200	200	F = 1000	0,1000	140	T41.14/103
T 398 N	200 ... 600	800	151	5,5	1,63/1,50	398	1,00	0,400	200	200	F = 1000	0,1000	140	T41.14/103
T 568 N	200 ... 600	900	225	6,7	1,76/2,00	568	0,80	0,440	200	200	F = 1000	0,0680	140	T41.14/103
T 828 N	200 ... 600	1500	720	12,0	1,65/2,50	828	1,00	0,230	300	150	F = 1000	0,0450	140	T50.14/103
T 1078 N	200 ... 600	2000	1050	14,5	1,81/3,50	1078	1,02	0,200	200	150	F = 1000	0,0330	140	T50.14/103
T 1258 N	200 ... 600	2500	2000	20,0	1,50/4,50	1258	1,00	0,100	120	200	F = 1000	0,0330	140	T60.14/103
◆ T 2510 N	200 ... 600*	4900	8820	42,0	1,22/6,00	2509	0,75	0,072	200	200	F = 1000	0,0184	140	T75.26K0/104
T 3710 N	200 ... 600*	7000	18000	60,0	1,50/15,00	3710	0,75	0,0475	200	200	F = 1000	0,0125	140	T100.26K/105

up to 1800 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^{-3}$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	rT mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	tq μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 86 N	1200 ... 1800*	200	20	2,00	1,99/0,4	86	1,00	2,600	150	200	F = 1000	0,3000	125	TSW27/102
T 130 N	1200 ... 1800	300	45	3,00	1,96/0,6	130	1,08	1,530	150	180	F = 1000	0,2000	125	TSW27/102 TFL36/102
T 160 N	1200 ... 1800	300	58	3,40	1,96/0,6	160	1,08	1,530	150	200	F = 1000	0,1500	125	TSW27/102 TFL36/102
T 178 N	1200 ... 1800	300	34	2,60	1,9/0,6	178	0,92	1,500	150	180	F = 1000	0,1400	125	T41.14/103
T 218 N	1200 ... 1800	400	58	3,40	2,2/0,8	218	0,90	1,350	150	200	F = 1000	0,1100	125	T41.14/103
T 221 N	1200 ... 1800	450	163	5,70	1,74/0,8	221	1,10	0,750	150	200	F = 1000	0,1200	125	TSW41/102 TFL54/102
T 298 N	1200 ... 1600	600	90,6	4,25	2,0/1,1	298	0,85	0,900	150	200	F = 1000	0,0880	125	T41.14/103
T 345 N	1200 ... 1800	550	238	6,90	1,56/1,0	345	0,80	0,700	150	250	F = 1000	0,0800	125	TFL54/102
T 358 N	1200 ... 1800	700	106	4,60	2,07/1,2	358	0,85	0,900	150	250	F = 1000	0,0680	125	T41.14/103
T 378 N	1200 ... 1600	800	202	6,35	1,85/1,2	378	0,80	0,750	150	250	F = 1000	0,0680	125	T41.14/103
T 388 N	1200 ... 1800	730	205	6,40	2,1/1,5	388	0,90	0,750	120	220	F = 1000	0,0680	125	T50.14/103
T 508 N	1200 ... 1800	800	238	6,90	1,92/1,6	510	0,80	0,600	120	250	F = 1000	0,0530	125	T58.26K0/104
T 588 N	1200 ... 1800	1250	320	8,00	2,15/2,4	588	0,80	0,500	200	250	F = 1000	0,0450	125	T50.14/103
◆ T 590 N	1200 ... 1800	1250	320	8,00	2,15/2,4	588	0,80	0,500	200	250	F = 1000	0,0450	125	T58.26K0/104
T 618 N	1200 ... 1400	1250	451	9,50	1,75/2,0	618	0,80	0,420	200	250	F = 1000	0,0450	125	T50.14/103
T 648 N	1200 ... 1600	1300	605	11,00	2,10/2,5	649	1,00	0,380	120	250	F = 1000	0,0380	125	T60.14/103
T 718 N	1200 ... 1600	1500	781	12,50	1,94/3,0	718	0,85	0,350	120	250	F = 1000	0,0380	125	T60.14/103
◆ T 720 N	1200 ... 1600	1500	781	12,50	1,94/3,0	718	0,85	0,350	120	250	F = 1000	0,0380	125	T58.26K0/104
T 878 N	1200 ... 1800	1750	1200	15,50	1,95/3,6	879	0,85	0,270	200	250	F = 1000	0,0320	125	T60.14/103
◆ T 880 N	1200 ... 1800	1750	1200	15,50	1,95/3,6	879	0,85	0,270	200	250	F = 1000	0,0320	125	T58.26K0/104
◆ T 1190 N	1200 ... 1800	2800	2530	22,50	2,05/5,4	1190	0,90	0,190	200	240	F = 1000	0,0230	125	T75.26K0/104
T 1500 N	1200 ... 1800	3500	5611	33,50	2,10/7,0	1500	0,90	0,150	200	240	F = 1000	0,0184	125	T75.26K0/104
T 2180 N	1200 ... 1800	4200	6480	36	2,05/8,0	2180	0,9	0,106	200	250	F = 1000	0,0125	125	T100.26K/105
T 3160 N	1200 ... 1800	7000	16245	57	1,37/6,0	3160	0,85	0,082	200	250	F = 1000	0,0085	125	T111.26K/105

■ Not for new design      ◆ New type      \* Highest voltage on request

# Phase Control Thyristors

up to 3000 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	$rT$ m $\Omega$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu s$ DIN IEC 747-6	$tq$ $\mu s$ typ.	$(dv/dt)_{cr}$ V/ $\mu s$ DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ $^\circ C$	Outline / page
■ T 271 N	2500	650	245	7	2,35/1,2	270	1,07	0,870	60	300	F = 1000	0,0910	125	TSW41/102
T 308 N	2000 ... 2600*	550	101	4,5	2,88/1,1	308	1,10	1,600	60	350	F = 1000	0,0560	125	T50.14/103
T 458 N	2200 ... 2600	1000	405	9	2,75/2,0	459	1,00	0,840	120	300	F = 1000	0,0455	125	T60.14/103
◆ T 460 N	2200 ... 2600	1000	405	9	2,75/2,0	459	1,00	0,840	120	300	F = 1000	0,0455	125	T58.26K/104
T 658 N	2200 ... 2600	1500	660	11,5	2,53/2,85	659	1,00	0,500	150	300	F = 1000	0,0330	125	T60.14/103
◆ T 660 N	2200 ... 2600	1500	660	11,5	2,53/2,85	659	1,00	0,500	150	300	F = 1000	0,0330	125	T58.26K/104
◆ T 700 N	1800 ... 2200	1500	744	12,2	2,32/2,85	699	0,95	0,450	200	300	F = 1000	0,0320	125	T58.26K/104
◆ T 1040 N	1800 ... 2200	2200	1711	18,5	1,53/2,0	1039	0,90	0,300	200	300	F = 1000	0,0231	125	T75.26K/104
◆ T 1220 N	2000 ... 2800	2625	2531	22,5	1,38/1,0	1220	1,00	0,275	150	350	F = 1000	0,0184	125	T75.26K/104
◆ T 1330 N	1800 ... 2200	2600	2645	23	1,13/1,0	1329	0,90	0,234	200	300	F = 1000	0,0184	125	T75.26K/104
T 1590 N	2000 ... 2800*	3200	3920	28	2,45/5,0	1590	1,10	0,237	150	400	F = 1000	0,0125	125	T100.26K/105
T 1960 N	1800 ... 2200	4100	6125	35	2,20/8,0	1960	0,90	0,150	200	300	F = 1000	0,0125	125	T100.26K/105
T 2160 N	2200 ... 2800	4600	8000	40	2,65/8,8	2400	1,05	0,154	150	400	F = 1000	0,0085	125	T111.26K/105
T 2480 N	2200 ... 2800	5100	9460	43,5	1,43/3,0	2480	0,95	0,154	200	400	F = 1000	0,0085	125	T111.26K/105
T 2810 N	1600 ... 2200	5800	12500	50	2,35/11,0	2810	0,90	0,112	200	300	F = 1000	0,0085	125	T111.26K/105
T 4301 N	2200 ... 2900	9420	41400	91	1,20/4,0	4300	0,77	0,107	300	250	F = 1000	0,0054	125	T150.35K/105
T 4771 N	2200 ... 2900	10110	41400	91	1,20/4,0	4640	0,77	0,107	300	250	F = 1000	0,0048	125	T150.26K/105

up to 4500 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	$rT$ m $\Omega$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu s$ DIN IEC 747-6	$tq$ $\mu s$ typ.	$(dv/dt)_{cr}$ V/ $\mu s$ DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ $^\circ C$	Outline / page
T 730 N	3800 ... 4200	1840	1250	15,8	3,40/3,5	730	1,20	0,570	80	400	F = 1000	0,0215	120	T75.26K/104
T 731 N	3600 ... 4400	2010	1280	16	1,86/1,2	910	1,08	0,650	300	500	H = 2000	0,0185	125	T76.26K/104
◆ T 860 N	3200 ... 3600	2000	1445	17	3,18/3,8	860	1,08	0,500	80	400	F = 1000	0,0210	125	T75.26K/104
T 901 N	2800 ... 3600	2050	1445	17	1,75/1,2	950	1,16	0,494	300	300	F = 1000	0,0185	125	T76.26K/104
T 930N	3200 ... 3600	2200	1530	17,5	2,70/3,6	930	1,00	0,430	80	500	F = 1000	0,0215	125	T75.26K/104
T 1401 N	3600 ... 4200	3450	6480	36	1,95/2,0	1600	1,29	0,330	300	350	H = 2000	0,0097	125	T120.35K/105
T 1971 N	3600 ... 4200	3700	6480	36	1,95/2,0	1730	1,29	0,330	300	350	H = 2000	0,0086	125	T120.26K/105
T 1601 N	2800 ... 3600	4160	8400	41	1,50/2,0	1920	1,00	0,250	300	300	F = 1000	0,0097	125	T120.35K/105
T 1930 N	3000 ... 3800	4200	6850	37	2,90/8,0	2180	1,08	0,200	150	450	F = 1000	0,0085	125	T111.26K/105
T 2001 N	2800 ... 3600	4460	8400	41	1,50/2,0	2060	1,00	0,250	300	300	F = 1000	0,0087	125	T120.26K/105
T 3401 N	3100 ... 3600	8350	37850	87	1,40/4,0	3800	0,82	0,145	300	300	F = 1000	0,0054	125	T150.35K/105
T 3801 N	3100 ... 3600	8950	37850	87	1,40/4,0	4100	0,82	0,145	300	300	F = 1000	0,0048	125	T150.26K/105
T 3101 N	4000 ... 4400	6830	34000	83	1,75/4,0	3160	1,01	0,185	300	400	H = 2000	0,0054	125	T150.35K/106

■ Not for new design

◆ New type

\* Highest voltage on request

# Phase Control Thyristors

up to 5500 V

Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	rT mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	tq μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 1451 N	4800 ... 5200	3610	9250	43	1,70/2,0	1690	0,920	0,370	300	450	H = 2000	0,0097	125	T120.35K/105
T 1551 N	4800 ... 5200	3920	9250	43	1,70/2,0	1830	0,920	0,370	300	450	H = 2000	0,0086	125	T120.26K/105
T 2161 N	4800 ... 5200	4630	14600	54	1,85/3,0	2170	0,810	0,360	300	450	H = 2000	0,0075	125	T120.35K/105
T 2351 N	4800 ... 5200	5000	14600	54	1,85/3,0	2360	0,810	0,360	300	450	H = 2000	0,0065	125	T120.26K/105
T 2851 N	4800 ... 5200	6230	31000	79	1,70/4,0	3000	0,765	0,235	300	600	H = 2000	0,0054	125	T150.35K/105
T 3441 N	4800 ... 5200	6600	31000	79	1,70/4,0	3200	0,765	0,235	300	600	H = 2000	0,0048	125	T150.26K/105
T 4021 N	4800 ... 5350	8480	50000	100	1,80/6,0	3920	0,920	0,142	300	550	H = 2000	0,00445	125	T172.35K/106

up to 10000 V

Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	rT mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	tq μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
■ T 201 N	6000 ... 7000	510	88,2	4,2	3,40/0,5	245	1,290	4,180	300	600	H = 2000	0,0430	125	T58.26K/104
◆ T 281 N	6000 ... 6500	600	115	4,8	2,75/0,5	280	1,350	2,800	150	1000	F = 1000	0,0430	125	T58.26K1/104
■ T 501 N	6000 ... 7000	1260	845	13	2,65/1,0	640	1,300	1,350	300	600	H = 2000	0,0185	125	T76.26K/104
■ T 551 N	6000 ... 7000	1260	845	13	2,65/1,0	600	1,300	1,350	300	600	H = 2000	0,0205	125	T76.35K/105
◆ T 571 N	6000 ... 6500	1150	442	9,4	2,75/1,0	540	1,350	1,400	150	1000	F = 1000	0,0230	125	T75.26K1/104
T 1081 N	6000 ... 7000	2830	5780	34	2,70/2,0	1330	1,180	0,759	300	600	H = 2000	0,0086	125	T120.26K/105
T 1201 N	6000 ... 7000	2600	5780	34	2,70/2,0	1230	1,180	0,759	300	600	H = 2000	0,00970	125	T120.35K/105
T 1651N	6000 ... 7000	3610	11500	48	2,65/3,0	1685	1,220	0,490	300	600	H = 2000	0,00750	125	T120.35K/105
T 1851 N	6000 ... 7000	3940	11500	48	2,65/3,0	1850	1,220	0,490	300	600	H = 2000	0,00650	125	T120.26K/105
T 1901 N	7000 ... 8000	4520	21100	65	3,00/4,0	2130	1,240	0,440	300	550	H = 2000	0,00540	125	T150.35K/105
T 2251N	7000 ... 8000	4840	21100	65	3,00/4,0	2280	1,240	0,440	300	550	H = 2000	0,00480	125	T150.26K/105
T 2871 N	7500 ... 8000	6060	40500	90	2,95/5,0	2680	1,267	0,336	300	550	H = 2000	0,00445	125	T172.35K/106

Light Triggered  
Thyristors

Type	$V_{BO}$ V	$V_{RRM}$ V $V_{RSM} = V_{RRM}$ + 100 V	$I_{TRMSM}$ A	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms, $T_{vj\ max}$	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$I_{TAVM}$ A/°C 180 ° el sin $T_c = 85\ ^\circ C$	$V(TO)$ V $T_{vj\ max}$	rT mΩ $T_{vj\ max}$	$(di/dt)_{cr}$ A/μs DIN IEC 747-6	tq μs typ.	$(dv/dt)_{cr}$ V/μs DIN IEC 747-6	$R_{thjC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 553 N	6500	7000	1200	684	11,7	2,65/1,0	550	1,30	1,350	300	600	H = 2000	0,0200	120	T76.35L/106
T 1503 N	7500	7500 ... 8000	3900	15125	55	3,00/4,0	1770	1,24	0,440	300	550	H = 2000	0,0063	120	T150.40L/106
T 2563 N	7500	7500 ... 8000	5600	40500	90	2,95/5,0	2520	1,28	0,278	300	550	H = 2000	0,0048	120	T172.40L/106
T 4003 N	5200	5200	5600	50000	100	1,80/5,0	3480	0,92	0,142	300	500	H = 2000	0,0048	120	T172.40L/106

■ Not for new design      ◆ New type      \* Highest voltage on request

# Fast Thyristors



up to 600 V														
Type	$V_{DRM}$ $V_{RRM}$ $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 50 V V	$I_{TRMSM}$ A	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	rT m $\Omega$ $T_{vj} =$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu$ s DIN IEC 747-6	tq $\mu$ s typ.	$(dv/dt)_{cr}$ V/ $\mu$ s DIN IEC 747-6	$V_{GT}$ V $T_{vj} =$ 25 °C	$V_{GT}$ mA $T_{vj} =$ 25 °C	$R_{thJC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 178 F04 TMC	400	300	1,9	1,85/0,5	1,02	1,55	300	$M \leq 50$	$C = 500$	2	200	0,180	140	T41.14/103
T 1078 F04 TDC	400	2000	14,5	1,81/3,5	1,02	0,20	200	$D \leq 15$	$C = 500$	2	250	0,033	140	T50.14/103

up to 1400 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 50 V V	$I_{TRMSM}$ A	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	rT m $\Omega$ $T_{vj} =$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu$ s DIN IEC 747-6	tq $\mu$ s typ.	$(dv/dt)_{cr}$ V/ $\mu$ s DIN IEC 747-6	$V_{GT}$ V $T_{vj} =$ 25 °C	$V_{GT}$ mA $T_{vj} =$ 25 °C	$R_{thJC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 408 F11 TFC	1100	750	6,4	2,20/1,4	1,20	0,63	200	$F \leq 25$	$C = 500$	2,20	250	0,053	125	T50.14/103
T 408 F12 TSB	1200	750	6,4	2,20/1,4	1,20	0,63	200	$S \leq 18$	$B = 50$	2,20	250	0,053	125	T50.14/103
T 408 F12 TSC	1200	750	6,4	2,20/1,4	1,20	0,63	200	$S \leq 18$	$C = 500$	2,20	250	0,053	125	T50.14/103
T 1052 S12 TDC	1200	2200	20	2,70/4,0	1,45	0,30	400	$D \leq 15$	$C = 500$	2,20	300	0,018	125	T75.26K/104

up to 2000 V														
Type	$V_{DRM}$ $V_{RRM}$ V $V_{DSM} = V_{DRM}$ $V_{RSM} = V_{RRM}$ + 50 V V	$I_{TRMSM}$ A	$I_{TSM}$ kA 10 ms, $T_{vj\ max}$	$V_T/I_T$ V/kA $T_{vj\ max}$	$V_{(TO)}$ V $T_{vj} =$ $T_{vj\ max}$	rT m $\Omega$ $T_{vj} =$ $T_{vj\ max}$	$(di/dt)_{cr}$ A/ $\mu$ s DIN IEC 747-6	tq $\mu$ s typ.	$(dv/dt)_{cr}$ V/ $\mu$ s DIN IEC 747-6	$V_{GT}$ V $T_{vj} =$ 25 °C	$V_{GT}$ mA $T_{vj} =$ 25 °C	$R_{thJC}$ K/W 180 ° el sin	$T_{vj\ max}$ °C	Outline / page
T 930 S16 TFB	1600	2000	18	2,70/3,5	1,35	0,33	250	$F \leq 25$	$B = 50$	2,20	250	0,021	125	T75.26K0/104
T 930 S16 TKC	1600	2000	18	2,70/3,5	1,35	0,33	250	$K \leq 40$	$C = 500$	2,20	250	0,021	125	T75.26K0/104
T 930 S18 TKB	1800	2000	18	2,70/3,5	1,35	0,33	250	$K \leq 40$	$B = 50$	2,20	250	0,021	125	T75.26K0/104
T 930 S18 TMC	1800	2000	18	2,70/3,5	1,35	0,33	250	$M \leq 50$	$C = 500$	2,20	250	0,021	125	T75.26K0/104
T 930 S20 TMC	2000	2000	18	2,70/3,5	1,35	0,33	250	$M \leq 50$	$C = 500$	2,20	250	0,021	125	T75.26K0/104

# Overview Rectifier in Disc Housings

$V_{RRM}$  – Concept

9000 V		D471N				D2601NH D2601N			
6800 V		D711N		D1481N		D3001N D3041N			
5800 V								D6001N	
5000 V									
4800 V	 Ceramic Disc	D750N		D1800N					
4600 V									
4500 V									
4400 V									
4000 V			D850N				D3501N		
3600 V		D270N							
3400 V									
3200 V									
2800 V				D748N					
2600 V						D1030N		D4810N	
2400 V									
2200 V									
2200 V	 Epoxy Discs								
690 $V_{RMS}$						D2200N/D2650N		D4201N	
2000 V									
1800 V									
1600 V									
1400 V									
1200 V									
600 V									
400 V									
Case fl									
	41 mm	50 mm	58 mm	60 mm	75 mm	100 mm	111 mm	120 mm	150 mm

# Rectifier Diodes

up to 800 V										
Type	$V_{RRM}$ V $V_{RSM} =$ $V_{RRM} + 50$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj\ max}$	$I_{FAVM}/T_c$ $A/^\circ C$ 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ $m\Omega$ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ $^\circ C$	Outline / page
D 255 N	200 ... 800*	400	4,6	105,8	255/110	0,65	0,8500	0,2300	180	DSW27/107
D 255 K	200 ... 800*	400	4,0	80	255/75	0,65	0,8500	0,3450	180	DSW27/107
D 448 N	200 ... 800*	710	5,1	130	450/122	0,70	0,5100	0,1020	180	D41.14/109
D 758 N	400 ... 800*	1195	8,8	387,2	760/115	0,70	0,3100	0,0670	180	D41.14/109
D 2228 N	200 ... 600	4000	28,5	4061	2230/110	0,70	0,0975	0,0254	180	D60.14/109
D 2898 N	400 ... 600	6100	32,3	5200	2894/100	0,66	0,0600	0,0254	180	D60.14/109
D 4457 N	400 ... 600	7000	52	13500	4460/111	0,70	0,0470	0,0128	180	D60.8/109
D 5807 N	400 ... 600	9100	70	24500	5800/108	0,70	0,0400	0,0098	180	D73.8/109
◆ D 5810 N	400 ... 600	9100	70	24500	5800/58	0,70	0,0400	0,0166	180	D75.26K0/110
D 6247 N	400 ... 600	9800	52	13500	6242/68	0,66	0,0470	0,0130	180	D60.8/109
D 8320 N	200 ... 600		95	45000	8320/56	0,70	0,0240	0,0125	180	D100.26K0/111
D 8407 N	400 ... 600	13200	70	24500	8408/64	0,66	0,0360	0,0098	180	D73.8/109

up to 1800 V										
Type	$V_{RRM}$ V $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj\ max}$	$I_{FAVM}/T_c$ $A/^\circ C$ 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ $m\Omega$ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ $^\circ C$	Outline / page
D 452 N	1200 ... 1800	710	10,8	583,2	450/130	0,77	0,48	0,0855	180	DFL54/108
D 452 K	1200 ... 1800	710	10,8	583,2	450/130	0,77	0,48	0,0855	180	DFL54/108
D 798 N	1200 ... 1800*	1650	11,8	696	800/130	0,81	0,28	0,0460	180	D50.14/109
◆ D 1050 N	1200 ... 1800	2590	18,5	1710	1050/130	0,81	0,17	0,0380	180	D58.26K0/110

up to 3000 V										
Type	$V_{RRM}$ V $V_{RSM} =$ $V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj\ max}$	$I_{FAVM}/T_c$ $A/^\circ C$ 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ $m\Omega$ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ $^\circ C$	Outline / page
D 121 N	1200 ... 2000	360	2,6	33,8	120/130	0,720	1,900	0,3240	180	DSW27/107
D 121 K	1200 ... 2000	330	2,4	28,8	120/130	0,720	1,900	0,4340	180	DSW27/107
D 251 N	1200 ... 2000	400	5,3	140,5	250/130	0,800	0,850	0,1510	180	DSW27/107
										DFL36/107
D 251 K	1200 ... 2000	400	4,7	110,5	250/102	0,800	0,850	0,2360	180	DSW27/107
										DFL36/107
D 400 N	1600 ... 2000	710	9,8	480,2	400/130	0,700	0,620	0,0950	180	DSW41/107
D 400 K	1600 ... 1800	710	9,8	480,2	400/130	0,700	0,620	0,0950	180	DSW41/107
D 428 N	1200 ... 2000	840	6	180	430/139	0,810	0,540	0,0690	180	D41.14/109
D 660 N	1800 ... 2200	1435	10,25	525	660/130	0,700	0,500	0,0500	180	D41.14K/109
D 748 N	2000 ... 2800	1260	9	405	750/100	0,830	0,520	0,0450	160	D50.14/109
D 1030 N	2200 ... 2600	2040	14,5	1051	1030/100	0,820	0,280	0,0380	160	D58.26K0/110
D 2200 N	2000 ... 2400	4900	35	6125	2200/100	0,830	0,145	0,0170	160	D75.26K0/110
D2520N	2200	4950	35	6125	2520/100	0,730	0,100	0,0220	175	D75.26K0/110
D 2650 N	2000 ... 2400	4710	33,5	5611	2650/100	0,820	0,148	0,0169	180	D75.26K0/110
D 4201 N	1600 ... 2200	11200	73,5	27000	4830/100	0,668	0,081	0,0092	160	D120.35K/111
D 4810 N	2000 ... 2800	8400	60	18000	4810/100	0,830	0,059	0,0080	160	D111.26K0/111

◆ New type

\* Highest voltage on request

# Rectifier Diodes

up to 5000 V

Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
◆ D 270 N	3600	550	4	80	270/100	0,860	1,540	0,0980	150	D58.26K0/110
D 475 N	3600	745	10,9	594	475/100	0,765	0,612	0,0850	160	DSW41.1/108
D 740 N	3600 ... 4800*	1540	11	605	750/100	0,850	0,650	0,0390	160	D58.26K0/110
D 850 N	3000 ... 4000*	1790	12,8	819	850/100	0,840	0,485	0,0380	160	D58.26K0/106
D 1800 N	3600 ... 4800	3850	27,5	3781	1800/100	0,850	0,253	0,0169	160	D75.26K0/106
D 3501 N	3200 ... 4200	8200	56	15680	3690/100	0,734	0,133	0,0092	160	D120.35K/110
D 6001 N	4500 ... 5000	13000	110	60500	6070/100	0,800	0,090	0,0046	160	D150.26K/111

up to 10000 V

Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms, $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
D 711 N	5800 ... 6800	1670	10,5	550	790/100	0,840	0,870	0,03150	160	D58.26K/110
D 1481 N	5800 ... 6800	3610	24,5	3000	1650/100	0,750	0,420	0,01580	160	D76.26K/110
D 3001 N	5800 ... 6800	6340	53	14040	2900/100	0,840	0,216	0,00920	160	D120.35K/111
D 3041N	5800 ... 6800	6620	53	14040	2900/100	0,840	0,216	0,00855	160	D120.26K/111
D 471 N	8000 ... 9000	1200	10	500	565/100	1,040	1,780	0,03150	160	D58.26K/110
D 2601 N	8500 ... 9000	4820	50	12500	2240/100	0,944	0,412	0,00855	160	D120.26K/111

◆ New type

\* Highest voltage on request



## GCT – Freewheeling Diodes

Type	$V_{RRM}$ V	$V_{(D)D}^{*)}$ kV $T_c=25$ typ.	$I_{(FSM)}$ kA sin, 10 ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ sin, 10 ms $T_{vj\ max}$	$V(F)/I(FM)$ V/2,5 kA $T_{vj\ max}$ sin	$I_{(RM)}$ A di/dt = 1000 A/ $\mu$ s $I_{(FM)} = 2,5\ kA$ $T_{vj} = T_{vj\ max}$	$Q_{(rr)}$ mAs di/dt = 1000 A/ $\mu$ s $I_{(FM)} = 2,5\ kA$ $T_{vj} = T_{vj\ max}$	$R_{thJC}$ K/W DC	$T_{vj\ max}$ $^{\circ}C$	Outline / page
D 911 SH	4500	2,8	17	1445	6,0	1200**)	2,8**)	0,0100	140	D100.26K/110
D 1031 SH	4500	2,8	23	2645	4,2	1500**)	3,5**)	0,0100	140	D100.26K/110
D 1121 SH	4500	2,8	17,5	1530	5,6	1200**)	3,5**)	0,0075	140	D120.26K/111
D 1331 SH	4500	2,8	28	3920	4,2	1500**)	3,5**)	0,0075	140	D120.26K/111
♦ D 1961 SH	4500	2,8	40	8000	2,5	2250**)	12,0**)	0,0075	140	D120.26K/111
D 931 SH	6500	3,2	16	1280	5,6	1300**)	3,5**)	0,0100	140	D100.26K/110
D 1131 SH	6500	3,2	22	2400	5,6	1300**)	3,5**)	0,0075	140	D120.26K/111
D 1951 SH	6500	3,2	44	9680	4,0	1800**)	5,0**)	0,0045	140	D150.26K/111

\*) Estimate failure rate  $l \sim 100$  fit

\*\*\*) Clamp circuit  $L = 0,25\ \mu H$

## GTO – Freewheeling Diodes

Type	$V_{(DRM)}$ V	$V_{(D)D}^{*)}$ kV $T_c = 25$ typ.	$I_{(FSM)}$ kA sin, 10 ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ sin, 10 ms $T_{vj\ max}$	$V(F)/I(FM)$ V/2,5 kA $T_{vj\ max}$ sin	$I_{(RM)}^{**)}$ A di/dt = 250 A/ms $I_{(FM)} = 1\ kA$ $T_{vj} = T_{vj\ max}$	$Q_{(rr)}^{**)}$ mAs di/dt = 250 A/ms $I_{(FM)} = 1\ kA$ $T_{vj} = T_{vj\ max}$	$(-di/dt)_{com}$ a/ms	$R_{thJC}$ K/W DC	$T_{vj\ max}$ $^{\circ}C$	Outline / page
D 721 S	3500...4500	2,00	18	1130	3,50/2,5	600	1,70	500	0,0180	125	D76.26K/110
D 1461 S	3500...4500	2,00	28	5120	2,50/2,5	840	2,80	500	0,0125	140	D100.26K/110
D 1251 S	4500	2,50	18	1620	2,50/2,5	800	3,00	500	0,0100	140	D76.14K/110
D 921 S	4500	2,50	28	5120	2,60/2,5	700	2,80	500	0,0125	140	D100.26K/110
D 1381 S	4500	3,00	28	5120	2,60/2,5	700	2,80	500	0,0125	140	D100.26K/110

\*) Estimate failure rate  $l \sim 100$  fit

GTO-Snubber \*\*)  $V_{(R)} = 0,5 V_{(RRM)}$ ,  $V_{(RM)} = 0,8 V_{(RRM)}$

## GTO Snubber Diodes and general use

Type	$V_{(RRM)}$ V	$V_{R(cr)}$ V 1)	$I_{(FSM)}$ kA sin, 10 ms $T_{vj\ max}$	$V(F)/I(FM)$ V/kA sin, 10 ms $T_{vj\ max}$	$V_{FRM}$ typ. V di/dt = 1000 A/ $\mu$ s $T_{vj} = T_{vj\ max}$	$R_{(th)JC}$ K/W DC	$T_{vj\ max}$ $^{\circ}C$	Outline / page
D 170 S	2500	1500	3,70	2,30/0,8		0,1800	140	DSW27.1/107
D 170 U	2500	1500	3,15	2,15/0,65		0,2500	140	DSW27.1/107
D 228 S	2500	1500	3,20	2,12/0,5		0,0750	125	D41.14/109
D 56 S	4500	3000	1,35	4,50/0,32	145	0,2450	125	DSW27.2/107
D 56 U	4500	3000	1,20	4,15/0,28	75	0,3250	125	DSW27.2/107
D 291 S	3500 ... 4500	3200	4,50	4,15/1,2	145	0,0400	125	D58.26K/110
D 841 S	4500	3200	15,00	3,50/2,5	75	0,0100	125	D76.14K/110
snubberless:								
D 371 S	4500	3200	6,00	3,90/1,2	150	0,0350	125	D58.26K/110
D 801 S	4500	3200	14,00	3,70/2,5	85	0,0100	125	D76.14K/110
D 901 S	3500 ... 4500	2500	21,50	3,50/2,5	70	0,0125	125	D100.26K/110

1) Maximum permissible link voltage, GTO snubber diode

# Fast Rectifier Diodes

up to 1400 V											
Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj} = T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V(TO)$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$I_{RM}$ A $T_{vj\ max}$ $i_F = I_{FAVM}$ , $di_F/dt = 50$ A/μs	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
D 188 S	1000	290	1,9	18,05	185/100	1,00	1,80	80	0,150	150	D41.14/109
D 238 S	1200	455	3,2	51,2	238/85	1,45	1,10	45	0,080	125	D41.14/109
D 368 S	1000...1400	730	5,2	135,2	368/100	1,00	0,80	102	0,080	150	D41.14/109
D 658 S	1000...1400	1400	10,1	510,05	658/100	1,00	0,45	122	0,044	150	D50.14/109
◆ D 650 S	1200,1400	1400	10,1	510,05	650/96	1,00	0,45	122	0,048	150	D58.26K0/110

up to 2600 V											
Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj} = T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V(TO)$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$I_{RM}$ A $T_{vj\ max}$ $i_F = I_{FAVM}$ , $di_F/dt = 50$ A/μs	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
D 170 S	2500	400	3,70	68,45	170/85	1,10	1,400	340 <sup>3)</sup>	0,1900	140	DSW27.1/107
D 170 U	2500	330	3,15	49,6	170/64	1,10	1,500	340 <sup>3)</sup>	0,2600	140	DSW27.1/107
D 228 S	2200,2500	450	3,20	51,2	228/85	1,18	1,800	280	0,0800	125	D41.14/109
D 348 S	1600...2000	645	4,60	105,8	348/100	1,00	0,900	160	0,0800	150	D41.14/109
D 690 S	2000...2600	1600	11,50	661,25	690/100	1,00	0,500	230	0,0390	150	D58.26K0/110

up to 6000 V											
Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj} = T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V(TO)$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$I_{RM}$ A $T_{vj\ max}$ $i_F = I_{FAVM}$ , $di_F/dt = 50$ A/μs	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
D 56 S	4500	160	1,35	9,1	56/85	1,64	8	230 <sup>2)</sup>	0,26	125	DSW27.2/107
D 56 U	4000, 4500	140	1,2	7,2	56/73	1,64	8	230 <sup>2)</sup>	0,34	125	DSW27.2/107

1)  $i_{FM} = 225$  A, -  $di_F/dt = 100$  A/μs

4)  $i_{FM} = 500$  A, -  $di_F/dt = 250$  A/μs

2)  $i_{FM} = 150$  A, -  $di_F/dt = 200$  A/μs

5)  $i_{FM} = 1600$  A, -  $di_F/dt = 600$  A/μs

3)  $i_{FM} = 500$  A, -  $di_F/dt = 200$  A/μs

6)  $i_{FM} = 1000$  A, -  $di_F/dt = 250$  A/μs

## Avalanche Rectifier Diodes

Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 100$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj} = T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V_{(TO)}$ V $T_{vj\ max}$	$r_T$ mΩ $T_{vj\ max}$	$V_{(BR)}$ A min.	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page
D 126 A 45	4500	315	2,3	26,45	126/100	0,86	3,2	4800	0,257	160	DSW27.2/107
D 126 B 45	4500	300	2,1	22	126/80	0,86	3,2	4800	0,337	160	DSW27.2/107
DD 126 A 45 K-B9*	4500	220	2,3	26,45	128/100	0,86	3,2	4800	0,060	160	DP30.1/88

\* Non isolated module

## Welding Diodes

up to 600 V											
Type	$V_{RRM}$ V $V_{RSM} = V_{RRM} + 50$ V	$I_{FRMSM}$ A	$I_{FSM}$ kA 10 ms $T_{vj\ max}$	$\int i^2 dt$ $A^2s \cdot 10^3$ 10 ms $T_{vj} = T_{vj\ max}$	$I_{FAVM}/T_c$ A/°C 180° sinus	$V_{(TO)}$ V $T_{vj} = T_{vj\ max}$	$r_T$ mΩ $T_{vj} = T_{vj\ max}$	$R_{thJC}$ K/W 180° el sin	$T_{vj\ max}$ °C	Outline / page	
25 DN 06	600	1800	12,75	813	1145/155	0,70	0,188	0,01740	180	25DN06/112	
38 DN 06	600	6100	32,3	5200	3885/120	0,66	0,060	0,01240	180	38DN06/112	
46 DN 06	600	8000	52	13500	5100/118	0,70	0,047	0,00935	180	46DN06/112	
56 DN 06	600	10050	70	24500	6400/116	0,70	0,040	0,00620	180	56DN06/112	
65 DN 06	600	13300	95	45000	8470/98	0,70	0,027	0,00470	180	65DN06/112	

## Insulated Cells

Type	$V_M$ V	$V_{RMS}$ VDC	CTI - Value	Iso-Class	$T_c$ (max) °C	$R_{thCK}$ K/W	$R_{thC-C}$ (typ) K/W	at clamp. force	$F_{max}$ kN	Weight g	Outline / page
ISO 57/26	6400	2520	250	III a	150	0,010	0,0880	at 12kN	30	260	I57.26/112
ISO 72/8	2250	700	250	III a	150	0,005	0,0280	at 20kN	45	130	I72.8/112
ISO 75/26	5900	2250	250	III a	150	0,005	0,0480	at 20kN	45	460	I75.26/112

Insulating material: AlN

# Outlines

IGBT

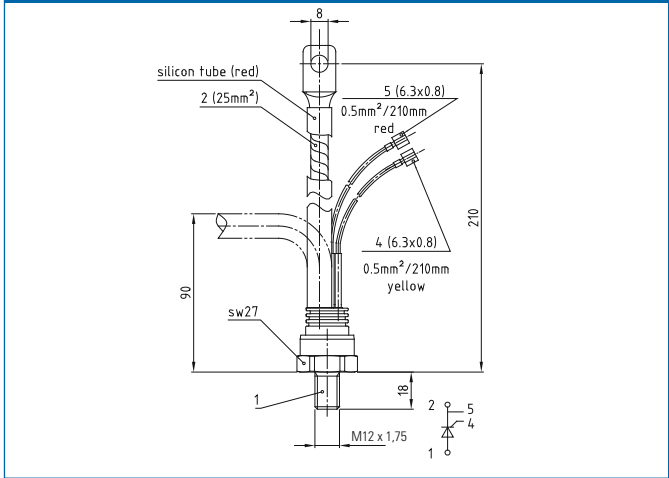
SCR/Diode Modules

Presspacks

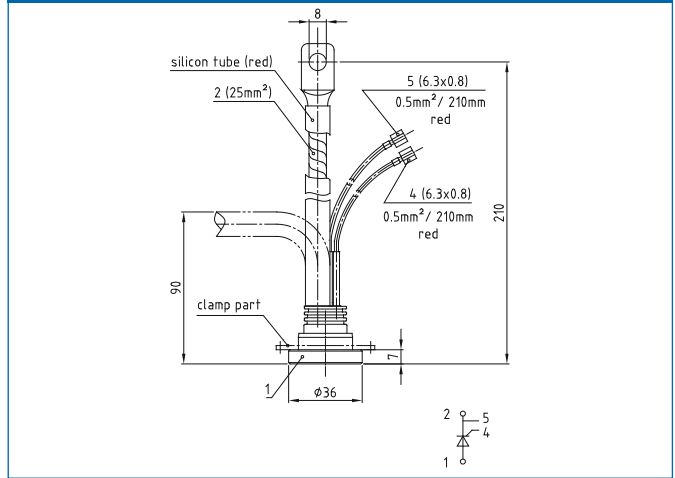
Stacks

Explanations

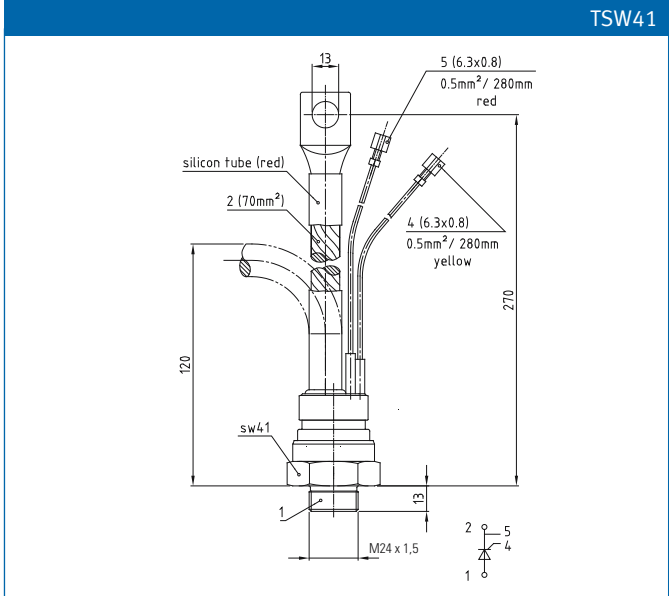
TSW27



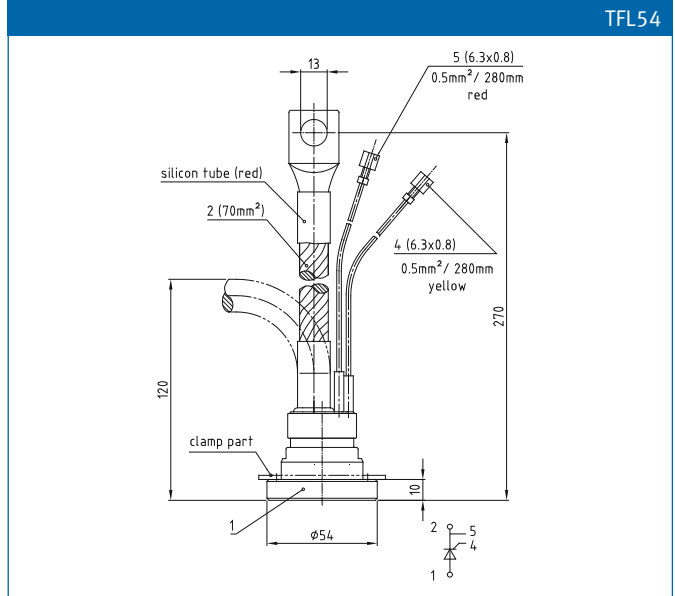
TFL36



TSW41

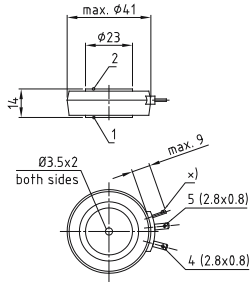


TFL54

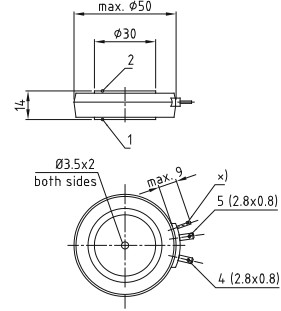


X) = evacuation pipe

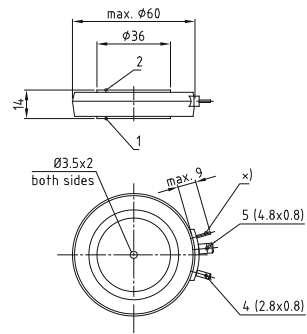
T41.14



T50.14

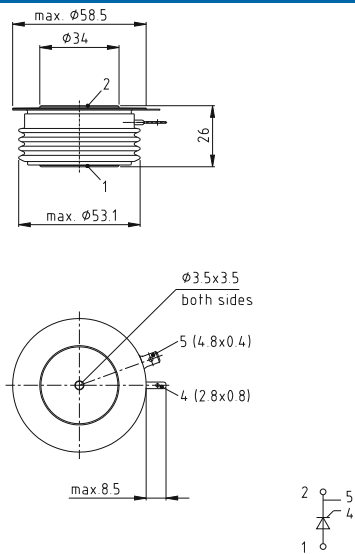


T60.14

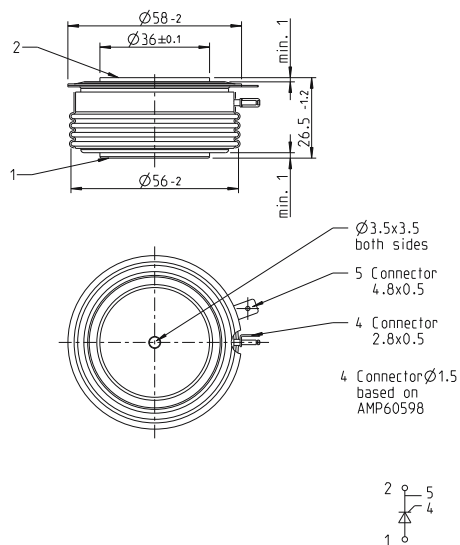


X) = evacuation pipe

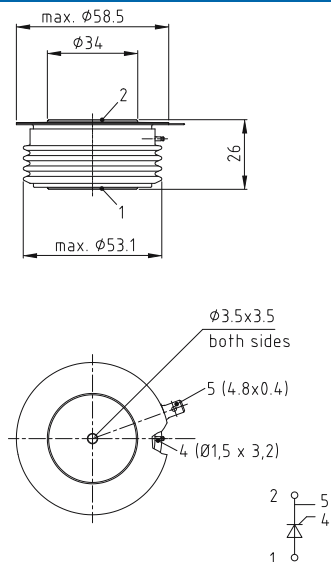
T58.26K



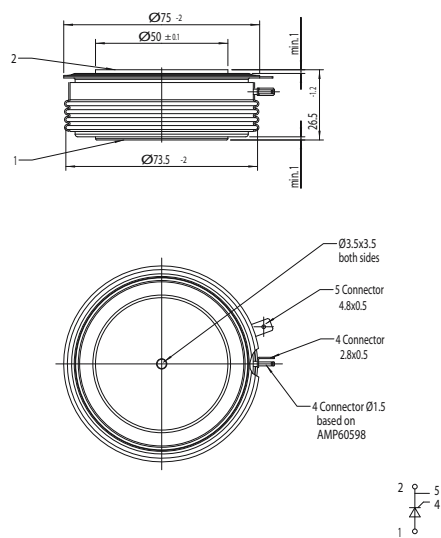
T58.26K0



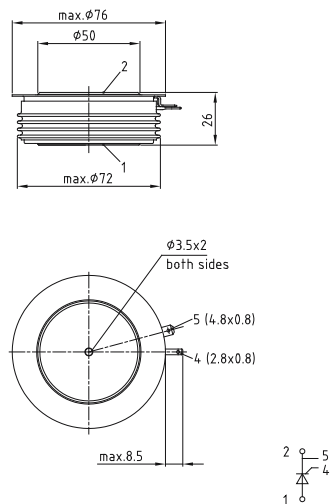
T58.26K1



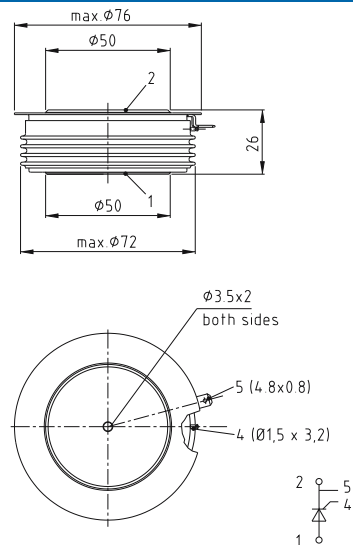
T75.26K0



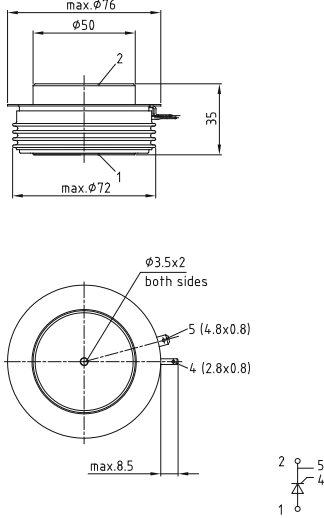
T76.26K



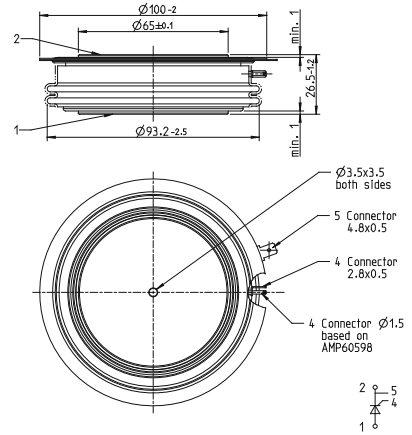
T75.26K1



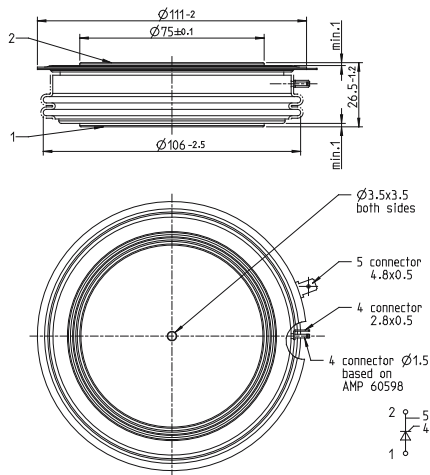
T76.35K



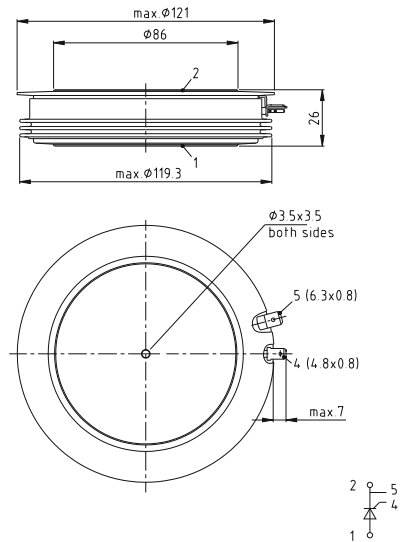
T100.26K



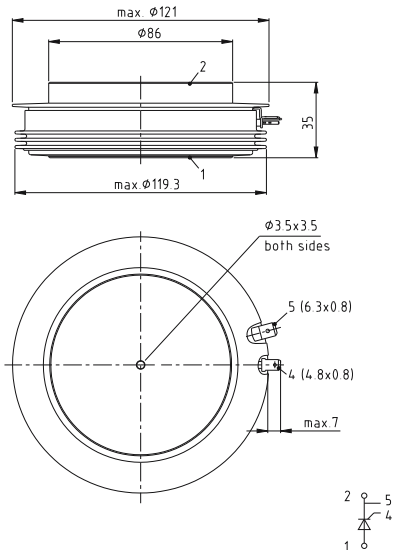
T111.26K



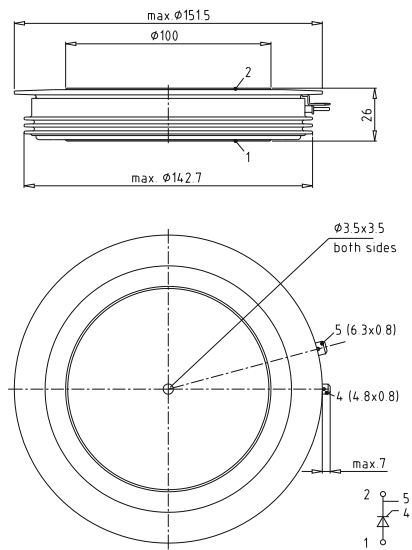
T120.26K



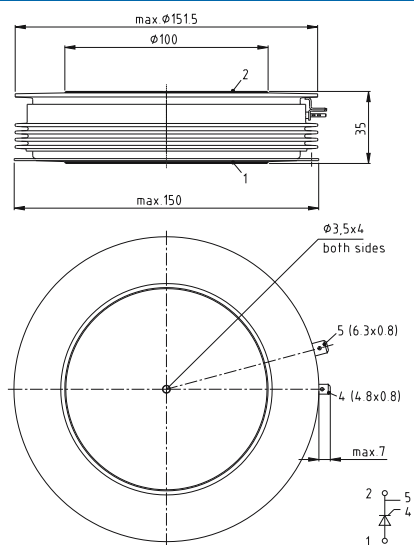
T120.35K



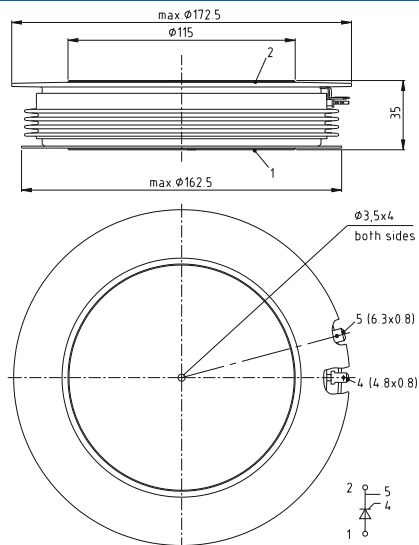
T150.26K



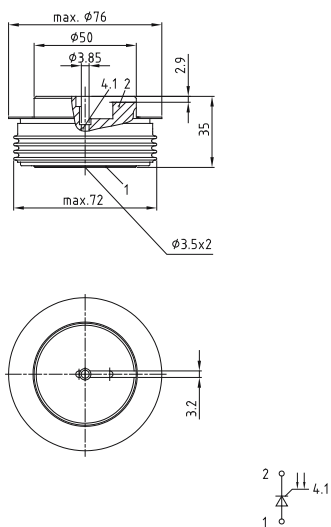
T150.35K



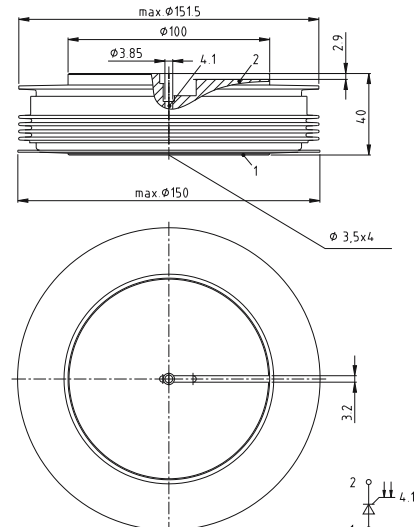
T172.35K



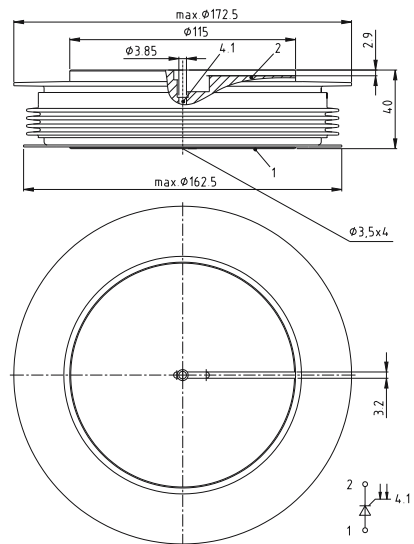
T76.35L



T150.40L



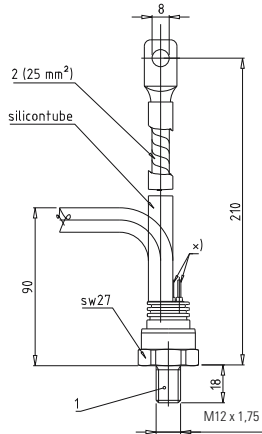
T172.40L



X) = evacuation pipe

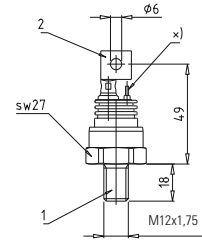


DSW27



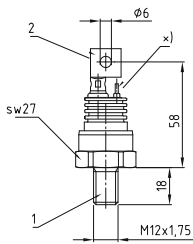
type	symbol	cathode	anode	prof. flex. tubing
N, S	⌘	rope (2)	case (1)	red
K, U	⌘	case (1)	rope (2)	blue

DSW27.1



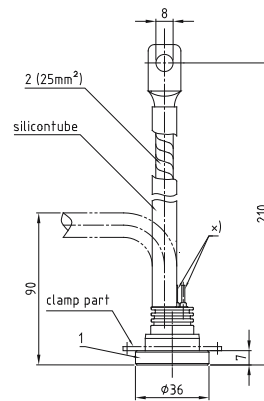
type	symbol	cathode	anode
N, S	⌘	connection pin	case (1)
K, U	⌘	case (1)	connection pin

DSW27.2



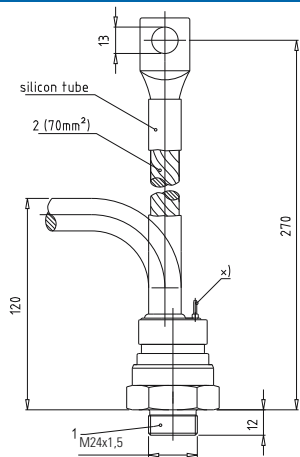
type	symbol	cathode	anode
N, S, A	⌘	connection pin (2)	case (1)
K, U, B	⌘	case (1)	connection pin (2)

DFL36



type	symbol	cathode	anode	prof. flex. tubing
N, S	⌘	rope (2)	case (1)	red
K, U	⌘	case (1)	rope (2)	blue

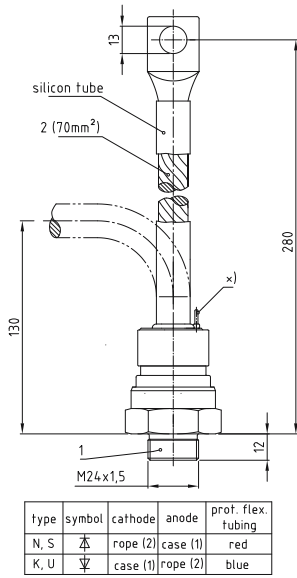
DSW41



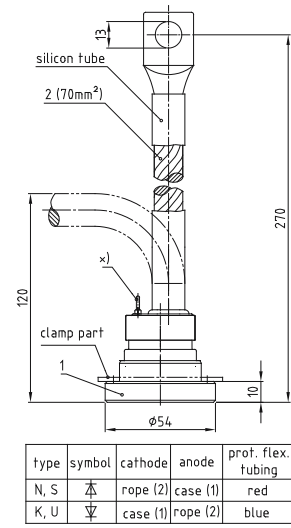
type	symbol	cathode	anode	prof. flex. tubing
N, S	⌘	rope (2)	case (1)	red
K, U	⌘	case (1)	rope (2)	blue

X) = evacuation pipe

DSW41.1

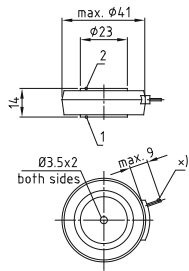


DFL54

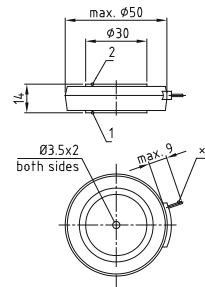


X) = evacuation pipe

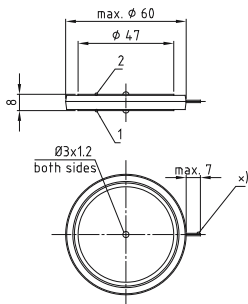
D41.14



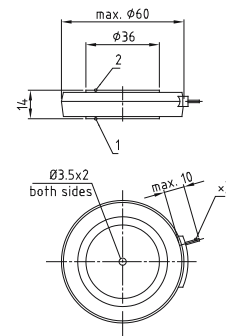
D50.14



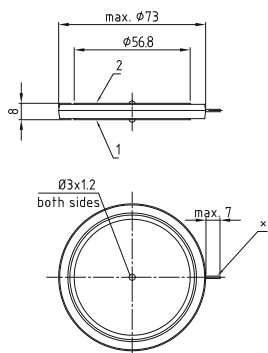
D60.8



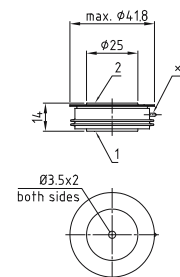
D60.14



D73.8

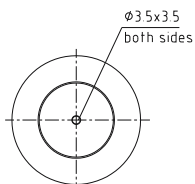
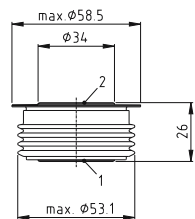


D41.14K

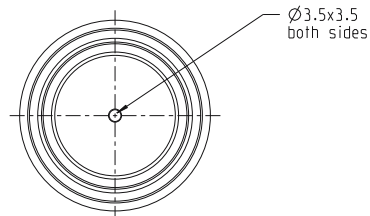
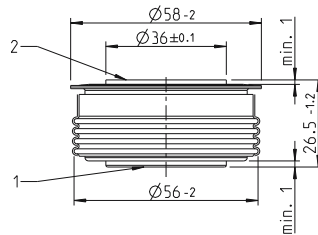


X) = evacuation pipe

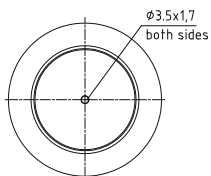
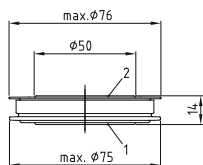
D58.26K



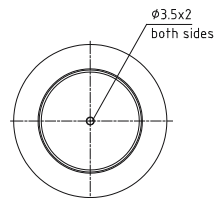
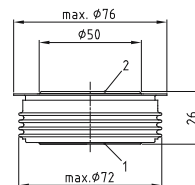
D58.26K0



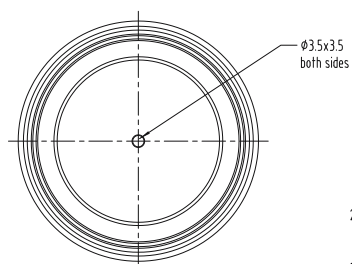
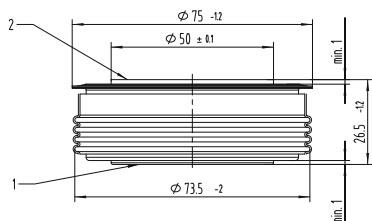
D76.14K



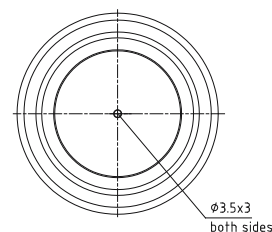
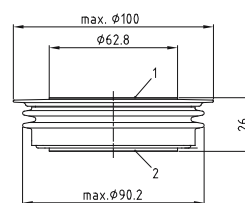
D76.26K



D75.26K0

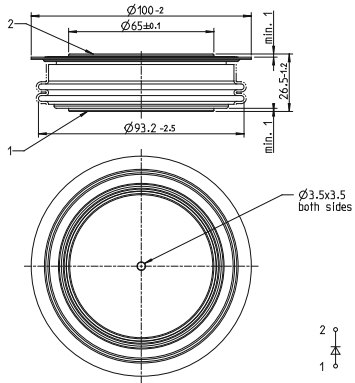


D100.26K

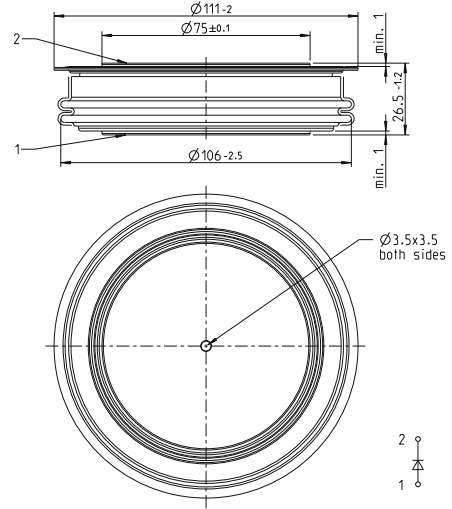


X) = evacuation pipe

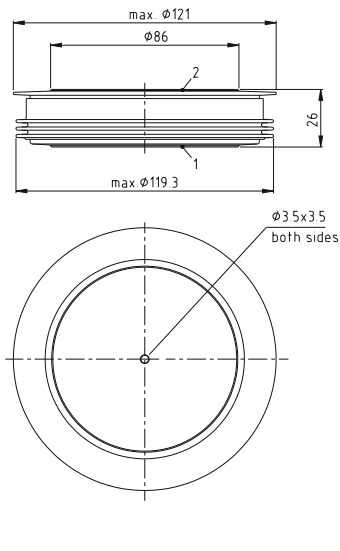
D100.26.K0



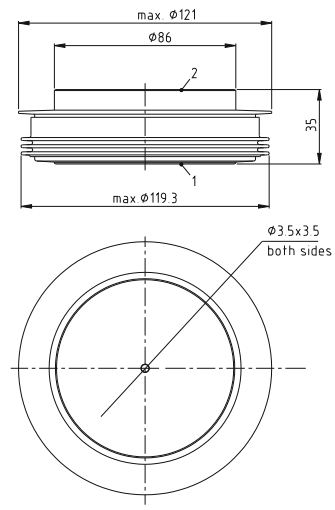
D111.26K0



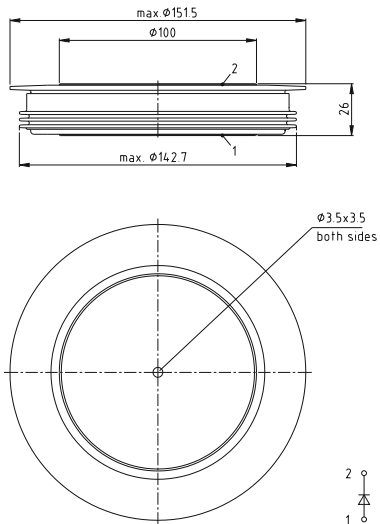
D120.26K



D120.35K

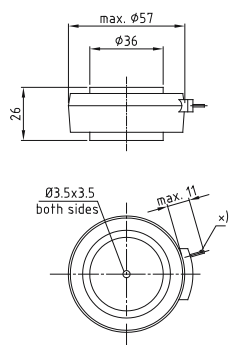


D150.26K

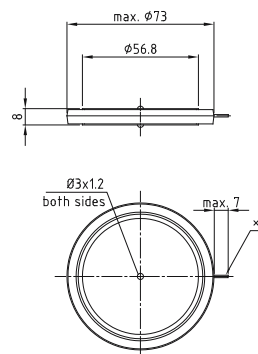


X) = evacuation pipe

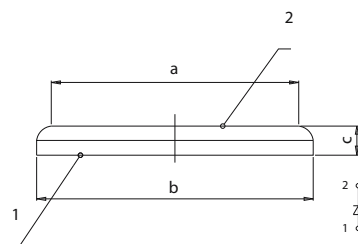
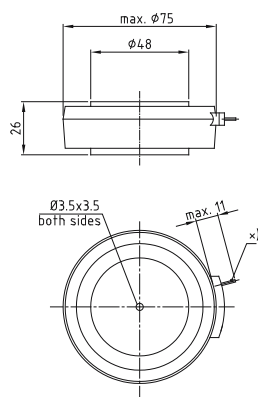
157.26



172.8



175.26



Designation	a	b	c
25DN06	Ø 22	Ø 25	3,6
38DN06	Ø 34	Ø 38	4,0
46DN06	Ø 43	Ø 46	4,0
56DN06	Ø 50	Ø 56	5,0
65DN06	Ø 58	Ø 65	5,0

**V50..M**

Hot Connection Bolt according to DIN 46200  
Zyl.-Bolt M5\*30 DIN 84-5.8  
Nutr B M8 DIN 439-MS  
Fastening Torque 6 Nm

with assembled cell  
equal to Cell-heights

Possible Outlets for Thyristor Control Leads

for components  $\phi 41\text{mm}$ ,  $h = 14\text{ mm}$   
Dust-degree 3 ( $V_{RRM} = 2900\text{ V}$ )  
Supply Voltage 1  $kV_{eff}$

V 50-14.45 M F = 4.5 kN  
V 50-14.60 M F = 6.0 kN

**V50..N**

Zyl. Bolt M5\*30 DIN 84-5.8

Labeling

Possible Outlets for Thyristor Control Leads

for components  $\phi 41\text{mm}$ ,  $h = 14\text{ mm}$   
Dust-degree 3 ( $V_{RRM} = 2900\text{ V}$ )  
Supply Voltage 1  $kV_{eff}$

V 50-14.45 N F = 4.5 kN  
V 50-14.60 N F = 6.0 kN

**V61..M**

Hot Connection Bolt acc. to DIN 46200  
Fastening Torque for the Nutr: 10 Nm

Nutr M10 DIN 934-MS  
Zyl. Bolt M6x35 DIN 84-6.8

with assembled cell  
equal to Cell-heights

Possible Outlets for Thyristor Control Leads

for components  $\phi 50\text{mm}$ ,  $h = 14\text{ mm}$   
Dust-degree 3 ( $V_{RRM} = 2900\text{ V}$ )  
Supply Voltage 1  $kV_{eff}$

V61-14.80 M F = 8.0 kN

**V61..N**

Zyl. Bolt M6\*35 DIN 84-5.8

equal to Cell-heights

Possible Outlets for Thyristor Control Leads

for components  $\phi 50\text{mm}$ ,  $h = 14\text{ mm}$   
Dust-degree 3 ( $V_{RRM} = 2900\text{ V}$ )  
Supply Voltage 1  $kV_{eff}$

V61-14.80 N F = 8 kN  
V61-14.100 N F = 10 kN

**V 72**

Nutr M10 Fastening Torque 10 Nm  
Zyl. Bolt M6\*45

for components  $\phi 60\text{mm}$ ,  $h = 14/26\text{ mm}$   
Dust-degree 3 ( $V_{RRM} = 4000/5000\text{ V}$ )  
Supply Voltage 1,4/1,8  $kV_{eff}$

Clamping device	c	l	a	b	d	e	f	F	U <sub>eff</sub>
V72-14.150M	14	45	68	49	32	36	40,5	15 kN	1400V
V72-26.150M	26	60	80	61	44	48	52,5	15 kN	1800V
V72-26.80 M	26	60	80	61	44	48	52,5	8 kN	1800V
V72-26.120M	26	60	80	61	44	48	52,5	12 kN	1800V
V72-26.120MS	26	60	80	61	44	49	53,5	12 kN	2100V

**V 89**

Bolt DIN 267 Zn 8 gl c B (A3K)  
Washer  
Clamping plate DIN 267 Zn 8 gl c B (A3K)  
pre-pressed power unit

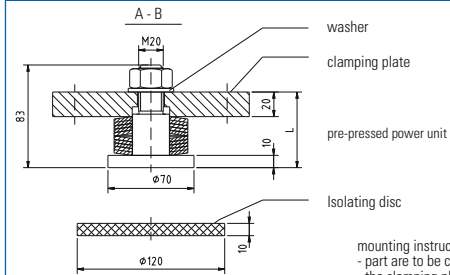
Isolating disc

mounting instructions:  
- part are to be centered  
- the clamping plate must be fixed equally with 4 Bolts M10 - 8.8 (not included) until the washer is untight up to a gap of 0.2 mm.  
- glue untightened washer to avoid noises

For max. 2  $kV_{eff}$  applications  
Dust-degree 3  
For higher voltage on request  
For components  $D = 75\text{ mm}$

Type	Mat.-No.	clamping force	L
V89-26.400N	6921	40KN	38
V89-26.300N	3586	30KN	39
V89-26.170N	12784	17KN	40

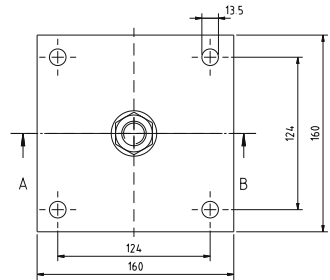
V 176



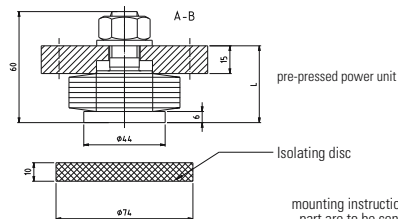
mounting instructions:  
 - part are to be centered  
 - the clamping plate must be fixed equally with 4 Bolts M12 - 8.8 (not included) until the washer is untight up to a gap of 0.2 mm.  
 - glue untightened washer to avoid noises

For max. 2.5 kVeff applications  
 Dust-degree 3  
 For components D = 150 mm

Type	Mat.-No.	clamping force	L
V176-35.650N	19610	65KN	57.5
V176-35.500N	19611	50KN	58.5
V176-35.400N	19612	40KN	59.5



V 100



mounting instructions:  
 - part are to be centered  
 - the clamping plate must be fixed equally with 4 Bolts M12 - 8.8 (not included) until the washer is untight up to a gap of 0.2 mm.  
 - glue untightened washer to avoid noises

For max. 2.5 kVeff applications  
 Dust-degree 3  
 For components D = 75 mm

Type	Mat.-No.	clamping force
V100-35.200N	23551	20KN

