

DIODES



Features:

- Voltage range of 100 to 10000 V
- Current range of 10 to 10200 A
- High reliability
- Optimized for low on-state voltage drop and for low reverse recovery charge
- Precision control Q_{RR} , V_{FM} for series and parallel connection
- Broad range of housings:
 - presspack;
 - stud (ceramic-metal and metal-glass);
 - flange
- Product portfolio:
 - rectifier diodes;
 - fast recovery diodes;
 - welding diodes;
 - avalanche diodes;
 - silicon surge voltage suppressors

Applications:

- Industrial AC and DC drives
- Oil-gas production and transport
- Power converters for traction
- Induction melting and heating
- Welding
- Electroplating
- Lighting equipment
- Uncontrollable and half-controlled rectifier bridges
- Inverters, choppers
- Uninterruptible supplies

RECTIFIER DIODES (STUD DESIGN)

Type	V_{RRM}	$I_{F(AV)}$ ($T_C, ^\circ C$)	I_{FSM} $t_p=10\text{ ms}$	V_{TO} $T_{j\max}$	r_T $T_{j\max}$	$R_{th(j-c)}$	$T_{j\max}$	M_d	Case
	V	A	κA	V	$m\Omega$	$^\circ C/W$	$^\circ C$	Nm	
D212-10, D212-10X	100-1600	10(150)	0.25	0.94	19.600	2.70	190	0.9-1.1	SD1
D212-16, D212-16X	100-1600	16(150)	0.27	0.84	11.250	1.90			
D212-25, D212-25X	100-1600	25(150)	0.34	0.78	8.150	1.25			
D222-32, D222-32X	100-1600	32(150)	0.46	0.86	6.500	0.90	190	1.4-1.8	SD2
D222-40, D222-40X	100-1600	40(150)	0.55	0.80	4.623	0.80			
D232-50, D232-50X	100-1600	50(150)	1.20	0.92	2.740	0.60	190	5.3-5,7	SD3
D232-63, D232-63X	100-1600	63(150)	1.30	0.82	2.850	0.50			
D232-80, D232-80X	100-1600	80(150)	1.30	0.76	2.360	0.40			
D141-100	300-1600	100(135)	2.20	0.95	1.600	0.40	190	6-10	SD4
D141-100X	300-1600	100(135)	2.00	0.95	1.600	0.40			
D151-125	300-1600	125(140)	3.00	0.90	1.300	0.30	190	10-20	SD5)
D151-160	300-1600	160(140)	4.50	0.90	1.000	0.24			
D161-200	300-1800	200(145)	5.50	0.90	0.850	0.15	190	20-30	SD6
D161-200X	300-1600	200(125)	5.50	0.90	0.850	0.15			
D161-250	300-1800	250(140)	6.40	0.90	0.640	0.15			
D161-250X	300-1600	250(140)	6.40	0.90	0.765	0.14			
D161-320	300-1600	320(130)	7.50	0.90	0.500	0.15			
D161-320X	300-1600	320(130)	7.50	0.90	0.650	0.13			
D161-400	300-1600	400(124)	8.25	0.90	0.350	0.13			
D261-250	2400-2600	250(113)	5.50	0.88	0.590	0.15	160	20-30	SD6
D271-250	2600-3000	250(130)	5.50	1.02	0.510	0.090	160	25-35	SD7
D371-250	4000-4400	250(116)	5.40	1.34	0.980	0.090			
D271-320	2000-2600	320(123)	6.50	0.92	0.450	0.090			
D171-400	300-1800	400(145)	14.0	0.90	0.560	0.085			

RECTIFIER DIODES (PRESS PACK DESIGN)

Type	V_{RRM}	$I_{F(AV)}$ $T_C=85^\circ C$	I_{FSM} $t_p=10ms$	V_{TO} $T_{j\max}$	r_T $T_{j\max}$	$R_{th(j-c)}$	$T_{j\max}$	F_m	Case
	V	A	κA	V	$m\Omega$	$^\circ C/W$	$^\circ C$	kN	
up to 1200V									
D123-630	200-1000	880	9.0	0.72	0.350	0.080	190	6	PD21
D133-1600	200-1000	1810	18	0.72	0.147	0.036	175	10	PD31
D143-2000	200-1000	2400	24	0.73	0.110	0.027	175	15	PD41
D153-6300	200-400	6930	50	0.80	0.026	0.011	180	22	PD50
D253-4000	200-1000	4100	65	0.82	0.037	0.017	190	26	PD53
D163-4000	200-1000	4700	55	0.73	0.040	0.015	175	33	PD63
D173-6300	200-1000	7530	75	0.73	0.025	0.010	175	45	PD73
up to 2200V									
D123-500	1000-2200	690	7.5	0.77	0.540	0.080	180	6	PD21
D133-1250	1200-2200	1480	16	0.77	0.250	0.036	180	10	PD31
D243-1600	1200-2200	2000	22	0.77	0.180	0.027	175	15	PD41
D153-2500	1200-2200	3440	37	0.77	0.080	0.018	175	26	PD53
D163-3200	1200-2200	4080	48	0.77	0.060	0.016	175	33	PD63
D173-5000	1200-2200	6410	65	0.77	0.040	0.010	175	45	PD73
D183-6300	1200-2200	7460	90	0.77	0.040	0.008	175	70	PD83
D193-8000	1200-2200	9100	98	0.85	0.029	0.0065	175	80	PD93
up to 3400V									
D123-400	2400-3200	550	5.5	0.85	0.850	0.08	175	6	PD22
D233-1000	2400-3400	1240	11.0	0.85	0.380	0.036	175	10	PD32
D433-1000	2400-3400	1240	11.0	0.85	0.380	0.036	175	10	PD33
D243-1250	2400-3200	1640	18.5	0.85	0.290	0.027	175	15	PD42
D153-2000	2400-3200	2830	33.0	0.85	0.130	0.018	175	26	PD53
D163-2500	2400-3200	3380	42	0.85	0.097	0.016	175	33	PD63
D173-4000	2400-3200	5290	53	0.85	0.065	0.010	175	45	PD73
D183-5000	2400-3200	5690	80	0.85	0.080	0.008	175	70	PD83
D193-6300	2400-3200	8500	90	0.85	0.037	0.0065	175	80	PD93

RECTIFIER DIODES (PRESS PACK DESIGN)

Type	V_{RRM}	$I_{F(AV)}$ $T_C=85^\circ\text{C}$	I_{FSM} $t_p=10\text{ms}$	V_{TO} $T_{j\max}$	r_T $T_{j\max}$	$R_{th(j-c)}$	$T_{j\max}$	F_m	Case
	V	A	kA	V	m Ω	$^\circ\text{C/W}$	$^\circ\text{C}$	kN	
up to 4400V									
D123-320	3400-4200	410	4.2	0.87	1.370	0.080	150	6	PD22
D223-400	3400-4200	530	5.5	0.85	0.850	0.085	150	6	PD23
D233-800	3400-4400	920	7.5	0.90	0.599	0.036	160	10	PD32
D433-800	3400-4400	920	7.5	0.90	0.599	0.036	160	10	PD33
D343-1000	3400-4400	1210	13	0.90	0.460	0.027	160	15	PD42
D153-1600	3400-4200	2100	27	0.90	0.206	0.018	160	26	PD53
D163-2000	3400-4200	2520	31	0.90	0.154	0.016	160	33	PD63
D173-3200	3400-4400	3940	43	0.90	0.103	0.010	160	45	PD73
D183-4000	3400-4200	4680	60	0.90	0.095	0.008	160	70	PD83
D193-5000	3400-4200	7300	67	0.85	0.040	0.0065	160	80	PD93
up to 5200V									
D123-250	4400-5000	310	3.5	0.92	2.200	0.080	150	6	PD22
D223-320	4400-5000	364	4.2	0.87	1.370	0.085	160	6	PD23
D233-630	4400-5200	740	6.0	0.90	0.840	0.036	150	10	PD32
D433-630	4400-5200	740	6.0	0.90	0.840	0.036	150	10	PD33
D343-800	4400-5200	940	9.5	0.92	0.700	0.027	150	15	PD43
D153-1250	4400-5000	1650	25	0.92	0.310	0.018	150	26	PD53
D163-1600	4400-5000	1980	28	0.92	0.230	0.016	150	33	PD63
D173-2500	4400-5200	3060	37	0.95	0.155	0.010	150	45	PD73
D183-3200	4400-5000	4000	50	0.95	0.110	0.008	150	70	PD83
D193-4000	4400-5000	4950	58	0.94	0.088	0.0065	150	80	PD93
up to 6500V									
D123-200	5200-6000	240	3.0	1.0	3.100	0.080	140	6	PD22
D223-200	5200-6500	230	3.0	1.0	3.100	0.085	140	6	PD23
D223-250	5200-6000	300	3.5	0.92	2.200	0.085	150	6	PD23
D333-500	5200-6000	580	5.0	1.0	1.420	0.036	150	10	PD32
D433-500	5200-6000	580	5.0	1.0	1.420	0.036	150	10	PD33
D243-630	5200-6000	840	8.0	0.9	0.900	0.027	150	15	PD42
D443-630	5200-6000	840	8.0	0.9	0.90	0.027	150	15	PD43
D153-1000	5200-6000	1470	20	1.0	0.400	0.018	150	26	PD53
D163-1250	5200-6500	1490	21	1.0	0.350	0.016	140	33	PD63
D173-2000	5200-6500	2530	29	1.0	0.250	0.010	150	45	PD73
D183-2500	5200-6500	3170	40	1.0	0.200	0.008	150	70	PD83
D193-3200	5200-6500	4180	45	1.0	0.135	0.0065	150	80	PD93
up to 8000V									
D543-630	7000-8000	651	11	1.2	1.20	0.027	140	15	PD44
D453-800	7000-8000	933	23	1.2	0.90	0.018	140	26	PD54
D373-1600	7000-8000	1830	24	1.2	0.40	0.010	140	45	PD74
up to 10000V									
D543-500	9000-10000	560	10	1.5	1.50	0.027	140	15	PD44
D453-630	9000-10000	794	22	1.5	1.20	0.018	140	26	PD54
D373-1250	9000-10000	1403	23	1.5	0.70	0.010	140	45	PD74

FLANGE DESIGN HIGH VOLTAGE RECTIFIER DIODE D185-500

Type	V_{RRM}	$I_{F(AV)}$ $T_C=100^\circ\text{C}$	I_{FSM} $t_p=10\text{ms}$	V_{TO} $T_{j\max}$	r_T $T_{j\max}$	$R_{th(j-c)}$	$T_{j\max}$	F_m	w	Case
	V	A	kA	V	m Ω	$^\circ\text{C/W}$	$^\circ\text{C}$	Nm	g	
D185-500	3200-4000	614	15	0.95	0.43	0.061	160	16	620	FD3

AVALANCHE DIODES

Type	V_{RRM}	$I_{F(AV)}$ ($T_C, ^\circ C$)	I_{FSM} $t_p=10\text{ ms}$	V_{TO} $T_{j\text{ max}}$	r_T $T_{j\text{ max}}$	P_{RSM} $t_p=100\ \mu s$	$R_{th(j-c)}$	$T_{j\text{ max}}$	M_d/F_m	Case
	V	A	kA	V	m Ω	kW	$^\circ C/W$	$^\circ C$	Nm/ kN	
up to 1800V										
DA212-10, DA212-10X	400-1600	10(120)	0.25	1.03	16.20	2.5	2.700			SD1
DA212-16, DA212-16X	400-1600	16(120)	0.27	0.93	9.15	2.5	1.900	160	0.9-1.1	
DA212-25, DA212-25X	400-1600	25(120)	0.34	0.83	7.35	2.5	1.250			
DA222-32, DA222-32X	400-1600	32(120)	0.46	0.91	5.83	3.0	0.900	160	1.4-1.8	SD2
DA222-40, DA222-40X	400-1600	40(120)	0.55	0.82	4.38	3.0	0.800			
DA232-50, DA232-50X	400-1600	50(120)	1.2	0.97	2.86	5.0	0.600	160	5.0-6.2	SD3
DA232-63, DA232-63X	400-1600	63(120)	1.3	0.87	2.51	5.0	0.500			
DA232-80, DA232-80X	400-1600	80(120)	1.3	0.78	2.12	5.0	0.400			
DA161-200	400-1800	200(115)	7.5	0.92	0.680	16	0.130	150	20-30	SD6
DA171-320	400-1800	320(115)	10	1.00	0.500	16	0.085	150	25-35	SD7
DA123-320	400-1600	320(113)	5.5	0.90	0.830	16	0.075	150	6	PD21
DA133-500	400-1600	500(123)	12	0.85	0.410	16	0.040	150	10	PD32
DA153-2000	1600-2000	200(100)	30	0.90	0.185	16	0.020	175	22	PD53
up to 2800V										
DA243-1000	2000-2600	1100(110)	14	0.85	0.30	16	0.027	160	15	PD42
DA153-1600	2200-2600	1600(100)	26	1.00	0.30	16	0.020	175	22	PD53
DA253-2500	1600-2800	2500(90)	36	0.88	0.130	20	0.020	175	22	
DA173-4000	1600-2400	3860(100)	50	1.00	0.08	16	0.011	175	45	PD73
up to 3600V										
DA243-800	2800-3400	880(110)	11	1.00	0.50	16	0.027	160	15	PD42
DA153-1250	2200-3200	1250(115)	26	1.10	0.35	16	0.020	175	22	PD53
DA253-1600	2200-3600	1600(115)	32	0.90	0.189	20	0.020	175	22	
DA173-3200	2400-3200	3200(105)	45	1.10	0.124	16	0.011	175	45	PD73
up to 4500V										
DA243-630	3600-4400	760(110)	9	1.10	0.700	16	0.027	160	15	PD42
DA253-1250	3200-4500	1250(100)	28	1.32	0.440	20	0.020	175	22	PD53
up to 5200V										
DA153-1000	3800-5000	1000(122)	18	1.30	0.540	16	0.020	175	22	PD53
up to 6000V										
DA153-800	4400-6000	800(90)	12	1.31	0.740	16	0.020	150	22	PD53

FAST RECOVERY DIODES

Type	V_{RRM}	$I_{F(AV)}$ ($T_C, ^\circ C$)	I_{FSM} $t_p=10\text{ms}$	V_{TO} $T_{j\text{ max}}$	r_T $T_{j\text{ max}}$	t_{rr} $di/dt=-50A/\mu s$	$R_{th(j-c)}$	$T_{j\text{ max}}$	M_d/F_m	Case
	V	A	kA	V	m Ω	μs	$^\circ C/W$	$^\circ C$	Nm/ kN	
up to 1800V										
DF212-10, DF212-10X	400-1400	10 (100)	0.18	1.20	32.0	0.50 - 1.00	2.50	150	0.9-1.1	SD1
DF212-16, DF212-16X	400-1400	16 (100)	0.25	1.20	20.0	0.50 - 1.00	1.60			
DF212-20, DF212-20X	400-1400	20 (100)	0.31	1.20	16.0	0.63 - 1.00	1.20			
DF222-25, DF222-25X	400-1400	25 (100)	0.40	1.20	13.0	0.50 - 1.00	1.00	150	1.4-1.8	SD2
DF222-32, DF222-32X	400-1400	32 (100)	0.50	1.20	10.0	0.63 - 1.00	0.80			
DF232-40, DF232-40X	400-1400	40 (100)	0.60	1.20	8.0	0.50 - 1.00	0.60	150	5-6.2	SD3
DF232-50, DF232-50X	400-1400	50 (100)	0.75	1.20	6.0	0.63 - 1.00	0.50			
DF232-63, DF232-63X	400-1400	63 (100)	0.95	1.20	5.0	0.63 - 1.00	0.40			
DF141-80	400-1600	80 (79)	2.5	1.10	4.4	1.6	0.45	150	6-10	SD4
DF141-80X	400-1600	80 (79)	2.2	1.10	4.4	1.6	0.45			
DF151-125	400-1600	125 (92)	4.0	1.15	2.2	2.0	0.25	150	10-20	SD5
DF151-125X	400-1600	125 (92)	3.5	1.15	2.2	2.0	0.25	150		
DF351-160, DF351-160X	600-1400	160 (59)	3.5	1.40	1.56	3.2;4.0	0.25	140		
DF351-200, DF351-200X	600-1400	200 (60)	4.3	1.05	1.1	3.2;4.0	0.25	140	140	SD6
DF361-250, DF361-250X	600-1400	250 (58)	4.5	1.20	1.6	3.2;4.0;5.0	0.15	140		
DF361-320, DF361-320X	600-1400	320 (56)	5.3	0.80	1.2	3.2,4.0,5.0	0.15	150	16	PD42)
DF343-800	600-1800	800(80)	12.5	1.30	0.60	4.0;5.0;6.3;8.0	0.035			
DF343-1000	600-1800	1000(77)	14.5	1.20	0.35	5.0;6.3;8.0	0.035	150		

FAST RECOVERY DIODES

Type	V_{RRM}	$I_{F(AV)}$ ($T_C=85^\circ\text{C}$)	I_{FSM} $t_p=10\text{ms}$	V_{TO} $T_{j,max}$	r_T $T_{j,max}$	t_{rr} $di/dt=-100\text{A}/\mu\text{s}$	$R_{th(j-c)}$	$T_{j,max}$	M_d/F_m	Case
	V	A	kA	V	m Ω	μs	$^\circ\text{C}/\text{W}$	$^\circ\text{C}$	Nm/ kN	
up to 2600V										
DF141-63	1600-2600	70	2.0	1.20	5.0	1.0; 2.0	0.45	150	6-10	SD4
DF141-63X	1600-2500	70	2.2	1.20	5.0	2.0	0.45	150	6-10	SD4
DF323-250	1600-2400	390	4.5	1.10	0.96	4.0	0.08	150	4.5	PD21
DF423-250	1600-2600	390	4.0	1.10	0.96	2.5	0.08	150	4.5	PD21
DF333-400	1600-2400	630	6.5	1.20	0.88	4.0	0.04	150	4.5	PD32
DF433-400	1600-2600	630	6.5	1.20	0.88	4.0	0.04	150	4.5	PD32
DF443-500	1600-2600	900	12	0.95	0.50	6.3	0.035	150	16	PD42
DF453-1000	1600-2600	1230	25	1.10	0.50	2.0	0.020	150	24	PD53
DF273-2000	1000-2400	2980	48	1.05	0.127	3.2;4.0;5.0;6.3;	0.011	150	45	PD73
up to 3400V										
DF343-500	3000-3600	630	10.5	1.55	0.90	5.0	0.035	150	16	PD42
up to 4600V										
DF323-200	3000-4600	230	3.0	1.40	2.70	5.0	0.08	140	4.5	PD22
DF423-200	3000-4600	230	2.7	1.40	2.70	3.2	0.08	140	4.5	PD22
DF443-320	3000-4600	670	5.0	1.35	0.60	8.0	0.035	140	16	PD42
DF353-800	3000-4600	860	9.5	1.40	0.84	6.3	0.020	140	24	PD53
DF453-800	3000-4600	863	16	1.40	0.84	2.5	0.020	140	24	PD53
DF173-1600	3000-4500	1700	32	1.4	0.305	8.0	0.012	140	45	PD73-1
up to 6000V										
DF443-250	4000-6000	620	4.0	1.60	0.60	8.0	0.035	140	16	PD42

SILICON SURGE VOLTAGE SUPPRESSORS

Features:

- Diffusion p-n-p structure
- Symmetric blocking characteristics with avalanche breakdown capability

Applications:

- Effective protection against repetitive and non-repetitive over-voltages
- Applicable for operation with thyristors

Type	V_N	I_{DRM}, I_{RRM}	V_{BR}	E_A	β	$R_{th(i-c)}$	$T_{j,max}$	M_d	F	Case
	V	mA	V	J	%/ $^\circ\text{C}$	$^\circ\text{C}/\text{W}$	$^\circ\text{C}$	Nm	kN	
SVS261-10	600-1800	5	V_N+100	10.0	0.15	0.120	125	20-30	-	SD6
SVS223-15	1800-2200	10	V_N+100	15.0	0.15	0.080	125	-	5	PD22
SVS423-15	2200-4600	10	V_N+200	15.0	0.15	0.080	125	-	5	PD22
SVS333-15	400-2200	10	V_N+100	15.0	0.15	0.036	125	-	10	PD32
SVS433-15	2400-4400	10	V_N+200	15.0	0.15	0.036	125	-	10	PD32
SVS343-15	800-2200	20	V_N+100	15.0	0.15	0.027	125	-	15	PD42
SVS443-15	2600-4400	20	V_N+200	15.0	0.15	0.027	125	-	15	PD42
SVS353-15	1600-2200	20	V_N+100	15.0	0.15	0.018	125	-	26	PD53
SVS453-15	2800-4400	20	V_N+200	15.0	0.15	0.018	125	-	26	PD53

ROTOR DEVICES



Features:

- Voltage range of 400 to 2800 V
- Current range of 160 to 630 A
- Flange design (terminals – round copper flange (base plate) and copper pipe)
- Diodes of direct and reverse polarity
- By means of special arrangement centrifugal forces are applied not to silicon chip but to case, providing safe operation in large mechanical force conditions
- Product portfolio: thyristor and diodes

Applications:

- Brushless excitation systems of power electric machines

THYRISTOR

Type	$V_{DRM},$ V_{RRM}	$I_{T(AV)}$ $T_C=85^\circ\text{C}$	I_{TSM} $t_p=10\text{ms}$	$V_{T(TO)}$ $T_{j\max}$	r_T $T_{j\max}$	$(di_T/dt)_{cr}$ $T_{j\max}$	$(dv_D/dt)_{cr}$ $T_{j\max}$	t_q typ	$R_{th(j-c)}$	$T_{j\max}$	F_m	Case
	V	A	kA	V	m Ω	A/ μs	V/ μs	μs	$^\circ\text{C/W}$	$^\circ\text{C}$	Nm	
T2-160*	400-1000	160	3.5	1.13	0.94	100	20-1000	160	0.16	125	16	FT1

* - not for new design

DIODES

Type	V_{RRM}	$I_{F(AV)}$ $T_C=100^\circ\text{C}$	I_{FSM} $t_p=10\text{ms}$	V_{TO} $T_{j\max}$	r_T $T_{j\max}$	$R_{th(j-c)}$	$T_{j\max}$	F_m	Case
	V	A	kA	V	m Ω	$^\circ\text{C/W}$	$^\circ\text{C}$	Nm	
D105-630, D105-630X	2000-2800	630(100)	15	1.00	0.400	0.06	175	16	FD2
B6-200, B6-200X*	400-1600	200(100)	6	0.92	0.95	0.13	140	16	FD1
D275-200	2000-2600	200(139)	8	0.80	0.74	0.09	160	16	FD3
D275-200X	2000-2400	200(139)	8	0.80	0.74	0.09	160	16	FD3

* - not for new design

<p>FT1 w = 290 g</p>	<p>FD1 w = 290 g</p>	<p>FD2 w = 580 g</p>	<p>FD3 w = 330 g</p>
--------------------------	--------------------------	--------------------------	--------------------------

OUTLINES

SD1 w = 6 g	SD2 w = 12 g	SD3 w = 27 g	FD3 w = 620 g
SD4 w = 90 g	SD5 w = 165 g	SD6 w = 265 g	SD7 w = 465 g
PD10 w = 34 g	PD21 w = 70 g	PD22 w = 91 g	
PD23 w = 100 g	PD31 w = 100 g	PD32 w = 180 g	PD33 w = 200 g

OUTLINES

PD41 w = 160 g	PD42 w = 240 g	PD43 w = 300 g
PD44 w = 320 g	PD50 w = 150 g	PD53 w = 550 g
PD54 w = 580 g	PD63 w = 710 g	PD73 w = 1200 g
PD73-1 w = 1100 r.	PD74 w = 1300 r.	
PD83 w = 1500 r.	PD93 w = 3000 r.	

LETTER SYMBOLS

Symbol	Terms
V_{RRM}	Repetitive peak reverse voltage
V_{DRM}	Repetitive peak off-state voltage
V_D	DC off-state voltage (maximum value)
V_R	DC reverse voltage (maximum value)
V_{BO}	Protective break overvoltage
V_{CES}	Collector-emitter voltage
V_{CESat}	Collector-emitter saturation voltage
V_{BR}	Avalanche breakdown voltage
V_{FM}	Peak forward voltage
V_{TM}	Peak on-state voltage
V_{TO}	Threshold voltage diodes
$V_{T(TO)}$	On-state threshold voltage thyristor
V_{GT}	Gate trigger direct voltage
V_{RGM}	Peak reverse gate voltage
V_{MG}	Insulating strength between power and control circuits
V_D	Continuous (direct) off-state voltage
V_N	Rated voltage for silicon surge voltage suppressor
I_D	Direct output current of the rectifier
I_R	Reverse current
I_{RRM}	Repetitive peak reverse current
I_{DRM}	Repetitive peak off-state current
I_{TM}	Peak on-state current
$I_{T(AV)}$	Maximum average on-state current
I_{TRMS}	Maximum RMS on-state current
$I_{F(AV)}$	Maximum average forward current
I_{FM}	Peak forward current
I_{FRMS}	Maximum RMS forward current
I_C	DC collector current
I_{CM}	Peak collector current
I_{FGM}	Peak collector current
I_{TORM}	Maximum repetitive turn-off current
I_{FSM}	Surge forward current
I_{TSM}	Surge on-state current
I_{GT}	Gate trigger current
$I_{G(ON)}$	Minimum on-state gate current
I_{GQM}	Peak gate turn-off current
I_{RM}	Peak reverse recovery current
I_{TRM}	Maximum permissible repetitive peak on-state current
I_{RCRM}	Gate trigger current for RCD
E_A	Avalanche breakdown energy
β	Temperature coefficient of avalanche breakdown voltage
T_C	Case temperature
T_{jmax}	Maximum permissible junction temperature
T_W	temperature of water
r_T	On-state slope resistance
P_{RSM}	Maximum surge avalanche power dissipation
P_{LM}	Minimum gate trigger light power
t_{rr}	Reverse recovery time
t_{gt}	Turn-on time (for thyristors)
t_{on}	Turn-on time (for IGBT)
t_{off}	Turn-off time (for IGBT)
t_q	Turn-off time (for thyristors)
t_{gq}	Gate controlled turn-of time
t_s	Storage time
t_f	Fall time
$(dv_p/dt)_{cr}$	Critical rate of rise of off-state voltage
$(dv_p/dt)_{com}$	Critical rate of rise of commutating voltage
$(di_T/dt)_{cr}$	Critical rate of rise of on-state current
$R_{th(j-c)}$	Thermal resistance junction to case
M_d	Mounting torque
F_m	Mounting force
V_{isol}	Insulation voltage (r.m.s.)
w	Weight
V_{cf}	Flow rate of the cooling air
Q	cooling water flow

WORLDWIDE

 <p>Russia Electrovipryamitel Center-M LLC</p> <p>111250, Moscow, Krasnokazarmennaya str.,12 Tel/Fax: (495) 362-05-89, 361-99-79 E-mail: evcm@mail.ru, evc@email.ru www.evc.ru</p>	 <p>Belarus ElectrovipryamitelBel LLC</p> <p>220036, Minsk, Domashevsky lane, 11-a, office 901 Тел./факс: (017) 213-67-51, 213-67-53 E-mail: electro@infonet.by</p>
 <p>Argentina INGRESS ELECRTONICA DE POTENCIA SRL</p> <p>Luciano Torrent 4779, B° San Lorenzo Sud CP: 5020 Ciudad de Cordoba, Provincia de Cordoba Tel: 0351 4507764 Web: www.ruso.us E-mail: info@ruso.us Contact person: Traductor Publico Jorge Daniel Villalon</p>	 <p>Bulgaria NEOLAB OOD</p> <p>Bldv. Tsarigradskoe road, bl.22, vh.2, g.k.Iztok, Sofia - 1113, Bulgaria Tel: +359 888 70 42 19 Tel/Fax: +3592 871 71 45 E-mail: ekowat@abv.bg Contact person: Christina Kisova</p>
 <p>China Anshan ANZA Electronic Power Co. Ltd</p> <p>Room 101, 16-2 HuiXianLi small area, SanDaoJie Street, Tiexi dist, Anshan Liaoning, P.R. China Tel/Fax: +86 (412) 858 2273 E-mail: anzanina@163.com nina@asanza.com Contact person: Bi Cheng I, Nina</p>	 <p>Europe (all countries) R3Tec GmbH</p> <p>Kornerstrasse 9, 55120 Mainz, Germany Tel: +49(0)6131/8859803 +49(0)6131/8859804 Web: www.r3tec-deutschland.de E-mail: jm.renard@r3tec.de Contact person: Jean-Marc Renard</p>
 <p>Germany PEP-Power Electronics Partner</p> <p>Raustrasse 17-1, 88400 Biberach, Germany Tel: +49 (0) 7351 31956 Fax: +49 (0) 7351 827723 Web: www.power-electronics-partner.de E-mail: hubert.berg@power-electronics-partner.de Contact person: Hubert Berg</p>	 <p>Germany AMS Technologies AG</p> <p>Fraunhoferstrasse 11 a, 82152 Planegg, Germany Tel: +49 89 895 77234 Fax: +49 89 895 77 199 Web:www.amstechnologies.com E-mail: AGeiger@amstechnologies.com Contact person: Andre Geiger</p>
 <p>India Chaitra Associates Power Electronics Pvt Ltd</p> <p>№ 406, 1st Floor, 1th Gross, 3rd Block, Jayanagar, Bangalore-560 011.India Tel: 0091-80-26635753 Fax: 0091-80-26635476 0091-80-22440667 E-mail: chaitra1@vsnl.com Contact person: Srinath Keshav</p>	 <p>Italy Poseico S.p.A.</p> <p>Via Pillea 42-44,16153 Genoa, Italy Tel: +39 010 8599400 Fax: +39 010 8682006 Web: www.poseico.com</p>

