
SPE

SILICON POWER ELECTRONICS

Rectifier Diodes

REVERSE/ NORMAL Type	V_{RRM} Volts	V_{FM} Volt	I_{RMS} Amp	I_F Amp	V_{FM} Volt	I_{RRM} mA	I_{FRM} Amp	I_{FSM} A	I^2t A^2s	T_{JC} °C	Tstg °C	$R_{\theta JC}$ °C/W	$R_{\theta CH}$ °C/W	C µF	R Ω	
SPR/SPN 6	400 to 2000	500-2200V	10	6	1.4	0.03		240	200	150	-40 to 180	2.3	1.00	0.02	500	DO-4
SPR/SPN12			20	12	1.4	0.1	60	250	300			2.0	0.50	0.02	500	
SPR/SPN16			25.5	16	1.4	0.1	80	300	450			1.20	0.50	0.02	500	
SPR/SPN25			40	25	1.5	0.1	150	400	800			1.0	0.35	0.05	200	DO-5
SPR/SPN40			65	40	1.5	0.2	200	500	1200			0.85	0.25	0.10	100	
SPR/SPN70			110	70	1.5	0.2	350	1200	7200			0.55	0.20	0.10	100	
SPR/SPN100			160	100	1.5	0.2	750	2300	25000			0.35	0.10	0.25	50	DO-8 & Flat
SPR/SPN150			250	150	1.5	025		3200	60000			0.30	0.08	0.25	50	
SPR/SPN250			400	250	1.5	1.0	1250	6000	180000			0.20	0.03	0.50	30	
SPR/SPN350			500	350	1.5	3.0	1750	7000	300000			0.20	0.15	1.00	20	DO-9 & FLAT
SPR/SPN400			628	400	1.5	3.0	2000	7000	245000			0.16	0.01	1.00	20	
SPR/SPN450			750	450	1.5	3.0	2500	7500	400000			0.11	0.01	1.00	20	
SPR/SPN500			750	500	1.5	800	2500	9000	405000			0.11	0.01			

Thyristors – Silicon Controlled Rectifier

Type	$I_{T(AV)}$ A	$I_{T(RMS)}$ A	V_{DRM} V_{RRM} V	V_{VTM} Volts Peak	I_{GT} (dc) mA	V_{GT} V	I_{hold} mA (dc)	dv/dt V/µs	di/dt A/µs	I_{TSM} A	I^2t A^2s	C µF	R Ω	I_{ROM}/ I_{FOM} At T_C 125°C	Pack
SPS 25	16	25	2000 to 200	2.2 @ 50 A	30	3.0	50	100	100	330	680	0.10	100	5.0	TO48
SPS 35	22	35		2.0 @ 30 A	40	3.0	70	100	100	360	545	0.10	100	5.0	TO48
SPS 45	30	45		1.90 @ 75 A	40	3.0	100	100	80	450	1000	0.10	100	8.0	TO48
SPS 63	40	63		2 @ 100 A	125	3.0	100	125	100	700	2500	0.22	68	8.0	TO65
SPS 80	50	80		1.7 @ 110 A	100	3.0	120	200	150	1300	8500	0.47	33	10.0	TO65
SPS 110	70	110		2 @ 200 A	120	3.0	120	200	200	1500	11250	0.47	33	10.0	TO94
SPS 160	100	160		2.1 @ 300 A	200	3.0	150	300	200	2000	20000	0.47	33	10.0	TO94
SPS 200	125	200		2.0 at 300 A	250	3.0	500	500	500	2000	20000	0.47	33	10.0	TO93
SPSC 180	150	235		1.21 @ 500 A	250	3.0	250	500	200	3500	61250	0.47	33	10.0	TO93
SPS 235	150	235		2.0 @t 500A	250	3.0	500	800	500	3500	61250	0.47	33	10.0	TO93
SPS 300	178	300		1.17 @ 500	250	3.0	500	800	500	4300	92450	0.47	33	10.0	TO93
SPS 400	250	400		2.05 @ 500	250	3.0	500	800	500	6000	180000	0.47	33	10.0	TO118
SPSC 290	300	550		1.65 @ 500	250	3.0	500	800	500	7000	245000	0.47	33	10.0	TO118
SPS 600	350	600		1.45 @ 500	250	3.0	500	800	200	11000	600000	0.47	33	10.0	TO118
SPS 650	400	650		1.5 @ 1000	250	3.0	500	500	200	11000	720000	0.47	33	10.0	TO118

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Isolated Single Phase Rectifier Bridge

Type	V_{RWM} V	V_{RRM} V	V_{RSM} V	V_{FM} V	I_{RRM} mA	I_D A			I_{TSM} A	I^2t A^2s	V_{ISOL} V A.C.	$R_{\theta JC}$ °C/W	$R_{\theta CH}$ °C/W	T_{JC} °C	T_{stg} °C	Snubber	
						I	M	H								R Ω	C µF
BSPR 4	40 to 640	100 to 1600	150 to 1750	1.25	0.10	1.5	2	4	50	12	2500	1.2	0.60	150	-40To150	50	0.01
BSPR 6				1.25	0.10	2	3	6	100	50		0.8	0.40	150		50	0.01
BSPR 10				1.30	0.10	3	5	10	125	78		0.3	0.50	150		50	0.01
BSPR 12				1.20	0.10	4	6	12	250	312		2.5	0.50	150		50	0.01
BSPR 16				1.30	0.10	5	8	16	300	450		2.00	0.40	150		33	0.05
BSPR 25				1.20	0.10	5	10	25	350	612		1.85	0.38	150		22	0.10
BSPR 35				1.35	0.10	5	11	35	450	1012		1.35	0.35	150		22	0.10
BSPR 40				1.30	0.10	5	13	35	500	1250		1.15	0.30	150		22	0.10
BSPR 50				1.40	0.10	10	22	48	750	2800		0.65	0.05	150		10	0.25
BSPR 60				1.40	0.10	12	25	55	1000	5000		0.8	0.15	150		10	0.25
BSPR 80				1.40	0.20	23	45	70	1050	5512		0.375	0.09	150		50	0.10
BSPR 100				1.40	0.20	26	54	90	1150	6612		0.275	0.08	150		50	0.10
BSPR 125				1.40	0.20	30	60	100	1250	7812		0.141	0.07	150		50	0.10

Isolated Three Phase Bridge Rectifier

Type	V_{RWM} V	V_{RRM} V	V_{RSM} V	V_{FM} V	I_{RRM} mA	I_D Amp			I_{TSM} A	I^2t A^2s	V_{ISOL} Volts A.C.	$R_{\theta JC}$ °C/W	$R_{\theta CH}$ °C/W	T_{JC} °C	Tstg °C	Snubber	
						I	M	H								R Ω	C µF
TSPR 16	40 to 640 V	100 to 1600 V	150 to 1800V	1.3	0.1	5	8	16	300	450	2500	2.00	0.40	150	-40 To 150	50	0.01
TSPR 25				1.4	0.1	6	11	25	450	1012	2500	0.80	0.15			50	0.05
TSPR 40				1.4	0.1	10	16	40	600	1800	2500	0.70	0.10			33	0.10
TSPR 50				1.5	0.1	10	22	60	750	2800	2500	0.45	0.05			33	0.10
TSPR 60				1.5	0.1	12	26	64	1000	5000	2500	0.70	0.10			33	0.10
TSPR 80				1.4	0.2	24	46	70	1050	5512	2500	0.38	0.09			50	0.10
TSPR 100				1.4	0.2	26	54	90	1150	6612	2500	0.27	0.08			50	0.10
TSPR 125				1.4	0.2	30	60	100	1250	7812	2500	0.14	0.07			50	0.10
TSPR 160				1.4	0.2	45	75	130	1800	16700	2500	0.17	0.08			50	0.10

Half Controlled Single Phase Module

Type	V_{DRM} V_{RRM} V	V_{RSM} V	I_D A			I_{TSM} A	I^2t A^2s	dv/dt V/µs	di/dt A/µs	I_H (max) mA	$I_{L(max)}$ mA	V_{GT} V	I_{GT} mA	V_{ISOL} Volts A.C.	Tj °C	$R_{\theta jc}$ °C/W	$R_{\theta jc}$ °C/W
			I	M	H												
SPHC 25	400 to 1600 V	500 to 1700 V	4	9	16	370	684	100	200	80	300	3	50	2500	-40 to 130	0.08	0.85
SPHC 35			6.5	14	22	400	800	200	200	200	700	3	80			0.06	0.65
SPHC 45			7	17	30	450	1012	200	200	200	700	3	100			0.05	0.45
SPHC 63			8	22	40	500	1250	200	200	200	700	3	100			0.04	0.25
SPHC 80			10	24	45	800	3200	500	280	200	700	3	100			0.04	0.25

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Full Controlled Single Phase Module

Type	V_{DRM} V_{RRM} Volts	V_{RSM} V	IDA			I_{TSM} A	I^2t A^2s	dv/dt V/µs	di/dt A/µs	I_H(max) Ma	I_L(max) mA	V_{GT} V	I_{GT} mA	V_{ISOL} V A.C.	Tj °C	$R_{\theta jc}$ °C/W	$R_{\theta jc}$ °C/W
			I	M	H												
SPFC-25	400 to 1600 V	500 to 1700 V	3	8	14	330	545	100	200	80	300	3	50	2500V	-40 to 130	0.08	0.85
SPFC-35			6	12	20	350	612	200	200	200	700	3	100			0.06	0.45
SPFC-45			7	15	28	400	800	200	200	200	700	3	100			0.05	0.45
SPFC-63			8	19	36	430	924	200	200	200	700	3	100			0.04	0.25

Triac

Type	I_T(A) (RMS)	V_{DRM} V_{RRM} V	V_{TM}(I_{TM}) V (A)	I_{GT}				I_{hold} mA	dv/dt V/µs	di/dt A/µs	I_{TSM} Amp	I_{ROM}/ I_{FOM} mA 125°C	Snubber	
				1 + +	2 + -	3 - -	4 - +						C µF	R Ω
SPT 4	04.0	200 to 1200V	1.6 (5)	15	15	15	20	25	20	10	25	1.0	0.05	470
SPT 6	06.0		1.7 (10)	25	25	25	40	50	80	10	85	3.0	0.05	470
SPT 8	08.0		1.5 (15)	25	25	25	40	50	80	100	90	3.0	0.05	470
SPT 10	10.0		1.5 (15)	40	50	40	50	60	80	100	100	3.0	0.05	470
SPT 12	12.0		1.4 (15)	40	50	40	50	60	80	100	120	3.0	0.05	470
SPT 15	15.0	200 to 800V	1.7 (20)	50	50	50	50	80	80	100	125	5.0	0.01	100
SPT 25	25.0		1.8 (30)	60	60	60	80	100	100	100	300	5.0	0.01	100
SPT 40	40.0		1.8 (50)	80	80	80	100	120	100	100	400	8.0	0.22	68
SPT 60	60.0		1.8 (75)	100	100	100	100	120	150	100	600	8.0	0.22	68
SPT 80	80.0		1.8 (120)	100	100	100	100	150	150	100	600	8.0	0.47	47

Isolated Thyristor- Thyristor Module

Type	V_{DRM} V_{RRM} Volts	V_{RSM} V	$I_{T(AV)}$ A	V_{TM} V	I_{TSM} KA	I^2t KA^2s	dv/dt V/µs	di/dt A/µs	I_{RRM} mA	I_H mA	V_{GT} V	I_{GT} mA	V_{ISOL} V A.C.
SPSS 35	400 to 1600 V	500 to 1700 V	22.5	2.30(75A)	0.32	0.512	500	100	2.0	100	3.0	50	2500 V
SPSS 45			30	1.80 (75A)	0.47	0.800	500	100	2.0	150	3.0	80	
SPSS 63			40	1.90 (75A)	0.80	3.200	500	200	3.0	150	3.0	100	
SPSS 80			50	1.65 (150A)	1.00	5.000	500	200	3.0	200	3.0	120	
SPSS 110			70	1.90 (300A)	1.60	12.80	500	200	2.5	150	3.0	150	
SPSS 160			100	1.65 (300A)	2.00	31.25	500	200	2.5	150	3.0	150	
SPSS 200			120	1.65 (300A)	2.25	110.45	500	200	2.5	150	3.0	120	
SPSS 240			150	1.95 (500A)	4.70	145.80	500	200	2.5	200	3.0	200	
SPSS 300			175	1.45 (500A)	6.00	145.80	500	200	2.5	250	3.0	220	
SPSS 350			210	1.60 (800A)	7.50	361.25	500	100	2.5	150	3.0	200	
SPSS 420			250	1.50 (800A)	8.00	405	500	100	2.5	300	3.0	200	
SPSS 500			300	1.40(800A)	10.0	600	500	125	2.5	300	3.0	200	
SPSS 550			350	1.6(850A)	11.0	600	500	200	2.5	300	3.0	300	
SPSS 650			400	1.55(850A)	13.0	845	500	200	2.5	300	3.0	300	
SPSS 800			500	1.5(850A)	17.0	14450	500	200	2.5	300	3.0	300	

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Isolated Thyristor-Diode Module

Type	V_{DRM} V_{RRM} V	V_{RSM} V	$I_{T(AV)}$ A	V_{TM} V	I_{TSM} A	I^2t KA^2 s	dv/dt V/µs	di/dt A/µs	I_{RRM} mA	I_H mA	V_{GT} V	I_{GT} mA	$R_{\theta jc}$ °C/W	$R_{\theta jc}$ °C/W
SPSD 35	400 to 1600 V	500 to 1700 V	22.50	2.30 (75A)	320	0.51	500	200	2.0	100	3.0	50	1.300	0.200
SPSD 45			30	1.80 (75A)	470	1.1	500	200	2.0	150	3.0	80	0.950	0.200
SPSD 63			40	1.90 (75A)	800	3.2	500	200	3.0	150	3.0	100	1.100	0.200
SPSD 80			50	1.65 (150A)	1000	5.00	500	200	3.0	200	3.0	120	0.600	0.200
SPSD 110			70	1.90 (300A)	1600	13	500	200	2.5	150	3.0	150	0.370	0.200
SPSD 160			100	1.65(300A)	2000	22	500	200	2.5	150	3.0	150	0.300	0.200
SPSD 200			120	1.65 (300A)	2250	25	500	200	2.5	200	3.0	120	0.320	0.200
SPSD 240			150	1.95 (500A)	4700	110	500	200	2.5	250	3.0	200	0.240	0.100
SPSD 300			175	1.45 (500A)	6000	145	500	200	2.5	150	3.0	200	0.220	0.075
SPSD 350			210	1.50 (750A)	8500	361	500	200	2.5	300	3.0	200	0.110	0.040
SPSD 420			250	1.40 (750A)	9000	405	500	200	2.5	300	3.0	200	0.090	0.030
SPSD 500			300	1.40(750A)	11000	600	500	200	2.5	300	3.0	200	0.075	0.025

ISOLATION VOLTAGE : 2500V A.C.

Isolated Diode- Diode module

Type	V_{DRM}/V_{RRM} V	V_{RSM} V	I_{TAV} A	I_{TRMS} A	I_{TSM} A	I^2t A^2s	V_T V	V_{ISOL} V A.C	r_T mΩ
SPFD 35	400 to 1600	500 to 1700	25	35	320	512	0.80 (I_F=230A)	2500	7
SPFD 45			30	45	400	800	1.95 (I_F=250A)		5
SPFD 63			40	63	550	1500	1.75 (I_F=230A)		5
SPFD 80			50	80	700	2450	1.55 (I_F=300A)		1.8
SPFD 110			70	110	1150	6612.5	0.75 (I_F=270A)		1.3
SPFD 160			100	160	2500	31250	1.25 (I_F=500A)		0.3
SPFD 200			125	200	2500	12500	1.35 (I_F=600A)		0.4
SPFD 240			150	240	6000	18000	1.25 (I_F=750A)		0.5
SPFD 350			175	300	6000	18000	1.25 (I_F=750A)		0.5
SPFD 430			260	430	11000	605000	1.25 (I_F=750A)		0.4
SPFD 500			300	500	11500	661000	1.25 (I_F=750A)		0.4

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Power Zener Diodes

Nom V_{ZT} (V)	International Type No		Type No				I_{ZT} (mA)			
	10W	50W	3W	10W	20W	50W	3W	10W	20W	50W
9.1	1N2973	1N3308	3Z9	10Z9	20Z9	50Z9	150	275	550	1370
10	1N2974	1N3309	3Z10	10Z10	20Z10	50Z10	125	250	500	1200
11	1N2975	1N3310	3Z11	10Z11	20Z11	50Z11	125	230	460	1100
12	1N2976	1N3311	3Z12	10Z12	20Z12	50Z12	100	210	420	1000
13	1N2977	1N3312	3Z13	10Z13	20Z13	50Z13	100	190	375	960
14	1N2978	1N3313	3Z14	10Z14	20Z14	50Z14	85	180	350	895
15	1N2979	1N3314	3Z15	10Z15	20Z15	50Z15	75	170	330	830
16	1N2980	1N3315	3Z16	10Z16	20Z16	50Z16	75	155	310	780
18	1N2982	1N3317	3Z18	10Z18	20Z18	50Z18	65	140	280	700
20	1N2984	1N3319	3Z20	10Z20	20Z20	50Z20	65	125	255	630
22	1N2985	1N3320	3Z22	10Z22	20Z22	50Z22	50	115	230	570
24	1N2986	1N3321	3Z24	10Z24	20Z24	50Z24	50	105	210	530
27	1N2988	1N3323	3Z27	10Z27	20Z27	50Z27	50	95	180	460
30	1N2989	1N3324	3Z30	10Z30	20Z30	50Z30	40	85	165	420
33	1N2990	1N3325	3Z33	10Z33	20Z33	50Z33	40	75	150	380
36	1N2991	1N3326	3Z36	10Z36	20Z36	50Z36	30	70	135	350
39	1N2992	1N3327	3Z39	10Z39	20Z39	50Z39	30	65	120	320
43	1N2993	1N3328	3Z43	10Z43	20Z43	50Z43	30	60	110	290
47	1N2995	1N3330	3Z47	10Z47	20Z47	50Z47	25	55	100	270
51	1N2997	1N3332	3Z51	10Z51	20Z51	50Z51	25	50	96	245
56	1N2999	1N3334	3Z56	10Z56	20Z56	50Z56	20	45	90	220
62	1N3000	1N3335	3Z62	10Z62	20Z62	50Z62	20	40	82	200
68	1N3001	1N3336	3Z68	10Z68	20Z68	50Z68	20	37	73	180
75	1N3002	1N3337	3Z75	10Z75	20Z75	50Z75	20	33	67	170
82	1N3003	1N3338	3Z82	10Z82	20Z82	50Z82	15	30	60	150
91	1N3004	1N3339	3Z91	10Z91	20Z91	50Z91	15	28	55	140
100	1N3005	1N3340	3Z100	10Z100	20Z100	50Z100	12	25	50	120
110	1N3007	1N3342	3Z110	10Z110	20Z110	50Z110	12	23	46	110
120	1N3008	1N3343	3Z120	10Z120	20Z120	50Z120	10	20	42	100
130	1N3009	1N3344	3Z130	10Z130	20Z130	50Z130	10	19	39	95
140	1N3010	1N3345	3Z140	10Z140	20Z140	50Z140	9	18	36	90
150	1N3011	1N3346	3Z150	10Z150	20Z150	50Z150	8	17	33	85
160	1N3012	1N3347	3Z160	10Z160	20Z160	50Z160	8	16	31	80
180	1N3014	1N3349	3Z180	10Z180	20Z180	50Z180	5	14	28	68
200	1N3015	1N3350	3Z200	10Z200	20Z200	50Z200	5	12	24	65

Package DO-4 for 3W and 10W
Package DO-5 for 20W and 50W

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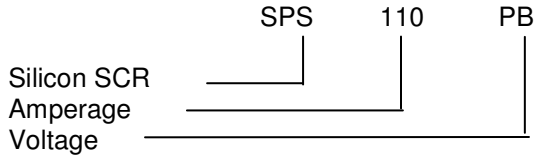
Coding System

Explanation of ordering code: Thyristor-SPS 110 PB



SP defines Silicon Power, Before SP First letter F and B indicate Fast Recovery. Bridge rectifier respectively. And T for 3 Bridge Combination.

FOR VOLTAGE GROUP:

A=100V, B=200V, D=400V, M=600V, N=800V, P=1000V, PB=1200V, PD=1400V
PE=1500V, PM=1600V, PN=1800V, L=2000V

SYMBOL

V_{RRM} : Max. rep. Peak reverse voltage which Includes the transient due to Commutation.

V_{RSM} : Non.rep peak reverse voltages.

V_{GT} : Gate triggering voltage.

T_{stg} : Storage temp. range.

di/dt : Critical rate of rise of on-state current. that will not initiate conduction.

$R_{\theta JC}$: Thermal resistance junction to case.

T_{JC} : Max. operating junction temp

P_{TAV} : Mean power loss

I_{FSM} : Rated surge (Non-rep) on-state current (10 ms half sine wave).

V_{TM} : Forward voltage Drop.

V_D : Maximum forward voltage

V_{DSM} : Non-rep peak off state voltage.

I_H : Holding current

I_L : Latching current

$I_{F(AV)}$: Max. mean forward current.

VRWM : The crest (peak) working voltage use For normal A.C. operation.

W : Mean power loss.

I_{TAV} : Maximum mean on state current.

t_q : Circuit commutated turn off time.

I_{FSM} : Surge (non-rep) forward current.

I_{GT} : Gate triggering current.

V_{DRM} : Max. rep. Peak off-state volt.

dv/dt : Critical rate of rise of off-state voltage.

$R_{\theta CH}$: Thermal resistance case to heatsink.

I_{RRM} : Max. average reverse current at rated VRRM at 125°C

It : Maximum forward current

T_{amb}: Ambient temperature

I_{FRM} : Rep. Peak on state current

I^2t : I^2t value for fusing

V_{FM} : Forward voltage drop.

t_{rr} : Reverse recovery time.

$I_{F(RMS)}$: Max. RMS forward current.

I_D : Maximum D.C. output current.

V_F : Forward voltage

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