



Solid State Devices, Inc.

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Designer's Data Sheet

Part Number/Ordering Information ^{1/}

SPD15 HF — —

Screening ^{2/}
 — = Not Screened
 TX = TX Level
 TXV = TXV
 S = S Level

Package Type

SMS = Surface Mount Square Tab
 GW = Gullwing
 BT = Button Tab

Voltage/Family

10 = 100V
 15 = 150V
 20 = 200V

SPD1510HF thru SPD1520HF Series

15 AMP HYPERFAST RECOVERY RECTIFIER

100 — 200 VOLTS, 30 nsec

FEATURES:

- Hyper fast reverse recovery: 30 nsec maximum ^{4/}
- High surge current: 450 A maximum
- Low forward voltage drop .95 V @15 A
- Hermetically sealed, void free construction
- High temperature category I eutectic metallurgical bond
- Depending on board configuration, two SPD1520HF devices can match the current output of larger and heavier DO-4 and TO-25X packages
- Weight: SMS – 0.45 g (typ), GW – 0.35 g (typ), BT – 0.3 g (typ)
- Surface mount components eliminate mounting hardware required for DO-4 and TO-25X packages
- Available in surface mount square tab, gullwing, and button tab versions
- Excellent thermal shock performance
- High temperature operation at junction and case temperature of 175°C
- TX, TXV, and S-level screening available ^{2/}

MAXIMUM RATINGS ^{3/}

RATING		SYMBOL	VALUE	UNIT
Peak Repetitive Reverse Voltage and DC Blocking Voltage	SPD1510HF	V_{RRM}	100	Volts
	SPD1515HF	V_{RWM}	150	
	SPD1520HF	V_R	200	
Average Rectified Forward Current (SMS $T_{EC} \leq 100^\circ\text{C}$) ^{5/}		I_O	15	Amps
Peak Surge Current (8.3 ms pulse, half sine wave, superimposed on I_O , V_{RWM} = rated, allow junction to reach equilibrium between pulses, $T_A = 25^\circ\text{C}$)		I_{FSM}	450	Amps
Operating & Storage Temperature		T_J and T_{STG}	-65 to +175	°C
Thermal Resistance	Surface Mount Square Tab (SMS)	$R_{\theta JE}$	3.5	°C/W
	Gullwing (GW)	$R_{\theta JL}$	4.5	
	Button Tab (BT)	$R_{\theta JC}$	2.0	

NOTES:

^{1/} For ordering information, price, operating curves, and availability- contact factory.

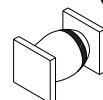
^{2/} Screening based on MIL-PRF-19500. Screening flows available on request.

^{3/} Unless otherwise specified, all electrical characteristics @ 25°C.

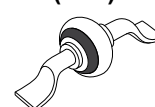
^{4/} $I_F = 1\text{A}$, $I_R = 1\text{A}$, $I_{RR} = 0.1\text{A}$, $T_A = 25^\circ\text{C}$

^{5/} Operating at higher I_O currents may be achieved based on specific application and device mounting if T_J is maintained below 175°C.

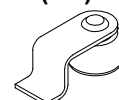
Surface Mount
Square Tab (SMS)



Gullwing
(GW)



Button Tab
(BT)



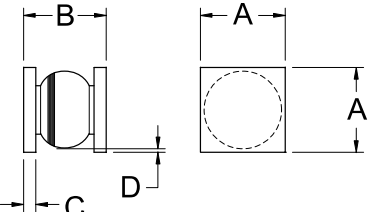
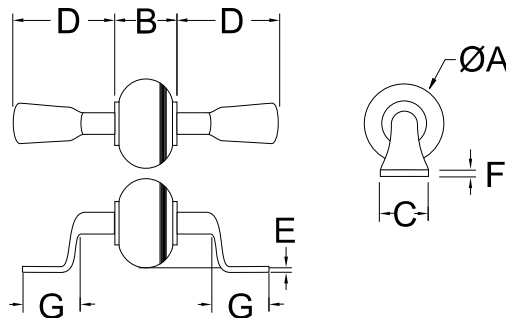
NOTE: All specifications are subject to change without notification.
 SCD's for these devices should be reviewed by SSDI prior to release.

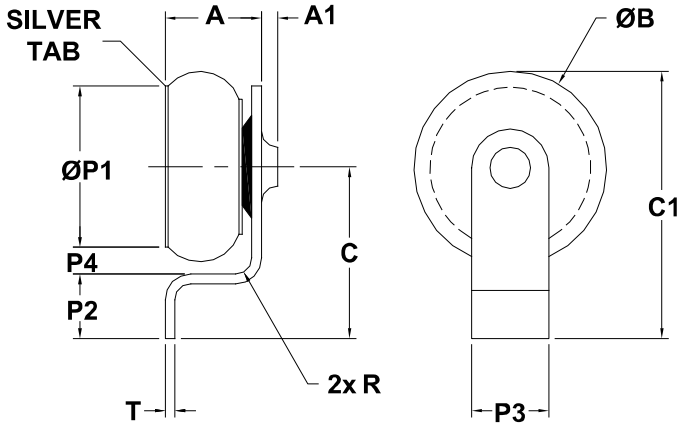
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SPD1510HF thru SPD1520HF Series

ELECTRICAL CHARACTERISTICS ^{3/}		SYM	MIN	TYP	MAX	UNIT
Instantaneous Forward Voltage Drop Pulsed	$I_F = 6 \text{ Adc}$	V_{F1}	--	--	0.86	Vdc
	$I_F = 15 \text{ Adc}$	V_{F2}	--	0.90	0.95	
	$I_F = 20 \text{ Adc}$	V_{F3}	--	--	1.00	
	$I_F = 15 \text{ Adc}, T_A = +125^\circ\text{C}$	V_{F4}	--	--	0.90	
	$I_F = 15 \text{ Adc}, T_A = +150^\circ\text{C}$	V_{F5}	--	--	0.86	
	$I_F = 15 \text{ Adc}, T_A = -55^\circ\text{C}$	V_{F6}	--	--	1.20	
Reverse Leakage Current At rated V_R , 300 μs pulse	$T_A = +25^\circ\text{C}$	I_{R1}	--	0.1	2	μA
	$T_A = +125^\circ\text{C}$	I_{R2}	--	15	100	μA
	$T_A = +150^\circ\text{C}$	I_{R3}	--	50	500	μA
Breakdown Voltage $I_R = 100 \mu\text{A}$	SPD1510HF	BV_R	110	--	--	V
	SPD1515HF		160	--	--	
	SPD1520HF		210	--	--	
Junction Capacitance $V_R = 10 \text{ Vdc}, f = 1 \text{ MHz}$		C_J	--	110	150	pF
Reverse Recovery Time $I_F = 0.5 \text{ A}, I_R = 1 \text{ A}, I_{RR} = 0.25 \text{ A}$		t_{rr}	--	--	30	nsec

Surface Mount Square Tab (SMS)			Gullwing (GW)		
DIMENSIONS (inches)			DIMENSIONS (inches)		
DIM	MIN	MAX	DIM	MIN	MAX
A	.157	.162	$\varnothing A$	.135	.155
B	.130	.175	B	.090	.115
C	.020	.030	C	.060	.100
D	.002	--	D	.150	.200
			E	.002	--
			F	.020	.028
			G	.090	.130
					

Button Tab (BT)			DIMENSIONS (in)		
			DIM	MIN	MAX
			A	.080	.115
			A1	--	.020
			$\varnothing B$	.135	.155
			C	.175	.195
			C1	.265 REF	
			P1	.090	.115
			P2	.055	.075
			P3	.090	.110
			P4	.060 REF	
			T	.008	.012
			R	.015 REF	

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