



**Solid State Devices, Inc.**

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**SPD1510HF thru  
 SPD1520HF Series**

**15 AMP  
 HYPERFAST RECOVERY  
 RECTIFIER  
 100 – 200 VOLTS, 30 nsec**

**Designer's Data Sheet**

**Part Number/Ordering Information <sup>1/</sup>**

SPD15 \_\_\_ HF \_\_\_

**L Screening <sup>2/</sup>**  
 \_\_\_ = 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

**FEATURES:**

- Hyper fast reverse recovery: 30 nsec maximum<sup>4/</sup>
- 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<sup>2/</sup>

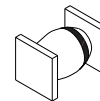
**MAXIMUM RATINGS <sup>3/</sup>**

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 $T_{EC} \leq 100^\circ C$ ) <sup>5/</sup>		$I_o$	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, $T_A = 25^\circ C$ )		$I_{FSM}$	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	

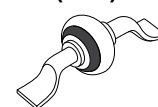
**NOTES:**

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

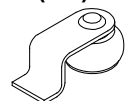
Surface Mount Square Tab (SMS)



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.

**DATA SHEET #: RC0173A**

**DOC**



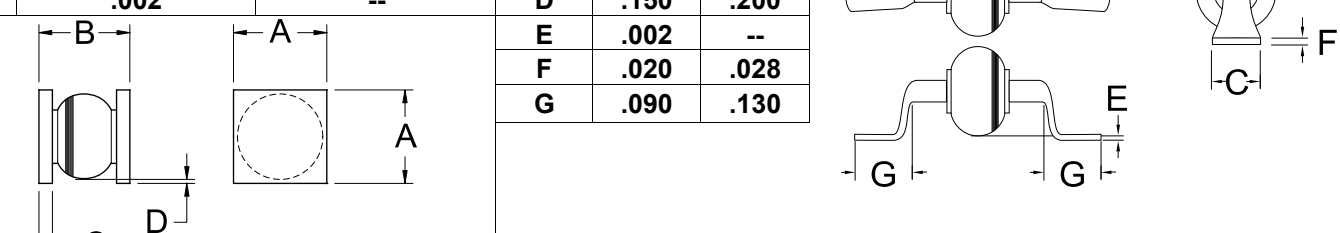
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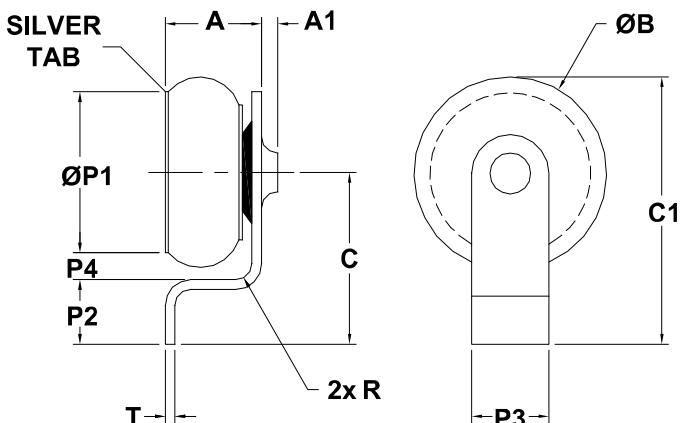
# SPD1510HF thru SPD1520HF Series

ELECTRICAL CHARACTERISTICS <sup>3/</sup>		SYMBOL	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 $\mu\text{s}$ pulse	$T_A = +25^\circ\text{C}$	$I_{R1}$	0.1	2	$\mu\text{A}$
	$T_A = +125^\circ\text{C}$	$I_{R2}$	15	100	$\mu\text{A}$
	$T_A = +150^\circ\text{C}$	$I_{R3}$	50	500	$\mu\text{A}$
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) DIMENSIONS (inches)			Gullwing (GW) 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	