

## LOW DROP POWER SCHOTTKY RECTIFIER

### MAIN PRODUCT CHARACTERISTICS

<b>I<sub>F(AV)</sub></b>	<b>3 A</b>
<b>V<sub>RRM</sub></b>	<b>25 V</b>
<b>T<sub>j (max)</sub></b>	<b>150°C</b>
<b>V<sub>F (max)</sub></b>	<b>0.44 V</b>

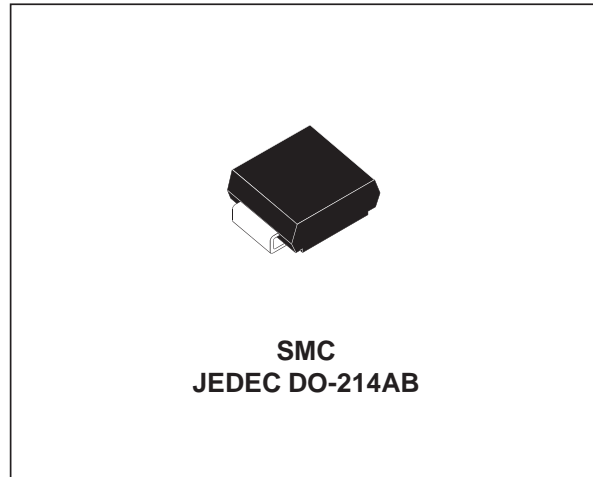
### FEATURES AND BENEFITS

- VERY LOW FORWARD VOLTAGE DROP FOR LESS POWER DISSIPATION
- OPTIMIZED CONDUCTION/REVERSE LOSSES TRADE-OFF WHICH MEANS THE HIGHEST EFFICIENCY IN THE APPLICATIONS
- HIGH POWER SURFACE MOUNT MINIATURE PACKAGE
- AVALANCHE CAPABILITY SPECIFIED

### DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters.

Packaged in SMC, this device is especially intended for use as an antiparallel diode on synchronous rectification freewheel MOSFET's at the secondary of 3.3V SMPS and DC/DC units.



### ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V <sub>RRM</sub>	Repetitive peak reverse voltage		25	V
I <sub>F(RMS)</sub>	RMS forward current		10	A
I <sub>F(AV)</sub>	Average forward current	T <sub>L</sub> = 115°C δ = 0.5	3	A
I <sub>FSM</sub>	Surge non repetitive forward current	tp = 10 ms Sinusoidal	75	A
I <sub>R(RM)</sub>	Repetitive peak reverse current	tp = 2 μs square F=1kHz	1	A
I <sub>R(SM)</sub>	Non repetitive peak reverse current	tp = 100 μs square	1	A
T <sub>stg</sub>	Storage temperature range		- 65 to + 150	°C
P <sub>ARM</sub>	Repetitive peak avalanche power	tp = 1μs T <sub>j</sub> = 25°C	1500	W
T <sub>j</sub>	Maximum operating junction temperature *		150	°C
dV/dt	Critical rate of rise of reverse voltage		10000	V/μs

\* :  $\frac{dP_{tot}}{dT_j} < \frac{1}{R_{th(j-a)}}$  thermal runaway condition for a diode on its own heatsink

# STPS3L25S

## THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to lead	20	°C/W

## STATIC ELECTRICAL CHARACTERISTICS

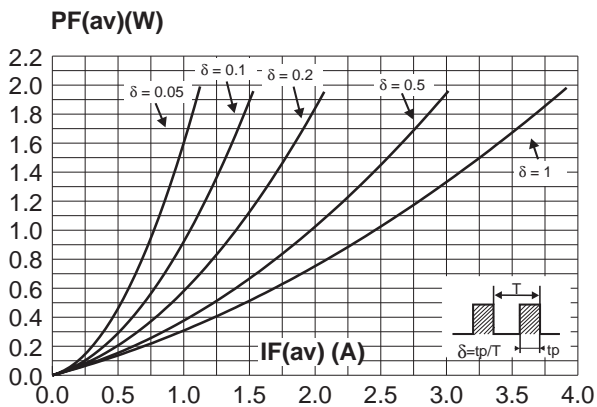
Symbol	Tests Conditions	Tests Conditions	Min.	Typ.	Max.	Unit
$I_R^*$	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = V_{RRM}$		90	$\mu\text{A}$
		$T_j = 125^\circ\text{C}$		15	30	$\text{mA}$
$V_F^*$	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 3\text{ A}$		0.49	V
		$T_j = 125^\circ\text{C}$		0.37	0.44	
		$T_j = 25^\circ\text{C}$	$I_F = 6\text{ A}$		0.6	
		$T_j = 125^\circ\text{C}$		0.5	0.58	

Pulse test: \*  $t_p = 380\ \mu\text{s}$ ,  $\delta < 2\%$

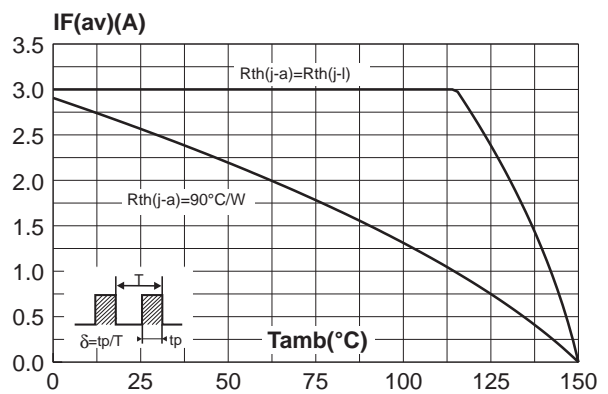
To evaluate the maximum conduction losses use the following equation :

$$P = 0.3 \times I_{F(AV)} + 0.047 \times I_{F(RMS)}^2$$

**Fig. 1:** Average forward power dissipation versus average forward current.

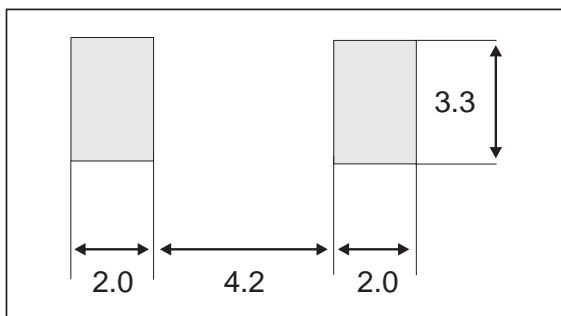


**Fig. 2:** Average forward current versus ambient temperature ( $\delta=0.5$ ).



**PACKAGE MECHANICAL DATA**  
 SMC

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	2.90	3.2	0.114	0.126
c	0.15	0.41	0.006	0.016
E	7.75	8.15	0.305	0.321
E1	6.60	7.15	0.260	0.281
E2	4.40	4.70	0.173	0.185
D	5.55	6.25	0.218	0.246
L	0.75	1.60	0.030	0.063

**FOOT PRINT DIMENSIONS** (in millimeters)


Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS3L25S	S23	SMC	0.243g	2500	Tape & reel

- BAND INDICATES CATHODE
- EPOXY MEETS UL94,V0