



STPS2L30A

LOW DROP POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

I_{F(AV)}	2 A
V_{RRM}	30 V
T_{j (max)}	150 °C
V_{F (max)}	0.375 V

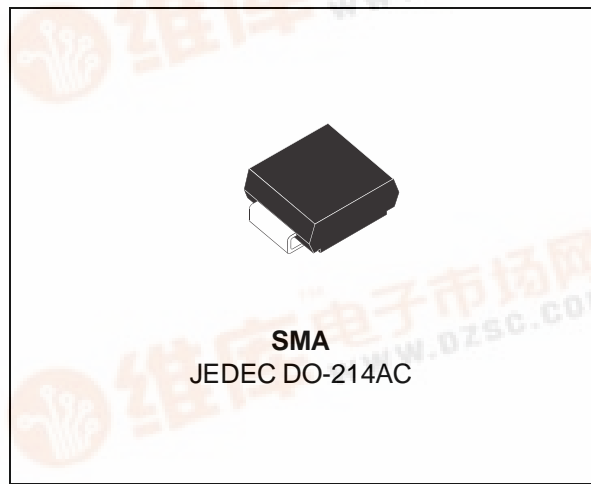
FEATURES AND BENEFITS

- LOW COST DEVICE WITH LOW DROP FORWARD VOLTAGE FOR LESS POWER DISSIPATION.
- OPTIMIZED CONDUCTION/REVERSE LOSSES TRADE-OFF WHICH LEADS TO THE HIGHEST YIELD IN THE APPLICATIONS.
- HIGH POWER SURFACE MOUNT MINIATURE PACKAGE.

DESCRIPTION

Single Schottky rectifier suited to Switched Mode Power Supplies and high frequency DC to DC converters, freewheel diode and integrated circuit latch up protection.

Packaged in SMA, this device is especially intended for use in parallel with MOSFETs in synchronous rectification.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit
V _{RRM}	Repetitive peak reverse voltage		30	V
I _{F(RMS)}	RMS forward current		10	A
I _{F(AV)}	Average forward current	T _L = 120°C δ = 0.5	2	A
I _{FSM}	Surge non repetitive forward current	tp = 10 ms Sinusoidal	75	A
I _{R(RM)}	Repetitive peak reverse current	tp = 2 μs F = 1kHz square	1	A
I _{R(SM)}	Non repetitive peak reverse current	tp = 100 μs square	1	A
T _{stg}	Storage temperature range		- 65 to + 150	°C
T _j	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



STPS2L30A

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
$R_{th(j-l)}$	Junction to lead	30	$^{\circ}\text{C}/\text{W}$

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameters	Tests Conditions	Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^{\circ}\text{C}$	$V_R = V_{RRM}$		200	μA
		$T_j = 100^{\circ}\text{C}$		6	15	mA
V_F^*	Forward voltage drop	$T_j = 25^{\circ}\text{C}$	$I_F = 2\text{ A}$		0.45	V
		$T_j = 125^{\circ}\text{C}$		0.325	0.375	
		$T_j = 25^{\circ}\text{C}$	$I_F = 4\text{ A}$		0.53	
		$T_j = 125^{\circ}\text{C}$		0.43	0.51	

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

To evaluate the conduction losses use the following equation :

$$P = 0.24 \times I_{F(AV)} + 0.068 I_{F(RMS)}^2$$

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

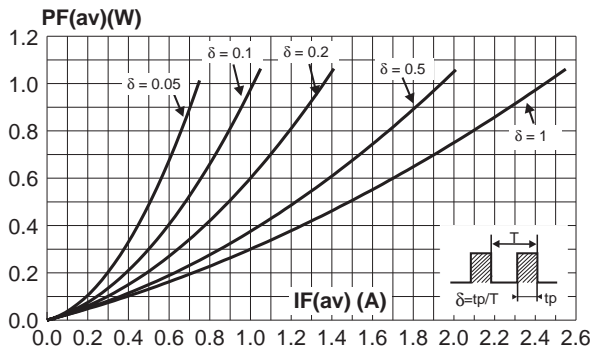


Fig. 3: Non repetitive surge peak forward current versus overload duration (maximum values).

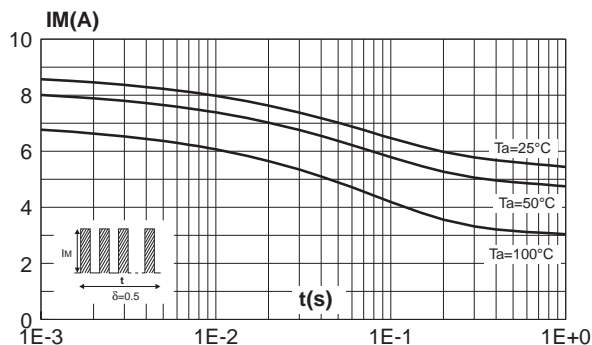


Fig. 2: Average forward current versus ambient temperature ($\delta=0.5$).

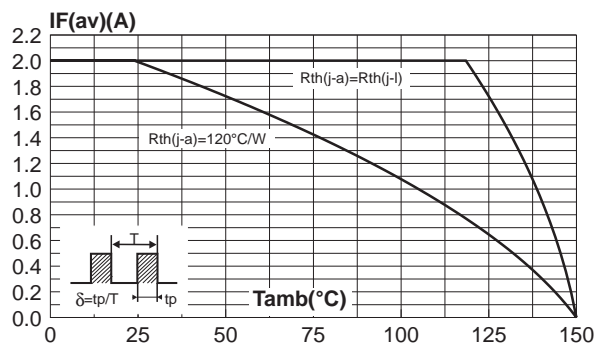


Fig. 4: Relative variation of thermal impedance junction to ambient versus pulse duration.

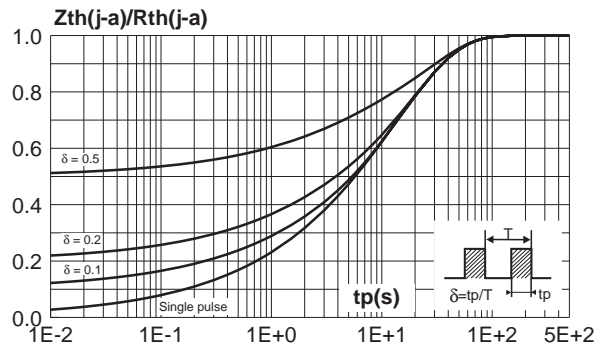


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

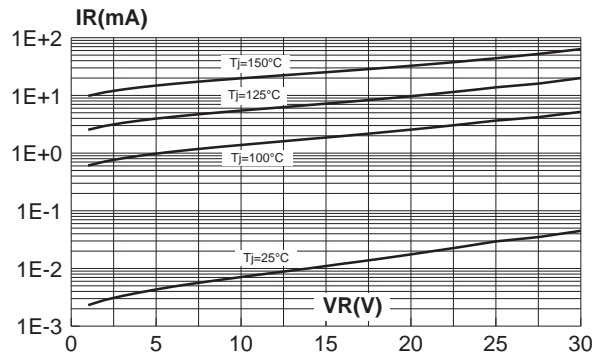


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

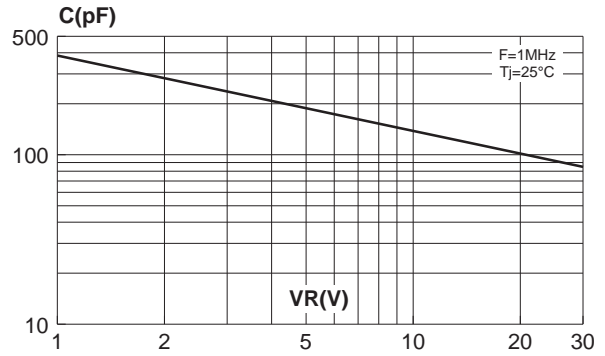


Fig. 7-1: Forward voltage drop versus forward current (maximum values, high level).

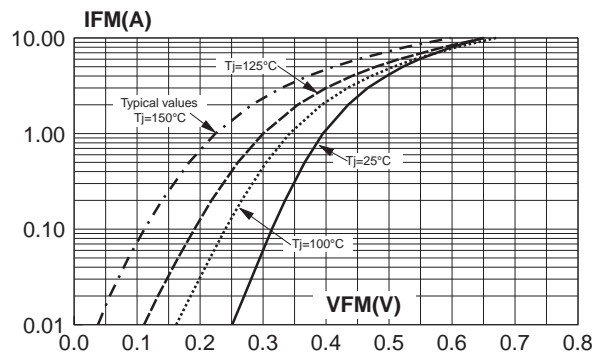


Fig. 7-2: Forward voltage drop versus forward current (typical values, low level).

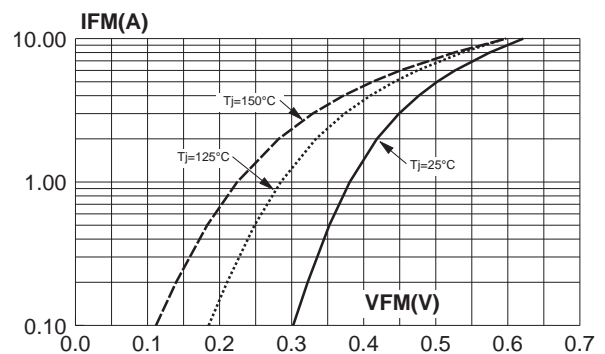


Fig. 7-3: Forward voltage drop versus forward current (maximum values, low level).

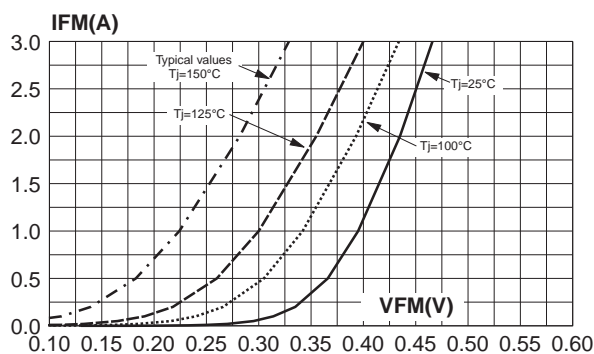
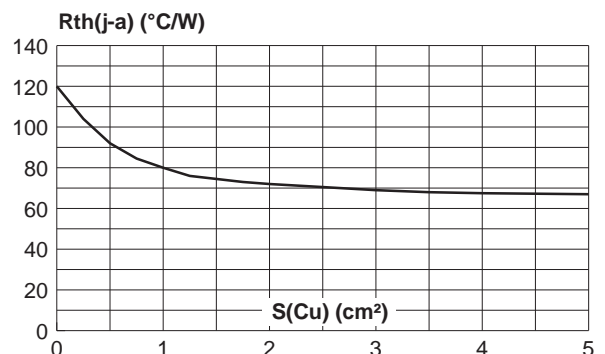


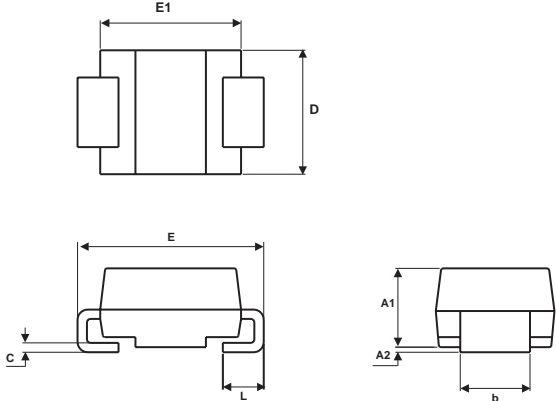
Fig. 8: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, copper thickness: ...)



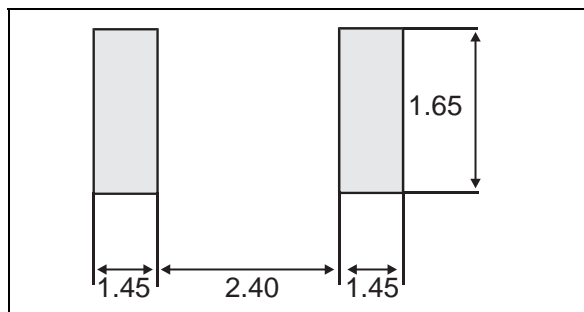
STPS2L30A

PACKAGE MECHANICAL DATA

SMA

	DIMENSIONS				
	REF.	Millimeters		Inches	
		Min.	Max.	Min.	Max.
	A1	1.90	2.70	0.075	0.106
A2	0.05	0.20	0.002	0.008	
b	1.25	1.65	0.049	0.065	
c	0.15	0.41	0.006	0.016	
E	4.80	5.60	0.189	0.220	
E1	3.95	4.60	0.156	0.181	
D	2.25	2.95	0.089	0.116	
L	0.75	1.60	0.030	0.063	

FOOT PRINT DIMENSIONS (in millimeters)



Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS2L30A	G30	SMA	0.068g	5000	Tape & reel

- Band indicates cathode
- Epoxy meets UL94,V0

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1999 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia
Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>