

POWER SCHOTTKY RECTIFIER

MAIN PRODUCT CHARACTERISTICS

$I_{F(AV)}$	3 A
V_{RRM}	150 V
$T_j(max)$	175°C
$V_F(max)$	0.66 V

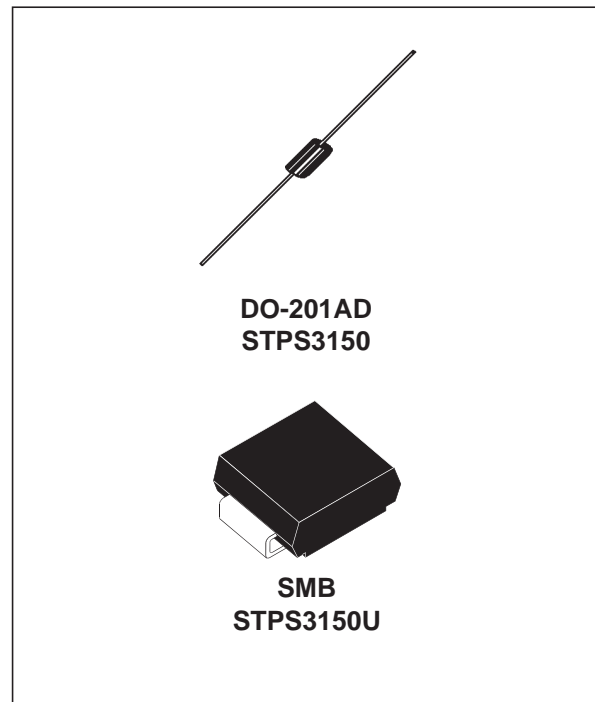
FEATURES AND BENEFITS

- NEGLIGIBLE SWITCHING LOSSES
- LOW FORWARD VOLTAGE DROP FOR HIGHER EFFICIENCY AND EXTENDED BATTERY LIFE
- LOW THERMAL RESISTANCE

DESCRIPTION

150V Power Schottky rectifier are suited for switch Mode Power Supplies on up to 24V rails and high frequency converters.

Packaged in SMB and Axial, this device is intended for use in consumer & computer applications like TV, STB, PC and DVD where low drop forward voltage in required to reduce power dissipation.



ABSOLUTE RATINGS (limiting values)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		150	V	
$I_{F(RMS)}$	RMS forward current		15	A	
$I_{F(AV)}$	Average forward current	$T_L = 130^\circ\text{C} \delta = 0.5$ SMB	3	A	
		$T_L = 140^\circ\text{C} \delta = 0.5$ DO-201AD			
I_{FSM}	Surge non repetitive forward current	Half wave, single phase, 50Hz	SMB	100	A
			DO-201AD	150	
T_{stg}	Storage temperature range		- 65 to + 150	°C	
T_j	Maximum junction temperature *		175	°C	
dV/dt	Critical rate of rise of reverse voltage (rated V_R , $T_j = 25^\circ\text{C}$)		10000	V/ μs	

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

STPS3150/U

THERMAL RESISTANCES

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to leads	Lead length = 10 mm	DO-1201AD	20
			SMB	15

STATIC ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Tests conditions		Min.	Typ.	Max.	Unit
I_R^*	Reverse leakage current	$T_j = 25^\circ\text{C}$	$V_R = 150\text{V}$		0.4	2.0	μA
		$T_j = 125^\circ\text{C}$			0.6	2.0	mA
V_F^*	Forward voltage drop	$T_j = 25^\circ\text{C}$	$I_F = 3\text{A}$		0.78	0.82	V
		$T_j = 125^\circ\text{C}$			0.63	0.67	
		$T_j = 25^\circ\text{C}$	$I_F = 6\text{A}$		0.85	0.89	
		$T_j = 125^\circ\text{C}$			0.70	0.75	

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

To evaluate the maximum conduction losses use the following equation:

$$P = 0.59 \times I_{F(AV)} + 0.023 \times I_{F(RMS)}^2$$

Fig. 1: Conduction losses versus average current.

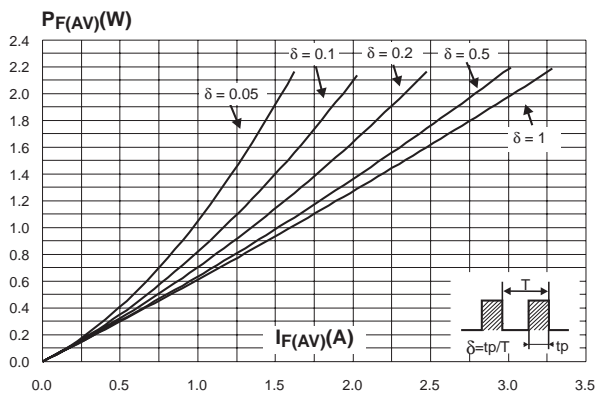


Fig. 3-1: Non repetitive surge peak forward current versus overload duration (maximum values) (SMB).

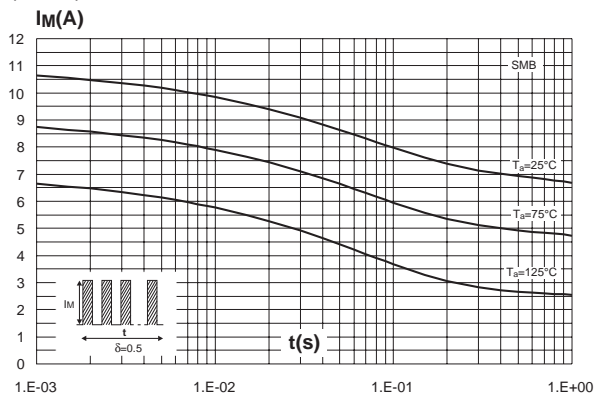


Fig. 2: Average forward current versus ambient temperature ($\delta = 0.5$).

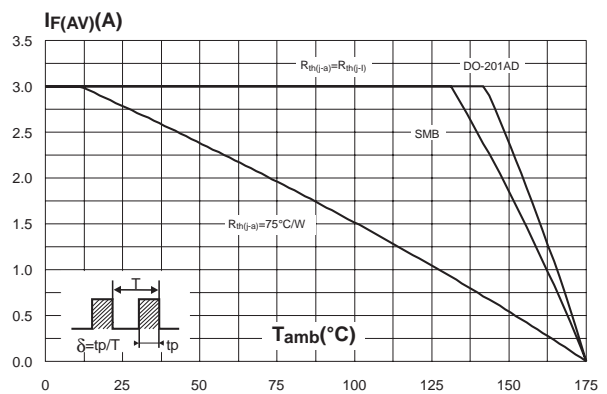


Fig. 3-2: Non repetitive surge peak forward current versus overload duration (maximum values) (DO-201AD).

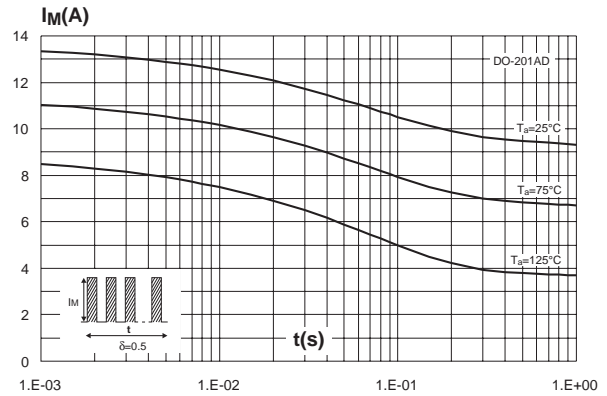


Fig. 4-1: Relative variation of thermal impedance junction to ambient versus pulse duration (SMB).

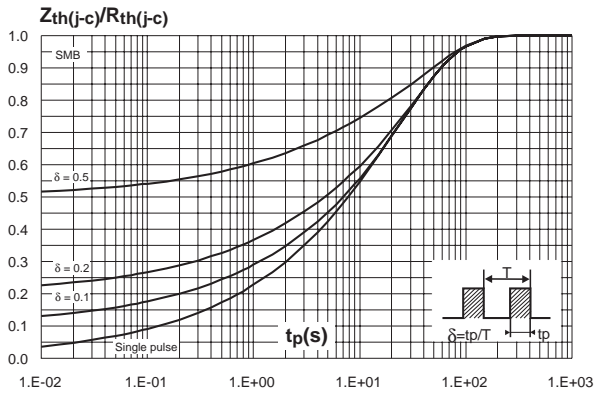


Fig. 4-2: Relative variation of thermal impedance junction to ambient versus pulse duration (DO-201AD).

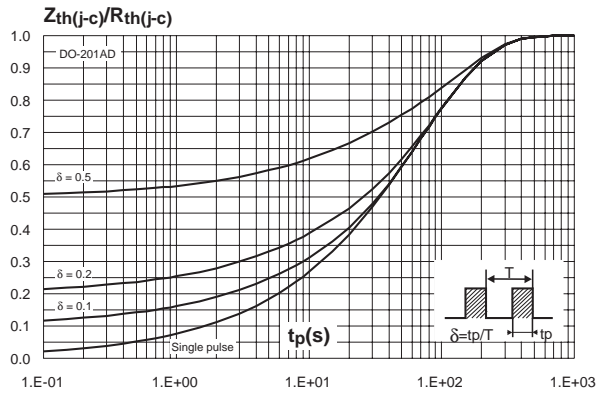


Fig. 5: Reverse leakage current versus reverse voltage applied (typical values).

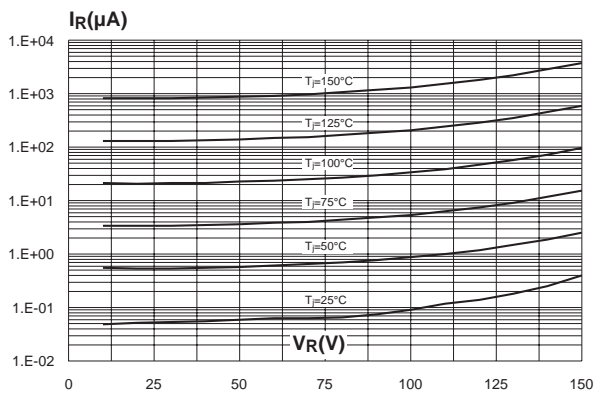


Fig. 6: Junction capacitance versus reverse voltage applied (typical values).

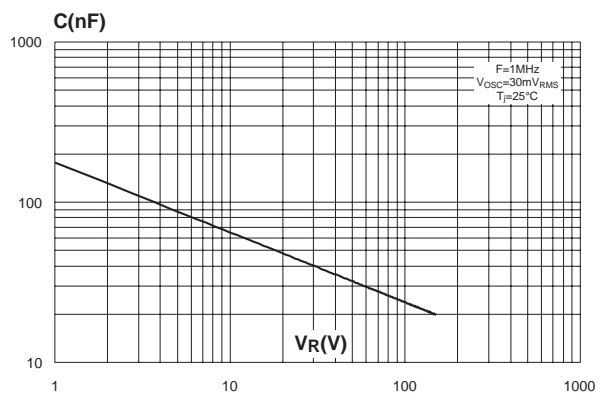


Fig. 7: Forward voltage drop versus forward current.

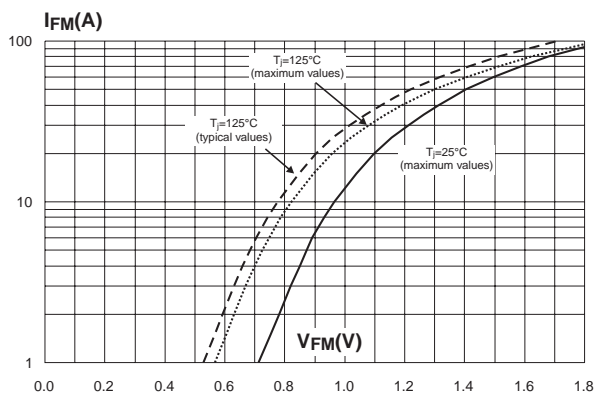
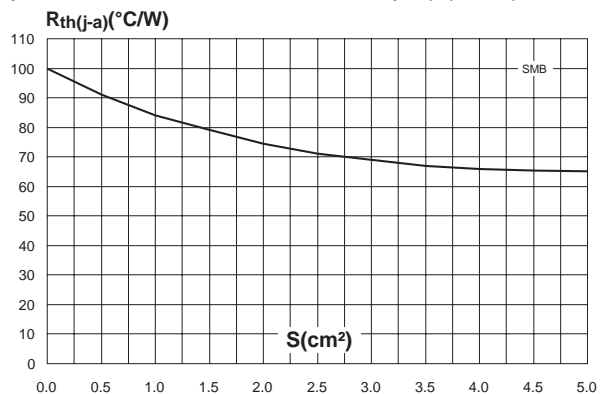
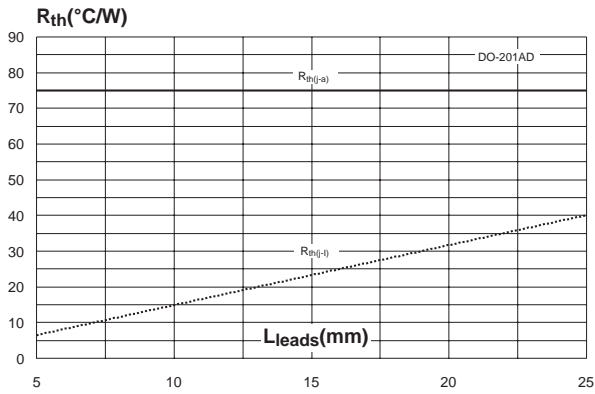


Fig. 8: Thermal resistance junction to ambient versus copper surface under each lead (Epoxy printed circuit board FR4, Cu: 35μm) (SMB).

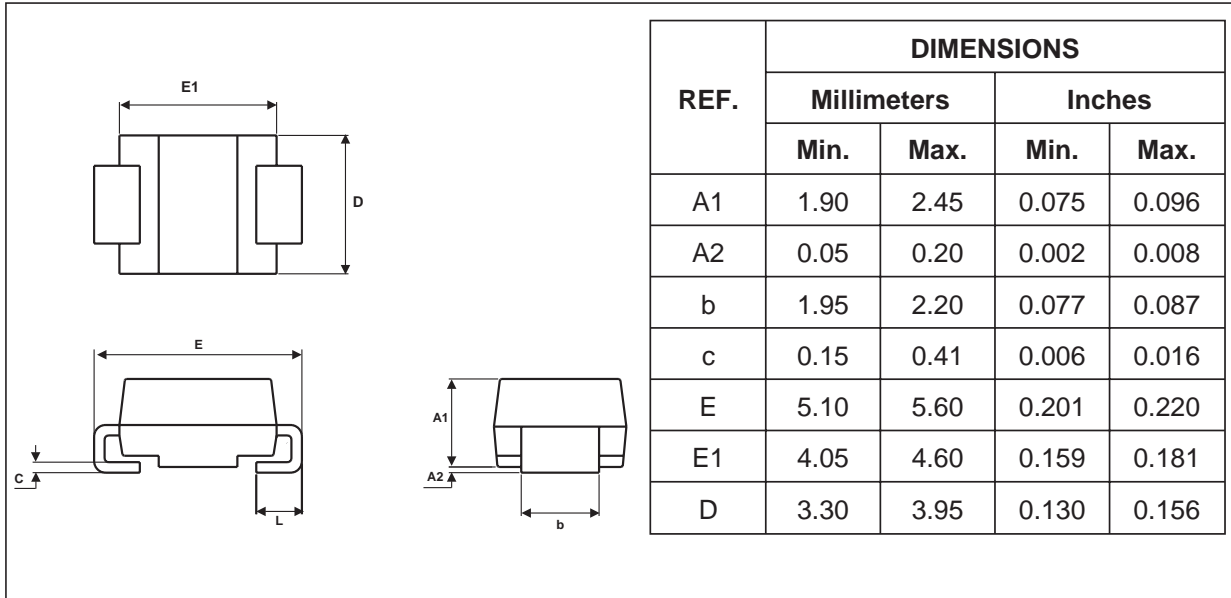


STPS3150/U

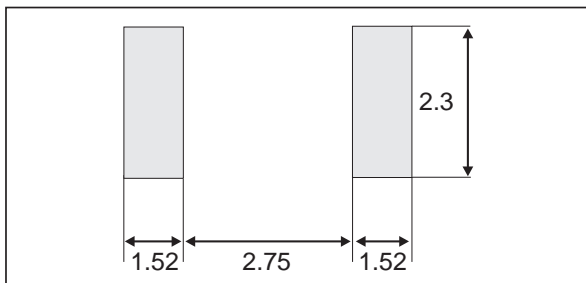
Fig. 9: Thermal resistance versus lead length (DO-201AD).



PACKAGE MECHANICAL DATA SMB

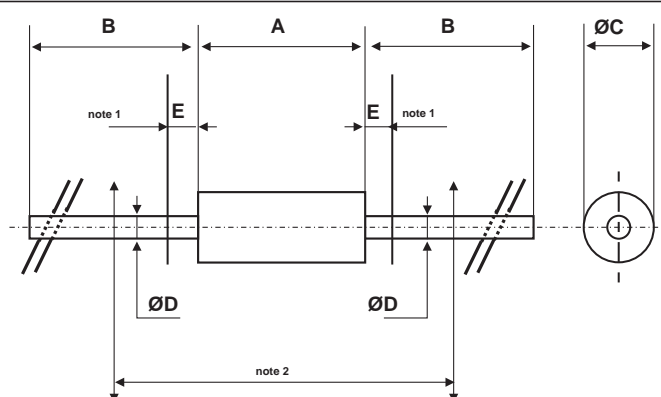


FOOT PRINT DIMENSIONS (in millimeters)



PACKAGE MECHANICAL DATA

DO-201AD plastic



REF.	DIMENSIONS				NOTES
	Millimeters		Inches		
	Min.	Max.	Min.	Max.	
A		9.50		0.374	1 - The lead diameter $\varnothing D$ is not controlled over zone E 2 - The minimum length which must stay straight between the right angles after bending is 0.59" (15 mm)
B	25.40		1.000		
C		5.30		0.209	
D		1.30		0.051	
E		1.25		0.049	

Ordering type	Marking	Package	Weight	Base qty	Delivery mode
STPS3150	STPS3150	DO-201AD	1.12 g	600	Ammopack
STPS3150RL	STPS3150	DO-201AD	1.12 g	1900	Tape & Reel
STPS3150U	G315	SMB	0.107 g	2500	Tape & Reel

- 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

© 2003 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany
 Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore
 Spain - Sweden - Switzerland - United Kingdom - United States.

<http://www.st.com>

