

Main product characteristics

$I_{F(AV)}$	3 A
V_{RRM}	150 V
T_j (max)	175° C
V_F (max)	0.67 V

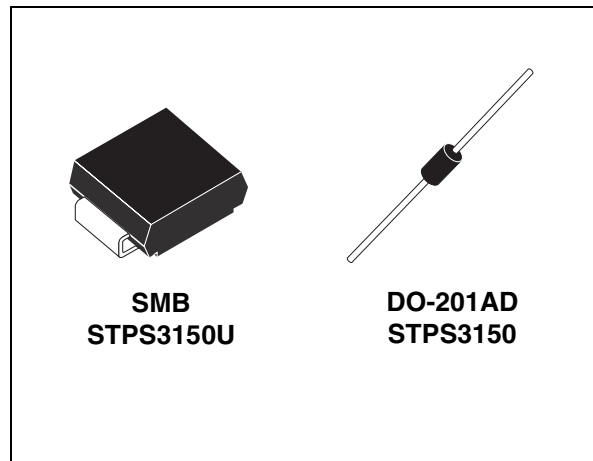
Description

150 V Power Schottky rectifier are suited for switch mode power supplies on up to 24 V rails and high frequency converters.

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

Order Codes

Part Number	Marking
STPS3150U	G315
STPS3150	STPS3150
STPS3150RL	STPS3150



Features and benefits

- Negligible switching losses
- Low forward voltage drop for higher efficiency and extended battery life
- Low thermal resistance

Table 1. Absolute Ratings (limiting values)

Symbol	Parameter		Value	Unit	
V_{RRM}	Repetitive peak reverse voltage		150	V	
$I_{F(RMS)}$	RMS forward voltage		15	A	
$I_{F(AV)}$	Average forward current	SMB	$T_L = 130^\circ\text{C}$ $\delta = 0.5$	3	A
		DO-201AD	$T_L = 140^\circ\text{C}$ $\delta = 0.5$		
I_{FSM}	Surge non repetitive forward current	SMB	$t_p = 10\text{ ms sinusoidal}$	100	A
		DO-201AD		150	
T_{stg}	Storage temperature range		-65 to + 175	° C	
T_j	Maximum operating junction temperature ⁽¹⁾		175	° C	

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

1 Characteristics

Table 2. Thermal resistance

Symbol	Parameter		Value	Unit
$R_{th(j-l)}$	Junction to lead	SMB	15	°C/W
		Lead length = 10 mm DO-201AD	20	

Table 3. Static electrical characteristics

Symbol	Parameter	Tests conditions		Min.	Typ	Max.	Unit
$I_R^{(1)}$	Reverse leakage current	$T_j = 25^\circ C$	$V_R = V_{RRM}$		0.4	2.0	μA
		$T_j = 125^\circ C$			0.6	2.0	mA
$V_F^{(2)}$	Forward voltage drop	$T_j = 25^\circ C$	$I_F = 3 A$		0.78	0.82	V
		$T_j = 125^\circ C$			0.63	0.67	
		$T_j = 25^\circ C$	$I_F = 6 A$		0.85	0.89	
		$T_j = 125^\circ C$			0.70	0.75	

- $t_p = 5 \text{ ms}$, $\delta < 2\%$
- $t_p = 380 \mu s$, $\delta < 2\%$

To evaluate the conduction losses use the following equation:
 $P = 0.59 \times I_{F(AV)} + 0.023 I_{F(RMS)}^2$

Figure 1. Average forward power dissipation versus average forward current

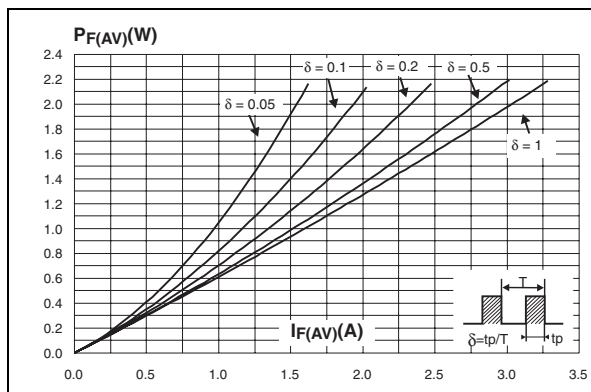


Figure 2. Average forward current versus ambient temperature (delta = 0.5)

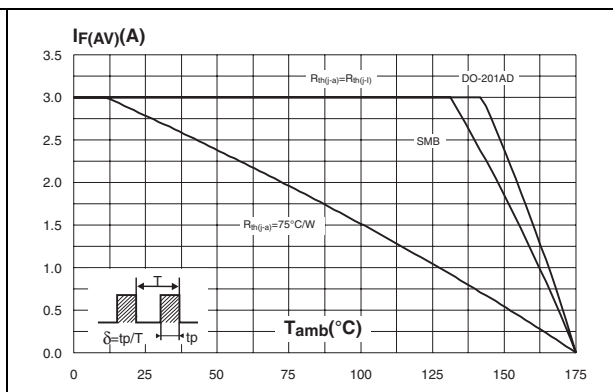


Figure 3. Non repetitive surge peak forward current versus overload duration - maximum values (SMB)

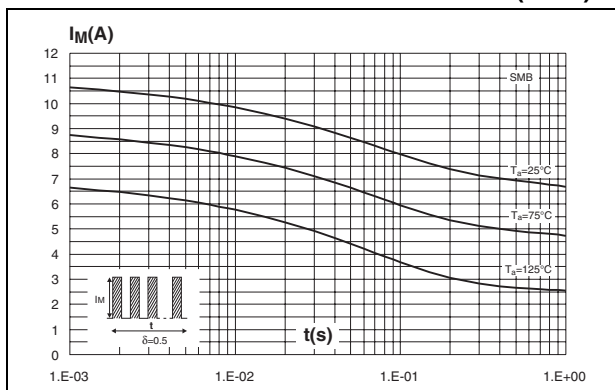


Figure 4. Non repetitive surge peak forward current versus overload duration - maximum values (DO-201AD)

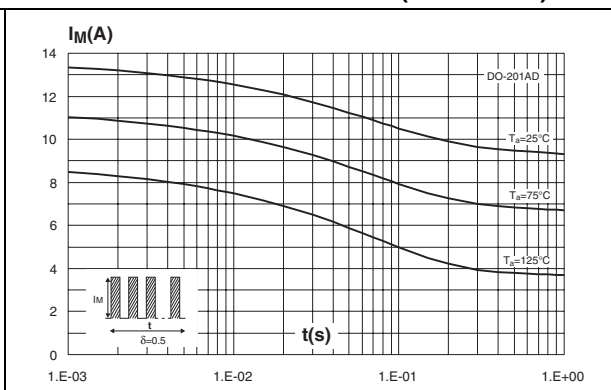


Figure 5. Relative variation of thermal impedance junction to ambient versus pulse duration (SMB)

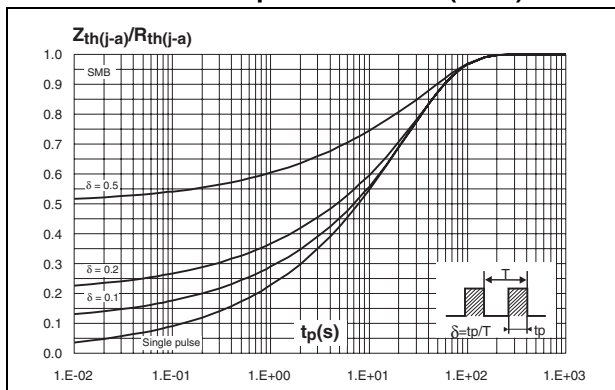


Figure 6. Relative variation of thermal impedance junction to ambient versus pulse duration (DO-201AD)

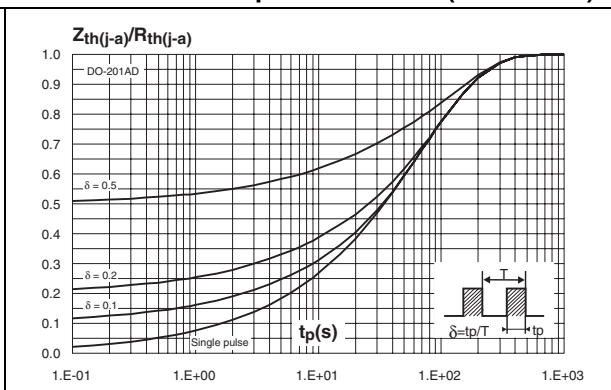


Figure 7. Reverse leakage current versus reverse voltage applied (typical values)

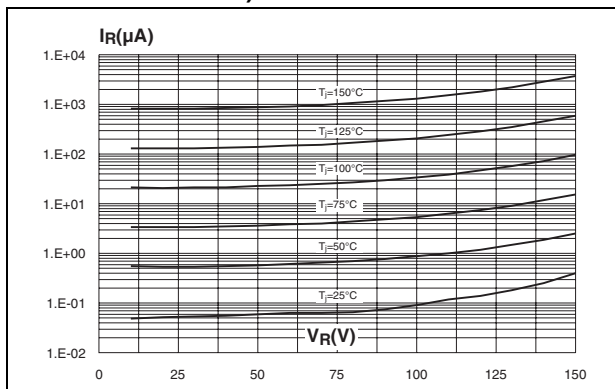


Figure 8. Junction capacitance versus reverse voltage applied (typical values)

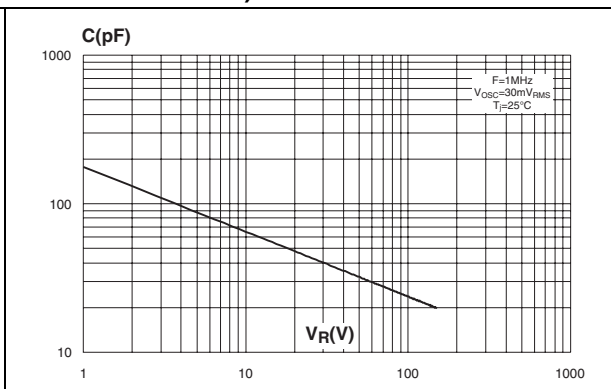


Figure 9. Forward voltage drop versus forward current

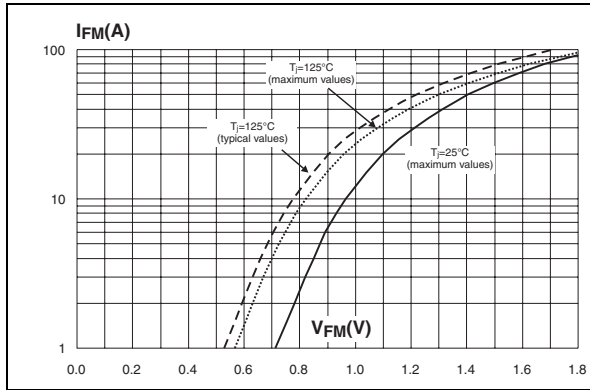


Figure 10. Thermal resistance junction to ambient versus copper surface under each lead - Epoxy printed circuit board FR4, e_{Cu} 35 μm (SMB)

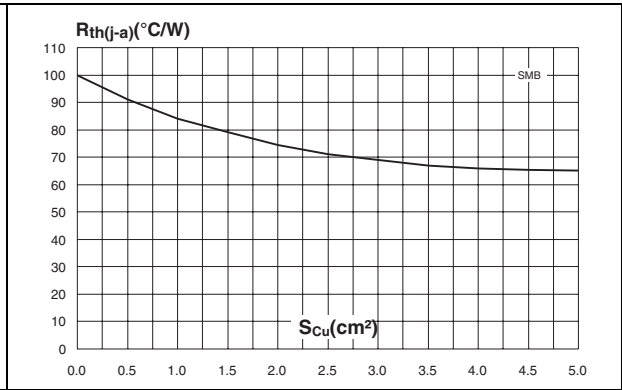
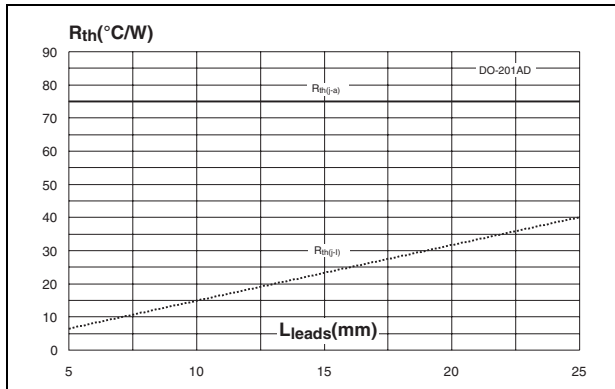


Figure 11. Thermal resistance versus lead length (DO-201AD)



2 Package information

Band shows cathode. Epoxy meets UL94, V0.

Table 4. SMB Package dimensions

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	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

Figure 12. SMB Foot Print Dimensions (in mm)

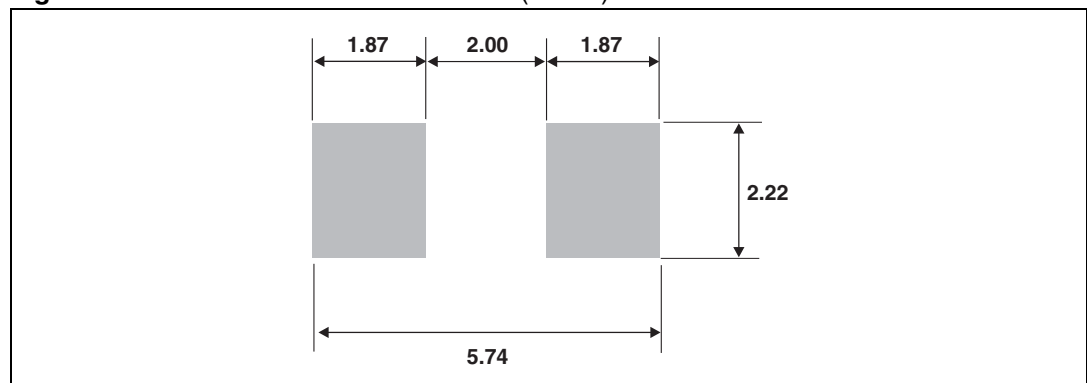


Table 5. DO-201AD Package dimensions

REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A		9.50		0.374
B	25.40		1.000	
C		5.30		0.209
D ⁽¹⁾		1.30		0.051
E		1.25		0.049
Note 2 ⁽²⁾	15		0.59	

1. The lead diameter D is not controlled over zone E
2. The minimum length, which must stay straight between the right angles after bending, is 15 mm (0.59")

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: www.st.com.

3 Ordering information

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

4 Revision history

Date	Revision	Description of Changes
May-2003	2A	Last update.
31-May-2006	3	Reformatted to current standard. Added ECOPACK statement. Updated SMB footprint in Figure 12. Changed nF to pF in Figure 8.

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